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August 28, 2015

Joel Ahmann  
Asst Operations Division Manager  
Public Works Department  
City of Gainesville

**RE: City of Gainesville - 2016 Projects – Micro-Surfacing and Cape Seal GMP Proposal**

Dear Mr. Ahmann,

I am writing to present our GMP Proposal for the above referenced project. This estimate is based on the project Batch List provided by City of Gainesville Public Works as well as specifications for Crack Filling/Sealing, Micro-Surfacing and Asphaltic Surface Treatment (all attached for reference).

**Clarifications / Scope of work:**

1. GMP amount is based on unit quantities as shown on the attached proposal breakdown. These quantities were taken from the above referenced and attached Batch List as provided by the COG (with the exception of pavement markings). Final cost amount may vary based on verification of actual quantities.
2. Proposal assumes that all work will be completed by FDOT certified subcontractors with relevant experience on similar projects as required by specifications.
3. Proposal includes full time supervision throughout the duration of the project.
4. Proposal includes a Performance and Payment bond and all necessary insurance.
5. Proposal assumes that all nine batches are to be handled as one single contract and that work on all batches can be underway at the same time if necessary or desired for schedule.
6. Proposal includes timely notification of residents within work areas. Hang tags listing the details of upcoming work will be placed at all affected residents +/- 1 week prior to commencement of work.
7. Proposal includes coordination with residents regarding replacement of driveways. CM will personally meet with each resident whose driveway will be replaced to coordinate schedule and alternate access/parking needs.
8. An allowance for testing is included. Scope of testing shall be as outlined on Micro-Surface and Cape Seal specifications. Universal Engineering Services has done this type of testing through some of their other offices and are familiar with the requirements. They indicate that a price of \$450/paving day is a good figure. We have included this amount in our proposal.

9. Proposal includes one compaction test per driveway. No other compaction testing is included. No concrete compression testing is included.
10. Proposal assumes that no testing is required at root repair areas.
11. Proposal does not include provisions for a third party inspector to perform any inspections.
12. Proposal includes removal and replacement of all ADA curb ramps as shown on Batch List. CM representative and City of Gainesville representative will inspect each existing ADA ramp to determine if any ramps can remain in place and be deleted from the project. New ADA ramps are to be installed in accordance with City of Gainesville standards.
13. Proposal includes removal and replacement of selected driveways as shown on Batch List. Proposal assumes a driveway is to be 12' wide with 6' wings for a total width at the street of 24'. Depth assumed to be 10'.
14. Proposal includes full depth repair at Root Area as shown on Batch List. Proposal assumes repairs to include sawcut of area, removal of material within sawcut area to a depth of 14" including roots, compaction of sub base, installation and compaction of 12" of new limerock and installation of 2" of asphalt paving.
15. Proposal includes removal and replacement of existing curb and gutter as shown on Batch List.
16. Proposal includes crack filling at a rate of 200 gallons per 10,000 SY based on a material and installation cost of \$20.00/gallon of crack filler material. Compensation for crack filling will be adjusted up or down depending on the actual gallons of product used.
17. Proposal assumes all work associated with depressed areas as shown on Batch List is to be by others and is not a part of this proposal.
18. Proposal assumes that all work associated with existing manholes as shown on Batch List is to be by GRU and is not a part of this proposal.
19. Proposal assumes that the City of Gainesville will provide a yard suitable for the stockpiling of material throughout the duration of the project. Yard shall be in reasonably close proximity to the project.
20. Proposal assumes an adequate water source to be used to fill trucks during completion of the work will be provided by the City of Gainesville.
21. Proposal includes preparation of a site utilization plan and MOT plans prepared by an FDOT certified entity.
22. Proposal includes replacement of existing pavement markings upon completion of new micro surface and cape seal work. Temporary paint markings will go down immediately upon completion and then thermoplastic will be applied after sufficient pavement cure time. Proposal includes a listing of assumed quantities and types of pavement markings to be replaced and includes unit pricing for each. Actual cost for pavement markings will be adjusted based on actual unit measure upon completion. Temporary paint for Bike Symbol will be a different profile and color than the permanent symbol.
23. Proposal assumes that all work is to be performed during normal business hours.

24. The paving portion of the work of this proposal is assumed to take +/- 34 work days to complete based on the below rates of production. Full depth repair (root areas), driveways, ADA ramps and curb and gutter replacement will need to start and complete prior to paving. See attached schedule.
- Micro-Surfacing – +/- 8,000 SY/Day
  - Chip Seal - +/- 35,000 SY/Day
25. Proposal includes contingency in the amount of \$115,000 as shown on proposal breakdown.

See the attached breakdown of estimated cost.

Sincerely,

Tom Fillmer  
Vice-President

# City of Gainesville Paving Projects

28-Aug-15

Plans By: NA

Specs: Attached

Project Manager: Joel Ahmann

Status of Estimate: GMP

Estimate Prepared By: Tom Fillmer

## Breakdown of GMP Estimate - City of Gainesville Paving Projects

DIV	DESCRIPTION	Quantity	Units	Labor Unit	Total Labor	Material Unit	Total Material	Subcontract Unit	Total Subcontract
<b>Div 1</b>	<b>General Conditions</b>								
1.1	Bonds & Insurance	1	LS		\$0.00		\$0.00	\$30,450.00	\$30,450.00
1.4	Debris Removal	1	Pulls		\$0.00		\$0.00	\$375.00	\$375.00
1.5	Daily Clean-Up Labor	1	LS		\$0.00		\$0.00	\$200.00	\$200.00
1.6	Final Clean-Up	1	LS		\$0.00		\$0.00	\$750.00	\$750.00
1.7	Emergency Costs				\$0.00		\$0.00		\$0.00
1.8	Protection of Finishes	1	LS		\$0.00		\$0.00		\$0.00
1.9	Temp. Utilities	1	LS		\$0.00		\$0.00	\$2,500.00	\$2,500.00
1.10	Temp. Safety Cost				\$0.00		\$0.00		\$0.00
1.11	Survey Costs	1	LS		\$0.00		\$0.00		\$0.00
1.12	Shop Draw, Photos, As-Builts	1	LS		\$0.00		\$0.00		\$0.00
1.13	Data Processing	1	LS		\$0.00		\$0.00		\$0.00
1.14	Reproduction of Documents	1	LS		\$0.00		\$0.00	\$2,500.00	\$2,500.00
1.15	Transportation & Main. Costs / Travel	1	LS		\$0.00		\$0.00		\$0.00
1.17	Job office equipment				\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$36,775.00</b>
	<b>Taxes</b>			<b>45.00%</b>	<b>\$0.00</b>	<b>6.00%</b>	<b>\$0.00</b>	<b>0.00%</b>	<b>\$0.00</b>
	<b>Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$36,775.00</b>
<b>Div 1</b>	<b>Total General Conditions</b>	<b>\$36,775.00</b>	<b>2.03%</b>						
<b>Div 1</b>	<b>Staffing</b>			Contract Rate					
1.2	Project Manager	170	Hours	\$98.00	\$16,660.00		\$0.00		\$0.00
1.3	Project Engineer		Hours		\$0.00		\$0.00		\$0.00
1.16	Superintendent	640	Hours	\$47.00	\$30,080.00		\$0.00		\$0.00
	<b>Sub-Total</b>				<b>\$46,740.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
	<b>Taxes</b>			<b>0.00%</b>	<b>\$0.00</b>	<b>6.00%</b>	<b>\$0.00</b>	<b>0.00%</b>	<b>\$0.00</b>
	<b>Total</b>				<b>\$46,740.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
<b>Div 1</b>	<b>Total Staffing</b>	<b>\$46,740.00</b>	<b>2.58%</b>						
	<b>Trade Contractors</b>								
<b>Div 2</b>	<b>Sitework</b>								
<b>2</b>	<b>Sitework Project</b>								
	<b>Batch 1</b>								
	Crack Fill - Double Microsurface	41724	SY		\$0.00		\$0.00	\$4.00	\$166,896.00
	Curb & Gutter Replacement	340	LF		\$0.00		\$0.00	\$25.00	\$8,500.00
	Full Depth Repair at Roots	117	SY		\$0.00		\$0.00	\$55.00	\$6,435.00
	ADA Ramp	0	EA		\$0.00		\$0.00	\$1,850.00	\$0.00
	Driveway	2	EA		\$0.00		\$0.00	\$2,550.00	\$5,100.00
	<b>Batch 2</b>								
	Crack Fill - Double Microsurface	30621	SY		\$0.00		\$0.00	\$4.00	\$122,484.00
	Curb & Gutter Replacement	120	LF		\$0.00		\$0.00	\$25.00	\$3,000.00
	Full Depth Repair at Roots	33	SY		\$0.00		\$0.00	\$55.00	\$1,815.00
	ADA Ramp	0	EA		\$0.00		\$0.00	\$1,850.00	\$0.00
	Driveway	1	EA		\$0.00		\$0.00	\$2,550.00	\$2,550.00
	<b>Batch 3</b>								
	Cape Seal	24998	SY		\$0.00		\$0.00	\$5.95	\$148,738.10
	Curb & Gutter Replacement	425	LF		\$0.00		\$0.00	\$25.00	\$10,625.00
	Full Depth Repair at Roots	213	SY		\$0.00		\$0.00	\$55.00	\$11,715.00
	ADA Ramp	0	EA		\$0.00		\$0.00	\$1,850.00	\$0.00
	Driveway	1	EA		\$0.00		\$0.00	\$2,550.00	\$2,550.00
	<b>Batch 4</b>								
	Cape Seal	25010	SY		\$0.00		\$0.00	\$5.95	\$148,809.50
	Curb & Gutter Replacement	50	LF		\$0.00		\$0.00	\$25.00	\$1,250.00
	Full Depth Repair at Roots	0	SY		\$0.00		\$0.00	\$55.00	\$0.00
	ADA Ramp	0	EA		\$0.00		\$0.00	\$1,850.00	\$0.00
	Driveway	0	EA		\$0.00		\$0.00	\$2,550.00	\$0.00
	<b>Batch 5</b>								
	Crack Fill - Double Microsurface	40044	SY		\$0.00		\$0.00	\$4.00	\$160,176.00
	Curb & Gutter Replacement	850	LF		\$0.00		\$0.00	\$25.00	\$21,250.00
	Full Depth Repair at Roots	66	SY		\$0.00		\$0.00	\$55.00	\$3,630.00
	ADA Ramp	15	EA		\$0.00		\$0.00	\$1,850.00	\$27,750.00
	Driveway	1	EA		\$0.00		\$0.00	\$2,550.00	\$2,550.00
	<b>Batch 6</b>								
	Cape Seal	21406	SY		\$0.00		\$0.00	\$5.95	\$127,365.70
	Curb & Gutter Replacement	430	LF		\$0.00		\$0.00	\$25.00	\$10,750.00
	Full Depth Repair at Roots	86	SY		\$0.00		\$0.00	\$55.00	\$4,730.00
	ADA Ramp	0	EA		\$0.00		\$0.00	\$1,850.00	\$0.00
	Driveway	2	EA		\$0.00		\$0.00	\$2,550.00	\$5,100.00
	<b>Batch 7</b>								
	Crack Fill - Double Microsurface	26066	SY		\$0.00		\$0.00	\$4.00	\$104,264.00
	Curb & Gutter Replacement	115	LF		\$0.00		\$0.00	\$25.00	\$2,875.00
	Full Depth Repair at Roots	27	SY		\$0.00		\$0.00	\$55.00	\$1,485.00
	ADA Ramp	15	EA		\$0.00		\$0.00	\$1,850.00	\$27,750.00
	Driveway	1	EA		\$0.00		\$0.00	\$2,550.00	\$2,550.00

Breakdown of GMP Estimate - City of Gainesville Paving Projects

DIV	DESCRIPTION	Quantity	Units	Labor Unit	Total Labor	Material Unit	Total Material	Subcontract Unit	Total Subcontract
	<b>Batch 8</b>								
	Cape Seal	16750	SY		\$0.00		\$0.00	\$5.95	\$99,662.50
	Curb & Gutter Replacement	330	LF		\$0.00		\$0.00	\$25.00	\$8,250.00
	Full Depth Repair at Roots	42.5	SY		\$0.00		\$0.00	\$55.00	\$2,337.50
	ADA Ramp	4	EA		\$0.00		\$0.00	\$1,850.00	\$7,400.00
	Driveway	2	EA		\$0.00		\$0.00	\$2,550.00	\$5,100.00
	<b>Batch 9</b>								
	Crack Fill - Double Microsurface	24762	SY		\$0.00		\$0.00	\$4.00	\$99,048.00
	Curb & Gutter Replacement	0	LF		\$0.00		\$0.00	\$25.00	\$0.00
	Full Depth Repair at Roots	0	SY		\$0.00		\$0.00	\$55.00	\$0.00
	ADA Ramp	25	EA		\$0.00		\$0.00	\$1,850.00	\$46,250.00
	Driveway	0	EA		\$0.00		\$0.00	\$2,550.00	\$0.00
	<b>Pavement Markings</b>								
	6" Double Yellow Lines - Paint	8000	LF		\$0.00		\$0.00	\$0.60	\$4,800.00
	6" Double Yellow Lines - Thermo	8000	LF		\$0.00		\$0.00	\$2.50	\$20,000.00
	6" Interrupted Yellow Lines - Paint (6,800 LF Act)	1700	LF		\$0.00		\$0.00	\$0.30	\$510.00
	6" Interrupted Yellow Lines - Thermo (6,800 LF Act)	1700	LF		\$0.00		\$0.00	\$1.25	\$2,125.00
	6" Solid White Lines - Paint	9800	LF		\$0.00		\$0.00	\$0.30	\$2,940.00
	6" Solid White Lines - Thermo	9800	LF		\$0.00		\$0.00	\$1.25	\$12,250.00
	Turn Lanes - Paint	13	EA		\$0.00		\$0.00	\$250.00	\$3,250.00
	Turn Lanes - Thermo	13	EA		\$0.00		\$0.00	\$800.00	\$10,400.00
	Stop Bar - Paint	85	EA		\$0.00		\$0.00	\$12.00	\$1,020.00
	Stop Bar - Thermo	85	EA		\$0.00		\$0.00	\$48.00	\$4,080.00
	Yield Diamonds at Traffic Circles - Paint	12	EA		\$0.00		\$0.00	\$50.00	\$600.00
	Yield Diamonds at Traffic Circles - Thermo	12	EA		\$0.00		\$0.00	\$250.00	\$3,000.00
	Hatched Crosswalks - Paint	8	EA		\$0.00		\$0.00	\$100.00	\$800.00
	Hatched Crosswalks - Thermo	8	EA		\$0.00		\$0.00	\$550.00	\$4,400.00
	Single White Line Crosswalks - Paint	8	EA		\$0.00		\$0.00	\$75.00	\$600.00
	Single White Line Crosswalks - Thermo	8	EA		\$0.00		\$0.00	\$450.00	\$3,600.00
	4' x 16' Green Bike Directional Mrk - Paint	4	EA		\$0.00		\$0.00	\$100.00	\$400.00
	4' x 16' Green Bike Directional Mrk - Thrm	4	EA		\$0.00		\$0.00	\$2,400.00	\$9,600.00
	<b>Misc</b>								
	Testing Allowance - Root Areas/Micro/Cape	34	Paving Days		\$0.00		\$0.00	\$450.00	\$15,300.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$1,510,416.30
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$1,510,416.30
<b>Div 2</b>	<b>Total Sitework</b>	<b>\$1,510,416.30</b>	<b>83.42%</b>						
<b>Div 3</b>	<b>Concrete</b>								
3.1	Compaction Testing - Driveways	7	Ea		\$0.00		\$0.00	\$100.00	\$700.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$700.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	20.00%	\$140.00
	<b>Total</b>				\$0.00		\$0.00		\$840.00
<b>Div 3</b>	<b>Total Concrete</b>	<b>\$840.00</b>	<b>0.05%</b>						
<b>Div 4</b>	<b>Masonry</b>								
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	20.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$0.00
<b>Div 4</b>	<b>Total Masonry</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 5</b>	<b>Steel</b>								
5.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$0.00
<b>5</b>	<b>Total Steel</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 6</b>	<b>Wood &amp; Plastics</b>								
6.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$0.00
<b>Div 6</b>	<b>Total Woods &amp; Plastics</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 7</b>	<b>Thermal &amp; Moisture Prot.</b>								
7.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$0.00
<b>Div 7</b>	<b>Total T &amp; M Protection</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 8</b>	<b>Doors &amp; Windows</b>								
8.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	<b>Total</b>				\$0.00		\$0.00		\$0.00
<b>Div 8</b>	<b>Total Doors &amp; Windows</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 9</b>	<b>Finishes</b>								
9.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				\$0.00		\$0.00		\$0.00
	<b>Taxes</b>			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00

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DIV	DESCRIPTION	Quantity	Units	Labor Unit	Total Labor	Material Unit	Total Material	Subcontract Unit	Total Subcontract
	<b>Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
<b>Div 9</b>	<b>Total Finishes</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 10</b>	<b>Specialties</b>								
10.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
	<b>Taxes</b>			45.00%	<b>\$0.00</b>	6.00%	<b>\$0.00</b>	0.00%	<b>\$0.00</b>
	<b>Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
<b>Div 10</b>	<b>Total Specialties</b>	<b>\$0.00</b>	<b>0.00%</b>						
<b>Div 11</b>	<b>Equipment</b>								
11.1					\$0.00		\$0.00		\$0.00
	<b>Sub-Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
	<b>Taxes</b>			45.00%	<b>\$0.00</b>	6.00%	<b>\$0.00</b>	0.00%	<b>\$0.00</b>
	<b>Total</b>				<b>\$0.00</b>		<b>\$0.00</b>		<b>\$0.00</b>
<b>Div 11</b>	<b>Total Equipment</b>	<b>\$0.00</b>	<b>0.00%</b>						

Breakdown of GMP Estimate - City of Gainesville Paving Projects

DIV	DESCRIPTION	Quantity	Units	Labor Unit	Total Labor	Material Unit	Total Material	Subcontract Unit	Total Subcontract
<b>Div 12</b>	<b>Furnishings</b>								
12.1					\$0.00		\$0.00		\$0.00
	Sub-Total				\$0.00		\$0.00		\$0.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$0.00
<b>Div 12</b>	<b>Total Furnishings</b>	\$0.00	0.00%						
<b>Div 13</b>	<b>Special Construction</b>								
13.1					\$0.00		\$0.00		\$0.00
	Sub-Total				\$0.00		\$0.00		\$0.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$0.00
<b>Div 13</b>	<b>Total Special Construction</b>	\$0.00	0.00%						
<b>Div 14</b>	<b>Conveying Systems</b>								
14.1					\$0.00		\$0.00		\$0.00
	Sub-Total				\$0.00		\$0.00		\$0.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$0.00
<b>Div 14</b>	<b>Total Conveying Systems</b>	\$0.00	0.00%						
<b>Div 15</b>	<b>Mechanical</b>								
15.1					\$0.00		\$0.00		\$0.00
	Sub-Total				\$0.00		\$0.00		\$0.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$0.00
<b>Div 15</b>	<b>Total Mechanical Systems</b>	\$0.00	0.00%						
<b>Div 16</b>	<b>Electrical</b>								
16.1					\$0.00		\$0.00		\$0.00
	Sub-Total				\$0.00		\$0.00		\$0.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$0.00
<b>Div 16</b>	<b>Total Electrical Systems</b>	\$0.00	0.00%						
<b>Div 17</b>	<b>Contingency</b>	1	LS		\$0.00		\$0.00	\$115,000.00	\$115,000.00
	Sub-Total				\$0.00		\$0.00		\$115,000.00
	Taxes			45.00%	\$0.00	6.00%	\$0.00	0.00%	\$0.00
	Total				\$0.00		\$0.00		\$115,000.00
<b>Div 17</b>	<b>Total Contingency</b>	\$115,000.00	6.35%						
<b>Summary Of Costs</b>									
	General Conditions	\$36,775.00	2.03%						
	Staffing	\$46,740.00	2.58%						
	Trade Contracts (Cost of the Work)	\$1,511,256.30	83.47%						
	Contingency	\$115,000.00	6.35%						
	Sub-Total	\$1,709,771.30	88.08%						
	CM Fee % (Does not include Bonds and Insurance)	6.00%							
	CM Fee	\$100,759.28	5.57%						
	<b>Project Total Costs</b>	<b>\$1,810,530.58</b>	<b>100.00%</b>						

BATCH 1

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PCT_CUMATE	PROP_MAINT_ACTION	COST_PER_Gallon	Cost Per SY	ACTUAL Gallons	Actual SY	Total Cost	
2016	NW 23 TER	22	NW 34 ST	NW 62 AVE	2,290	24	54,960	AC	0	3	0	0	0	8	0	0	ROL	66	60	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 23 WAY	1	NW 66 CT	NW 71 PL	955	28	26,740	AC	0	0	0	0	0	2	0	0	C&G	67	97	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 26 TER	11	NW 55 BLVD	NW 57 PL	785	24	18,840	AC	60	1	21.5	0	0	1	0	1	C&G	71	80	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 27 ST	14	NW 63 PL	NW 65 PL	746	24	17,904	AC	0	0	0	0	0	2	0	0	C&G	74	77	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 27 ST	15	NW 65 PL	NW 67 PL	545	24	13,080	AC	0	0	0	0	0	1	0	0	C&G	77	79	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 27 TER	25	NW 65 PL	NW 67 PL	552	24	13,248	AC	0	0	0	0	0	1	0	0	C&G	78	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 28 TER	13	NW 62 AVE	NW 63 PL	465	24	11,160	AC	0	0	3	0	0	1	0	0	C&G	67	91	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 28 TER	14	NW 63 PL	NW 65 PL	646	24	15,504	AC	0	0	0	0	0	1	0	0	C&G	70	86	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 28 TER	15	NW 65 PL	NW 67 PL	530	24	12,720	AC	0	0	0	0	0	2	0	0	C&G	81	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 29 ST	12	NW 57 PL	NW 62 AVE	1,540	24	36,960	AC	30	0	78.5	0	0	3	0	0	C&G	71	87	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 29 ST	13	NW 63 PL	NW 65 PL	624	24	14,976	AC	0	0	0	0	0	1	0	0	C&G	78	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 29 ST	14	NW 65 PL	NW 67 PL	525	24	12,600	AC	0	0	0	0	0	1	0	0	C&G	73	83	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 29 TER	14	NW 63 PL	NW 65 PL	723	24	17,352	AC	0	0	0	0	0	1	0	0	C&G	84	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 29 TER	15	NW 65 PL	NW 67 PL	544	24	13,056	AC	40	14	0	0	0	1	0	0	C&G	74	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 30 TER	11	NW 63 PL	NW 65 PL	731	24	17,544	AC	150	0	5.5	0	0	1	0	1	C&G	71	66	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 30 TER	12	NW 65 PL	NW 67 PL	563	24	13,512	AC	20	0	0	0	0	3	0	0	C&G	75	89	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 32 ST	10	NW 63 PL	NW 67 PL	1,220	24	29,280	AC	0	0	0	0	0	3	0	0	C&G	78	100	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 33 ST	3	NW 57 PL	NW 58 PL	313	24	7,512	AC	40	0	8.5	0	0	1	0	0	C&G	82	20	CRACK FILL - DOUBLE MICROSURFACING							
2016	NW 33 ST	4	NW 58 PL	NW 62 AVE	1,190	24	28,560	AC	22	0	0	0	0	3	0	0	C&G	67	49	CRACK FILL - DOUBLE MICROSURFACING							
5832 10x10 11sy man hole high																											
592910x10 11sy roadway																											
																								\$0.00			

Total SF Area	375,508	SF
C&G Replace	340	LF
Roots	117	SY
ADA Ramps	0	EA
Driveways	2	EA

Description	Unit	Unit Price	Total
Crack Fill -Double Microsurface	41,723.11 SY		
C&G Replacement	340 LF		
Roots	117 SY		
ADA Ramps	0 EA		
Driveways	2 EA		
Crack Fill			



BATCH 2

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN_FT	WID_FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	COST_PER_Gallon	Cost Per SY	ACTUAL Gallons	Actual SY	Total Cost
2016	NW 33 ST	5	NW 62 AVE	NW 63 PL	385	24	9,240	AC		0	0	0	0	0	2	0	0	C&G	67	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 33 ST	6	NW 63 PL	NW 67 PL	1,244	24	29,856	AC		0	0	0	0	0	3	0	0	C&G	59	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 33 ST	7	NW 67 PL	NW 68 AVE	306	24	7,344	AC		10	0	0	0	0	0	0	0	C&G	78	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 34 ST	4	NW 54 AVE	N DEAD END	1,373	22	30,206	AC		0	0	0	0	0	1	0	0	ROL	80	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 58 PL	2	NW 33 TER	NW 33 ST	218	24	5,232	AC		40	0	0	0	0	1	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 63 PL	4	NW 33 ST	NW 32 ST	408	24	9,792	AC		0	0	11	0	0	1	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 63 PL	5	NW 32 ST	NW 31 TER	318	24	7,632	AC		0	0	0	0	0	1	0	0	C&G	78	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 63 PL	6	NW 30 TER	NW 29 TER	266	24	6,384	AC		40	0	22	0	0	0	0	0	C&G	78	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 63 PL	7	NW 29 ST	NW 28 TER	255	24	6,120	AC		0	0	0	0	0	0	0	0	C&G	68	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	2	NW 30 TER	NW 29 TER	288	24	6,912	AC		0	0	0	0	0	1	0	0	C&G	71	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	3	NW 29 TER	NW 29 ST	275	24	6,600	AC		0	0	0	0	0	0	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	4	NW 29 ST	NW 28 TER	292	24	7,008	AC		0	0	0	0	0	1	0	0	C&G	71	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	5	NW 28 TER	NW 27 TER	284	24	6,816	AC		0	0	0	0	0	1	0	0	C&G	63	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	6	NW 27 TER	NW 27 ST	270	24	6,480	AC		0	0	0	0	0	0	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 65 PL	7	NW 27 ST	NW 26 TER	290	24	6,960	AC		0	0	0	0	0	0	0	0	C&G	56	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 67 PL	2	NW 33 ST	NW 32 ST	428	24	10,272	AC		0	0	0	0	0	1	0	0	C&G	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 67 PL	3	NW 32 ST	NW 31 TER	315	24	7,560	AC		0	0	0	0	0	0	0	0	C&G	78	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 67 PL	4	NW 30 TER	NW 29 TER	235	24	5,640	AC		0	0	0	0	0	0	0	0	C&G	67	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 67 PL	5	NW 29 ST	NW 28 TER	252	24	6,048	AC		0	0	0	0	0	1	0	0	C&G	64	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 67 PL	6	NW 27 TER	NW 27 ST	246	24	5,904	AC		0	0	0	0	0	0	0	0	C&G	73	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 68 AVE	1	W DEAD END	NW 33 ST	291	24	6,984	AC		0	0	0	0	0	0	0	0	C&G	74	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 68 AVE	2	NW 33 ST	NW 26 TER	2,829	24	67,896	AC		10	3	0	0	0	8	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	NW 68 AVE	3	NW 26 TER	NW 13 ST	529	24	12,696	AC		20	0	0	0	0	1	0	1	C&G	64	CRACK FILL - DOUBLE MICROSURFACING					

\$0.00

Total SF Area	275,582	SF
C&G Replace	120	LF
Roots	33	SY
ADA Ramps	0	EA
Driveways	1	EA

Description	Unit	Unit Price	Total
Crack Fill -Double Microsurface	30,620.22 SY		
C&G Replacement	120 LF		
Roots	33 SY		
ADA Ramps	0 EA		
Driveways	1 EA		
Crack Fill			

BATCH 3

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	Cost Per SY	ACTUAL Gallons	Actual SY	Total Cost																							
2016	NW 25 ST	3	NW 55 BLVD	N DEAD END	440	24	10,560	AC		80	0	28	0	0	1	1	1	C&G	59	CAPE SEAL																												
2016	NW 26 ST	8	NW 55 BLVD	N DEAD END	440	24	10,560	AC		120	0	27	0	0	2	0	0	C&G	54	CAPE SEAL																												
2016	NW 26 ST	9	NW 57 PL	N DEAD END	680	24	16,320	AC		70	0	0	0	0	2	0	0	C&G	60	CAPE SEAL																												
2016	NW 27 ST	12	NW 55 BLVD	N DEAD END	490	24	11,760	AC		35	0	4	0	0	2	0	0	C&G	58	CAPE SEAL																												
2016	NW 30 TER	9	NW 55 BLVD	N DEAD END	507	24	12,168	AC		0	0	0	0	0	2	0	0	C&G	62	CAPE SEAL																												
2016	NW 31 TER	17	NW 54 AVE	NW 56 PL	716	24	17,184	AC		50	1	87	0	0	1	0	0	C&G	62	CAPE SEAL																												
2016	NW 31 TER	18	NW 57 PL	NW 62 AVE	1,502	24	36,048	AC		50	0	8.5	0	0	3	0	0	C&G	52	CAPE SEAL																												
2016	NW 31 TER	19	NW 63 PL	NW 67 PL	1,207	24	28,968	AC	117	0	0	0	0	0	1	0	0	C&G	59	CAPE SEAL																												
2016	NW 32 ST	8	NW 54 AVE	NW 56 PL	715	24	17,160	AC		20	0	8	0	0	1	0	0	C&G	57	CAPE SEAL																												
2016	NW 32 ST	9	NW 57 PL	NW 62 AVE	1,485	24	35,640	AC		0	0	50.5	0	0	3	0	0	C&G	56	CAPE SEAL																												
2016	NW 33 TER	8	NW 58 PL	NW 62 AVE	1,192	24	28,608	AC		0	0	0	0	0	3	0	0	C&G	59	CAPE SEAL																												
	DP 6616 50x17 94sy																																															
	19x11 23sy																																															
	6101 high manhole																																															
	6001 high manhole																																															

\$0.00

Cape Seal Area	224,976	SF
C&G Replace	425	LF
Roots	213	SY
ADA Ramps	0	EA
Driveways	1	EA

Description	Unit	Unit Price	Total
Cape Seal	24,997.33	SY	
C&G Replacement	425	LF	
Roots	213	SY	
ADA Ramps	0	EA	
Driveways	1	EA	

BATCH 4

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	COST_PER_SF	ACTUAL AREA	Total Treatment Cost	Including Concrete
2016	NW 33 TER	9	NW 62 AVE	NW 68 AVE	1,930	24	46,320	AC		0	0	0	0	0	5	0	0	C&G	57	CAPE SEAL					
2016	NW 55 BLVD	1	NW 30 TER	NW 29 TER	259	24	6,216	AC		0	0	0	0	0	0	0	0	C&G	60	CAPE SEAL					
2016	NW 55 BLVD	2	NW 29 TER	NW 29 ST	279	24	6,696	AC	50	0	0	0	0	0	1	0	0	C&G	61	CAPE SEAL					
2016	NW 55 BLVD	3	NW 29 ST	NW 28 TER	287	24	6,888	AC	0	0	0	0	0	0	1	0	0	C&G	60	CAPE SEAL					
2016	NW 62 AVE	6	NW 32 ST	NW 31 TER	308	24	7,392	AC	0	0	0	0	0	0	0	0	0	C&G	63	CAPE SEAL					
2016	NW 62 AVE	8	NW 30 TER	NW 29 TER	283	24	6,792	AC	0	0	0	0	0	0	1	0	0	C&G	57	CAPE SEAL					
2016	NW 62 AVE	9	NW 29 TER	NW 29 ST	298	24	7,152	AC	0	0	0	0	0	0	2	0	0	C&G	65	CAPE SEAL					
2016	NW 62 AVE	10	NW 29 ST	NW 28 TER	263	24	6,312	AC	0	0	0	0	0	0	0	0	0	C&G	62	CAPE SEAL					
2016	NW 63 PL	8	NW 27 TER	NW 27 ST	265	24	6,360	AC	0	0	0	0	0	0	0	0	0	C&G	53	CAPE SEAL					
2016	NW 66 CT	1	NW 22 ST	NW 23 WAY	1,345	28	37,660	AC	0	0	0	0	1	3	0	0	0	C&G	61	CAPE SEAL					
2016	NW 66 CT	2	NW 23 WAY	NW 71 PL	1,265	28	35,420	AC	0	0	0	0	0	4	0	0	0	C&G	66	CAPE SEAL					
2016	NW 71 PL	1	W DEAD END	NW 66 CT	475	28	13,300	AC	0	0	0	0	0	1	0	0	0	C&G	65	CAPE SEAL					
2016	NW 71 PL	2	NW 66 CT	NW 23 WAY	603	28	16,884	AC	0	0	0	0	0	2	0	0	0	C&G	57	CAPE SEAL					
2016	NW 71 PL	3	NW 23 WAY	NW 22 ST	775	28	21,700	AC	0	0	0	0	0	2	0	0	0	C&G	58	CAPE SEAL					

\$0.00

Cape Seal Area	225,092	SF
C&G Replace	50	LF
Roots	0	SY
ADA Ramps	0	EA
Driveways	0	EA

Description	Unit	Unit Price	Total
Cape Seal	25,010	SY	
C&G Replacement	50	LF	
Roots	0	SY	
ADA Ramps	0	EA	
Driveways	0	EA	

BATCH 5

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	Cost Per SY	ACTUAL Gallons	Actual SY	Total Cost																				
2016	NE 10 DR	1	NE 10 ST	NE 10 ST	1,340	24	32,160	AC	67	150	0	19.5	0	6	0	0	C&G	72	72	CRACK FILL - DOUBLE MICROSURFACING																									
2016	NE 10 ST	17	NE 28 AVE	NE 31 AVE	1,375	24	33,000	AC	123	250	2	11	1	0	6	0	1	C&G	66	66	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 11 ST	14	NE 23 AVE	NE 28 AVE	1,300	24.5	31,850	AC		80	0	30	1	0	3	0	0	C&G	71	71	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 16 TER	12	NE 23 AVE	N DEAD END	360	26.5	9,540	AC		0	0	0	0	0	2	0	0	C&G	72	72	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 18 TER	3	NE 23 AVE	NE 27 AVE	1,100	23	25,300	AC		0	0	0	0	0	0	0	0	ROL	73	73	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 19 DR	2	NE 23 AVE	NE 27 AVE	1,100	24	26,400	AC		0	0	0	0	0	2	0	0	ROL	84	84	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 19 DR	3	NE 27 AVE	NE 31 AVE	1,681	24	40,344	AC		0	0	0	0	0	5	0	0	ROL	53	53	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 20 AVE	2	NE 12 ST	NE 15 ST	1,365	21	28,665	ST		50	2	0	4	0	3	0	0	C&G	64	64	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 20 PL	3	NE 12 ST	NE 15 ST	1,370	21	28,770	ST		140	2	5.5	3	0	5	0	0	C&G	60	60	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 21 AVE	3	W DEAD END	NE 15 ST	540	22	11,880	ST		90	0	0	2	0	3	0	0	C&G	72	72	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 22 AVE	2	W DEAD END	NE 15 ST	540	22	11,880	ST		60	0	0	2	0	2	0	0	C&G	62	62	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 26 AVE	1	NE 14 ST	NE 15 ST	525	20	10,500	AC		0	0	0	2	0	2	0	0	ROL	63	63	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 34 PL	1	N MAIN ST	E DEAD END	480	24	11,520	AC		0	0	0	0	1	1	0	0	C&G	68	68	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 40 LN	1	NE 02 WY	E DEAD END	260	24	6,240	AC		0	0	0	0	0	2	0	0	C&G	87	87	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 41 PL	1	NE 02 WY	E DEAD END	636	24	15,264	AC		0	0	0	0	0	2	0	0	C&G	86	86	CRACK FILL - DOUBLE MICROSURFACING																								
2016	NE 42 PL	1	N MAIN ST	NE 02 WAY	1,545	24	37,080	AC		30	3	0	0	0	6	0	0	C&G	83	83	CRACK FILL - DOUBLE MICROSURFACING																								
	sink hole w/ limerock 8x8 7sy by manhole																																												
	2829 DP by curb 5x8 4sy																																												
	2841 DP center of road inline w/ manhole 60x6 40sy																																												
	2932 Patch around manhole bad 12x12 16sy																																												
	2824 DP 50x17 88sy between speedbump and manhole GRU need to check																																												
	2829 patch needs cur and repaired 8x8 7sy																																												
	patch around manhole bad 15x12 20sy																																												
	2932 DP hole in front of inlet 6x12 8sy																																												

\$0.00

Total SF Area	360,393	SF
C&G Replace	850	LF
Roots	66	SY
ADA Ramps	15	EA
Driveways	1	EA

Description	Unit	Unit Price	Total
Crack Fill - Double Microsurface	40,043.67	SY	
C&G Replacement	850	LF	
Roots	66	SY	
ADA Ramps	15	EA	
Driveways	1	EA	
Crack Fill			

BATCH 6

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	Cost Per SY	ACTUAL AREA	Total Treatment Cost	Including Concrete																							
2016	NE 01 TER	3	NE 39 PL	NE 02 WY	1,015	24	24,360	AC		0	0	0	0	0	4	0	0	C&G	66	CAPE SEAL																												
2016	NE 02 WY	1	NE 39 AVE	NE 39 PL	100	24	2,400	AC		60	0	0	0	0	0	0	0	C&G	77	CAPE SEAL																												
2016	NE 02 WY	2	NE 39 PL	NE 40 PL	301	24	7,224	AC		0	1	0	0	0	1	0	0	C&G	65	CAPE SEAL																												
2016	NE 02 WY	3	NE 40 PL	NE 40 LN	264	24	6,336	AC		0	0	0	0	0	1	0	0	C&G	41	CAPE SEAL																												
2016	NE 02 WY	4	NE 40 LN	NE 41 PL	299	24	7,176	AC		0	1	0	0	0	2	0	0	C&G	52	CAPE SEAL																												
2016	NE 02 WY	5	NE 41 PL	NE 42 PL	237	24	5,688	AC		0	0	0	0	0	1	0	0	C&G	59	CAPE SEAL																												
2016	NE 02 WY	6	NE 42 PL	NE 01 TER	120	24	2,880	AC		0	0	0	0	0	1	0	0	C&G	63	CAPE SEAL																												
2016	NE 02 WY	7	NE 01 TER	N DEAD END	430	24	10,320	AC		30	1	11	0	0	2	0	0	C&G	47	CAPE SEAL																												
2016	NE 10 TER	6	NE 23 AVE	NE 28 AVE	1,352	25	33,800	AC	94	0	2	0	0	0	3	0	0	C&G	54	CAPE SEAL																												
2016	NE 11 DR	1	NE 11 TER	NE 11 TER	1,338	24.5	32,781	AC		140	0	47	0	0	5	0	0	C&G	48	CAPE SEAL																												
2016	NE 11 TER	6	NE 23 AVE	NE 28 AVE	1,275	24.5	31,238	AC	22	30	2	0	0	0	4	0	1	C&G	55	CAPE SEAL																												
2016	NE 11 TER	7	NE 28 AVE	NE 11 DR	251	24.5	6,150	AC	16	70	0	11	0	0	2	0	0	C&G	41	CAPE SEAL																												
2016	NE 11 TER	8	NE 11 DR	NE 11 DR	910	24.50	22,295	AC	123	100	2	17	0	0	2	0	1	C&G	61	CAPE SEAL																												
	2502 DP center road 70x10 77sy																																														\$0.00	
	2519 DP center road 10x10 16sy																																															
	2809 DP man hole 12x12 16sy																																															
	2840 DP center road 40x8 35.5 A3sy																																															
	2917 DP old patch 100x8 center road 88sy																																															
	2411 DP 10x10 11sy																																															
	Speed table 10x10 11sy																																															

Cape Seal Area	192,647	SF
C&G Replace	430	LF
Roots	86	SY
ADA Ramps	0	EA
Driveways	2	EA

Description	Unit	Unit Price	Total
Cape Seal	21,405.22	SY	
C&G Replacement	430	LF	
Roots	86	SY	
ADA Ramps	0	EA	
Driveways	2	EA	

BATCH 7

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN_FT	WID_FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	COST_PER_SY	ACTUAL AREA	Total Treatment Cost	Including Concrete
2016	SW 04 AVE	1	SW 13 ST	SW 12 ST	580	34	19,720	AC		0	0	0	1	0	2	0	0	ROL	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 04 AVE	2	SW 12 ST	SW 10 ST	660	34	22,440	AC		0	0	0	0	0	4	0	0	C&G	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 06 AVE	1	SW 12 ST	SW 10 ST	660	28	18,480	AC		0	0	0	3	0	2	0	0	C&G	83	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 06 AVE	2	SW 10 ST	SW 09 ST	435	25	10,875	AC		0	0	0	0	2	2	0	0	C&G	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	2	SW 08 AVE	SW 07 AVE	266	28	7,448	AC		10	0	0	1	0	1	0	1	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	3	SW 07 AVE	SW 06 AVE	346	28	9,688	AC		0	0	0	1	0	1	0	0	C&G	64	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	4	SW 06 AVE	SW 05 AVE	322	28	9,016	AC		0	0	0	1	3	1	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	5	SW 05 AVE	SW 04 AVE	317	28	8,876	AC		0	0	0	1	1	3	0	0	C&G	82	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	6	SW 04 AVE	SW 03 AVE	312	24	7,488	AC		0	0	0	0	3	1	0	0	C&G	67	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	7	SW 03 AVE	SW 02 PL	165	24	3,960	AC		30	0	0	0	0	0	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	8	SW 02 PL	SW 02 AVE	178	24	4,272	AC		0	0	0	0	2	4	0	0	C&G	83	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	9	SW 02 AVE	SW 01 AVE	385	24	9,240	AC		0	0	0	2	4	1	0	0	C&G	83	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 10 ST	10	SW 01 AVE	W UNIVERSITY AVE	280	24	6,720	AC		0	0	0	2	0	6	3	0	C&G	77	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 12 ST	7	SW 02 AVE	SW 01 AVE	352	27	9,504	AC		0	0	0	2	5	10	0	0	C&G	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 12 ST	8	SW 01 AVE	W UNIVERSITY AVE	260	27	7,020	AC		25	0	0	1	0	2	0	0	C&G	81	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 16 ST	1	S DEAD END	SW 16 AVE	730	37	27,010	AC		40	0	27	0	5	4	0	0	ROL	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SW 16 ST	2	SW 16 AVE	ARCHER RD	1,258	42	52,836	AC		10	0	0	0	6	7	0	0	C&G	64	CRACK FILL - DOUBLE MICROSURFACING					

\$0.00

Total SF Area	234,593	SF
C&G Replace	115	LF
Roots	27	SY
ADA Ramps	15	EA
Driveways	1	EA

Description	Unit	Unit Price	Total
Crack Fill -Double Microsurface		26,065.89	SY
C&G Replacement		115	LF
Roots		27	SY
ADA Ramps		15	EA
Driveways		1	EA
Crack Fill			

BATCH 8

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA_SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	COST_PER_SY	ACTUAL AREA	Total Treatment Cost	Including Concrete
2016	NE 11 TER	9	NE 11 DR	NE 31 AVE	215	24.5	5,268	AC		0	0	4	0	0	1	0	2	C&G	81	CAPE SEAL					
2016	NE 17 AVE	1	NE 12 ST	NE 15 ST	1,365	21	28,665	ST	82.2	280	2	38.5	4	0	4	0	0	C&G	46	CAPE SEAL					
2016	NE 17 TER	6	NE 23 AVE	N DEAD END	980	26.5	25,970	AC		20	0	0	0	0	3	0	0	C&G	38	CAPE SEAL					
2016	NE 39 PL	1	NE 01 TER	NE 02 WY	670	24	16,080	AC		0	0	0	0	0	2	0	0	C&G	59	CAPE SEAL					
2016	NE 40 PL	1	NE 01 DR	NE 02 WY	947	24	22,728	AC		0	0	0	0	0	3	0	0	C&G	75	CAPE SEAL					
2016	SW 29 TER	1	SW 37 PL	N DEAD END	760	22	21,135	AC	SW	30	0	0	0	0	30	0	0	0	56	CAPE SEAL					
2016	SW 30 TER	3	SW 39 AVE	SW 38 PL	337	24	8,088	AC	SW	0	0	0	0	0	2	0	0	0	44	CAPE SEAL					
2016	SW 30 TER	4	SW 38 PL	PAVEMENT CHANGE	177	20	3,540	AC	SW	0	0	0	0	0	0	0	0	0	45	CAPE SEAL					
2016	SW 30 TER	5	PAVEMENT CH	SW 37 PL	177	22	3,894	AC	SW	0	0	0	0	0	1	0	0	0	62	CAPE SEAL					
2016	SW 37 PL	1	SW 30 TER	SW 28 TER	641	24	15,384	AC	SW	0	0	0	0	0	1	0	0	0	55	CAPE SEAL					

1235 DP 6x6 4sy																									
1303 DP 24x21 56sy																									
1404 DP patch 40x5 22.2sy																									
west end needs rebuilt 113x21 263sy																									
Road segments swapped from fy17 paving to allow for GRU upgrades																									\$0.00

Cape Seal Area	150,752	SF
C&G Replace	330	LF
Roots	42.5	SY
ADA Ramps	4	EA
Driveways	2	EA

Description	Unit	Unit Price	Total
Cape Seal		16750 SY	
C&G Replacement		330 LF	
Roots		42.5 SY	
ADA Ramps		4 EA	
Driveways		2 EA	

BATCH 9

PLAN_YEAR	BRANCH	SEC	SEC_FROM	SEC_TO	LEN - FT	WID - FT	AREA - SF	SURFACE	Depression SY	C/G Replacement	Speedtables	Roots Sq Yd	ADA Ramps	Water/Gas	Sewer MH	Storm MH	Driveways	CURB	CURR_PROJ_PCI	PROP_MAINT_ACTION	Cost Per Gallon	Cost Per SY	ACTUAL AREA	Total Treatment Cost	Including Concrete
2016	SE 07 ST	2	S DEAD END	SE 07 AVE	507	15	7,605	ST	SE	0	0	0	0	0	0	0	0	ROL	76	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 07 ST	3	SE 07 AVE	SE 05 AVE	455	30	13,650	AC	SE	0	0	0	0	0	6	0	0	C&G	57	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 07 ST	4	SE 05 AVE	SE 04 AVE	448	30	13,440	AC	SE	0	0	0	4	4	1	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 07 ST	5	SE 04 AVE	SE 02 PL	502	45	22,590	AC	SE	0	1	0	2	1	1	0	0	C&G	73	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 07 ST	6	SE 02 PL	SE 02 AVE	125	33	4,125	AC	SE	0	0	0	2	0	2	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 07 ST	7	SE 02 AVE	SE 01 AVE	217	33	7,161	AC	SE	0	0	0	2	2	1	0	0	C&G	69	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 08 ST	1	S DEAD END	SE 12 AVE	272	16	4,352	AC	SE	0	0	0	0	0	1	0	0	ROL	79	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	6	SE 09 ST	SE 10 ST	443	24	10,632	AC	SE	0	0	0	0	1	1	0	0	C&G	78	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	7	SE 10 ST	SE 10 TER	440	24	10,560	AC	SE	0	0	0	0	0	2	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	8	SE 10 TER	SE 11 ST	170	24	4,080	AC	SE	0	0	0	0	2	1	0	0	C&G	75	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	9	SE 11 ST	SE 12 ST	200	34	6,800	AC	SE	0	0	0	2	0	0	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	10	SE 12 ST	SE 13 ST	866	24	20,784	AC	SE	0	0	0	0	0	0	0	0	C&G	65	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 11 AVE	11	SE 13 ST	SE 14 ST	440	34	14,960	AC	SE	0	0	0	0	0	0	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	1	SE 08 ST	SE 09 ST	430	17	7,310	AC	SE	0	0	0	0	2	3	0	0	ROL	79	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	2	SE 09 ST	SE 10 ST	440	24	10,560	AC	SE	0	0	0	4	0	3	0	0	C&G	70	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	3	SE 10 ST	SE WILLISTON RD	480	24	11,520	AC	SE	0	0	0	2	0	4	0	0	C&G	63	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	4	SE WILLISTON RD	SE 12 ST	270	24	6,480	AC	SE	0	0	0	0	0	1	0	0	C&G	65	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	5	SE 12 ST	SE 12 TER	444	24	10,656	AC	SE	0	1	0	0	0	2	0	0	C&G	66	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 AVE	6	SE 12 TER	SE 13 ST	438	24	10,512	AC	SE	0	0	0	0	0	1	0	0	C&G	73	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 ST	4	SE 13 AVE	SE 12 AVE	420	18	7,560	AC	SE	0	0	0	1	0	1	0	0	ROL	73	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 12 ST	5	SE 12 AVE	SE 11 AVE	415	24	9,960	AC	SE	0	0	0	4	0	1	0	0	ROL	73	CRACK FILL - DOUBLE MICROSURFACING					
2016	SE 14 ST	1	SE 12 AVE	SE 11 AVE	420	18	7,560	AC	SE	0	0	0	2	0	1	0	0	C&G	72	CRACK FILL - DOUBLE MICROSURFACING					

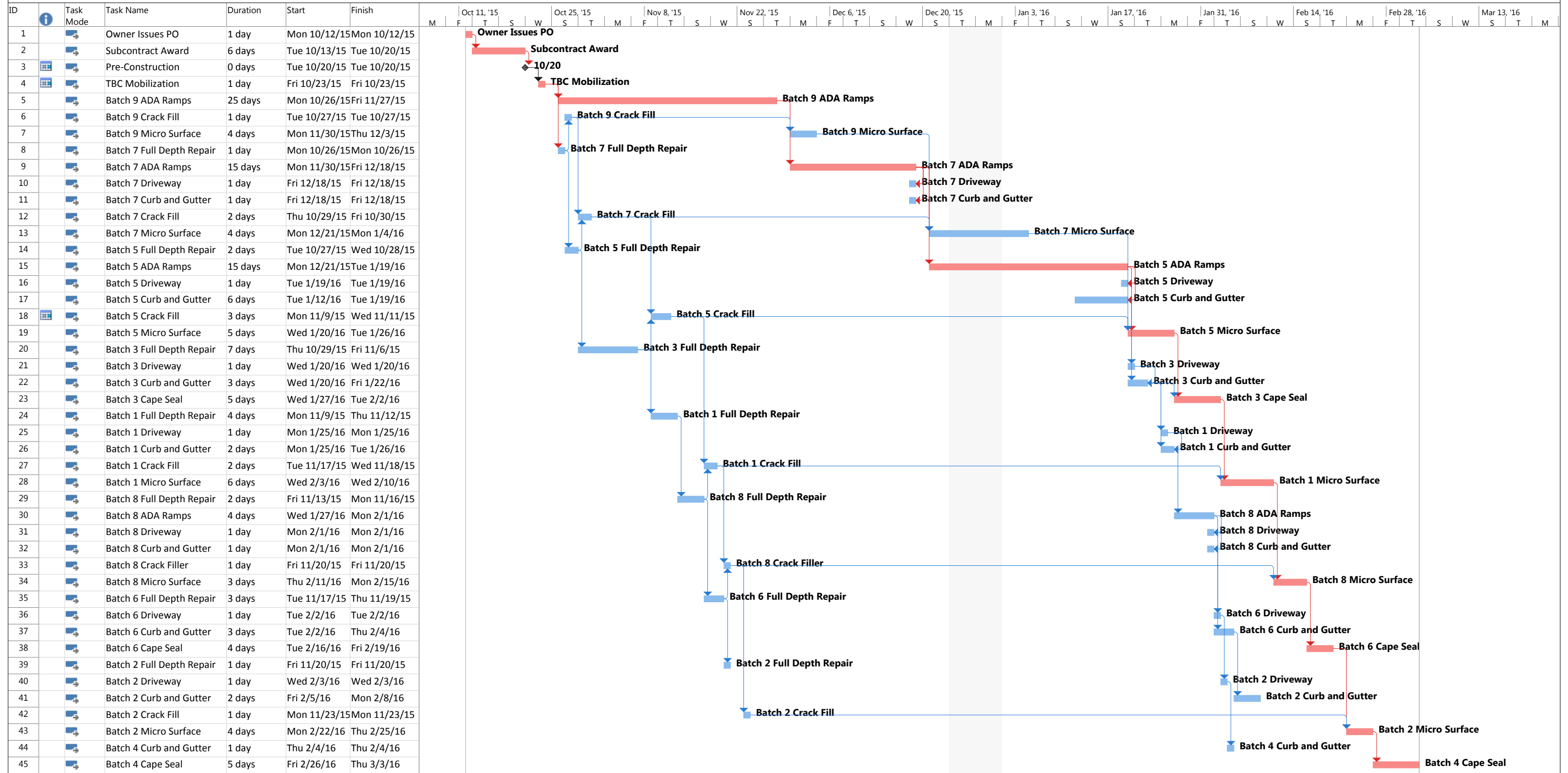
\$0.00

Total SF Area	222,857	SF
C&G Replace	0	LF
Roots	0	SY
ADA Ramps	25	EA
Driveways	0	EA

Description	Unit	Unit Price	Total
Crack Fill -Double Microsurface		24,762 SY	
C&G Replacement		0 LF	
Roots		0 SY	
ADA Ramps		25 EA	
Driveways		0 EA	
Crack Fill			



# The Brentwood Company, Inc.



Project: City of Gainesville Pavin  
Date: Fri 8/28/15

Task		Summary		Inactive Milestone		Duration-only		Start-only		External Milestone		Critical Split	
Split		Project Summary		Inactive Summary		Manual Summary Rollup		Finish-only		Deadline		Progress	
Milestone		Inactive Task		Manual Task		Manual Summary		External Tasks		Critical		Manual Progress	

## ASPHALTIC SURFACE TREATMENT (CHIP SEAL) SPECIFICATIONS

The work specified in this section consists of furnishing and applying a single or double application of bituminous surface treatment on a paved roadway or on a prepared road base, compacted to the lines, grades, and thickness established by the City and in substantial conformance with the limits established by the owner.

Description: Chip Seal is a pavement surface treatment option that combines a layer of polymer modified liquid asphalt emulsion placed on a prepared base with a layer of aggregate spread and compacted while the asphalt is still liquid.

### **Materials:**

**Aggregates:** Crushed granite conforming to FDOT specifications section 901, table 1 for #89, #78 or #67 gradation for coarse aggregates except as modified herein. The aggregate shall be washed granite obtained from a source approved by the owner. Sampling and testing of aggregate shall be the responsibility of the contractor. Copies of test results from the aggregate supplier shall be furnished to the owner prior to the start of the surface treatment.

**Liquid bituminous material for surface treatment:** CRS-2h liquid bituminous material conforming to FDOT specification section 916-4.1 except as modified herein. The bituminous material shall be polymer modified. The contractor shall certify the liquid bituminous material meets the aforementioned FDOT.

The Cationic mixing grade shall be homogenous and of high quality. The material shall be prepared from straight-run Venezuelan Asphalt of high ductility and shall contain a rubber hydrocarbon additive derived from latex in addition to carefully controlled amounts of selected diluents to promote work ability and minimize stripping. Additives that enhance pavement performance are subject to approval by the City.

Cationic Asphalt Emulsion

Material Designation		
Test on Emulsion:	Minimum	Maximum
Viscosity, Saybolt Furol, 77 degrees F (25 C), s	---	---
Viscosity, Saybolt, 122 degrees F (50 C), s	150	400
Storage Stability Test, 24-h, %*		1
Distillation (prior to addition of diluent)		
% residue by volume of emulsion	65	---
% oil distillate by volume of emulsion	---	0.5
Tests on Residue from Distillation:	---	---
Penetration, 77 °F, 100 g., 5 sec.	70	110
Solubility in Trichloroethylene, %	97.5	---
Ductility, 77 °F, 5 cm./min., cm.	100	---

### **Material Samples:**

The City will require the Contractor to sample and test each load of emulsion prior to delivery. The Contractor will also provide a sample of the emulsion, on site, prior to commencing work. The City will require the Contractor to provide sample containers and a local Independent testing laboratory for the analyzing of emulsion. The Contractor will be responsible for the cost of the testing. The City reserves the right to test any shipment of emulsion that is believed to be of substandard. All samples shall be shipped and stored in clean air tight sealed wide mouth jars or bottles made of plastic.

## **Equipment:**

### **Distributor:**

The liquid bituminous material shall be applied with a truck mounted, pressure distributor that has been calibrated within the previous twelve (12) months, for transverse and longitudinal application rate. The distributor shall be equipped, maintained and operated so that the bituminous material can be applied at controlled temperatures and rates from .035 to 1.5 gallons per square yard. The distributor shall be capable of applying bituminous material of variable widths up to sixteen (16) feet. The distributor shall uniformly apply the bituminous material to the specified rate with a maximum allowed variation of 0.015 gallons per square yard. Distributor equipment shall include tachometer, accurate volume measuring device, a calibrated tank and a thermometer for measuring the temperature of the tank's contents. Distributors shall be equipped with a heating device, asphalt pump and full circulating spray bars adjustable laterally and vertically. Distributors and transport trailers shall be equipped with a sampling valve. Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The valves which control the flow from nozzles shall act positively so as to provide a uniform unbroken spread of bituminous material on the surface. The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of bituminous material being applied and with a bitumeter of the auxiliary wheel type registering speed in feet per minute, and trip and total distance in feet.

### **Aggregate Spreader:**

The aggregate spreader shall be a self-propelled unit capable of uniformly spreading the aggregate at the required rate on a minimum width of six (6") inches wider than the width of the lane to be treated. The spreader shall be calibrated within the previous twelve (12) months for transverse and longitudinal application. The spreader shall be equipped with a computer-controlled aggregate/chip spreader in order to ensure the appropriate aggregate coverage at varying speeds, unless approved otherwise by Engineer.

### **Pneumatic Tire Rollers:**

The contractor shall use eight (8) to twelve (12) ton self-propelled pneumatic tire rollers with oscillating wheels and low pressure, smooth tires. Maintain the inflation of the tires such that in no two tires the air pressure varies more than 5 psi. The rollers will be equipped with an operating water system and coco pads. A sufficient number of rollers and a sufficient number of passes shall be used to ensure cover aggregate is properly rolled.

### **Self-Propelled Rotary Power Broom:**

The self-propelled rotary broom shall be designed, equipped, maintained and operated so the pavement surface can be swept clean. The broom shall have an adjustment to control the downward pressure.

### **Additional equipment:**

Additional equipment will be needed to complete the operations required by this technical provision. All equipment necessary for the successful completion of projects governed by this technical provision shall be included in the unit costs associated herein. Availability of quality assurance devices (such as a 15' straight edge) shall be the responsibility of the Contractor.

## **Experience:**

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Chip Seal project references in the State of Florida that have been completed within the past three years. Bidders may be required to submit detailed information regarding the staff that they propose for this project. Contractor shall be capable of meeting all the requirements of this specification at the time of the bid. Staff shall have the option to inspect the Contractor's equipment and if found deficient, it shall be the basis for rejection of Contractor's bid.

## **Construction:**

### **Layout:**

The Contractor will be responsible for the string lining and lay out of the roadway prior to paving.

### **Weather and Seasonal limitations:**

The surface treatment shall not be applied to a wet surface or when rain is occurring or the threat of rain is present immediately before placement. The surface treatment shall not be applied when the temperature is less than 50 degrees Fahrenheit in the shade. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

### **Preparation of Surface:**

The chip seal material shall be placed on a firm unyielding prepared roadway. The Contractor shall be responsible for clipping back shoulders and removing overburden or any other vegetation or debris to ensure that the road is free of organic and deleterious material. The contractor will be responsible for blowing or sweeping the road immediately ahead of the chip seal operation to make sure the road is free of loose aggregate and other debris.

### **Application of bituminous material:**

Liquid bituminous material shall be applied by means of a pressure type distributor in a uniform, continuous spread over the section to be treated. The distributor shall be moving forward at the proper speed when the liquid is discharged onto the pavement to provide an even and consistent application at the rate prescribed. If any areas are deficient the operation shall be stopped and corrected immediately. The liquid shall not be applied more than two hundred (200') feet in advance of the aggregate spreader when the ambient air temperature is above 75 degrees or one hundred (100') feet if the air temperature is below 75 degrees.

- **Single Chip Seal:** Application of the liquid bituminous material shall be applied at a rate of .38 - .45 gallons per square yard depending on the composition of the existing road bed, surface texture and the size of the aggregate in use.
- **Double Chip Seal:** The second application of liquid bituminous material shall be applied at a rate of .38 - .42 gallons per square yard depending upon the size of the first layer of aggregate that the liquid is sprayed upon and the size of the aggregate being placed over the first application of surface treatment.

### **Application of cover Aggregate:**

Immediately following the spray application of the liquid bituminous material, cover aggregate shall be spread over the liquid material at a rate of 18 – 30 lbs square yard depending upon the type of road base and/or the size of the existing aggregate that is being resurfaced.

### **Rolling:**

Immediately following the first application of the cover material, roll the entire surface with a pneumatic roller, followed immediately with the steel drum roller. Cover the entire surface one time with the steel drum roller. Then, roll the cover material again with the pneumatic roller. Continue rolling as long as necessary to ensure thorough keying of the cover aggregate into the liquid bituminous material. Eliminate the steel drum when rolling the second application of cover aggregate. Apply the second application of liquid and cover material the same day as the first application, as far as it is practicable and consistent with the setting of the liquid bituminous material.

### **Sweeping:**

After rolling of the first application of cover aggregate, lightly broom the loose aggregate in a manner not to dislodge the aggregate embedded in the liquid. Sweep loose material from road bed. Following second application again broom loose aggregate from the road bed prior to the application of the fog seal. If temperatures exceed 85 degrees, it may be necessary to wait 24 hours before sweeping the first application of chip seal.

**Fog Seal:**

Upon direction from the engineer, fog seal is to be applied as a separate pay item. When surface treatment has set, a fog seal is to be applied at a rate of .1 to .15 gallons per square yard to the entire surface treatment. The liquid for fog seal shall be a cationic mixing type emulsion diluted forty (40%) percent with water. Fog seal shall then be lightly sanded at a rate of plus or minus two (2) pounds per square yard by means of a mechanical spreader.

**General Performance:**

Provide completed pavement which performs to the satisfaction of the engineer without bleeding, rutting, shoving, raveling, stripping, or showing other types of pavement distress or unsatisfactory performance.

**Traffic Control:**

The **Contractor** shall furnish all necessary traffic control, barricades, signs and flagmen, to ensure the safety of the traveling public and to all working personnel. Traffic shall not travel on fresh mix until rolling and blotting has been completed. The Contractor shall submit an M.O.T plan indicating all facets of traffic control for the project area. The MOT plan must be approved in writing by the City prior to commencing any work. All traffic control shall be in accordance with the FDOT Roadway Design Standards, most current edition and TP-102. M.O.T. and associated devices shall be checked daily and periodically throughout the project for compliance; and where adjustments or corrections are needed, prompt revisions shall be made.

**Method of Measurement:**

If a pay item is listed on the Bid Form for work required in this Technical Provision, the quantity to be paid shall be as specified in the Bid Form including all items of work described herein. Any item necessary for Chip Seal, and not specifically listed in another item in the Bid Form, shall be included in this item. Should the contractor be directed to place Fog Seal as a secondary application to Chip Seal, it shall be measured separately as listed in the Technical Provision for Fog Seal

**Basis of Payment:**

The quantities to be paid for under this Technical Provision shall be included in the Square Yard price for Chip Seal (Single application), Chip Seal (Double application) or as listed in the Bid Form. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Chip Seal, including all items of work described herein. No additional payment will be provided for any item necessary for the completion of this contract as detailed in the specifications, except that at the direction of the city, Fog Seal shall be applied and paid separately as listed in the Technical Provision for Fog Seal. Cape Seal will be the combined price per SY of a Single Chip Seal and a Double Micro-surface.

**Cape Seal Applications:**

For Cape Seal applications a Single Chip Seal with #89 stone will be applied to the roadway. After sweeping the single chip seal in 24 to 48 hours a double micro-surface 30-34 lbs./SY will be applied in one lift. (See Micro-surfacing Specifications and warranty)

## TECHNICAL REQUIREMENTS

### Section 1. CRACK FILLING/SEALING

#### 1.1 Description

All cracks within the specified area that are one quarter (1/4) inch or greater shall be properly prepared and sealed. All contractors and their subcontractors shall be FDOT prequalified. Crack filling material must cure for a minimum of 30 days prior to application of the micro surfacing.

#### 1.2 References

All reference standards and specifications shall be the current issue or latest revision at the first date of tender advertisement. These specifications herein are in addition to the following standards, specifications or publications listed below:

- ASTM D-5329: Standard Test Method for Sealants and Fillers, Hot-Applied, For Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.
- ASTM D36: Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
- ASTM D3111: Standard Test Method for Flexibility Determination of Hot-Melt Adhesives by Mandrel Bend Test Method.
- ASTM DI13: Standard Test Method for Ductility of Bituminous Materials
- ASTM D-2669: Standard Test Method for Apparent Viscosity of Petroleum Waxes Compounded with Additives (Hot Melts)
- ASTM D4: Standard Test Method for Bitumen Content
- ASTM D6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

#### 1.3 Submittals

- a) The CONTRACTOR shall submit to the Project Manager the specifications sheets along with the manufacturer's suggested installation procedures of the type of crack seal that is to be used.
- b) A log sheet shall be maintained during the crack seal operations. The original of this log sheet shall be supplied to the Project Manager. A minimum of the following information shall be recorded:
  1. Date, time and amount added to the melter. The lot number from each box added shall be also recorded.
  2. Road name, date, time application process starts, amount installed, time application process ends.
  3. Weather conditions.
- c) The CONTRACTOR shall supply the Project Manager with tickets and the corresponding actual lot numbers removed from the boxes, showing the amount of gallons used for each road.

- d) A log of all herbicides, if any, shall be kept and a copy shall be supplied to the Project Manager within one (1) week of spraying. This log shall include the type of material, mixture rate, application rate, location, date, and time of application.

#### 1.4 Materials

- a) **Crack Seal:** Crack sealer product shall be Crafcro PolyFlex Type 3, product # 34521 or equivalent. It shall be an asphalt based product designed to be used to fill cracks and joints in asphalt. It shall have the ability to seal out water.
- b) **Blotting Material:** If required the blotting material shall be an aggregate such as cement dust, Crafcro Detack or equivalent, or other cover aggregate approved by the Project Manager.

#### 1.5 Equipment

- a) **Crack Sealant Application Equipment:** Equipment used to install the sealant into the cracks shall be as specified by the manufacturer and shall have the ability to fill cracks with two wands at the same time and maintain the proper temperature of the sealant throughout the sealing process.  
This heating unit shall be a jacketed double boiler melter and shall be equipped with an agitation system. The applicator hose's shall have a recirculation system or be equipped with a temperature controlled heating system. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints.
- b) **Compressor:** The compressor shall be 75 C.F.M. capacity, or more, to ensure an adequate supply of air to effectively clean the joints. Any pneumatic tool lubricator must be bypassed and a filter installed on the discharge valve to keep water and oil out of the lines.
- c) **Hot Compressed Air Equipment:** A hot compressed air lance shall be used to clean, dry and pre-heat cracks prior to applying sealant. The air lance shall consist of a compressor propane system providing a high temperature, high velocity blast of air.
- d) **Crack Cleaning Equipment:** Cleaning of excess debris shall be done by means of power sweepers, hand brooms, or air brooms.

#### 1.6 Work Methods

- a) **Weather:** No sealant shall be installed unless the ambient and pavement temperature are 40° and rising. There shall be no fog and no chance of rain. Any cracks that are not sealed the same day they are prepared shall be blown out with compressed air before the sealing operation continues. If rain or fog delays the sealing operation, the cracks shall be allowed to dry and shall have additional cleaning as required to remove any debris that may have been washed into the crack by rain. The cracks shall be completely dry before the seal treatment can resume. The Contractor may use the Hot Compressed Air Lance method of cleaning and drying the cracks with the approval of the Project Manager. Care shall be taken to not overheat the existing asphaltic concrete surface if this method is used.
- b) **Surface Preparation:** Prior to starting any application process the CONTRACTOR shall be responsible for removing any existing dirt and vegetation that is on the asphalt.

- c) **Crack Cleaning:** All cracks and joints shall be cleaned free of all deleterious materials, including any dust, old sealant, incompressible, and organic material. When vegetation exists in the cracks and joints, it shall be removed by either using propane torch or treated with an herbicide that sterilizes the soil. The method of removal is subject to the approval of the Project Manager. If an herbicide is used it shall be applied according to the manufacturer's specifications and shall be applied ahead of the operations so that the weed is totally browned. The applicator of the herbicide shall have the proper State of Florida Pesticide Applicators License. A copy of this license shall be supplied to the Project Manager upon request. A log of all herbicides shall be kept as specified in the section 1.3 Submittals and a copy shall be supplied to the Project Manager. All cracks are to be clean and are sufficiently dry before any crack sealing material is applied. All cracks shall be blown clean by high pressure air. All old material and other debris removed from the cracks shall be removed from the pavement surface immediately. Any cracks that are not sealed the same day they are prepared shall be blown out with compressed air before the sealing operation continues.
- d) **Sealant Heating:** The temperature of the sealant shall be heated and maintained using the manufacturer's recommended procedures. The sealant compound shall be melted slowly with constant agitation until it is in a lump-free, free-flowing state, within the temperature range recommended by the manufacturer for application. Care shall be taken to insure that the sealant is not heated above the manufacturer's recommended maximum temperature or for longer than the recommended application life. The Project Manager shall have the right to reject the product if it is determined that this has occurred.
- e) **Sealant Application:** The sealant shall be applied in the crack or joint reservoir uniformly from the bottom to the top and shall be filled without formation of entrapped air or voids. The sealant shall be installed so that it is recessed approximately one eighth (1/8) inch below the pavement surface to prevent tracking. Sealant shall be applied to slightly overfill the reservoir and then struck off using a "V" shaped squeegee. The remaining squeegee material shall be flush with the pavement surface. In no case shall the width of excess material on the pavement surface exceed (4) inches. At no time shall the sealant be in excess of one sixtieth (1/16) inch above the adjacent surface and shall extend no more than one and a half (1.5) inches from the crack edges. Each wand shall have removable heads so that variable width discs from two (2) to four (4) inches may be installed at the Project Managers request.
- f) **Blotting Application:** When traffic requires immediate use of the roadway, a blotting material shall be broadcast or sprayed over the fresh sealant to prevent it from being picked up and tracked. Any excessive or spilled sealer shall be removed by the CONTRACTOR using approved methods .
- During the period of construction and the warranty period the CONTRACTOR shall be responsible for processing any and all claims for property damage and or bodily injury caused by the failure of the Crack Sealing including but not limited to, motor vehicles or pedestrians. The CONTRACTOR shall be responsible for the payment of all property damage and bodily injury claims and agrees to save and hold harmless the CITY from all such claims. Claims not handled by the CONTRACTOR or their representative in the proper manner, will be settled by the CITY. The CITY shall recover all costs from the CONTRACTOR.



The CONTRACTOR shall be responsible for any claims of tracking as part of this specification. If there is a claim the CONTRACTOR shall be responsible for:

- 1) Applying more blotting material as necessary.
- 2) Address the tracked material by either removing or repairing the object that was affected.

**1.7 Method of Measurement.**

The measurement shall be made in amount of gallons of crack seal applied to the road, and shall be supported by the submittals as outlined in Section 1.3 Submittals, paragraph b. The amount of crack sealer shall be reported and invoiced for each road.

**1.8 Basis of Payment.**

Crack Sealing shall be based on a price per gallon. The unit price as shown on the Bid Sheet "Sealing" or "Routing and Sealing" shall be all inclusive to include cleaning, sealing, FDOT traffic control, mobilization and any other incidentals required to provide the CITY with a final product that will meet the specifications as described in the crack sealing section. All invoices shall contain the purchase order number, invoice date, itemized work detail including the amount of product applied to each road, date of service specific to each location, appropriate retention, person to contact and their phone number for billing questions and location of delivery or service, and confirmation of acceptance of the goods or services by the appropriate CITY representative.

**1.9 Deficiencies and Repairs**

- a) Where the sealant subsides in the crack by more than  $1/8$  inch below the adjacent pavement surface, except where the pavement will be immediately overlaid, the surface of the sealant shall be cleaned and topped up.
- b) The sealant shall be removed, the routed crack rerouted at the Project Manager's discretion, and resealed if any of the following occur:
  - i) the sealant contains imbedded foreign material other than dusting material;
  - ii) the sealant contains entrapped air bubbles;
  - iii) the sealant has de-bonded or pulled away from the crack; or
  - iv) the sealant has been excessively heated.

## Micro-surfacing Specifications

The work specified in this section consists of placement of a polymer modified Microsurface on a prepared existing paved road, placed within the lines, grades, and thickness established by the City.

Description: Microsurfacing is a polymer-modified cold-mix paving system that begins as a mixture of dense-graded aggregate, polymer modified asphalt emulsion, water, and mineral fillers placed in a slurry state at ambient air temperature to extend the service life of both urban and rural roads within the City. The end product should maintain a skid-resistant surface in variable thick sections throughout the service life of the micro surfacing.

### Materials:

**Emulsified Asphalt:** Provide a quick- traffic latex modified cationic type CSS emulsion with natural or synthetic latex conforming to the requirements specified in AASHTO M208 or ASTM D2397 for CSS-1H,

Property	Minimum	Maximum
Viscosity, Saybolt Furol @ 25° C, Sec.	20.0	90.0
Particle Charge	Positive	---
Sieve Test	---	0.1
Distillation:	---	---
Oil distillate, by volume, %	---	0.5
Residue from Distillation, %	62.0	---
Penetration, 25°C, 100g, 5 sec.	40.0	100.0
Ductility, 77° F, 50 mm/ sec.	70.0	---

plus the following:

AASHTO TEST NO.	ASTM TEST NO.	QUALITY	SPECIFICATION
T53	D36	Softening Point	135 °F (57 °C) Min.
T59	D244	Residue after Distillation	62% Minimum
T49	2397	Penetration at 77 ° F (25 ° C)	40 – 90*
	2170	Kinematic Viscosity @ 275 ° F (135 ° C)	650 cSt/sec. Minimum °F

It shall pass all applicable storage and settlement tests. The cement mixing test shall be waived for this emulsion. The polymer material shall be milled or blended into the asphalt or emulsifier solution prior to the emulsification process.

The minimum amount and type of polymer modifier shall be determined by the laboratory performing the mix design. The minimum amount required will be based on asphalt weight content and will be certified by the emulsion supplier. In general, a three percent (3%) polymer solids, based on asphalt weight, is considered minimum.

The five-day (5) settlement test may be waived, provided job stored emulsion is used within thirty-six (36) hours from the time of the shipment, or the stored material has had additional emulsion blended into it prior to use.

Each load of emulsified asphalt shall be accompanied with a Certificate of Analysis/Compliance to assure that it is the same as that used in the mix design. For the first load of emulsified asphalt produced for the project, the supplier shall submit a sample to the owning agency's designated laboratory for testing. At any time during application, the owner / buying agency may sample and test all subsequent loads of emulsified asphalt delivered to the project to verify and determine compliance with specification requirements. Where these tests identify material outside specification requirements, the owner may require the supplier to cease shipment of that pretested emulsified asphalt product. Further shipment of that pretested emulsified asphalt product to the owning agency's projects will remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the owning agency.

**Aggregate:** The mineral aggregate used shall be of the type and grade specified for the particular use of the Microsurfacing. The aggregate shall be a manufactured crushed stone such as granite, slag, limestone, chat, or other high-quality aggregate, or combination thereof. To assure the material is totally crushed, one-hundred percent (100%) of the parent aggregate will be larger than the largest stone in the gradation to be used.

When aggregate is tested according to the following test, it should meet these minimum requirements:

AASHTO TEST NO.	ASTM TEST NO.	QUALITY	SPECIFICATION
AASHTO T176	ASTM D2419	Sand Equivalent	65 Minimum
AASHTO T104	ASTM C88	Soundness	15% Maximum using NA2 SO4 or 25% Maximum using MgSO4
AASHTO T96	ASTM C131	Abrasion Resistance	30% Maximum

The abrasion test is to be run on the parent aggregate. The aggregate should meet state-approved polishing values. Proven performance may justify the use of aggregates that may not pass all of the above tests.

When tested in accordance with AASHTO T27 (ASTM C136) and AASHTO T11 (ASTM C117), the target (mix design) aggregate gradation (including the mineral filler) shall be within one of the following bands.

SIEVE SIZE	TYPE II PERCENT PASSING	TYPE III PERCENT PASSING	STOCKPILE TOLERANCE
$\frac{3}{8}$ (9.5 mm)	100	100	
#4 (4.75 mm)	90 – 100	70 - 90	± 5 %
#8 (2.36 mm)	65 – 90	45 – 70	± 5 %
#16 (1.18 mm)	45 – 70	28 - 50	± 5 %
#30 (600 um)	30 – 50	19 - 34	± 5 %
#50 (330 um)	18 – 30	12 - 25	± 4 %
#100 (150 um)	10 – 21	7 - 18	± 3 %
#200 (75 um)	5 – 15	5 - 15	± 2 %

The job mix (target) gradation shall be within the gradation band for the desired type. After the target gradation has been submitted (this should be the gradation that the mix design is based on), then the percent passing each sieve shall not vary by more than the stockpile tolerance shown in the above table for each individual sieve, and still remain within the gradation band. It is recommended that the percent passing shall not go from the high end to the low end of the range for any two consecutive screens.

The aggregate will be accepted at the job location stockpile or when loading into the support units for delivery to the lay-down machine. The stockpile shall be accepted based on five gradation tests according to AASHTO T2 (ASTM D75). If the average of the five tests are within the gradation tolerances, then the materials will be accepted. If the tests show the material to be out, the contractor will be given the choice to either remove the material or blend other aggregate with the stockpiled material to bring it into specification. Materials used in blending must meet the quality tests before blending and must be blended in a manner to produce a consistent gradation. If blending is used, it will require that a new mix design be performed. The contractor shall supply copies of the aggregate tickets to the customer within 24 hours of delivery to the job site.

Screening shall be required at the stockpile prior to delivery to the paving machine if there are any problems created by having oversize material in the mix.

**Mineral filler:** (if required) shall be any recognized brand of non-air entrained Portland cement or hydrated lime that is free from lumps. It may be accepted upon visual inspection. The type and amount of mineral filler needed shall be determined by a laboratory mix design and will be considered as part of the aggregate gradation. An increase or decrease of less than one percent (1%) may be permitted when the Microsurfacing is being placed if it is found to be necessary for better consistency or set times.

**Water:** Potable and free of harmful or deleterious materials.

**Additives:** Additives may be added to the emulsion mix or any of the component materials to provide the control of the quick-traffic properties. They must be included as part of the mix design and be compatible with the other components of the mix.

**Mix Design:** The Contractor shall submit to the City for approval a complete mix design with an aggregate source used on five (5) similar micro surfacing projects by a City or County in the State of Florida. The mix design shall be prepared and certified by a laboratory which has experience in designing Microsurfacing. After the mix design has been approved, no substitution will be permitted, unless approved by the City. Compatibility of the aggregate, polymer-modified emulsion, mineral filler, and other additives shall be verified by the mix design. The mix design shall be made with the same aggregate gradation that the contractor will provide on the project. Recommended tests and values are as follows:

ISSA TEST NO.	DESCRIPTION	SPECIFICATION
ISSA TB-139	Wet Cohesion @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic)	12 Kg-cm Minimum 20 Kg-cm Minimum or Near Spin
ISSA TB-109	Excess Asphalt by LWT Sand Adhesion	50 g/ft <sup>2</sup> Maximum (538 g/m <sup>2</sup> Maximum)
ISSA TB-114	Wet Stripping	Pass (90% Minimum)
ISSA TB-100	Wet-Track Abrasion Loss One-hour Soak Six-day Soak	50 g/ft <sup>2</sup> (538 g/m <sup>2</sup> ) Maximum 75 g/ft <sup>2</sup> (807 g/m <sup>2</sup> ) Maximum

The Wet Track Abrasion test is performed under laboratory conditions as a component of the mix design process. The purpose of this test is to determine the minimum asphalt content of a micro surface system. The Wet Track Abrasion Test is not recommended as a field quality control or acceptance test. Some systems require longer times for the asphalt to adhere to the stone. In these systems, a modified Marshall Stability Test (ISSA TB-148) or Hveem Cohesimeter Test (ASTM D 1560) has been used to confirm asphalt content.

ISSA TEST NO.	DESCRIPTION	SPECIFICATION
ISSA TB-147	Lateral Displacement	5% Maximum
	Specific Gravity after 1,000 Cycles of 125 Pounds (56.71 Kg)	2.10% Maximum
ISSA TB-113	Mix Time @ 77°F (25°C)	Controllable to 120 Seconds Minimum

The mixing test is used to predict how long the material can be mixed in the machines before it begins to break. It is more for information to be used by the contractor than for quality of the end product.

The mixing test and set-time test should be checked at the highest temperatures expected during construction.

The mix design should report the quantitative effects of moisture content on the unit weight of the aggregate (bulking effect). The report must clearly show the proportions of aggregate, mineral filler (minimum and maximum), water (minimum and maximum), additive usage, and polymer-modified asphalt emulsion based on the dry weight of the aggregate.

All the component materials used in the mix design shall be representative of the materials proposed by the contractor to be used on the project. The percentages of each individual material required shall be shown in the laboratory report. Adjustments may be required during construction, based on field conditions. The Project Manager will give final approval for all such adjustments.

COMPONENT MATERIALS	LIMITS
Residual Asphalt	7% to 10.5% by dry weight of aggregate
Mineral Filler	0.0 to 3% by dry weight of aggregate
Polymer-Based Modifier	Minimum of 3% solids based on bitumen weight content
Additives	As needed
Water	As required to produce proper mix consistency

### **Sampling and Testing:**

The Engineer at their discretion shall obtain two samples of micro surfacing mixture for each day of production. The samples shall be obtained at different periods during the production day and the Engineer shall test each sample at the expense of the City in accordance with FM 5-563 and FM 1-T 030 to determine the residual asphalt content and the gradation of each sample. Evaporate all water from the sample prior to testing.

## **EXPERIENCE:**

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Micro Surfacing project references that have been completed within the past three years. Bidders may be required to submit detailed information regarding the staff that they propose for this project. Contractor shall be capable of meeting all the requirements of this specification at the time of the bid. Staff shall have the option to inspect the Contractor's equipment and if found deficient, it shall be the basis for rejection of Contractor's bid.

## **EQUIPMENT:**

**Mixing Equipment:** The machine shall be specifically designed and manufactured to lay Microsurfacing. The material shall be mixed by an automatic-sequenced, self-propelled Microsurfacing mixing machine, which shall be a continuous-flow mixing unit able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive, and water to a revolving multi-blade, double-shafted mixer and to discharge the mixed product on a continuous-flow basis.

The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control additive and water to maintain an adequate supply to the proportioning controls.

The machine shall be equipped to allow the operator to have full control, from the rear of the machine, of the forward and reverse speeds during applications of the Microsurfacing material and be equipped with opposite-side driver stations to assist in alignment. The self-loading device, opposite-side driver stations, and forward and reverse speed controls shall be original equipment manufacturer design.

**Proportioning Devices:** Individual volume or weight controls for proportioning each material to be added to the mix (i.e. aggregate, mineral filler, emulsified asphalt, additive, and water) shall be provided and properly marked. These proportioning devices are used in material calibration and determining the material output at any time.

**Spreading Device:** The mixture shall be agitated and spread uniformly in the surfacing box by means of twin-shafted paddles or spiral augers fixed in the spreader box. A front seal shall be provided to insure no loss of the mixture at the road contact point. The rear seal shall act as a final strike-off and shall be adjustable. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved to produce a free flow of material to the rear strike-off. The spreader box shall have suitable means provided to side shift the box to compensate for variations in the pavement geometry.

**Secondary Strike-off:** A secondary strike-off shall be provided to improve surface texture. The secondary strike-off shall have the same adjustments as the spreader box. No burlap drags will be permitted on the final applications.

**Rut-Filling Box:** When required, before the final surface course is placed, preliminary Microsurfacing material may be required to fill ruts, utility cuts, depressions in the existing surface, etc. Ruts of one-half (½) inch (12.7 mm) or greater in depth shall be filled independently with a rut-filling spreader box, either five foot (5) (1.5m) or six foot (6) (1.8 m) in width. For irregular or shallow rutting of less than one-half (½) inch (12.7 mm) in depth, a full-width scratch-coat pass may be used as directed by the City. Ruts that are in excess of one and one-half (1-½) inches (38.1 mm) in depth may require multiple placements with the rut-filling spreader box to restore the cross-section. All rut-filling level-up material should cure under traffic for at least a twenty-four (24) hour period before additional material is placed on top of the level-up.

**Auxiliary Equipment:** Suitable surface preparation equipment, traffic control equipment, hand tools, and any other support and safety equipment shall be provided by the contractor as necessary, (or as the City requires) to perform the work.

**General:** Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the City prior to construction. Previous calibration documentation covering the exact materials to be used may be acceptable, provided that no more than sixty (60) days have lapsed. The documentation shall include an individual calibration of each material at various settings, which can be related to the machine metering devices. No machine will be allowed to work on the project until the calibration has been completed and/or accepted.

All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working condition at all times to ensure a high-quality product. Availability of quality assurance devices (such as a 15' straight edge) shall be the responsibility of the **Contractor**.

### **Construction:**

**Weather Limitations:** Microsurfacing shall not be applied if either the pavement or air temperature is below 50°F (10°C) and falling, but may be applied when both pavement and air temperatures are above 45°F (7°C) and rising. No Microsurfacing shall be applied when there is the possibility that the finished product will freeze within 24 hours. The mixture shall not be applied when weather conditions prolong opening to traffic beyond a reasonable time or as directed by the City.

**Surface Preparation:** Immediately prior to applying the Microsurfacing, the surface shall be cleared of all loose material, silt spots, vegetation, and other objectionable material. Any standard cleaning method will be acceptable. If water is used, cracks shall be allowed to dry thoroughly before applying Microsurfacing. Manholes, valve boxes, drop inlets and other service entrances shall be protected from the Microsurfacing by a suitable method. The City shall approve the surface preparation prior to surfacing. No dry aggregate either spilled from the lay-down machine or existing on the road, will be permitted.

**Tack Coat:** Normally, tack coat is not required unless the surface to be covered is extremely dry and raveled or is concrete or brick. If required, the tack coat should consist of one part emulsified asphalt/three parts water and should be applied with a standard distributor. The emulsified asphalt should be SS or CSS grade. The distributor shall be capable of applying the dilution evenly at a rate of 0.05 to 0.10 gal/yd<sup>2</sup> (0.23 to 0.45 l/m<sup>2</sup>). The tack coat shall be allowed to cure sufficiently before the application of Microsurfacing. If a tack coat is to be required, it must be billed as a separate pay item.

**Application:** A test strip shall be placed in conditions similar to those expected to be encountered during the project unless specifically waived by the City.

When required by local conditions, the surface shall be pre-wetted ahead of the spreader box. The rate of application of the spray shall be adjusted during the day to suit temperatures, surface texture, humidity, and dryness of the pavement.

The Microsurfacing shall be of the desired consistency upon leaving the mixer. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained. Overloading of the spreader shall be avoided. No lumping, balling, or unmixed aggregate shall be permitted.

No streaks, such as those caused by oversized aggregate, shall be left in the finished surface. If excess streaking develops, the job will be stopped until the contractor proves to the Project Manager or his/her designee that the situation has been corrected. Excessive streaking is defined as more than four drag marks greater than one-half (½) inch wide (12.7 mm) and four inches (4) long (101 mm), or one inch (1) wide (25.4 mm) and three (3) inches long (76.2 mm), in any 29.9

yd<sup>2</sup> (25 m<sup>2</sup>) area. No transverse ripples or longitudinal streaks of one-fourth (¼) inch in depth (6.4 mm) will be permitted, when measured by placing a ten (10) foot (3 m) straight edge over the surface.

The Microsurfacing mixture shall be of the proper consistency at all times, so as to provide the application rate required by the surface condition. The average single application rate, as measured by the Project Manager, shall be in accordance with the following table:

AGGREGATE TYPE	LOCATION	SUGGESTED APPLICATION RATES
TYPE II Single application	Urban and Residential Streets	20 - 24 lb/yd <sup>2</sup> (+/- 2 lbs)
TYPE II Double application	Urban, Residential, and Primary Routes	30 - 34 lb/yd <sup>2</sup> (+/- 2 lbs)
TYPE II Heavy single application	Primary and Cold Mix Roads as directed	24 - 28 lb/yd <sup>2</sup> (+/- 2 lbs)
TYPE II Heavy double application	Primary and Cold Mix Roads as directed	38 - 42 lb/ yd <sup>2</sup> (+/- 2 lbs)
TYPE II Rut Fill	Wheel Ruts	Tonnage As Required

Suggested application rates are based upon the weight of dry aggregate in the mixture. Application rates are affected by the unit weight of the aggregate.

Microsurfacing is often put down in two full-width passes in place of rut-filling when the rutting or deformation is not severe. When two passes are used, the first pass (scratch course) is made using a metal or stiff rubber strike-off and applying only what the surface demands for leveling. The second course is applied at 15 – 30 lb/yd<sup>2</sup> (8.1 – 16.3 kg/m<sup>2</sup>).

**Opening to Traffic:** Microsurfacing shall be capable of producing an emulsified asphalt paving mixture that will cure at a rate which will permit traffic on the pavement within one hour after application without damaging the pavement surface. Any damage done by traffic to the Microsurfacing shall be repaired by the contractor at his/her expense.

**Joints:** No excess buildup, uncovered areas, or unsightly appearance shall be permitted on longitudinal or transverse joints. The contractor shall provide suitable-width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd-width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved area. A maximum of three (3) inches (76.2 mm) shall be allowed for overlap of longitudinal lane line joints. Also, the joint shall have no more than a one-fourth (¼) inch (6.4 mm) difference in elevation when measured by placing a ten (10) foot (3 m) straight edge over the joint and measuring the elevation drop-off.

**Mix Stability:** The Microsurfacing shall possess sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture shall be homogeneous during and following mixing and spreading. It shall be free of excess water or emulsion and free of segregation of the emulsion and aggregate fines from the coarser aggregate. Under no circumstances shall water be sprayed directly into the lay-down box while laying Microsurfacing material.

**Handwork:** Areas which cannot be reached with the machine shall be surfaced using hand squeegees to provide uniform coverage. If necessary, the area to be hand worked shall be lightly dampened prior to mix placement. Care shall be exercised to leave no unsightly appearance from



hand work. The same type of finish as applied by the spreader box shall be required.

**Edgelines:** Care shall be taken to ensure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide a good appearance. If necessary, a suitable material will be used to mask off the end of streets to provide straight lines. Edge lines shall not vary by more than  $\pm 2$  inches ( $\pm 50$  mm) horizontal variance in any 96 feet (30 m) of length.

**Clean-up:** All areas, such as man-ways, gutters, and intersections, shall have the Microsurfacing mix removed as specified by the City. The contractor shall, on a daily basis, remove any debris associated with the performance of the work, completely and thoroughly to the satisfaction of the City. In addition, the contractor shall, at the request of the City pressure wash any area such as, curb and gutter, private driveways, etc. removing any and all stains associated with the placement of the Microsurfacing.

**General Performance:**

Provide completed pavement which performs to the satisfaction of the engineer without bleeding, rutting, shoving, raveling, stripping, or showing other types of pavement distress or unsatisfactory performance.

**Traffic Control:**

Traffic shall not travel on fresh mix until rolling and blotting has been completed. All traffic control shall be in accordance with the FDOT Roadway Design Standards, most current edition and TP-102 (MOT). All associated devices shall be checked daily or more frequently as needed throughout the project for compliance. Where adjustments or corrections are needed, prompt revisions shall be made.

**Method of Measurement:**

If a pay item is listed on the Bid Form for work required in this Technical Provision, the quantity to be paid shall be as specified in the Bid Form including all items of work described herein. Any item necessary for Microsurfacing, and not specifically listed in another item in the Bid Form, shall be included in this item.

**Basis of Payment:**

The quantities to be paid for under this Technical Provision shall be included in the Square Yard price for Microsurfacing (Single application), Microsurfacing (Double application), Microsurfacing (Heavy single application), Microsurfacing (Heavy double application) and the per Ton price for Microsurfacing (Rut filling) or as listed in the Bid Form. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Microsurfacing, including all items of work described herein. No additional payment will be provided for any item necessary for the completion of this contract as detailed in the specifications.

**Warranty:**

The Contractor shall provide the City upon final acceptance of the Microsurfacing work, a warranty period of three years which shall include all labor, materials, hauling, traffic control and striping to repair the defective areas. Defective areas shall include debonding/delamination, bleeding, excessive raveling and aggregate loss exposing the old roadway surface. The Contractor shall perform all warranty work at no cost to the City.