



Department of Administrative Services

Purchasing and Contracts

500 S Grand Central Pky 4th Fl • Box 551217 • Las Vegas NV 89155-1217
 (702) 455-2897 • Fax (702) 386-4914

Sabra Smith Newby, Chief Administrative Officer
 Adleen B. Stidhum, Purchasing Administrator



CLARK COUNTY, NEVADA

BID NO. 603381-14

GOVERNMENT CENTER PARKING LOT REHABILITATION

July 24, 2014

ADDENDUM NO. 1

INVITATION TO BID

1. The Bid Opening date of July 25, 2014 at 2:15:00 p.m. **has been changed to July 29, 2014 at 2:15:00 p.m.**

INSTRUCTION TO BIDDERS

2. Page 1-9 Evaluation of Bids and Award, Item C Award Determination: Change the first sentence of the paragraph to read as follows: All responsive and responsible bids received are considered firm offers for **120** calendar days after the date of bid opening and may be considered for award.

DRAWINGS

3. **Replace** sheet C1 with attached sheet C1; revision is clouded with Delta 1.

SPECIFICATIONS

4. Section 01 31 19 Part 1.03 Progress Meetings; B Frequency changed to read as follows: **Weekly** for the duration of the work, at a time mutually agreed upon by Owner, Architect/Engineer and Contractor.
5. Section 01 35 53 Part 3 Execution: **Delete** 301 D E F G and 3.02 in their entirety.
6. **Replace** Section 32 12 16 - Asphalt Paving with new attached Section 32 12 16-Asphalt Paving.
7. **Add** attached Section 412 - PAVEMENT SURFACE TREATMENTS - SLURRY SEAL/MICROSURFACING

Except as modified herein, all other bid specifications, terms, conditions and special provisions shall remain the same.

ISSUED BY:


 SANDY MOODY-UPTON
 Purchasing Analyst

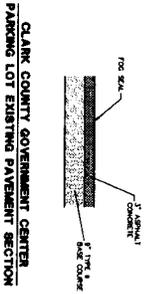
Attachment(s): Drawings (1-sheet)
 Section 32 12 16 (6 pages)
 Section 412 (7 pages)

Cc: Chuck James, Real Property Management Brian Connolly, Real Property Management
 John Rodriguez, Real Property Management Jeff Herrick, VTN Nevada

BOARD OF COUNTY COMMISSIONERS
 STEVE SISOLAK, Chairman • LARRY BROWN, Vice Chairman
 SUSAN BRAGER • TOM COLLINS • CHRIS GIUNCHIGLIANI • MARY BETH SCOW • LAWRENCE WEEKLY
 DONALD G. BURNETTE, County Manager

ENGINEER'S QUANTITY ESTIMATE

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
41001	ASPHALT SURFACE SEAL	807.36	SF
4051	ASPHALT CONCRETE TYPE 3 AGRICULTURE EQUIVALENT 7" THICKNESS (1042.21)	26	TON
41012	PAVING SEALANT	12	TON
41013	CLASS II CONCRETE TROCKON CURB (60 STANDARD DRAWING 200)	12	TON
42010	ELECTRIC POLE BOX CONCRETE COLUMN	1	EA
42011	4-INCH WHITE STRIPING (POSSIBLE STALL)	41.848	LF
42012	4-INCH WHITE STRIPING (RESTRICTED PAVING LOADING ZONE)	9.298	LF
42013	4-INCH YELLOW STRIPING	696	LF
42014	4-INCH RED STRIPING (PARK LANE)	850	LF
42015	4-INCH STRIPING (PARK STRIPING CROSSWALK)	1,510	LF
42016	4-INCH STRIPING (PEDESTRIAN CROSSWALK)	2,091	LF
42017	4-INCH LADDER MARK (PEDESTRIAN CROSSWALK)	278	LF
42018	4-INCH LADDER MARK (PEDESTRIAN CROSSWALK)	484	LF
42019	4-INCH LADDER MARK (PEDESTRIAN CROSSWALK)	2,171	LF
42020	POSSIBLE YELLOW TYPE I CENTER LINE	144	LF
42021	WHITE LANE MARK WITH SPRING RETICULAR MARK	220	LF
42022	RED PAINTED CURB	7,003	LF
42023	YELLOW PAINTED CURB	200	LF
42024	GREEN PAINTED CURB	714	LF
42025	WHITE PAINTED CURB	322	LF
42026	4-FEET WHITE STOP BAR	49	EA
42027	4-FEET WHITE STOP LEAD	5	EA
42028	4-FEET WHITE STOP LEAD	10	EA
42029	WHITE TURN STRAIGHT AND COMBINATION ARROWS	12	EA
42030	4-INCH WHITE NO PARKING LEAD ON CURB	16	EA
42031	4-INCH RED NO PARKING FIRE LANE LEAD	89	EA
42032	4-INCH WHITE MISCELLANEOUS TEXT LEAD	2	EA
42033	4-INCH YELLOW MISCELLANEOUS TEXT LEAD	12	EA
42034	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42035	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42036	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42037	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42038	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42039	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42040	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42041	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42042	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42043	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42044	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42045	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42046	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42047	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42048	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42049	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42050	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42051	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42052	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42053	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42054	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42055	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42056	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42057	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42058	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42059	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42060	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42061	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42062	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42063	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42064	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42065	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42066	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42067	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42068	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42069	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42070	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42071	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42072	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42073	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42074	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42075	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42076	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42077	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42078	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42079	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42080	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42081	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42082	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42083	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42084	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42085	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42086	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42087	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42088	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42089	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42090	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42091	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42092	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42093	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42094	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42095	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42096	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42097	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42098	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42099	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA
42100	4-INCH BLUE AND WHITE LAMPPOST SYMBOL	12	EA



LEGEND

- CENTERLINE
- RIGHT OF WAY LINE
- PROPERTY LINE
- APPROPRIATION TO ENTER PROPERTY (AEP)
- MATCH SYMBOL LINE
- CURB STRIPING
- DOUBLE YELLOW LANE LINE
- PAVEMENT TO BE RESURFACED
- EXISTING PAVEMENT
- RED PAINT
- YELLOW PAINT
- GREEN PAINT
- WHITE PAINT
- HANDICAP MARKING
- AREA LIGHT
- BENCHMARK
- ELEC. WALK TO MARK
- ELECTRIC LAMP
- ELECTRIC METER
- FRIED HYDRANT
- GAS METER
- GAS VALVE
- FIRE CONTROLLER
- IRIG. VALVE
- LOOP DETECTOR
- SANITARY SEWER MAN SET MOVEMENT
- SKIN
- STORM DRAIN INLET
- STREET LIGHT
- STREET LIGHT PS
- TELEPHONE IN
- TELEPHONE PS
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL PS
- TV/MALLON
- TV/MALLON PS
- UTILITY POLE
- UTILITY POLE GUY WIRE
- UTILITY WALL
- UTILITY WALL/CONDUIT
- WATER MANHOLE
- WATER METER
- WATER VALVE

Call before you Dig

1-702-428-5300

CLARK COUNTY GOVERNMENT CENTER
PARKING LOT AC MAINTENANCE

Call before you Dig

1-702-227-2829

CLARK COUNTY GOVERNMENT CENTER
PARKING LOT AC MAINTENANCE



CLARK COUNTY GOVERNMENT CENTER
PARKING LOT AC MAINTENANCE
NO. 10000
GENERAL NOTES

CLARK COUNTY
DEPARTMENT OF REAL PROPERTY MANAGEMENT
ACQUISITION, DESIGN, & CONSTRUCTION DIVISION
800 S GRAND CENTRAL PARKWAY
Las Vegas, Nevada
702-455-497

VTP
CONSULTING ENGINEERS • PLANNERS • SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-3508
PH. 702-875-7580 FAX. 702-362-2297
WEB: WWW.VTPNV.COM

REVISIONS BY DATE

1	JRH	7/18/2011

15405ae Improvement Plan.dwg

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes for hot-mix asphalt patching (for all areas greater than 1/4" in width), patch filler (for all cracks) and 2 coats of slurry seal over the entire existing asphalt parking lots. This work pertains to each of the parking lots to be finished with new slurry seal as outlined in the construction documents and this specification.
- B. G.C. is also required to restripe the entire parking lot with updated parking lot layout as outlined in the new plans.
- C. The work covered by this specification consists of contractor furnishing all labor, equipment, materials and performance of operation in connection with application of all the materials outlined in item A above.
- D. The major items of work shall consist of, but not be limited to the following operations.
 - a. Remove and sterilize any incidental vegetation.
 - b. Repair cracks/pot holes and patch low areas
 - c. Cleaning of the pavement surface.
 - d. Apply patch filler on all existing cracks.
 - e. Application of (2) two new coats of slurry seal coat sealer over entire parking lot.
 - f. Apply new stripping for entire parking lot per the new parking lot layout. Curb paint is also required to be repainted.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
- B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
- C. Material certificates.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located or as approved by architect.
- B. Regulatory Requirements: Comply with Clark County Standards and Code for asphalt paving work.
- C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:
 - 1. Tack Coat: Minimum surface temperature of 60 deg F (15.5 deg C).
 - 2. Asphalt Base Course: Minimum surface temperature of 4 deg F (4 deg C) and rising at time of placement.
 - 3. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.5 deg C) at time of placement.
- B. Slurry seal coat shall be applied per Section 412
- C. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F (4 deg C) for oil-based materials, 50 deg F (10 deg C) for water-based materials, and not exceeding 95 deg F (35 deg C).

PART 2 - PRODUCTS

2.1 CRACK FILLER

- A. Crafc0 Parking Lot Sealant, (Number 34200) or approved equal per Section 412.

2.2 SLURRY SEAL

- A. Type I per Section 412, or approved equal

2.3 PATCHING AGGREGATES (1/4" OR LARGER ASPHALT REPAIRS)

- A. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.
- B. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.
- C. Mineral Filler: ASTM D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.4 PATCHING - ASPHALT MATERIALS (1/4" OR LARGER ASPHALT REPAIRS)

- A. Asphalt Binder: AASHTO MP 1, [PG 64-22] [PG 58-28] [PG 70-22] Delete paragraph below if not required. Tack coat is usually diluted in equal amounts of water and emulsified asphalt. It is usually applied to vertical surfaces of curbs, gutters, cold pavement joints, and structures in the pavement that will be in contact with hot-mix asphalt. Tack coat is also applied to existing pavement surfaces to bond new hot-mix asphalt paving overlays.
- B. Tack Coat: ASTM D 977 or AASHTO M 140, emulsified asphalt or ASTM D 2397 or AASHTO M 208, cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.5 PARKING LOT STRIPING AND CURB PAINT

- A. Pervoplastic (HI_Build, HI-Performance) WaterBorne Paint, or approved equal (6050 NV white and 6053 NV Yellow Lead Free) Color to match existing conditions and comply with

parking lot standards.

- B. TK products, 35651 R, or approved equal for all red zone marking paint. TK-3258 Series, Traffic Marking Latex, or approved equal for all.
- C. Parking lot painting is required and to be repainted per new layout including repainting of all curbs.
- D. Wheel Stops: Precast, air-entrained concrete, 2500-psi (17.2-MPa) minimum compressive strength, 4-1/2 inches (115 mm) high by 9 inches (225 mm) wide by 72 inches (1800 mm) long and to meet local Clark County Standards. Provide chamfered corners and drainage slots on underside and holes for anchoring to substrate.
 - 1. Dowels: Galvanized steel, 3/4-inch (19-mm) diameter, 10-inch (254-mm) minimum length.

2.6 PATCHING – MIXES (1/4" OR LARGER ASPHALT REPAIRS)

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
 - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
 - 2. Base Course: To meet all local code requirements
 - 3. Surface Course: To meet all local code requirements.
 - 4. Have architect approve all asphalt mixes used in patching areas prior to construction.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION (See Section 412)

- A. Surface preparation applies to entire parking lot and shall also conform with manufacturers installation requirements per the approved product and application.
- B. Determine and mark areas that will require larger asphalt repairs, review with architect/owner and obtain approval to proceed
- C. The surface must be free of all foreign material, such as sand, dust, clay, and grease, which might adversely affect bonding of the Sealcoat. High-pressure air blowers, vacuums or sweepers shall be used to remove these objectionable materials. Where there are deposits of grease or oil, a detergent (Trisodium Phosphate, etc.) and stiff brush shall be used to scrub the area clean. When detergents are used, the pavement shall be thoroughly rinsed with water. After cleaning and removing grease and oil spots the areas should be sealed with an oil spot sealant.
- D. All weeds or other vegetation growing through the asphaltic concrete shall be removed and sprayed with a suitable chemical.
- E. Thoroughly clean all cracks of all foreign matter. All cracks shall be filled with approved crack filler. Larger cracks may require several applications. Allow crack filler to cure prior to seal coating.

- F. Proof-roll sub-base using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- G. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
 - 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.
- H. Proof-roll sub-base using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

3.2 PATCHING (1/4" OR LARGER ASPHALT REPAIRS)

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.
- B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).
- C. Patching: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

3.3 COMPACTION (1/4" OR LARGER ASPHALT REPAIRS)

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.4 APPLICATION OF CRACK FILLER

- A. Apply crack filler to all existing parking lot cracks and completely fill all voids. Comply with all instructions provided by manufacturer.

3.5 Two (2) or more applications shall be made. However, the controlling factor should be not the number of applications, but that the surface should be smooth, uniform and level with surrounding parking lot, showing no evidence of course or uneven texture.

3.6 APPLICATION OF SLURRY SEAL (See Section 412)

3.7 PAINT STRIPPING AND CURB PAINTING

- A. All painting of parking spaces shall be first discussed and approved by the architect to ensure that it matches the new plan. A phasing plan must be discussed and this plan shall be coordinated with the owner as to not disrupt the operation of the Park or Recreation Center.
- B. Stripping shall only be applied after the (2) coats of slurry are fully dry.
- C. On approval, the contractor may proceed with the stripping based on the above mentioned phasing plan and permitted weather conditions. (see section 3.10 for additional requirements)

3.8 INSTALLATION TOLERANCES (See Section 412)

3.9 GENERAL PRECAUTIONS

- A. Weather limitation – No part of the construction involving the application of slurry seal coat shall take place during or just prior to rainfall. Air temperature shall be at least 50 degrees F and rising.

3.10 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to properly dry prior to starting pavement marking unless otherwise approved by architect.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).
 - 1. Broadcast glass spheres uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).
- E. Paint – A water based acrylic paint should be used (unless otherwise noted per SECTION 2.5 PARKING LOT STRIPING AND CURB PAINT). Traffic marking white, yellow and/or handicap blue (according to the construction documents and should match existing) will be the paint used unless otherwise specified in the proposal. Marking Paints (or equal) meet or exceed all federal and state highway paint specifications. All lines will be applied

with a speed flow Airless Line 2800 (or equal). This striper applies paint at the approximate rate of 300- lineal feet per gallon as opposed to an air striper which applies paint at the rate of about 650 lineal feet per gallon. All lines will be approximately 4 inches wide. They will be straight and uniform. All stencils will be clear and well defined.

3.11 WHEEL STOPS

- A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
- B. Additional testing and inspecting at Contractor's expense will be performed to determine compliance of replaced or additional work with specified requirements.
- C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.13 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION

SECTION 412

PAVEMENT SURFACE TREATMENTS - SLURRY SEAL/MICROSURFACING

DESCRIPTION

412.01.01 GENERAL

The slurry seal shall be **Type I** and consist of a mixture of emulsified asphalt, mineral aggregate, mineral filler if required, set control additive and water; proportioned, mixed and spread evenly on a prepared surface in accordance with these specifications, or as directed by the Engineer. The slurry when cured, shall have a homogeneous appearance, fill all cracks, adhere firmly to the surface and have skid resistant texture.

MATERIALS

412.02.01 ASPHALT EMULSION

The asphalt emulsion shall be a Latex Modified Cationic Quick-set (LMCQS-1h) as determined by compatibility test procedures specified in ISSA Technical Bulletin #115, latest edition.

Each shipment of emulsified asphalt shall be accompanied with a certificate of analysis/compliance from the manufacturer for that lot.

412.02.04 CARBON BLACK:

The Carbon Black shall be approved by the Engineer and meet the following criteria:

Specifications	Tolerances
Total Solids	40-44
Percent Black by Weight	35-37
Type Black	Medium furnace color

Slurry seals shall be applied by experienced machine operators and material mixers. Machine operators shall have successfully completed a minimum of three (3) recent and consecutive construction seasons operating a slurry seal or micro-surfacing machine for a local government agency. Similarly, mixing operations shall be accomplished by an experienced material mixer who has successfully completed a minimum of three (3) recent and consecutive construction seasons on site mixing carbon black into the emulsion tank on the machine at the stockpile loading site.

412.02.05 SET CONTROL ADDITIVE

To control the setting time of the slurry mixture, an additive shall be added which will retard the set when a cationic emulsion is used. The set control additive shall be aluminum sulfate or Portland Type I/II cement, and shall be added to the slurry mix by an approved method that will assure uniform distribution and proper control. The exact amount shall be determined by conditions in the field.

412.02.07 MINERAL AGGREGATE

The mineral aggregate shall conform to the specified contract gradations for ISSA Type I, Type II, or Type III. The gradation types are listed in section 705 Tables 10, 11, and 12.

The mineral aggregate shall consist of angular sand or crushed stone that is free from dirt, organic matter, clay balls, adherent films of clay, dust or other objectionable matter. When tested according to AASHTO T176, the aggregate shall have a sand equivalent of not less than 50, and the aggregate shall be non-plastic. When tested according to AASHTO T104, the aggregate shall show a loss of not more than 15 percent (using Na_2SO_4) and when tested according to AASHTO T96 the aggregate shall show a loss of not more than 35 percent.

The gradation test for the job mix formula shall not be out-of-spec for two consecutive tests.

CONSTRUCTION

412.03.01 SLURRY SEAL/MICROSURFACING MIXTURES

Prior to the start of work, the Contractor shall place one test section of at least 1,000 square yards each, for each mix to be used, in an area designated by the Engineer.

The test section shall be placed using the same equipment, methods, and mixes as scheduled for use on the Contract.

At the test section, the Contractor shall also satisfactorily demonstrate the equipment and procedure intended for the removal of oil deposits from the pavement surface.

The test section will be evaluated for a minimum of 3 days after placement under traffic and normal usage.

If a test section proves to be unsatisfactory, the necessary adjustments to the mix design, equipment, and placement methods shall be made.

Additional test sections, as required, shall be constructed and evaluated for conformance to the specifications.

The Contractor will be given a maximum of 15 calendar days to successfully place an acceptable test section. These days will not be counted toward nor added to the contract calendar days. The contract calendar days will commence after the test section is approved or the maximum 15 day limit is attained.

412.03.01 SLURRY SEAL/MICROSURFACING MIXTURES

Job Mix Design:

No slurry or microsurfacing mixture shall be placed until mix design(s) submitted by the Contractor have been approved by the Engineer.

Sources of all materials shall be selected prior to the time when the materials are required to be used in the work, and suitable sized samples of aggregate, bituminous material and mineral filler shall be submitted when required by the Engineer, for approval not less than ten days before the work starts. All samples of materials shall be supplied by the Contractor at his expense, and all tests necessary to determine conformance with requirements specified shall be performed without cost to the Contractor. AASHTO T2/ASTM D75 shall be used for sampling aggregate; AASHTO T127/ASTM C183 shall be used for sampling mineral filler; and AASHTO T40/ASTM D140 shall be used for sampling asphalt emulsions. Additional samples of materials shall be furnished as directed by the Engineer during progress of the work.

The exact proportions used in the preparation of the slurry seal or microsurfacing shall be determined by a testing laboratory, experienced in slurry seal and microsurfacing mix design procedures, and approved by the Engineer.

The approved mixture shall be homogenous and sufficiently stable during the entire mixing and spreading period so that the emulsion does not break prematurely, there is no segregation of the fines from the coarser aggregate, and the liquid portion of the mix does not float to the surface.

The amount and type of asphalt emulsion to be blended with aggregate shall be determined by the laboratory mix design.

The set control additive shall be introduced into the slurry mix by an approved method that will ensure uniform distribution and proper control. The exact amount shall be determined by conditions in the field and indicated in the mix design.

A minimum amount of water, added as specified by the Engineer, shall be used as necessary to obtain a workable and homogeneous mixture.

The slurry mixture shall show no signs of uncoated aggregate or premature breaking of emulsion when applied to the pavement surface.

The slurry shall be a homogeneous mixture. Prior to the emulsion breaking, it shall be sufficiently stable during the entire mixing and spreading. There shall not be any segregation of the fines and coarse aggregate nor liquid floating on the surface. If it is established that a satisfactory mixture meeting the requirements specified herein cannot be produced from the materials furnished, the materials shall be rejected and the Contractor shall submit a new mix design.

412.03.02 PREPARATION OF SURFACE

It shall be the Contractor's responsibility to ensure that the surface is suitable for the proper adhesion of Slurry Seal when complete.

The crack sealing material shall be CRAFCO Parking Lot Sealant (Number 34200) or approved equal. Crack sealing material shall be applied to all cracks 3/16" or wider in accordance with manufacturer recommendations and as required by the Engineer. Cracks shall be filled flush with the surface and any overfill shall be squeegeed so that the overband cap does not exceed 1/16" above the surface and the width does not exceed two (2) inches beyond the crack edges. Multiple applications of the crack sealing material may be required for deeper cracks.

Any unacceptable applications of the crack sealing material shall be corrected by the Contractor at no additional cost to the Owner and shall be corrected within five days of notification. Work shall be scheduled such that crack seal operations in a given area are performed and completed as to allow for proper curing time per the manufacturer's specifications prior to application of slurry seal.

Traffic paint not tightly bonded to the surface, pavement marking tape, polyurea pavement markings and thermoplastic markings shall be removed prior to slurry seal placement and replaced afterwards. Unless directed otherwise, the pavement markings shall be reinstalled in the identical pattern as existed prior to their removal.

Manholes, valve boxes, drop inlets, monuments, and other facilities will be protected from the slurry seal by placing "FIBREEN GRADE 208 - SD10" reinforced, waterproof all-purpose paper as manufactured by the Fortifiber Corporation (or approved equal), held in place with spray glue, or other suitable method approved by the Engineer. The paper shall be removed within twenty-four hours after the Slurry Seal has cured.

Raised pavement markers shall be removed prior to slurry seal application and replaced following the slurry seal operation in the identical pattern as before their removal unless otherwise directed by the Engineer.

412.03.03 MIXING UNIT

The slurry seal or microsurfacing shall be mixed and applied with a machine designed and manufactured to lay the mixture. The equipment, tools and machines needed in the performance of the work shall be provided by the Contractor, shall be subject to the approval of the Engineer and shall be maintained in a satisfactory working condition at all times.

The mixing machine shall be equipped with a water pressure system and fog type spray-bar adequate for completely fogging the surface with up to 0.05 gallons per square yard immediately ahead of the spreading equipment.

No machine will be allowed to work on the project until the calibration has been completed and/or accepted.

Power pick-up brooms, power brooms, power blowers, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the pavement surface and cracks therein.

Hand squeegees, shovels and other equipment shall be provided as necessary to perform the work.

412.03.04 MIX PREPARATION

The slurry seal shall be mixed and applied with a slurry machine. The amount and type of asphalt emulsion to be blended with the aggregate shall be determined by the laboratory mix design. A minimum amount of water, added as specified by the Engineer, shall be used as necessary to obtain a workable and homogeneous mixture. The slurry mixture shall be of proper consistency with no segregation when deposited on the surface of the pavement and no additional elements shall be added. The slurry mixture shall show no signs of uncoated aggregate or premature breaking of emulsion when applied to the pavement surface. Total time of mixing shall not exceed four minutes. The Mixing machine shall be equipped with a temperature indicating device installed in the emulsion tank at the suction line level. The machine shall be equipped with a hydraulically controlled steel pugmill gate for positive discharge operations. Discharge from the pugmill shall be controlled by a chute or other mechanical device. The pugmill shall not leak slurry seal or other fluids.

412.03.06 APPLICATION

The slurry seal shall be placed in accordance with the following:

Aggregate	Minimum Application Rate (pounds per square yard)
Type I	13
Type II	18
Type III	28

Report the gallons per minute of Carbon Black, sulfate, and water used.

If in the Contractor's opinion, the proposed Slurry Seal Type or application rate is not appropriate for a particular street, he shall notify the Engineer prior to any application of slurry on that particular street. Once the Contractor notifies the Engineer of a potential problem with a particular street, the Engineer shall review the field conditions and make the final decision regarding the appropriate Slurry Seal Type and application rate.

No build-up of cured slurry seal shall be allowed to collect in the spreader box.

412.03.08 PRODUCTION

The Contractor shall average a minimum of 15,000 square yards of material, in place, per working day.

412.03.11 CURING

Areas which are damaged before being opened to traffic shall be repaired by the Contractor at his expense.

412.03.12 ROLLING

All streets will be compacted using a smooth pneumatic tire roller, with a minimum weight of four (4) tons.

412.03.13 WEATHER LIMITATIONS

Slurry seal shall be applied only when the atmospheric temperature is fifty (50) degrees

Fahrenheit and rising and when the temperature is not expected to fall below fifty (50) degrees Fahrenheit during working hours.

Application of slurry seal when the atmospheric temperatures are expected to exceed one hundred five (105) degrees Fahrenheit may be allowed, if approved by the Engineer.

The Contractor may be granted excusable, non-compensable days for weather limitations in accordance with Section 108.08.

412.03.17 CLEANUP

All applied slurry seal surfaces shall be swept by the Contractor with a sweeper approved by the Engineer to remove any excess raveled material that becomes dislodged from the street after 72 hours.

1. Dislodged material from the street shall be disposed of to a site approved by the Engineer.