

SECTION NO. 22

SPECIAL PROVISIONS - MILL & OVERLAY/RECLAMATION SPECIFICATIONS

NUMERICAL LISTING

Section No.	
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SPECIAL PROVISIONS - MILL & OVERLAY/RECLAMATION SPECIFICATIONS

22-01 BASE FAILURE REPAIR:

- Note to staff
- this is
applicable
only to M/O
streets and
not for REC
streets*
- A. All base failures will be repaired with Type "B" HMAC, or as specified by the City. Material will be placed and compacted in 4-inches lifts and shall be flush with the existing milled surface. Minimum depth is 8-inches and final depth will be achieved once solid subgrade is reached. Depth required for excavation of base failures will be determined by the City. Measurements for base failure repairs will be verified by the Contractor and the City at the end of each working day.
 - B. Base failures that appear in front of citizen's driveways will be repaired the same day the street is milled. Base failures on the remainder of the road surface must be made safe for vehicular traffic the same day the street is milled until permanent repairs are made. Contractor must complete all base failures on each street within three (3) working days or a penalty of one thousand dollars (\$1,000) per day for each day in excess of the three (3) working days.
 - C. On residential streets, Contractor will be required to use a mill, gradall type excavator or backhoe to excavate the base failure.
 - D. Contractor shall immediately load excavated material into a truck. Excavated material shall not be placed on top of the milled surface at any time.
 - E. Asphalt shall be delivered to the job site and placed in the prepared area for repair. Contractor shall not dump loads of asphalt in the street.
 - F. Areas that require repair or asphalt reclamation will be determined by the City. If the City determines that more than thirty percent (30%) of the street has base failures, or determines that the weight of the excavation equipment will cause more than thirty percent (30%) of the street to fail, asphalt reclamation will be performed instead of a base failure repair.
 - G. The City will pay for areas agreed upon by the Contractor and City.

22-02 RECLAMATION:

- A. It is the intent of the following specifications to establish provisions for restoration of selected HMAC streets. The reconstruction will consist of recycling the existing base and asphalt into a new base. The process is generally referred to as "Full Depth Reclamation". This specification may also be used for improved streets (with curb and gutter).
- B. **GENERAL:** This item consists of a subgrade composed of a combination of existing roadbed and HMAC, mixed with Lime and/or Portland Cement at amounts specified in the plans and/or Bid Items provided. The Recycled base shall be shaped to the line grades, thickness and typical cross-sections as directed by the City. The required thickness of compacted Recycled Stabilized Subgrade shall be 10-inches total with the lime being

mixed to a depth of 10-inches and the Cement being mixed to a depth of 8-inches for Residential & Collector streets.

C. MATERIALS:

1. Lime: Refer to Section 13-05 (Lime & Cement Treated Subgrade)
2. Cement: Refer to Section 13-06 (Cement Treated Subgrade)
3. Water: Water shall conform to the requirements of specification NCTCOG Item 303.2.7 thru 303.2.7.4.
4. HMAC: Refer to Section 13-22 (Hot Mix Asphaltic Concrete)
5. Petromat: Refer to Section 13-23 (Paving Fabric (Petromat))
6. Application Rates:
 - a. Typically, the existing material shall be scarified and pulverized to a target depth of 14-inches. The application rates shall be provided in the plans and/or PROPOSAL. If it is determined that the amount of lime and/or cement shown is deemed excessive by the City, it may be lowered based on results of an Atterburg Limits/Lime Series Test performed by the City's approved laboratory. No direct compensation will be given for lowering the amount of lime and/or cement used but compensation will be given at the unit price bid for the project if additional material is needed.
 - b. The profile of the recycled base will generally match the profile of the existing street. The ideal final cross-section, after resurfacing, when checked with a straightedge or stringline, shall have a 5-inches crown for Residential streets & a 7-inches crown for Collector streets and cul-de-sac (measured centerline to outside edges), shall be parabolic in shape, and shall have a smooth centerline joint.

C. EQUIPMENT:

1. General:

Equipment necessary for the proper construction of work shall be in safe and proper working condition, and shall be approved by the City, both as to type and condition, prior to the beginning of construction operations. All equipment shall have properly working and easily audible safety back-up alarms. The Contractor shall at all times provide sufficient equipment to ensure continuous execution of the work and its completion in the required number of working days. If in the opinion of the City, additional pieces of equipment are required for the mixing, aerating, compacting and finishing of the full depth reclamation mixture or to achieve a rate of progress which shall ensure completion of the work in time to restore traffic, the Contractor shall immediately secure and place in operation the required equipment. No additional compensation shall be granted for additional equipment utilized at the City's request.

2. Motor Grader

The use of motor grader for spreading/shaping recycled subgrade will be required.

3. Rollers

It shall be the responsibility of the Contractor to have rolling equipment available on the job to properly compact the Recycled/Stabilized Subgrade in place as required without delay of daily operations. A minimum of three (3) rollers, one of which will be pneumatic, shall be on the job at all times. Rollers provided shall meet the qualifications for their type as follows:

- a. Pneumatic-Tire Roller: The roller shall be an acceptable medium pneumatic tire roller conforming to the requirements of TxDOT Item 210 "ROLLING" unless otherwise specified on the plans. Pneumatic-tire rollers used for compaction shall be twelve (12) to twenty-five (25) ton.
- b. Vibratory Sheepsfoot Roller shall be thirty (30) Ton minimum.
- c. Vibrator Steel-Wheel Roller: This roller shall be a minimum of six (6) tons. The compactor shall be equipped with amplitude and frequency controls and shall be specifically designed to compact the material on which it is used. It shall be operated in accordance with the manufacturer's recommendations or as directed by the City.

4. Other Equipment

The Contractor shall furnish all other equipment required for the proper construction of the work. Prior to the beginning of construction, the Contractor shall provide a list of major equipment he intends to use stating the make, type, size, capacity and number of each piece of equipment. The approved list of additional equipment will include, but not be limited to the following:

- Water Truck
- Trucks
- Loader
- Backhoe
- Reclaimer
- Vacuum type sweeper

D. OPERATIONS:

The following sequence may vary however, each of the operational steps should be completed sometime during the recycling process.

1. Pulverize the surface asphalt and existing road base materials to the required depth.
2. Move the pulverized material by blading material placed in a windrow. Remove excess material to allow for determined street profile and cross-section for the required thickness of new HMA.

3. Inspection of the road sub-base to determine unsatisfactory conditions such as wet areas, soft spots, and other identified failures. Proof roll the sub-base to ensure no unsatisfactory sub-base areas occur.
4. Unsuitable sub-base areas shall be excavated and replaced with approved material as required to a depth not exceeding 3-feet to provide a uniform, firm, moist, compacted subgrade with ninety-five percent (95%) of density per ASTM D698, +/- two percent (2%) optimum moisture content.
5. All recycled asphalt, base, soil material to receive lime and/or cement stabilization shall receive an initial scarification to the bottom of the specified subgrade stabilization prior to application.
6. Proof roll the subgrade to ensure no unsatisfactory subgrade areas occur. Failing areas shall be re-stabilized at one hundred percent (100%) cement rate or be removed and replaced with cement treated base (CTB) at the City's discretion.
7. The finished recycled stabilized subgrade shall be continuously moist cured beginning immediately after completion of the lime and/or cement stabilization at no less than three (3) times daily, including holidays and weekends or as directed by the City. No direct compensation shall be given for moisture curing.
8. All Type "B" HMAC shall be laid within fourteen (14) days of initial pulverization.

Failure to observe the above sequence or time requirements may result in cessation of the work until proper adjustments in operations are made. No additional days will be compensated should adjustments be required.

- E. **MEASUREMENT AND PAYMENT:** The work performed will be paid for at the unit price bid as indicated in the PROPOSAL as measured in the field. The price shall be full compensation for preparing the subgrade as detailed in the specifications including scarifying, recycling, mixing, hauling, repair of sub-base failure, placing and compacting all materials and incidentals not otherwise specified necessary to complete the work in accordance with the intent of the plans and/or specifications. No additional compensation will be given for excavation & haul-off of additional material to establish grade, including but not limited to concrete, 2:27 or existing/unknown structures.

22-03 SURFACE, EDGE, AND BUTT MILLING:

- A. The existing surface on designated streets shall be milled to the depths and dimensions directed by the City. It is the intent to mill down to the original binder course or concrete base. This will include the milling of any and all existing asphalt surfaces, asphalt out of all curb and gutters, and valley gutters as directed by the City. All other milling work, not directed or authorized by the City, shall be considered incidental to the performance of the contract work and separate payment shall not be made for such work.

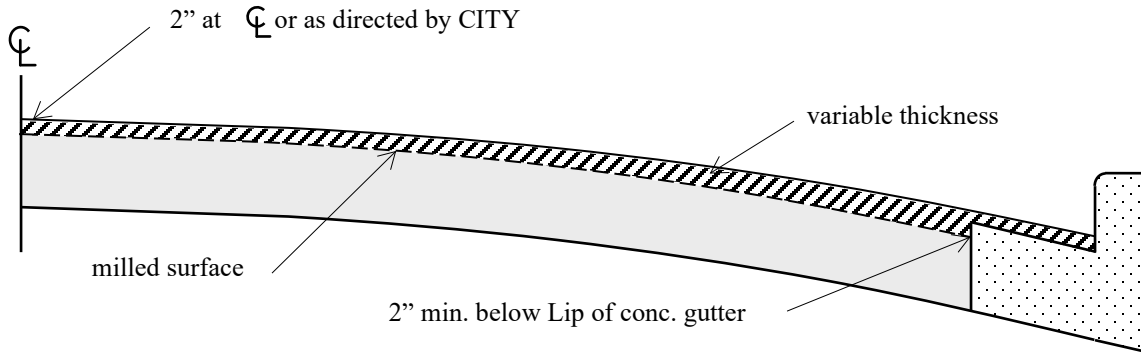
- B. Contractor shall mill only one side at a time. The other side shall not be milled until the initial side is completed, including any/or all temporary traffic items or as directed by the City.
- C. Normal milling operations shall be conducted to the edge of all manholes, valves and other appurtenances encountered. If the milling machine cannot accomplish this, then milling with hand tools or by other methods shall be used. No separate compensation shall be paid for any milling adjacent to appurtenances that is done with hand tools or by other methods.
- D. The milling machine shall self-load the milled material onto an adjacent hauling unit. Milling contract items will be bid on the basis that all milled material will be hauled and disposed of by the Contractor. Hauling of material shall be subsidiary to all other bid items in the PROPOSAL.
- E. Water shall be sprayed on the material being milled to eliminate dust during the milling operation. Sweeping to remove any loose material not removed by the machine shall be conducted immediately behind the machine in an approved manner to the satisfaction of the City. The use of a vacuum style street sweeper will be required in order to limit dust during construction. All milled surfaces shall be cleaned, inspected, measured and approved before the application of the HMAC.
- F. Normal operations shall require complete cleanup before the Contractor is allowed to leave the job. The Contractor **shall not** mill any street **more than seven (7) calendar days** in advance of scheduled resurfacing. When a street remains open, after milling, longer than seven (7) calendar days, in the absence of any required base repairs, any exposed surface that has deteriorated through traffic use, inclement weather, etc. shall be repaired and/or replaced, as directed by the City, at the Contractor's expense prior to any resurfacing. Failure to observe these constraints may result in cessation of the work until proper adjustments in operations are made.
- G. In no case shall the total milling work performed exceed the amount indicated in the PROPOSAL unless approved otherwise by the City. The Contractor shall be fully responsible for keeping a daily total for each item of milling work performed and shall cease all milling work should the total work reach the contract quantity. Payment for overruns shall be agreed upon and authorized by the City.
- H. Authorized Surface Milling & Butt Milling as defined by this specification, shall be measured for payment in square yards of surface milled regardless of the number of passes required. EDGE MILLING shall be paid for by the linear foot regardless of the number of passes necessary to provide the required width and section. The contract unit prices shall be the total compensation for milling the surface, removal and disposal of the milled material, cleaning the milled area, and for all labor, equipment, and incidentals necessary to complete the work in accordance with this provision, the specifications and attached details.

- I. Concrete butt milling is a separate pay item. Butt milling operations shall take place immediately before the asphalt paving operation or as approved by the City. Intersection(s) within the limits shall be butt milled as directed by the City.
- J. The unit prices for SURFACE MILLING, EDGE MILLING, and BUTT MILLING, will not be subject to renegotiation due to underrun or overrun of contract quantities.
- K. Milling operations shall include the removal of reinforcement steel, and other non-concrete items which may be exposed or subsequently stick up in the milled area. No separate pay item is provided for this rebar removal.
- L. The Contractor shall notify the City of Signal Control two (2) working days in advance of milling any street having traffic signals.

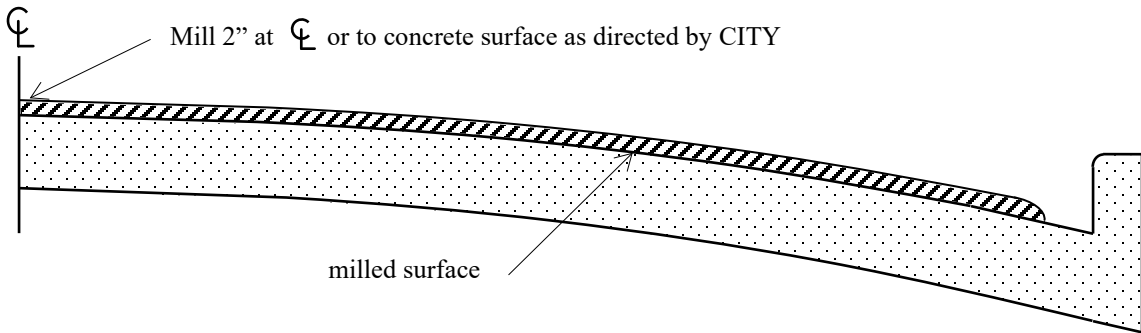
22-04 WARNING SIGNS FOR MILLED SURFACES:

- A. The Contractor will be responsible to submit a Traffic Control Plan in accordance with Section 12-03 Detours and Barricades.
- B. The Contractor shall erect and maintain suitable signs warning traffic of sharp edges from milling and exposed appurtenances.

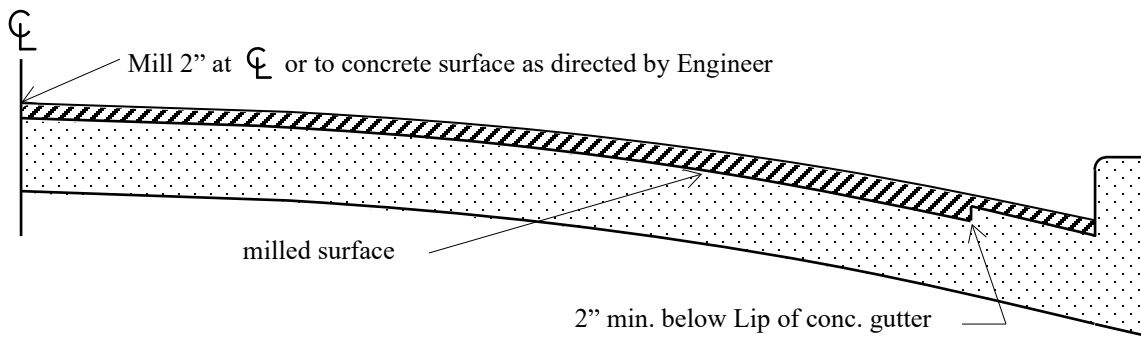
Surface Milling Details



Surface Milling for Full Depth Asphalt Streets with Separate Concrete Curb and Gutter

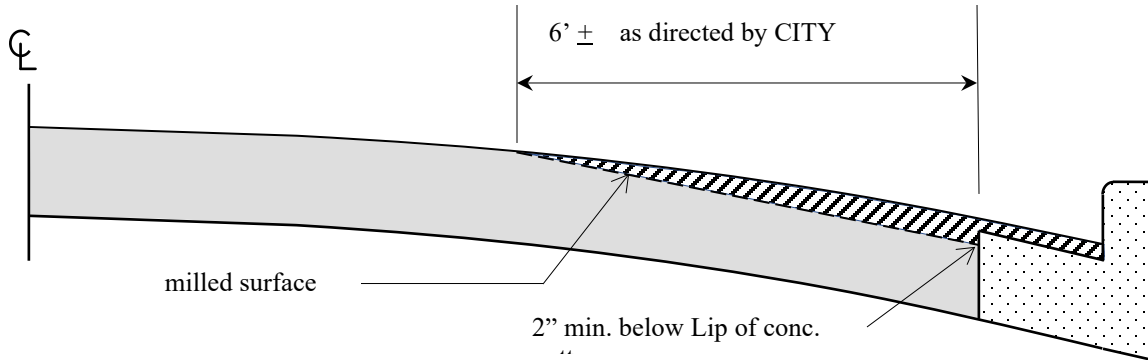


Surface Milling for Concrete Streets with Asphalt Overlay

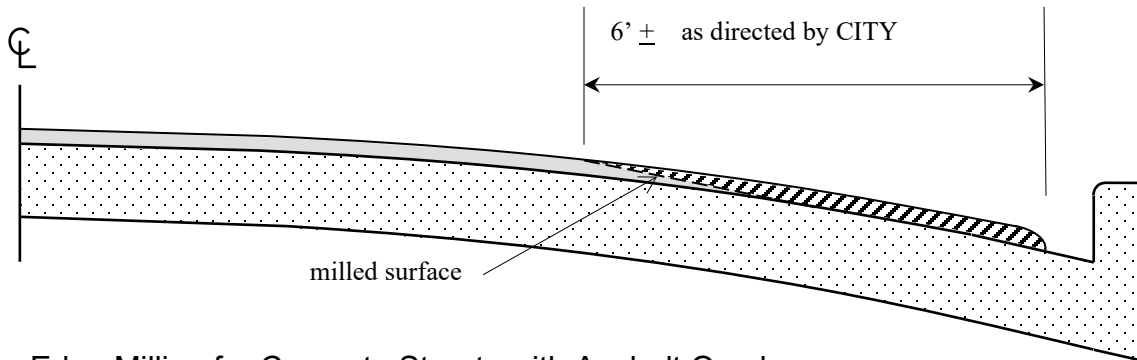


Surface Milling for Streets with Concrete base and Concrete Curb and Gutter

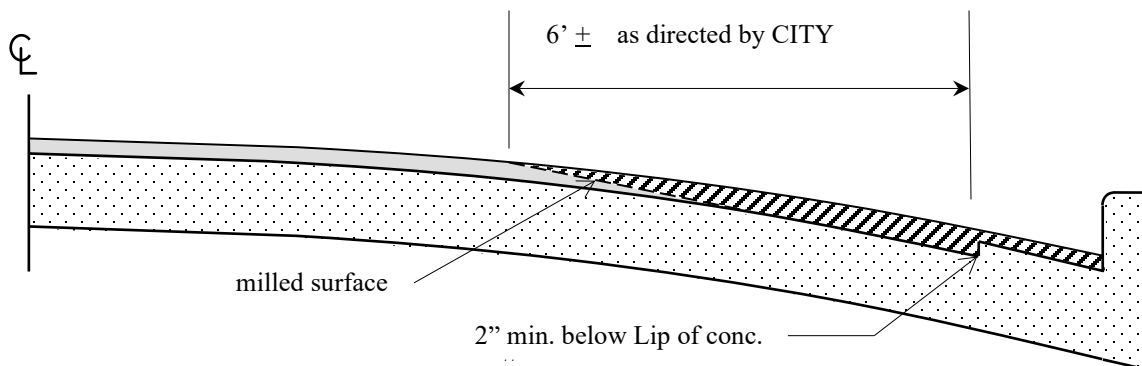
Edge Milling Details



Edge Milling for Full Depth Asphalt Streets with Separate Concrete Curb and Gutter

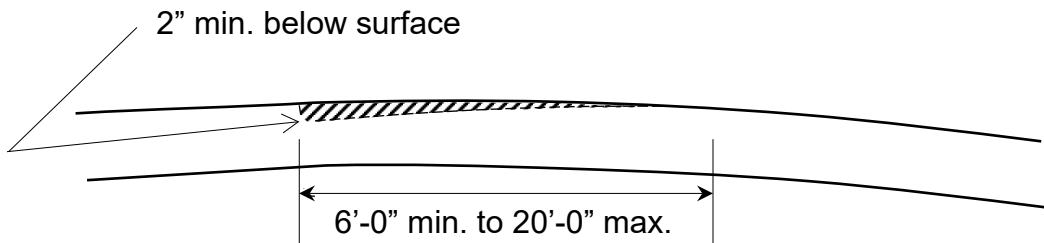
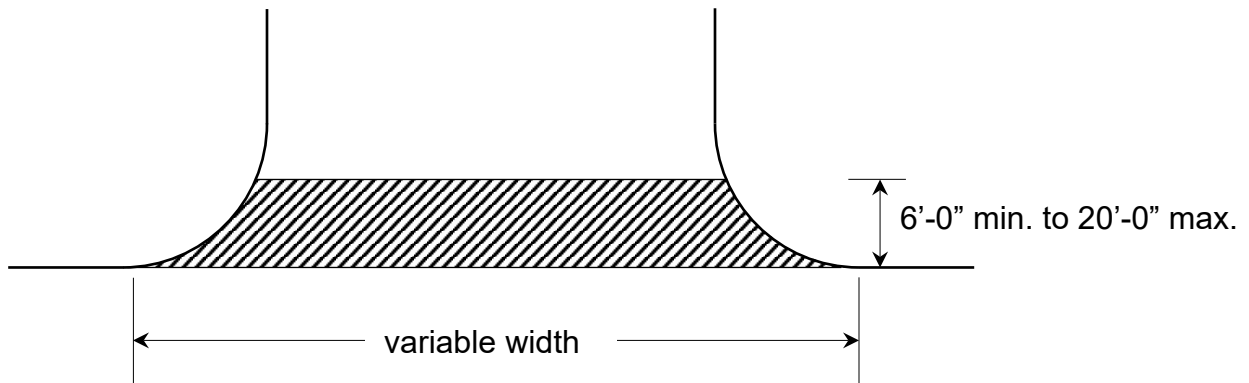
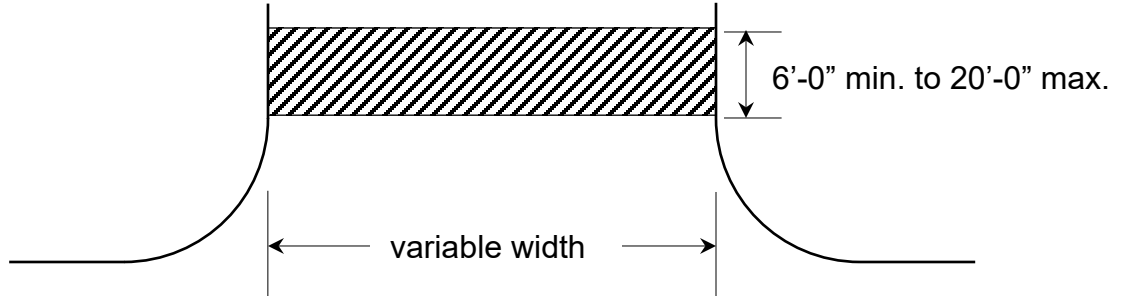


Edge Milling for Concrete Streets with Asphalt Overlay



Edge Milling for Streets with Concrete base and Concrete Curb and Gutter

Butt Joint Milling Details



END OF SECTION