GUIDELINES FOR SELECTING PROJECTS FOR MAINTENANCE CONTRACT WORK

SEPTEMBER 1984

PREPARED
BY OFFICE OF MAINTENANCE
HIGHWAY DIVISION

Telephone 515—239—1197

Iowa Department of Transportation

INDEX

The purpose of this publication is to set forth the scope of the contract maintenance program and material procurement procedures. It is also intended to provide guidelines with respect to information needed by this office to prepare project proposals for contract maintenance projects.

CONTRACT PROCUREMENT OF MAINTENANCE MATERIALS AND REHABILITATIVE SERVICES

The Highway Division, through the Offices of Maintenance, Contracts, Purchasing and Inventory and the district offices, develops annual programs for procurement by formal contract of maintenance materials such as shoulder aggregate, asphaltic materials, chemicals, etc., and rehabilitative services such as bridge painting, pavement patching, seal coating, resurfacing, mowing, etc. In addition, small quantities of materials and services may be purchased directly as set out in PPM 010.14.

Material needs are determined by field offices, residency and district, and approved for contract by Offices of Maintenance, and Purchasing and Inventory. Aggregate, and asphaltic concrete, quantities are assembled and prepared for letting through the Office of Contracts by the Office of Maintenance. Other material quantities such as asphaltic road oils, patching premix, chemicals, signs, posts, etc., are assembled based on field estimates and requests, and prior usage history and are let to contract through the Office of Purchasing and Inventory. These items, depending on type, storage requirements, and usage, are often purchased on continuing yearly contracts. Delivery of material let under these contracts is authorized by purchase orders.

Contract rehabilitative services such as bridge painting, pavement patching, seal coating, and thin layer resurfacing are identified and prioritized by the districts. The Office of Maintenance, after field reviewing the candidate projects, assembles the project data and arranges for contract letting through the Office of Contracts. Funding is provided through a special cost center (6500) that is established jointly by the Highway Division and Planning Division (Office of Program Management). The amount requested for this program element is determined from preliminary estimates developed by the district offices and the Office of Maintenance. The total allocation is approved by the DOT Commission yearly as part of the planning and programming process.

The selection and prioritization of candidate projects is initiated in the field offices. The "system preservation concept" emphasizes preserving capital investments, traffic services and safety, and maintenance cost/effort containment. A central office review of the program is coordinated by the

Office of Maintenance which draws on the expertise contained in the Offices of Road Design, Bridge Design, Construction, Materials and Contracts. Contract administration and inspection are handled as set forth in the Code and DOT policies which govern all construction and maintenance project work.

All work is to be performed in accordance with current-applicable specifications. Inspection is to be provided as set out in the instructions provided by the Offices of Construction and Materials.

DEVELOPMENT OF CONTRACT MAINTENANCE PROJECTS
(Minor Rehabilitation Projects)

Near the middle of the fiscal year, the Office of Program Management prepares a listing in the format of the sufficiency rating book for each district. This listing includes all primary roads (including the interstate system). With some guidance concerning the cutoff level associated with the pavement matrix numbers for each level of service (provided by the Office of Program Management), each district prepares recommendations for minor and major pavement rehabilitation work. (Involvement of Resident Maintenance Engineers in the selection of candidates for contract maintenance projects is strongly recommended.) Preliminary concepts are coded by the district according to the minor and major pavement rehabilitation work codes (see pages 17 and 18) including the year recommended for accomplishment. District recommendations are returned to the Office of Program Management and sorted with respect to minor and major pavement rehabilitation work.

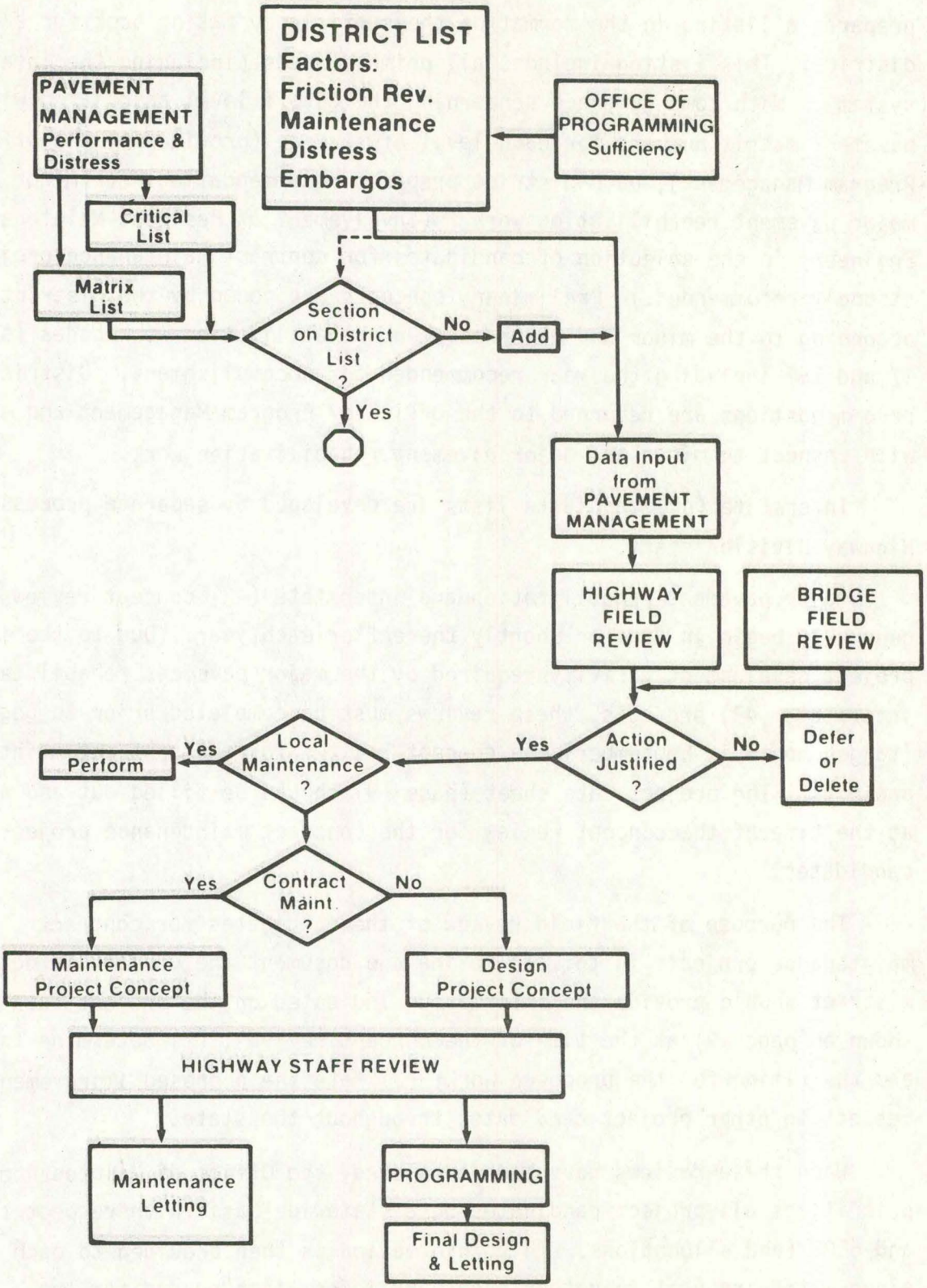
Interstate (4R) candidate lists are developed by separate process by the Highway Division staff.

Major pavement rehabilitation and interstate (4R) concept reviews generally begin in June or shortly thereafter each year. Due to the intense project development activity required by the major pavement rehabilitation and interstate (4R) projects, these reviews must be completed prior to beginning (target month is September) the concept reviews for the contract maintenance projects. The project data sheet (page 19) should be filled out and available at the time of the concept review for the contract maintenance project candidates.

The purpose of the field review of the candidates for contract maintenance projects is to: (1) refine and document the concept in detail (the district should provide the information indicated on the project data sheet shown on page 19) at the time of the concept reviews; (2) determine the need and the timing for the proposed work; (3) rate the proposed improvement with respect to other project candidates throughout the state.

When these reviews have been completed, the Office of Maintenance prioritizes all project candidates on a statewide basis with respect to need and 6500 fund allocations. This information is then provided to each district along with a request to gather necessary information needed for the preparation of the project proposals.

System Preservation Flowchart



GUIDELINES FOR SELECTING PROJECTS FOR MAINTENANCE CONTRACT WORK

The following information should be used to determine the type of work normally done under the contract maintenance program and for developing project estimates. NOTE: WHEN PREPARING PROJECT ESTIMATES REFER TO THE NOTES TAKEN ON THE CONCEPT REVIEWS FOR SPECIFIC STATEMENTS CONCERNING PROJECT CONCEPT.

Major interstate work should not be included in this program but should be submitted as 4R projects.

I. Bridge Painting and Repair:

A. Bridge Painting: Each year the bridge maintenance engineer sends a list of bridges which may require painting. These candidates are reviewed by the district and the necessary information required for proposal preparation is transmitted to the office of maintenance by the district.

Bridge steel should be painted before there is section loss due to rusting.

B. Bridge Repair: minor strengthening, damage repair, etc. may be included in this program. The need for this work should be reviewed with the bridge maintenance engineer.

II. Pavement Patching: This work should be programmed when the repair needs are beyond the capability of the local crews.

NOTE: The cause of pavement failures should be ascertained and corrected as a part of the contract if possible. Refer to the following checklist:

1. Wet subgrade: ditch cleaning (local crew), pavement edge drain, patch drainage.

2. Settlement: check for need of culvert or tile repair (local crew).

3. Pressure: clean and seal contraction joints, install pressure relief joints.

4. On ACC resurfaced/PCC pavements: if pressure relief is necessary, full depth asphalt patches should be specified. These patches shall be full pavement width for a uniform section through the pavement. (2 ft. patches min.)

A. Surface Patching: This type of work may be considered for heavily "D" cracked PCC pavement, spalled ACC surfaces and other deteriorated pavements where spalling has not reached the point where full depth repair or resurfacing is warranted. This work is not considered to be a permanent repair. Other work such as full depth patching or resurfacing should be programmed by the district for future review to facilitate a more permanent means of pavement rehabilitation.

B. Full Depth Patching: Full depth patching projects should be grouped, if possible, to provide a basis for competitive bidding. Individual projects should not be let if the quantity is less than 150 sq. yards. The measurements should result in the removal of all unsound concrete.

Tabulations of full depth patches should be typed on 8 1/2" x 11" forms (102-6, tabulation of PCC patches and 102-7, tabulation of ACC patches) The office of maintenance will supply the forms upon request. The patch size should be identified in the remarks column of these forms and all pertinent information should also be provided on the forms. The current specifications for pavement repair (full depth patches) not intended for resurfacing projects will apply to this work.

Details of the existing pavement and reinforcement is to be described by the use of a <u>legible, reproducible</u> typical detail or a verbal (typed) description including the type of coarse aggregate (gravel or limestone) which was used in the pavement. This information is also needed for special surface patches in PCC pavement.

C. Special Surface Patching or Partial Depth Patching: Tabulations of patches indicating the square yards (or square foot - see appropriate

specifications) in each traffic lane by mile post on the roadway should be provided. Any special instructions to the contractor regarding this work including modifications to the specifications such as an increase in thickness, etc. should be provided.

III. Pavement Surface Maintenance:

A. Pavement Milling: This work may be appropriate for ACC pavements where low friction numbers or wheel rutting are present on a highway with a high wet weather accident experience. The pavement structure must be adequate and the surface must be in a generally good condition. This work would generally be appropriate as a part of pavement preparation prior to a seal coat, slurry seal or thin lift ACC resurfacing. The general intent is not to leave the milled pavement as the final surface for traffic except in extenuating circumstances. In this instance of fog seal should follow the pavement milling.

B. Fog Seals: The purpose of a fog seal is to retard the oxidation of the ACC surface. This work should be programmed when minor raveling and surface checking appears on the asphalt surface.

Roadways with sprinkle treatment aggregate should also be considered for fog sealing when the surface appears to be losing sprinkle treatment aggregate.

C. Bituminous Seal Coats: Seal coats are normally limited to bituminous surfaces with less than 1,000 vehicles per day. Seal coats may also be used to rehabilitate asphalt paved shoulders.

This work should be considered for programming when raveling, excessive cracking, or a polished surface condition exists.

Information needed for proposal preparation includes a plat (pencil drawing on county map section is satisfactory) showing the beginning and ending (mile post and station), and gaps or skips, bridges not to be surfaced (bridges which currently have bituminous surfaces will be sealed), equations, irregular areas and pavement width (or shoulder widths). When preparing information for a shoulder seal coat

project, the lengths of each shoulder by width which are proposed to be seal coated are required.

When full depth patching, crack filling or slurry leveling are a part of the work, furnish estimates as stated elsewhere in this handbook.

Furnish a tabulation of needed strengthening and leveling areas.

Pavement marking estimates (in stations) shall include: (1) solid yellow "no passing" line; (2) dashed yellow center line - actual paint line; (3) solid white edge line (sections not in the current edgeline program shall be excluded); (4) solid yellow edge line (4-lane divided); (5) dashed white center line (4-lane divided); (6) solid white cross walks and stop lines; (7) symbols - number of each and type.

D. Slurry Seals: The pavement structure must be adequate. Wheel rutting should be less than 1/4 of an inch (1/2 of an inch for double course).

No maximum ADT has been set for slurry seals except that with very high traffic they do tend to wear through quite rapidly. Slurry seal work should be considered where raveling, excessive cracking, or low friction numbers have developed. Minor wheel rutting may be corrected with this concept. Slurry seal work may also be used on an ACC paved shoulder, full surface width or a slurry wedge.

Information required for proposal preparation are the same as that listed for seal coats.

E. Thin Overlay (1" Max.): The pavement structure must be adequate, wheel rutting should average less than 1/4 of an inch. One inch overlays may be considered for a dry raveled surface for correcting a pavement surface with low friction numbers. Some improvement in ride will be experienced with this work. One inch overlays should <u>not</u> be considered for portland cement concrete surfaces. Estimates for pavement marking should be provided (see seal coat). Aggregate for granular surfacing of shoulders will also be required when this concept is utilized.

Before proposing project work for a 1 inch overlay, consideration should be given to the use of a seal coat or a slurry seal.

F. Heater Scarification With Thin Overlay: The pavement structure must be adequate. This type of work will correct wheel rutting up to 3/4 of an inch. It will correct a moderate amount of cracking and surface deterioration and improve pavement friction. Project proposals for this work should include all necessary surface and full depth pavement repair. This concept is <u>not</u> suitable for badly oxidized, low penetration, ACC surfaces. Information concerning pavement marking will also be required for this work (see seal coat).

G. Spot Leveling: Overlays in excess of one inch can be considered for funding if limited to short areas (normally 600 feet or less in length). It is suggested that they be used where short stretches of highway needs strengthening, leveling or where a thicker overlay will eliminate the need for excessive full depth patching through short areas. This concept could also be utilized for bridge approaches (may require pavement milling to remove the existing approach prior to ACC placement). Locations of the proposed areas for these overlays should be tabulated. Estimates for necessary pavement marking should be included as should necessary aggregate for granular surfacing of shoulders.

This concept will provide for the contractor to furnish and place the ACC material. Recommend the use of contract spot leveling in locations with permanent ACC plants. This concept has proven to be cost effective and allows more flexibility for scheduling the state lay down machines.

H. Pavement Planing: Pavement must be structurally sound and in good condition. Use of this concept is applicable to PCC pavements with low friction numbers and high wet weather accident experience or pavements with a rough ride. This concept can also be utilized on a faulted pavement. Pavement grooving may be utilized with planing.

Pavement undersealing may be necessary in conjunction with this work.

The installation of longitudinal subdrains when required would be done in conjunction with this work along with crack and joint sealing. Pavement preparation including full depth patching should be a part of this concept. Pavement marking estimates should also be provided when this work is utilized (see seal coat).

NOTE: Work should normally be programmed through the major rehabilitation program due to lack of funds in the contract maintenance program.

IV. Joint Maintenance:

A. Joint and Crack Sealing (PCC Pavements): Portland Cement concrete pavements should be considered for crack and joint sealing when the original joint sealer has failed. Bond failure of the original joint sealing material can be determined by visual inspection. Spalling at the joints due to the intrusion of incompressibles is also an indication that the original joint sealer has failed. The intent is to perform this work on the better PCC pavements first. Candidates for joint and crack sealing should be reviewed for longitudinal subdrains. Special surface patches may also be a part of this work. The type of patching (ACC or PCC) will be determined on the concept review.

Estimate joint and crack lengths in accordance with the specifications by class by mile posts. The intent is not to route and seal random cracks which are not working and are 1/8" or less in width. Provide the date the estimates for this work were made. Detailed estimates are necessary to avoid large overruns on these projects. Totals of joints and cracks by class should be provided.

Estimate center line joint separately by class and indicate the percentage that can be sawed with a large wet diamond saw. Pavements where the center line joint was formed with "parting strip" may necessitate routing where it is crooked and cannot be followed with a saw. These areas should be identified and totaled on the estimate.

Special surface patches should be estimated in square feet. Provide a tabulation by lane by milepost for this work.

B. Crack Sealing (ACC Surfaces): Sealing of ACC surfaces should be considered for contract when the work load exceeds the local crew capability. The intent is to seal fairly new ACC surfaces when the reflection cracking is complete. Estimates for this work should be furnished in accordance with a current special provision or specification by class and by mile posts.

Crack filling with emulsion by local crews should continue until the crack sealing work can be done.

C. Crack Filling ACC Surfaces with Emulsion: This work will normally be done in conjunction with seal coat and slurry seal projects as a part of surface preparation. This work could also be considered for contract if local crews are falling behind in crack filling work.

An estimate of the number of gallons per mile will be required. The need for emulsion generally varies from 200 to 700 gallons per mile (2 lane roadway). Before sending in an estimate for this work, the resident engineer should contact the supervisor responsible for the roadway and consult with him concerning the emulsion needs. (A test section by local crews may be appropriate to determine need.)

An estimate for the number of tons of ACC material needed for crack patching will also be required.

D. Slurry Leveling of Cracks: This work can be used on a roadway to improve the ride on an ACC pavement, or could be preparatory work for a seal coat or slurry seal.

Provide the total number of joints to be leveled per mile, and the length of each joint.

V. Miscellaneous Pavement Maintenance:

A. Longitudinal Subdrains: Subdrains should be considered through areas where wet subgrade may be causing pavement cracking, instability, frost heaves, settlements and pumping. At the time of the concept review the district shall provide a preliminary tabulation of the

proposed subdrain locations. All subdrain needs will be reviewed by the Soils Design Section, Office of Road Design.

B. Pressure Relief Joints: Pressure relief joints should not be cut unless there is evidence of excessive pressure in the pavement. Installation of pressure relief joints may be warranted when either of the following conditions are met: (1) A section of pavement has a history of more than 2 blowups per mile per year. (2) Past pavement performance indicates the above frequency of blowups may be expected from a specific pavement type or the use of a particular aggregate. Cutting pressure relief joints when not warranted will cause loss of interlock at joints and cracks.

Do not install pressure relief joints on ACC resurfaced PCC pavements, except at bridge ends. Consideration should be given to cutting pressure relief joints by contract at bridge ends when recutting is necessary and the concentration of bridges makes a contract worthwhile.

VI. Shoulder Rehabilitation:

A. Paved ACC Shoulders:

1. Fog seal when the surfaces become dry. Fog seals should not be considered if excess raveling or breakup has occurred on the shoulder surface. Fog seals can be placed on shoulders that are flush with the pavement surface.

2. Seal coat to correct raveling and cracking problems. Shoulders should be about 1/2 inch low to accommodate the seal coat and to facilitate the drainage off the roadway. When shoulders are flush with the pavement surface, pavement milling may be utilized to provide adequate room for the seal coat adjacent to the pavement edge. Aggregate for shoulder seal coats will normally be the 3/8 inch size. Strip seal coats may be required if the shoulders are more than 1/2 inch low. A slurry wedge could also be considered for this work.

3. Slurry seal may be placed in lieu of a seal coat if the shoulders are between 1/4 to 1/2 inch low. The use of a slurry seal should not be employed on a shoulder which lacks adequate structure. This concept can also be used to correct pavement edge dropoffs and to fill cracks between the shoulders and the pavement. The width of the slurry seal may vary depending on the shoulder condition from a minimum of 12" wide to full width.

4. Full depth repair of asphalt shoulders can be included for contract work if beyond the capability of the local crew. Large projects (quantities) on the interstate system should be considered as project candidates in the interstate 4R program.

B. Granular Shoulders:

1. Granular shoulder material should be replaced when it is no longer practical to blade existing material up to fill the edge rut and placement of this material is beyond the scope of work which could be accomplished by local crews. Blading of granular shoulder material to the extent that it causes excessive shoulder slopes should not be done. Material should be added by the local crew as needed to correct minor problems as a part of routine maintenance operations.

2. The estimate of quantities should be developed from cross sections (not less than 2 per mile per side) to insure accurate quantities are provided for the estimate. The rate per station per side should be developed by the district. Provide the unit weight used to calculate the rate.

   When removal of the existing earth "dam" at the edge of an existing granular shoulder or when coring out an earth shoulder and placing stabilized shoulder material, furnish a tabulation of haulout areas when it is not possible or appropriate to waste excavation on the foreslope and indicate a designated waste area or state that the contractor should waste the material off the project.

Indicate whether or not there is bituminous edge rut material on the existing shoulder (built up seal coat or ACC hot mix) and how this material should be disposed of.

Furnish a plat as indicated under seal coat. Note: When the existing shoulders are earth, work will generally be done as per the specifications for stabilized shoulders. Upgrading of earth shoulders is generally beyond the scope of contract maintenance projects.

3. If there are known aggregate sources not suitable for this work in the project area, and a special note must be added to the proposal; please advise of potential problems and provide the necessary notes.

VII. Maintenance of Primary Road Extensions and Institutional Park Roads:

A. Primary Road Extensions: Primary highways within the corporate limits of cities may be reviewed and included in the contract maintenance program. These can be submitted as MP projects or they can be added to the maintenance agreement with the city or by supplemental agreement.

B. Institutional and State Park Roads: Institutional and state park roads may be included in the contract maintenance program. These projects should not be listed in the priority sequence with the other work within the district. They are to be prioritized separately and funded from the parks and institutional road fund. The Office of Program Management should be contacted to coordinate this work.

VIII. Interstate Sign Refurbishment:

A. Evaluation: Signs which are greater than 7 years old should be monitored frequently to determine replacement needs. Retro-reflectometer readings of 50 % of new values are an indication that replacement will be required in the near future. Cracking of background surface visible from 30 feet or more in daylight is evidence of poor serviceability. Signs with physical damage such as dents, bent sections, bullet holes, etc., should be considered for

replacement. Nighttime checks which reveal that the legend is not uniform and clear from a readable distance indicate the need for replacement.

B. Procedures: When recommending contract sign replacement, all signs needing refurbishing on a section of roadway should normally be replaced at one time. Generally, projects should include entire sections as they were originally installed or reconditioned. Type B signs on ramps and side roads should be included in the refurbishing projects.

C. Miscellaneous: When recommending a contract sign refurbishing project the size of panel and content of legend should be reviewed for any necessary changes to conform with standards. Some original signs may be downgraded in size. Mountings should be reviewed for modification such as break-away design, set back from roadway and conversion to smaller wood signs.

IX. Miscellaneous Items:

A. Miscellaneous Types of Maintenance Work: Other types of work may be let to contract if found to be cost effective and/or beyond the capability of local maintenance crews and budgets. Contract work performed outside the shoulder line will be funded from the local budget. Proposals for this type of work should be developed for specific needs as they are identified.

Estimate information

Information for the development of the project proposals should be provided by the district offices. Information required is indicated under the major types of work items which begin on page 5 of this handbook. To provide the necessary information please refer to the current specifications, supplemental specifications or special provisions that apply to each bid item. A current listing of supplemental specifications and special provisions can be obtained from the Specifications Engineer. Copies of the supplemental specifications and special provisions may be obtained from the Office of Contracts.

Transmittal of this information to the Office of Maintenance should be presented as shown in the example on pages 25 to 27 with a plat. The need for the modification of any specifications dealing with this work or other information pertinent to the project should be provided with this submittal.

Due to the Pavement and Maintenance Management and Maintenance Cost Distribution systems, quantity tabulations and quantity estimates must be divided and shown as divisions of work (provide map showing mile posts at B.O.P., divisions splits and E.O.P.) at the following locations:

(1) Show district lines (mile post and station) when work on a roadway crosses district lines,
(2) Show residency lines (mile post and station) when work on a roadway crosses maintenance residency lines,
(3) Show maintenance area lines (mile post and station) when work on a roadway crosses maintenance area responsibility (cost center) line,
(4) When work is to be done (patching, spot leveling, etc.) are on more than one route within a maintenance area responsibility, list each route on a separate tabulation sheet,
(5) When work is to be done on a section of a route that includes more than one unit type (10, 80, 90, etc.) and the work on an individual unit type constitutes 25 % or more of the work, estimate and tabulate the proposed work by unit type so these may be let as separate divisions,
(6) Indicate the projects that should be tied.

Form 000020
2-75 , H-6686

IOWA DEPARTMENT OF TRANSPORTATION

To Office: K. M. Meeks, V. R. Snyder, R. I. Bortle, R. F. Percival, J. R. Bump, R. C. Henely

Date: January 7, 1987

Attention: District Maintenance Engineers

Ref. No. 650

From: Leland D. Smithson LDS

Office: Maintenance

Subject: Manual Update

Attached are revisions (page numbers 17 and 18) to the manual "Guidelines For Selecting Projects for Maintenance Contract Work"

Original Manual Distribution:

Districts: 2 @ RME Office
2 @ RCE Office
3 @ District Office
1 @ Maintenance Supervisor

Central Office: 12 @ Maintenance Office
6 @ Construction Office
4 @ Materials Office
2 @ Road Design Office

LDS:fmh
Attachments

cc :K. P. McLaughlin w/attachment
G. F. Sisson w/attachment
B. C. Brown w/attachment

OFFICE OF MAINTENANCE
MINOR & MAJOR PAVEMENT REHABILITATION WORK CODES

WORK CODES	DESCRIPTION	COST/CENTERLINE MI. EXCEPT AS NOTED (based on ave. project cost-FY86) $
01- *	JOINT & CRACK FILLING W/EMULSION (AC SURFACE) - 2 LANE	2,500
02- *	JOINT & CRACK SEALING (AC PAVT) - 2 LANE	7,500
03- *	JOINT & CRACK SEALING (PC PAVT) - 2 LANE	10,000
04-	NOT ASSIGNED	-----
05- *	JOINT & CRACK FILLING W/EMULSION (AC PAVT) 4 LANE	5,000
06- *	JOINT & CRACK SEALING (AC PAVT) - 4 LANE	10,000
07- *	JOINT & CRACK SEALING (PC PAVT) - 4 LANE	23,000
08-	NOT ASSIGNED	-----
09- *	NOT ASSIGNED	-----
10- *	FULL DEPTH PATCHING	80/SQ. YD.
20- *	ACC SURFACE AND PARTIAL DEPTH PATCHING	50/SQ. YD.
21- *	PAVEMENT FOG SEAL (AC PAVT) - 2 LANE	1,000
22- *	PAVEMENT SEAL COAT - 2 LANE	10,000
23- *	PAVEMENT SLURRY SEAL - 2 LANE	13,000
24- *	PAVEMENT DOUBLE SLURRY SEAL - 2 LANE	24,000
25- *	PAVEMENT FOG SEAL (AC PAVT) - 4 LANE	2,000
26- *	PAVEMENT SEAL COAT - 4 LANE	20,000
27- *	PAVEMENT SLURRY SEAL - 4 LANE	26,000
28- *	PAVEMENT DOUBLE SLURRY SEAL - 4 LANE	48,000
29-	NOT ASSIGNED	------
30- *	INTERMITTENT AC RESURFACING (SPOT LEVELING)	55/TON
31-	RESURFACING - AC (INCLUDES AVERAGE BASE REPAIR, WITH PAVED SHOULDERS)	-----
32-	RESURFACING - AC 4-LANE 3"	400,000
33-	RESURFACING - AC 4-LANE 4 1/2"	550,000
40-	RESURFACING - AC (INCLUDES AVERAGE BASE REPAIR & STABILIZED SHOULDERS)	-----
41-	RESURFACING - AC 2 LANE 1"	44,000
42-	RESURFACING - AC 2 LANE 2"	70,000
43-	RESURFACING - AC 2 LANE 3"	98,000
44-	RESURFACING - AC 2 LANE 4 1/2"	125,000
45-	RESURFACING - AC 2 LANE 6"	155,000
46-	RESURFACING - AC 4 LANE 1"	80,000
47-	RESURFACING - AC 4 LANE 2"	135,000
48-	RESURFACING - AC 4 LANE 3"	185,000
49-	RESURFACING - AC 4 LANE 4 1/2"	230,000

* INDICATES WORK CODE NORMALLY ASSOCIATED WITH CONTRACT MAINTENANCE PROGRAM

50-		SHOULDER RESTORATION (NON-PAVED)	-----
51-	*	SHOULDER RESTORATION WITH EARTH	SPECIAL EST.
52-	*	SHOULDER RESTORATION WITH AGGREGATE	14,000
53-		CONVERT EARTH TO 6" STABILIZED SHOULDER (10 FT SHOULDER) PRORATE FOR VARIABLE WIDTHS & DEPTHS	30,000
60-	*	SHOULDER SURFACE RESTORATION (PAVED)	-----
61-	*	SHOULDER FOG SEAL 20' WIDE	3,000
62-	*	SHOULDER SAND SEAL 20' WIDE	4,000
63-	*	SHOULDER SEAL COAT 20' WIDE	6,000
64-	*	SHOULDER SLURRY SEAL 20' WIDE	11,000
65-	*	SHOULDER FOG SEAL 32' WIDE	3,000
66-	*	SHOULDER SAND SEAL 32' WIDE	8,000
67-	*	SHOULDER SEAL COAT 32' WIDE	11,000
68-	*	SHOULDER SLURRY COAT 32' WIDE	18,000
69-		NOT ASSIGNED	------
70-		PAVEMENT REPLACEMENT	SPECIAL EST.
71-		INLAY-PCC W/EXISTING PAVED SHLD. - 2 LANE	550,000
72-		RESURFACING-PCC BONDED WITH EXISTING PAVED SHOULDER - 2 LANE (4")	340,000
73-		RESURFACING-PCC BONDED W/STABILIZED SHOULDERS - 2-LANE (4")	170,000
80-		BRIDGE	-----
81-	*	BRIDGE PAINT	SPECIAL EST.
82-		BRIDGE REPAIR	SPECIAL EST.
90-		OTHER - SPECIFY	SPECIAL EST.
91-		DIAMOND GRINDING (PC PAVT)-2 LANE (LIMESTONE)	38,000
92-		DIAMOND GRINDING (PC PAVT)-2 LANE (GRAVEL)	45,000

ADD ONE OF THE FOLLOWING LETTERS TO THIRD FIGURE OF THE ABOVE WORK CODES TO INCLUDE ADDITIONAL WORK WHEN REQUIRED. (2 LANE MILE COSTS)

A - ADDS SURFACE PATCHING TO CRACK FILLING CONTRACTS	1,000
B - ADDS SLURRY LEVELING TO CRACK FILLING CONTRACTS	2,000
C - ADDS HEATER SCARIFICATION TO AC RESF. CONTRACTS	6,000
D - ADDS PAVEMENT MILLING TO AC RESF. CONTRACTS	8,000
E - ADDS UNDERSEALING TO A JOINT SEALING CONTRACT 100% OF LENGTH TO BE UNDERSEALED)	18,000
F - ADDS 4' WIDENING TO A RESURFACING CONTRACT	30,000
G - ADDS 6' WIDENING TO A RESURFACING CONTRACT	45,000
H - ADDS LONGITUDINAL SUBDRAINS (COST PER 100 FT.)	500
I - ADDS SPECIAL PCC SURFACE PATCHING TO JOINT & CRACK SEALING (PCC) CONTRACTS ($12.00/Sq.Ft.)	SPECIAL ESTIMATE
J - ADDS SPRINKLE TREATMENT TO AC RESURFACING	2,500
K - ADDS GUARDRAIL INSTALLATION OR UPDATE	7,000/INSTALLATION
L - ADDS CULVERT EXTENSIONS TO RESURFACING PROJECTS	SPECIAL EST.

* INDICATES WORK CODE NORMALLY ASSOCIATED WITH CONTRACT MAINTENANCE PROGRAM

OFFICE OF MAINTENANCE
MINOR & MAJOR PAVEMENT REHABILITATION WORK CODES

WORK CODES	DESCRIPTION	COST/CENTERLINE MI. (based on ave. project cost-FY84)
01- *	JOINT & CRACK FILLING W/EMULSION AC - 2 LANE	3,000
02- *	JOINT & CRACK SEALING (AC PAVT) - 2 LANE	5,000
03- *	JOINT & CRACK SEALING (PC PAVT) - 2 LANE	11,000
04-	NOT ASSIGNED	-----
05- *	JOINT & CRACK FILLING 2/EMULSION - 4 LANE	6,000
06- *	JOINT & CRACK SEALING (AC PAVT) - 4 LANE	12,000
07- *	JOINT & CRACK SEALING (PC PAVT) - 4 LANE	17,000
08-	NOT ASSIGNED	-----
09- *	JOINT & CRACK WORK - MISCELLANEOUS	SPECIAL EST.
10- *	FULL DEPTH REPAIRS	SPECIAL EST.
20- *	MINOR SURFACE RESTORATION	-----
21- *	PAVEMENT FOG SEAL - 2 LANE	1,000
22- *	PAVEMENT SEAL COAT - 2 LANE	10,000
23- *	PAVEMENT SLURRY SEAL - 2 LANE	16,000
24- *	PAVEMENT DOUBLE SLURRY SEAL - 2 LANE	24,000
25- *	PAVEMENT FOG SEAL - 4 LANE	1,500
26- *	PAVEMENT SEAL COAT - 4 LANE	20,000
27- *	PAVEMENT SLURRY SEAL - 4 LANE	32,000
28- *	PAVEMENT DOUBLE SLURRY SEAL - 4 LANE	48,000
29- *	MINOR SURFACE RESTORATION - OTHER	SPECIAL EST.
30-	INTERMITTENT AC RESURFACING	SPECIAL EST.
40-	RESURFACING - AC (INCLUDES AVERAGE PAVT. REPAIR & SHOULDER WORK)	-----
41- *	RESURFACING - AC 2 LANE 1"	34,000
42-	RESURFACING - AC 2 LANE 2"	72,000
43-	RESURFACING - AC 2 LANE 3"	88,000
44-	RESURFACING - AC 2 LANE 4 1/2"	126,000
45-	RESURFACING - AC 4 LANE 1"	68,000
46-	RESURFACING - AC 4 LANE 2"	144,000
47-	RESURFACING - AC 4 LANE 3"	178,000
48-	RESURFACING - AC 4 LANE 4 1/2"	252,000
49-	RESURFACING - OTHER	SPECIAL EST.
50- *	SHOULDER RESTORATION (EARTH OR GRANULAR)	-----
51- *	SHOULDER RESTORATION WITH EARTH	SPECIAL EST.
52- *	SHOULDER RESTORATION WITH AGGREGATE	SPECIAL EST.
60- *	SHOULDER SURFACE RESTORATION (PAVED)	-----
61- *	SHOULDER FOG SEAL 20' WIDE	3,000
62- *	SHOULDER SAND SEAL 20' WIDE	4,000
63- *	SHOULDER SEAL COAT 20' WIDE	7,000
64- *	SHOULDER SLURRY SEAL 20' WIDE	11,000
65- *	SHOULDER FOG SEAL 32' WIDE	3,000
66- *	SHOULDER SAND SEAL 32' WIDE	8,000

Revised 12-84

* INDICATES WORK CODE NORMALLY ASSOCIATED WITH CONTRACT MAINTENANCE PROGRAM

WORK CODES	DESCRIPTION	COST/CENTERLINE MI. (based on ave. project cost-FY84)
67- *	SHOULDER SEAL COAT 32' WIDE	12,000
68- *	SHOULDER SLURRY COAT 32' WIDE	18,000
69- *	SHOULDER SURFACE RESTORATION - OTHER	SPECIAL EST.
70-	PAVEMENT REPLACEMENT	SPECIAL EST.
80-	BRIDGE -----	
81- *	BRIDGE PAINT	SPECIAL EST.
82-	BRIDGE REPAIR	SPECIAL EST.
90-	OTHER - SPECIFY	SPECIAL EST.
91-	DIAMOND GRINDING (PC PAVT)-2 LANE (LIMESTONE)	34,000
92-	DIAMOND GRINDING (PC PAVT)-2 LANE (GRAVEL)	62,000

ADD ONE OF THE FOLLOWING LETTERS TO THIRD FIGURE OF THE ABOVE WORK CODES TO INCLUDE ADDITIONAL WORK WHEN REQUIRED. (2 LANE MILE COSTS)

A -	ADDS SURFACE PATCHING TO CRACK FILLING CONTRACTS	1,000
B -	ADDS SQUEEGEE SLURRY TO CRACK FILLING CONTRACTS	2,500
C -	ADDS HEATER SCARIFICATION TO AC RESF. CONTRACTS	6,000
D -	ADDS PAVEMENT MILLING TO AC RESF. CONTRACTS	7,000
E -	ADDS UNDERSEALING TO A JOINT SEALING CONTRACT	12,000
F -	ADDS 4' WIDENING TO A RESURFACING CONTRACT	40,000
G -	ADDS 6' WIDENING TO A RESURFACING CONTRACT	60,000
H -	ADDS LONGITUDINAL SUBDRAINS (COST PER 100 FT.)	550
I -	ADDS SPECIAL PCC SURFACE PATCHING TO JOINT & CRACK SEALING (PCC) CONTRACTS ($25.00/Sq.Ft.)	SPECIAL ESTIMATE

Revised 12-84

* INDICATES WORK CODE NORMALLY ASSOCIATED WITH CONTRACT MAINTENANCE PROGRAM

OFFICE OF MAINTENANCE
MINOR & MAJOR PAVEMENT REHABILITATION WORK CODES

WORK CODES	DESCRIPTION	COST/CENTERLINE MI.
01- *	JOINT & CRACK FILLING W/EMULSION AC - 2 LANE	2,000
02- *	JOINT & CRACK SEALING (AC PAVT) - 2 LANE	4,000
03- *	JOINT & CRACK SEALING (PC PAVT) - 2 LANE	10,000
04-	NOT ASSIGNED	-----
05- *	JOINT & CRACK FILLING 2/EMULSION - 4 LANE	4,000
06- *	JOINT & CRACK SEALING (AC PAVT) - 4 LANE	9,000
07- *	JOINT & CRACK SEALING (PC PAVT) - 4 LANCE	20,000
08-	NOT ASSIGNED	-----
09- *	JOINT & CRACK WORK - MISCELLANEOUS	SPECIAL EST.
10- *	FULL DEPTH REPAIRS	SPECIAL EST.
20- *	MINOR SURFACE RESTORATION	-----
21- *	PAVEMENT FOG SEAL - 2 LANE	1,500
22- *	PAVEMENT SEAL COAT - 2 LANE	9,500
23- *	PAVEMENT SLURRY SEAL - 2 LANE	14,000
24- *	PAVEMENT DOUBLE SLURRY SEAL - 2 LANE	21,000
25- *	PAVEMENT FOG SEAL - 4 LANE	3,000
26- *	PAVEMENT SEAL COAT - 4 LANE	19,000
27- *	PAVEMENT SLURRY SEAL - 4 LANE	28,000
28- *	PAVEMENT DOUBLE SLURRY SEAL - 4 LANE	42,000
29- *	MINOR SURFACE RESTORATION - OTHER	SPECIAL EST.
30- *	INTERMITTENT AC RESURFACING	SPECIAL EST.
40-	RESURFACING - AC (INCLUDES AVERAGE PAVT. REPAIR & SHOULDER WORK)	-----
41- *	RESURFACING - AC 2 LANE 1"	40,000
42-	RESURFACING - AC 2 LANE 2"	56,000
43-	RESURFACING - AC 2 LANE 3"	77,000
44-	RESURFACING - AC 2 LANE 4 1/2"	110,000
45-	RESURFACING - AC 4 LANE 1"	80,000
46-	RESURFACING - AC 4 LANE 2"	110,000
47-	RESURFACING - AC 4 LANE 3"	154,000
48-	RESURFACING - AC 4 LANE 4 1/2"	220,000
49-	RESURFACING - OTHER	SPECIAL EST.
50- *	SHOULDER RESTORATION (EARTH OR GRANULAR)	-----
51- *	SHOULDER RESTORATION WITH EARTH	SPECIAL EST.
52- *	SHOULDER RESTORATION WITH AGGREGATE	SPECIAL EST.
60- *	SHOULDER SURFACE RESTORATION (PAVED)	-----
61- *	SHOULDER FOG SEAL 20' WIDE	1,750
62- *	SHOULDER SAND SEAL 20' WIDE	3,600
63- *	SHOULDER SEAL COAT 20' WIDE	8,000
64- *	SHOULDER SLURRY SEAL 20' WIDE	11,000
65- *	SHOULDER FOG SEAL 32' WIDE	3,000
66- *	SHOULDER SAND SEAL 32' WIDE	6,500
67- *	SHOULDER SEAL COAT 32' WIDE	14,000
68- *	SHOULDER SLURRY COAT 32' WIDE	17,000
69- *	SHOULDER SURFACE RESTORATION - OTHER	SPECIAL EST.
70-	PAVEMENT REPLACEMENT	SPECIAL EST.
80-	BRIDGE -----	
81- *	BRIDGE PAINT	SPECIAL EST.
82- *	BRIDGE REPAIR	SPECIAL EST.
90- *	OTHER - SPECIFY	SPECIAL EST.

* INDICATES WORK CODE NORMALLY ASSOCIATED WITH CONTRACT MAINTENANCE PROGRAM

ADD ONE OF THE FOLLOWING LETTERS TO THIRD FIGURE OF THE ABOVE WORK CODES TO INCLUDE ADDITIONAL WORK WHEN REQUIRED.

A - ADDS SURFACE PATCHING TO CRACK FILLING CONTRACTS	1,000
B - ADDS SQUEEGEE SLURRY TO CRACK FILLING CONTRACTS	2,000
C - ADDS HEATER SCARIFICATION TO AC RESF. CONTRACTS	6,000
D - ADDS PAVEMENT MILLING TO AC RESF. CONTRACTS	7,000
E - ADDS UNDERSEALING TO A JOINT SEALING CONTRACT	60,000
F - ADDS 4' WIDENING TO A RESURFACING CONTRACT	58,000
G - ADDS 6' WIDENING TO A RESURFACING CONTRACT	83,000
H - ADDS LONGITUDINAL SUBDRAINS	$ 7.50/Lin Ft. of Subdrain
I - ADDS SPECIAL SURFACE PATCHING TO JOINT & CRACK SEALING (PCC) CONTRACTS	$25.00/ Sq. Ft.

Office of Maintenance
Project Data Sheet

District _____ Major (Development) _____ Minor _____ Date _____

Route _____ County _____ County No. _____ Service Level _____ Traffic _____

Location _____ Width _____ Length _____

Type of work _____ Work Code _____ Residency _____

Pavement History: (Surface Restoration Only)

Sub base _____ Year built _____

Base _____ Year built _____

Surface _____ Year built _____

_____ Year built _____

_____ Year built _____

Surface Condition: _____

_____

_____

Pavement Friction _____ Wheel Rut _____ PSI _____

Residency Comments _____

_____

Priority: Residency _____ District _____ Est. Cost _____

District Comments: _____

_____

For Central Office Use:

Field Reviewed by: _____ Date _____ Priority _____

Comments _____

_____

_____

Recommendation: _____

Actual Begin _____ Actual End _____

Gaps _____

F.D. Repair Type _____ Amt. _____ $ _____ Mill/Scarity $ _____

Adjust Manholes _____ $ _____ Sprinkle Treat $ _____

Surface Preparation Type _____ $ _____

Bridge Painting Cost Estimate Res. _____

Bridge No. _____ a _____' x _____' _____

with _____ _____' x _____' _____ Approach Spans

carrying _____ over _____

and located _____ mi. _____ from _____

CLEANING & PAINTING	Square Feet	$/Sq.Ft.	Cost
Superstructure _____		--------	----
Handrails _____		--------	----
Other (describe) _____		--------	----
Total			

Comment: Present paint system on superstructure, handrails and other surfaces is

(red lead) (zinc silicate) (other) _____

POLLUTION CONTROL	Square Feet	$/Sq.Ft.	Cost
Special containment (water quality critical)	-----		----
White silica sand (air quality critical)_____	-----		----
Regular containment _____	-----		----
None (little chance of significant pollution)	-----		----
Total			
TRAFFIC CONTROL Total			

Comment: Special conditions, special provisions needed, recommended ties to other

bridges, etc. _____

_____

Residency Priority _____ of _____ District Priority _____ of

_____ Contract let on _____, 198___ to _____

	Cost Record		
	Estimate	Actual	$/Sq.Ft.
Cleaning & Painting			
Pollution Control			
Traffic Control			
Total			

PAINT ESTIMATING WORK SHEET

Bridge No._____, a_____'X___'_____

with_____'X___'_____ Approach Spans

Member				Total	Sq.Ft./	Total
Description	Size & Shape	Length	No.	Lin. Ft.	Lin. Ft.	Sq.Ft.
SUPERSTRUCTURE						
Stringers						
Floorbeams or Diaphrams						
Girders						
Lower Lateral Bracing						
					Sub-total	
					Add-on for Miscellaneous (0-10%)	%
					SUPERSTRUCTURE TOTAL	
HANDRAIL						
Posts						
Rail						
					Sub-total	
					Add-on for Miscellaneous (0- 5%)	%
					HANDRAIL TOTAL	
OTHER						
					OTHER TOTAL	

TABULATION OF EXISTING PAVEMENT

102-5
2-12-82

No.	LOCATION	EXISTING PAVEMENT TYPE	COARSE AGGREGATE TYPE	PAVEMENT THICKNESS inches	REINFORCE-MENT	DETAIL TYPICAL

TABULATION OF P.C. CONCRETE PATCHES

102-6
2-12-82

LOCATION			TYPE	PROPOSED PATCH THICKNESS	DOWEL ASSEMBLIES No. (non-bid)	FULL DEPTH PATCHES sq. yds.	SUBDRAIN PIPE lin. ft.	OUTLETS No.	Removal of Anchor Lugs No.	Granular Fill sq. yds.	REMARKS
No.	STATION to STATION	LANE L-R-B									

TABULATION OF A.C. CONCRETE PATCHES

102-7
2-12-82

LOCATION			TYPE	PROPOSED PATCH THICKNESS	EXISTING PAVEMENT DESCRIPTION	FULL DEPTH PATCHES sq. yds.	SUBDRAIN PIPE lin. ft.	OUTLETS No.	Removal of Anchor Lugs No.	Granular Fill sq. yds.	REMARKS
No.	STATION to STATION	LANE L-R-B									

Form 000020
2-75 H-2884

SAMPLE SUBMITTAL

IOWA DEPARTMENT OF TRANSPORTATION

To Office

Attention

From

Office

Subject

RECAP THE ESTIMATE INFORMATION IN THIS FORM. TYPING OR MEMO FORMAT IS NOT NECESSARY. ANY TABULATIONS NEEDED SHOULD BE TYPED AND ATTACHED

Date / /

Ref. No. 650

Minor Rehabilitation Projects - 1984

County - Buena Vista
Highway - US 71
Location - N.C.L. Storm Lake to Jct. Iowa 3

Proposed Work - Joint & crack fill, slurry level depressed joints, longitudinal joint repair, full depth A.C. Patches, selected milling and slurry seal.

Length

Begin Project 59+00.0

End Project 492+28.0

Length = 43,328.0 L.F. = 8.21 Miles

Width - 24 feet

Work Items:

1. Cleaning and filling cracks — 8.21 Miles
2. Filler Material (Emulsion) — 8.21 Miles
   Estimated at 300 gallons per mile = — 2,463 Gallons
3. A.C.C. Mix for Crack Filling — 8.21 Miles
   Estimated at 1 ton per mile = — 8 Tons
4. Slurry Leveling - — 115 Depressed Joints Total and/or 14 per Mile
5. Longitudinal Joint Repair — 9,750 L.F.
   (See Attached Listings for Location.)
6. Full Depth A.C. Patches -
   96 patches for 585.5 square yards, all Type 1. (See attached form 102-7 for tabulation.)

Note: As discussed on Minor Stop Gap Field Review we need to specify 60% crushed particles in the A.C. Mix for these full depth patches.

7. Partial Depth A.C. Patches
   68 patches for 272 square years (see attached tabulation).
   Equipment will be on project for milling so partial depth patches by milling will be possible. Partial depth repair was not discussed on Minor Stop Gap Review, but these locations warrant repair.

8. Milling of high or tipped widening unit. All of the widening unit is either high or tipped. Enclosed is a tabulation showing the widening unit less than 3/8 inch high and that over 3/8 inch high.

9. Spot A.C. Leveling - this was not discussed on field review, but should be done prior to the slurry seal.

150+00 to 151+00	42 Ton
237+75 to 238+75	42 Ton
294+25 to 295+25	42 Ton
366+50 to 367+50	42 Ton
370+75 to 371+24	42 Ton
TOTAL	210 Ton

10. Granular Surfacing of Shoulders
    53 tons to be placed along the asphalt leveling.

11. Surface preparation — 8.21 Miles

12. Slurry Seal
    43,328.0 L.F. x 24 feet = 115,541 sq. yds.

13. Granular Fill - 66.7 sq. yds. for under the full depth patches at Sta. 291+60.

14. Subdrain - 60 lin. feet for outletting the granular fill at Sta. 291+60.

15. Pavement Marking - See attached tabulation. Summary of markings as follows:

a. Dashed yellow centerline	100.02
b. Solid yellow - no passing line	136.27
c. Double yellow centerline	66.98
d. Solid white edgeline	835.46
TOTAL	1,138.73 Sta.

Recommended working days are _____ with recommended start or stop date: _____.
Note: These recommendations should be set by the district.

MAINTENANCE PROJECT CODING SHEET

IDENTIFICATION NO: _____ (CENTRAL MAINTENANCE USE)

ROUTE NO: ___

COUNTY NO: __

DISTRICT NO: _

RESIDENCY NO: __

BEGINNING MILEPOST NO: ___.__

LOCATION: _____

PROJECT NO: MP-____-(___)--76-___ (BY CENTRAL MAINT.)

FISCAL YEAR: __

WORK CODE: ___ (MAJOR WORK CODE, OTHER WORK CODES IN COMMENTS)

SERVICE LEVEL: _ (A, B, C, OR D - PLANNING SERVICE LEVEL)

DISTRICT PRIORITY: __

STATE PRIORITY: _

WIDTH: __

LENGTH: ____

COST: _____.__ (CENTRAL)

LETTING DATE: _____ (MDY) (MAINTENANCE)

COMPLETION DATE: _____ (MDY) (USE)

COMMENTS: _____

_____

UNIT TYPE: __ (10, 80, 90, ETC.)

ENDING MILEPOST NO: ___.__

COST CENTER: 65____