

AWARD INFORMATION FOR BID # 15-601 Pavement Management Alternative Methods

| | | |
|-------------------------|--|---|
| AWARD DATE: | October 5, 2015 | October 5, 2015 |
| AWARDED TO: | Pavement Technology Inc. | Asphalt Paving System, Inc, |
| ADDRESS | 24144 Detroit Road Westlake, OH 44145 | 9021 Wire Road Zephyrhills, FL 33540 |
| PHONE NUMBER | 440-892-1895 | 813-788-0010 |
| TOLL FREE NUMBER | 800-333-6309 | |
| CONTACT: | John J. Schlegel | Robert Capoferri |
| EMAIL ADDRESS: | jschlegel@pavetechinc.com | ponderosamark@hotmail.com |
| ITEMS: | PC-002 | PC-003 ALT, PC-004 ALT, PC-005 ALT PC-006 ALT, PC-007 ALT, PC-008 ALT, PC-009 ALT |
| CONTRACT PERIOD: | October 5, 2015 through October 4, 2018 | October 5, 2015 through October 4, 2018 |
| MASTER PO# | 21600219 | 21600220 |
| | | |

| PC-002 ASPHALT REJUVENATOR | | | Pavement Tech | Asphalt Paving Systems |
|----------------------------|---|---------|---------------|------------------------|
| Item No. | Description | Unit | Unit Price | |
| PC-002 | ASPHALT REJUVENATOR | | | |
| PC-002-1 | ASPHALT REJUVENATOR PER SPECIFICATION | SY | \$0.78 | No Bid |
| 902-2 | SILICA SAND | SY | \$0.02 | No Bid |
| 101-1 | MOBILIZATION | | | |
| | Work Order Total \$0.00 - \$50,000 | LS | \$1,500.00 | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | \$1,200.00 | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | \$1,000.00 | No Bid |
| | Work Order Total Over \$500,000 | LS | \$500.00 | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | \$800.00 | No Bid |

BASIS FOR AWARD TOTAL BID: \$5,000.80

| ADDITIONAL PRICING FOR INFORMATION | | | | |
|------------------------------------|---|------|------------|--------|
| Item No. | Description | Unit | Unit Price | |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | \$1.10 | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | \$5.50 | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | \$5.50 | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | \$5.50 | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | |
| 11-111 | Standard, White, Solid 6" | NM | \$1,742.00 | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | \$0.55 | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | \$1.65 | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | \$2.47 | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | \$3.30 | No Bid |
| 11-131 | Standard, White Skip 6" | GM | \$580.00 | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | \$0.55 | No Bid |
| 11-160 | Standard, White, Message | EA | \$55.00 | No Bid |
| 11-170 | Standard, White, Arrows | EA | \$27.50 | No Bid |
| 11-180 | Standard, White, Yield Line | LF | \$5.50 | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | \$1,742.00 | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | \$0.55 | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | \$1.65 | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | \$2.47 | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | \$3.30 | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | \$726.00 | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | \$0.55 | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | \$4,356.00 | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | \$1.32 | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | \$2.75 | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | \$4.12 | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | \$5.50 | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | \$1,234.00 | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | \$1.21 | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | \$209.00 | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | \$66.00 | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | \$8.80 | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | \$4,356.00 | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | \$1.21 | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | \$2.75 | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | \$4.12 | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | \$5.50 | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | \$1,234.00 | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | \$1.21 | No Bid |

PC-002-ALT. ASPHALT REJUVENATOR

| Item No. | Description | Unit | Unit Price | Pavement Tech | Asphalt Paving Systems |
|---------------|---|---------|------------|---------------|------------------------|
| PC-002 | ASPHALT REJUVENATOR | | | No Bid | No Bid |
| PC-002-2 | ASPHALT REJUVENATOR - ALTERNATE MATERIAL | SY | | No Bid | No Bid |
| 902-2 | SILICA SAND | SY | | No Bid | No Bid |
| 101-1 | MOBILIZATION | | | No Bid | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | | No Bid | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | | No Bid | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | | No Bid | No Bid |
| | Work Order Total Over \$500,000 | LS | | No Bid | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | No Bid | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | | No Bid | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | No Bid | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | | No Bid | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | | No Bid | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | | No Bid | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | | No Bid | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | No Bid | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | | No Bid | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | | No Bid | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | | No Bid | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | | No Bid | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | | No Bid | No Bid |
| 11-131 | Standard, White Skip 6" | GM | | No Bid | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | | No Bid | No Bid |
| 11-160 | Standard, White, Message | EA | | No Bid | No Bid |
| 11-170 | Standard, White, Arrows | EA | | No Bid | No Bid |
| 11-180 | Standard, White, Yield Line | LF | | No Bid | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | | No Bid | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | | No Bid | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | | No Bid | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | | No Bid | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | | No Bid | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | | No Bid | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | | No Bid | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | No Bid | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | | No Bid | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | | No Bid | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | | No Bid | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | | No Bid | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | | No Bid | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | | No Bid | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | | No Bid | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | | No Bid | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | | No Bid | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | | No Bid | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | | No Bid | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | | No Bid | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | | No Bid | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | | No Bid | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | | No Bid | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | | No Bid | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | | No Bid | No Bid |

BASIS FOR AWARD TOTAL BID: \$0.00

Company Name _____

PC-003 CRACK SEALING

| | | | | Asphalt Paving Systems | Pavement Tech |
|---|---|---------|------------------------------|------------------------------|---------------|
| Item No. | Description | Unit | Unit Price | | |
| PC-003 | CRACK SEALING | | | | No Bid |
| | 0 - 500 | GAL | 20 | | No Bid |
| | 501 - 1,000 | GAL | 18 | | No Bid |
| | 1,001 - 5,000 | GAL | 16 | | No Bid |
| | 5,001 AND OVER | GAL | 15 | | No Bid |
| 101-1 | MOBILIZATION | | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 500 | | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 200 | | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 200 | | No Bid |
| | Work Order Total Over \$500,000 | LS | 200 | | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | | No Bid |
| BASIS FOR AWARD | | | TOTAL BID: \$2,419.00 | | |
| ADDITIONAL PRICING FOR INFORMATION | | | | | No Bid |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | | | No Bid |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 | | No Bid |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 | | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |

PC-004 CHIP SEAL

| Item No. | Description | Unit | Asphalt Paving Systems Unit Price | Pavement Tech No Bid |
|---|---|---------|--------------------------------------|-------------------------|
| PC-004-1 | CHIP SEAL (SINGLE APPLICATION) | | | No Bid |
| | 0 - 25,000 | SY | 2.8 | No Bid |
| | 25,001 - 50,000 | SY | 2.39 | No Bid |
| | 50,001 AND OVER | SY | 2.26 | No Bid |
| PC-004-2 | CHIP SEAL (DOUBLE APPLICATION) | | | No Bid |
| | 0 - 25,000 | SY | 4.15 | No Bid |
| | 25,001 - 50,000 | SY | 3.88 | No Bid |
| | 50,001 AND OVER | SY | 3.78 | No Bid |
| | 50,001 AND OVER | SY | 3.78 | No Bid |
| 902-2 | Silica Sand | SY | 0.15 | No Bid |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | | No Bid |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 | No Bid |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 101-1 | MOBILIZATION | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 2500 | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 2500 | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 2500 | No Bid |
| | Work Order Total Over \$500,000 | LS | 2500 | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | No Bid |
| BASIS FOR AWARD | | | TOTAL BID: \$26,296.19 | |
| ADDITIONAL PRICING FOR INFORMATION | | | | No Bid |
| SHOULDER AND ROADSIDE | | | | No Bid |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | No Bid |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | No Bid |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | No Bid |
| 577-70 | SHOULDER REWORK | SY | 1.75 | No Bid |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | No Bid |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | No Bid |

PC-005 MICRO-SURFACING

| Item No. | Description | Unit | Unit Price | Asphalt Paving Systems | Pavement Tech |
|---|---|---------|------------|------------------------|---------------|
| PC-003 | CRACK SEALING | | | | No Bid |
| | 0 - 500 | GAL | 20 | | No Bid |
| | 501 - 1,000 | GAL | 18 | | No Bid |
| | 1,001 - 5,000 | GAL | 16 | | No Bid |
| | 5,001 AND OVER | GAL | 15 | | No Bid |
| PC-005 | MICRO-SURFACING | | | | No Bid |
| PC-005-1 | SINGLE MICRO | SY | 2.25 | | No Bid |
| PC-005-2 | DOUBLE MICRO | SY | 3.45 | | No Bid |
| PC-005-3 | RUT FILLING | TON | 150 | | No Bid |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | | | No Bid |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 | | No Bid |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 | | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |
| 101-1 | MOBILIZATION | | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 1500 | | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 1500 | | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 1500 | | No Bid |
| | Work Order Total Over \$500,000 | LS | 1500 | | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | | No Bid |
| BASIS FOR AWARD TOTAL BID: \$22,497.70 | | | | | |
| ADDITIONAL PRICING FOR INFORMATION | | | | | No Bid |
| | SHOULDER AND ROADSIDE | | | | No Bid |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | | No Bid |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | | No Bid |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | | No Bid |
| 577-70 | SHOULDER REWORK | SY | 1.75 | | No Bid |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | | No Bid |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | | No Bid |

PC-006 SCRUB SEAL

| Item No. | Description | Unit | Unit Price | Asphalt Paving Systems | Pavement Tech |
|---|---|---------|-------------------------------|------------------------|---------------|
| PC-006 | SCRUB SEAL | | | | No Bid |
| | 0 - 25,000 | SY | 3.65 | | No Bid |
| | 25,001 - 50,000 | SY | 3.25 | | No Bid |
| | 50,001 AND OVER | SY | 3.15 | | No Bid |
| PC-009 | FOG SEAL | | | | No Bid |
| | 0 - 25,000 | SY | 0.55 | | No Bid |
| | 25,001 - 50,000 | SY | 0.4 | | No Bid |
| | 50,001 AND OVER | SY | 0.35 | | No Bid |
| 902-2 | Silica Sand | SY | 0.15 | | No Bid |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | | | No Bid |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 | | No Bid |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 | | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | | No Bid |
| 101-1 | MOBILIZATION | | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 2500 | | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 2500 | | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 2500 | | No Bid |
| | Work Order Total Over \$500,000 | LS | 2500 | | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | | No Bid |
| BASIS FOR AWARD | | | TOTAL BID: \$26,284.50 | | |
| ADDITIONAL PRICING FOR INFORMATION | | | | | No Bid |
| SHOULDER AND ROADSIDE | | | | | No Bid |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | | No Bid |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | | No Bid |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | | No Bid |
| 577-70 | SHOULDER REWORK | SY | 1.75 | | No Bid |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | | No Bid |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | | No Bid |

PC-007 COLD-IN-PLACE RECYCLING (CIP)

| | | | Asphalt Paving Systems | Pavement Tech |
|-----------------|---|-------------|---------------------------------------|--------------------------|
| Item No. | Description | Unit | Unit Price | No Bid |
| PC-001 | Milling from 0 to 1,000 Square Yards | | | No Bid |
| PC-001-1 | 0" - 1" | Sq Yd | 6 | No Bid |
| PC-001-2 | 1.01" - 2" | Sq Yd | 8 | No Bid |
| PC-001-3 | 2.01" - 3" | Sq Yd | 9 | No Bid |
| PC-001-4 | 3.01" -4" | Sq Yd | 10 | No Bid |
| PC-001-5 | greater than 4" | Sq Yd | 11 | No Bid |
| | Milling from 1,001 to 5,000 Square Yards | | | No Bid |
| PC-001-6 | 0" - 1" | Sq Yd | 4.75 | No Bid |
| PC-001-7 | 1.01" - 2" | Sq Yd | 5.5 | No Bid |
| PC-001-8 | 2.01" - 3" | Sq Yd | 6.25 | No Bid |
| PC-001-9 | 3.01" -4" | Sq Yd | 6.5 | No Bid |
| PC-001-10 | greater than 4" | Sq Yd | 6.75 | No Bid |
| | Milling from 5,001 to 25,000 Square Yards | | | No Bid |
| PC-001-11 | 0" - 1" | Sq Yd | 2.5 | No Bid |
| PC-001-12 | 1.01" - 2" | Sq Yd | 3 | No Bid |
| PC-001-13 | 2.01" - 3" | Sq Yd | 3.5 | No Bid |
| PC-001-14 | 3.01" -4" | Sq Yd | 4 | No Bid |
| PC-001-15 | greater than 4" | Sq Yd | 4.5 | No Bid |
| | Milling over 25,000 Square Yards | | | No Bid |
| PC-001-16 | 0" - 1" | Sq Yd | 1.75 | No Bid |
| PC-001-17 | 1.01" - 2" | Sq Yd | 2.25 | No Bid |
| PC-001-18 | 2.01" - 3" | Sq Yd | 2.75 | No Bid |
| PC-001-19 | 3.01" -4" | Sq Yd | 3.25 | No Bid |
| PC-001-20 | greater than 4" | Sq Yd | 3.75 | No Bid |
| 334 | Asphalt Types from 0 to 100 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 109 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 107 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 120 | No Bid |
| 334 | Asphalt Types from 101 to 1,000 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 99 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 97 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 110 | No Bid |
| 334 | Asphalt Types over 1,001 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 94 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 92 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 105 | No Bid |
| PC-007 | Cold-in-Place Recycling (CIP) | | | No Bid |
| PC-007-1 | Excavation for Widening or Unsuitable Material | CY | 25 | No Bid |
| PC-007-2 | Added RAP or Aggregate | Ton | 18 | No Bid |
| | CIP from 0 to 25,000 Square Yards | | | No Bid |
| PC-007-3 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 7.25 | No Bid |
| PC-007-4 | Asphalt Emulsion | Gal | 2.45 | No Bid |
| | CIP from 25,001 to 50,000 Square Yards | | | No Bid |
| PC-007-5 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 5.75 | No Bid |
| PC-007-6 | Asphalt Emulsion | Gal | 2.45 | No Bid |
| | CIP over 50,000 Square Yards | | | No Bid |
| PC-007-7 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 4.95 | No Bid |
| PC-007-8 | Asphalt Emulsion | Gal | 2.45 | No Bid |
| | SHOULDER AND ROADSIDE | | | No Bid |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | No Bid |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | No Bid |

PC-007 COLD-IN-PLACE RECYCLING (CIP)

| Item No. | Description | Unit | Unit Price | No Bid |
|---------------|---|---------|------------|--------|
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | No Bid |
| 577-70 | SHOULDER REWORK | SY | 1.75 | No Bid |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | No Bid |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 101-1 | MOBILIZATION | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 7000 | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 7000 | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 7000 | No Bid |
| | Work Order Total Over \$500,000 | LS | 7000 | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | No Bid |

BASIS FOR AWARD TOTAL BID: \$45,587.35

PC-008 FULL DEPTH RECLAMATION (FDR)

| | | | Asphalt Paving Systems | Pavement Tech |
|-----------------|--|-------------|---------------------------------------|------------------|
| Item No. | Description | Unit | Unit Price | No Bid |
| PC-001 | Milling from 0 to 1,000 Square Yards | | | No Bid |
| PC-001-1 | 0" - 1" | Sq Yd | 6 | No Bid |
| PC-001-2 | 1.01" - 2" | Sq Yd | 8 | No Bid |
| PC-001-3 | 2.01" - 3" | Sq Yd | 9 | No Bid |
| PC-001-4 | 3.01" -4" | Sq Yd | 10 | No Bid |
| PC-001-5 | greater than 4" | Sq Yd | 11 | No Bid |
| | Milling from 1,001 to 5,000 Square Yards | | | No Bid |
| PC-001-6 | 0" - 1" | Sq Yd | 4.75 | No Bid |
| PC-001-7 | 1.01" - 2" | Sq Yd | 5.5 | No Bid |
| PC-001-8 | 2.01" - 3" | Sq Yd | 6.25 | No Bid |
| PC-001-9 | 3.01" -4" | Sq Yd | 6.5 | No Bid |
| PC-001-10 | greater than 4" | Sq Yd | 6.75 | No Bid |
| | Milling from 5,001 to 25,000 Square Yards | | | No Bid |
| PC-001-11 | 0" - 1" | Sq Yd | 2.5 | No Bid |
| PC-001-12 | 1.01" - 2" | Sq Yd | 3 | No Bid |
| PC-001-13 | 2.01" - 3" | Sq Yd | 3.5 | No Bid |
| PC-001-14 | 3.01" -4" | Sq Yd | 4 | No Bid |
| PC-001-15 | greater than 4" | Sq Yd | 4.5 | No Bid |
| | Milling over 25,000 Square Yards | | | No Bid |
| PC-001-16 | 0" - 1" | Sq Yd | 1.75 | No Bid |
| PC-001-17 | 1.01" - 2" | Sq Yd | 2.25 | No Bid |
| PC-001-18 | 2.01" - 3" | Sq Yd | 2.75 | No Bid |
| PC-001-19 | 3.01" -4" | Sq Yd | 3.25 | No Bid |
| PC-001-20 | greater than 4" | Sq Yd | 3.75 | No Bid |
| 334 | Asphalt Types from 0 to 100 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 109 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 107 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 120 | No Bid |
| 334 | Asphalt Types from 101 to 1,000 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 99 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 97 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 110 | No Bid |
| 334 | Asphalt Types over 1,001 Tons | | | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 94 | No Bid |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 92 | No Bid |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 105 | No Bid |
| PC-008 | Full Depth Reclamation (FDR) | | | No Bid |
| PC-008-1 | Excavation for Widening or Unsuitable Material | CY | 25 | No Bid |
| PC-008-2 | Added RAP or Aggregate | Ton | 18 | No Bid |
| | Full Depth Reclamation (FDR) from 0 to 25,000 Square Yards | | | No Bid |
| PC-008-3 | Pulverization | Sq Yd | 7.1 | No Bid |
| PC-008-4 | Cement - Cement Treatment | Ton | 145 | No Bid |
| PC-008-5 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 | No Bid |
| PC-008-6 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 | No Bid |
| | Full Depth Reclamation (FDR) from 25,001 to 50,000 Square Yards | | | No Bid |
| PC-008-7 | Pulverization | Sq Yd | 5.5 | No Bid |
| PC-008-8 | Cement - Cement Treatment | Ton | 145 | No Bid |
| PC-008-9 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 | No Bid |
| PC-008-10 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 | No Bid |
| | Full Depth Reclamation (FDR) over 50,000 Square Yards | | | No Bid |
| PC-008-11 | Pulverization | Sq Yd | 4.5 | No Bid |
| PC-008-12 | Cement - Cement Treatment | Ton | 145 | No Bid |
| PC-008-13 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 | No Bid |
| PC-008-14 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 | No Bid |
| | SHOULDER AND ROADSIDE | | | No Bid |

PC-008 FULL DEPTH RECLAMATION (FDR)

| Item No. | Description | Unit | Unit Price | No Bid |
|---------------|---|---------|------------|--------|
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | No Bid |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | No Bid |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | No Bid |
| 577-70 | SHOULDER REWORK | SY | 1.75 | No Bid |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | No Bid |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | No Bid |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | No Bid |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | No Bid |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | No Bid |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | No Bid |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | No Bid |
| 710 | PAINTED PAVEMENT MARKINGS | | | No Bid |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | No Bid |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | No Bid |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | No Bid |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | No Bid |
| 11-125 | Standard, White, Solid 24" | LF | 3 | No Bid |
| 11-131 | Standard, White Skip 6" | GM | 530 | No Bid |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 11-160 | Standard, White, Message | EA | 50 | No Bid |
| 11-170 | Standard, White, Arrows | EA | 25 | No Bid |
| 11-180 | Standard, White, Yield Line | LF | 5 | No Bid |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | No Bid |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | No Bid |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | No Bid |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | No Bid |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | No Bid |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | No Bid |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid |
| 711 | Thermoplastic Pavement Markings (711) | | | No Bid |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | No Bid |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | No Bid |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | No Bid |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | No Bid |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | No Bid |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | No Bid |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | No Bid |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | No Bid |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | No Bid |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | No Bid |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | No Bid |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | No Bid |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | No Bid |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | No Bid |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | No Bid |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid |
| 101-1 | MOBILIZATION | | | No Bid |
| | Work Order Total \$0.00 - \$50,000 | LS | 7000 | No Bid |
| | Work Order Total \$50,001 - \$100,000 | LS | 7000 | No Bid |
| | Work Order Total \$100,001 - \$500,000 | LS | 7000 | No Bid |
| | Work Order Total Over \$500,000 | LS | 7000 | No Bid |
| 102-1 | Maintenance of Traffic (MOT) | | | No Bid |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | No Bid |

BASIS FOR AWARD TOTAL BID: \$46,039.50

PC-009 FOG SEAL

| | | | | Asphalt Paving Systems | Pavement Tech |
|---|---|---------|------------|-------------------------------|------------------|
| Item No. | Description | Unit | Unit Price | No Bid | |
| PC-009 | FOG SEAL | | | No Bid | |
| | 0 - 25,000 | SY | 0.55 | No Bid | |
| | 25,001 - 50,000 | SY | 0.4 | No Bid | |
| | 50,001 AND OVER | SY | 0.35 | No Bid | |
| 902-2 | Silica Sand | SY | 0.15 | No Bid | |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | | No Bid | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 | No Bid | |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 | No Bid | |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | | No Bid | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 | No Bid | |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 | No Bid | |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 | No Bid | |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 | No Bid | |
| 710 | PAINTED PAVEMENT MARKINGS | | | No Bid | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 | No Bid | |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 | No Bid | |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 | No Bid | |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 | No Bid | |
| 11-125 | Standard, White, Solid 24" | LF | 3 | No Bid | |
| 11-131 | Standard, White Skip 6" | GM | 530 | No Bid | |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid | |
| 11-160 | Standard, White, Message | EA | 50 | No Bid | |
| 11-170 | Standard, White, Arrows | EA | 25 | No Bid | |
| 11-180 | Standard, White, Yield Line | LF | 5 | No Bid | |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 | No Bid | |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 | No Bid | |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 | No Bid | |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 | No Bid | |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 | No Bid | |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 | No Bid | |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 | No Bid | |
| 711 | Thermoplastic Pavement Markings (711) | | | No Bid | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 | No Bid | |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 | No Bid | |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 | No Bid | |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 | No Bid | |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 | No Bid | |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 | No Bid | |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid | |
| 11-160 | Thermo, Standard, White, Message | EA | 190 | No Bid | |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 | No Bid | |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 | No Bid | |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 | No Bid | |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 | No Bid | |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 | No Bid | |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 | No Bid | |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 | No Bid | |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 | No Bid | |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 | No Bid | |
| 101-1 | MOBILIZATION | | | No Bid | |
| | Work Order Total \$0.00 - \$50,000 | LS | 200 | No Bid | |
| | Work Order Total \$50,001 - \$100,000 | LS | 200 | No Bid | |
| | Work Order Total \$100,001 - \$500,000 | LS | 200 | No Bid | |
| | Work Order Total Over \$500,000 | LS | 200 | No Bid | |
| | | | | No Bid | |
| 102-1 | Maintenance of Traffic (MOT) | | | No Bid | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 | No Bid | |
| BASIS FOR AWARD | | | | TOTAL BID: \$17,074.45 | |
| ADDITIONAL PRICING FOR INFORMATION | | | | | No Bid |
| | SHOULDER AND ROADSIDE | | | No Bid | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 | No Bid | |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 | No Bid | |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 | No Bid | |
| 577-70 | SHOULDER REWORK | SY | 1.75 | No Bid | |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 | No Bid | |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 | No Bid | |

**SIGNATURE ACKNOWLEDGEMENT
(SUBMITTAL PAGE)**

To Polk County, a Political Subdivision of the State of Florida

Date: 9/14/2015

I certify that this bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same construction, service or material and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I have read and understand the bidding documents. I have completed and submitted all bid submittal forms, and I am authorized to sign this bid for the bidder. In submitting a bid to the County, the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the County all rights, titles and interests in and to all causes of action it may now or hereafter acquire under the Anti-Trust Laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the County. At the County's discretion, such assignment shall be made and become effective at the time the County tenders final payment to the bidder.

Pavement Technology, Inc.

VENDOR NAME

24144 Detroit Road

MAILING ADDRESS

Westlake, Ohio 44145

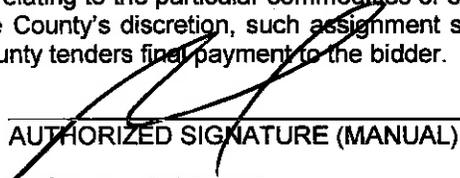
CITY, STATE AND ZIP CODE

(440) 892-1895

(AREA CODE) TELEPHONE NUMBER

jschlegel@pavetechinc.com

E-MAIL ADDRESS


AUTHORIZED SIGNATURE (MANUAL)

John J. Schlegel

NAME (TYPED OR PRINTED)

Vice President

TITLE (TYPED OR PRINTED)

(800) 333-6309

TOLL FREE NUMBER

This bid may be used by any other Government Agency. YES [] NO [] N/A

**BID SHEET
PC-002 ASPHALT REJUVENATOR**

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| PC-002 | ASPHALT REJUVENATOR | | |
| PC-002-1 | ASPHALT REJUVENATOR PER SPECIFICATION | SY | \$0.78 |
| 902-2 | SILICA SAND | SY | \$0.02 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | \$1,500.00 |
| | Work Order Total \$50,001 - \$100,000 | LS | \$1,200.00 |
| | Work Order Total \$100,001 - \$500,000 | LS | \$1,000.00 |
| | Work Order Total Over \$500,000 | LS | \$500.00 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | \$800.00 |

BASIS FOR AWARD TOTAL BID: \$5,000.80

| ADDITIONAL PRICING FOR INFORMATION | | | |
|------------------------------------|---|----|------------|
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | \$1.10 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | \$5.50 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | \$5.50 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | \$5.50 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | \$1,742.00 |
| 11-122 | Standard, White, Solid 8" | LF | \$0.55 |
| 11-123 | Standard, White, Solid 12" | LF | \$1.65 |
| 11-124 | Standard, White, Solid 18" | LF | \$2.47 |
| 11-125 | Standard, White, Solid 24" | LF | \$3.30 |
| 11-131 | Standard, White Skip 6" | GM | \$580.00 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | \$0.55 |
| 11-160 | Standard, White, Message | EA | \$55.00 |
| 11-170 | Standard, White, Arrows | EA | \$27.50 |
| 11-180 | Standard, White, Yield Line | LF | \$5.50 |
| 11-211 | Standard, Yellow, Solid 6" | NM | \$1,742.00 |
| 11-222 | Standard, Yellow, Solid 8" | LF | \$0.55 |
| 11-223 | Standard, Yellow, Solid 12" | LF | \$1.65 |
| 11-224 | Standard, Yellow, Solid 18" | LF | \$2.47 |
| 11-225 | Standard, Yellow, Solid 24" | LF | \$3.30 |
| 11-231 | Standard, Yellow, Skip 6" | GM | \$726.00 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | \$0.55 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | \$4,356.00 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | \$1.32 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | \$2.75 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | \$4.12 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | \$5.50 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | \$1,234.00 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | \$1.21 |
| 11-160 | Thermo, Standard, White, Message | EA | \$209.00 |
| 11-170 | Thermo, Standard, White, Arrows | EA | \$66.00 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | \$8.80 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | \$4,356.00 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | \$1.21 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | \$2.75 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | \$4.12 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | \$5.50 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | \$1,234.00 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | \$1.21 |

PAVEMENT TECHNOLOGY, INC.

Company Name

**SIGNATURE ACKNOWLEDGEMENT
(SUBMITTAL PAGE)**

To Polk County, a Political Subdivision of the State of Florida

Date: 9/16/15

I certify that this bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same construction, service or material and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I have read and understand the bidding documents. I have completed and submitted all bid submittal forms, and I am authorized to sign this bid for the bidder. In submitting a bid to the County, the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the County all rights, titles and interests in and to all causes of action it may now or hereafter acquire under the Anti-Trust Laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the County. At the County's discretion, such assignment shall be made and become effective at the time the County tenders final payment to the bidder.

ASPHALT PAVING SYSTEMS, INC
VENDOR NAME


AUTHORIZED SIGNATURE (MANUAL)

9021 WIRE ROAD
MAILING ADDRESS

ROBERT CAPOFERRI
NAME (TYPED OR PRINTED)

ZEPHYRHILLS, FL 33540
CITY, STATE AND ZIP CODE

PRESIDENT
TITLE (TYPED OR PRINTED)

(813) 788-0010
(AREA CODE) TELEPHONE NUMBER

N/A
TOLL FREE NUMBER

ponderosamark@hotmail.com
E-MAIL ADDRESS

This bid may be used by any other Government Agency. YES [] NO [] N/A

**BID SHEET
PC-003 CRACK SEALING**

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| PC-003 | CRACK SEALING | | |
| | 0 - 500 | GAL | 20 |
| | 501 - 1,000 | GAL | 18 |
| | 1,001 - 5,000 | GAL | 16 |
| | 5,001 AND OVER | GAL | 15 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 500 |
| | Work Order Total \$50,001 - \$100,000 | LS | 200 |
| | Work Order Total \$100,001 - \$500,000 | LS | 200 |
| | Work Order Total Over \$500,000 | LS | 200 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$2,419.00

| ADDITIONAL PRICING FOR INFORMATION | | | |
|---|---|----|------|
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |

ASPHALT PAVING SYSTEMS, INC

Company Name

BID SHEET
PC-004 CHIP SEAL

| Item No. | Description | Unit | Unit Price |
|-----------------|---|---------|------------|
| PC-004-1 | CHIP SEAL (SINGLE APPLICATION) | | |
| | 0 - 25,000 | SY | 2.8 |
| | 25,001 - 50,000 | SY | 2.39 |
| | 50,001 AND OVER | SY | 2.26 |
| PC-004-2 | CHIP SEAL (DOUBLE APPLICATION) | | |
| | 0 - 25,000 | SY | 4.15 |
| | 25,001 - 50,000 | SY | 3.88 |
| | 50,001 AND OVER | SY | 3.78 |
| | 50,001 AND OVER | SY | 3.78 |
| 902-2 | Silica Sand | SY | 0.15 |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 2500 |
| | Work Order Total \$50,001 - \$100,000 | LS | 2500 |
| | Work Order Total \$100,001 - \$500,000 | LS | 2500 |
| | Work Order Total Over \$500,000 | LS | 2500 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$26,296.19

| ADDITIONAL PRICING FOR INFORMATION | | | |
|------------------------------------|--|----|------|
| SHOULDER AND ROADSIDE | | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |

ASPHALT PAVING SYSTEMS, INC
Company Name

**BID SHEET
PC-005 MICRO-SURFACING**

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| PC-003 | CRACK SEALING | | |
| | 0 - 500 | GAL | 20 |
| | 501 - 1,000 | GAL | 18 |
| | 1,001 - 5,000 | GAL | 16 |
| | 5,001 AND OVER | GAL | 15 |
| PC-005 | MICRO-SURFACING | | |
| PC-005-1 | SINGLE MICRO | SY | 2.25 |
| PC-005-2 | DOUBLE MICRO | SY | 3.45 |
| PC-005-3 | RUT FILLING | TON | 150 |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 1500 |
| | Work Order Total \$50,001 - \$100,000 | LS | 1500 |
| | Work Order Total \$100,001 - \$500,000 | LS | 1500 |
| | Work Order Total Over \$500,000 | LS | 1500 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$22,497.70

| ADDITIONAL PRICING FOR INFORMATION | | | |
|------------------------------------|--|----|------|
| SHOULDER AND ROADSIDE | | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |

Company Name ASPHALT PAVING SYSTEMS, INC

**BID SHEET
PC-006 SCRUB SEAL**

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| PC-006 | SCRUB SEAL | | |
| | 0 - 25,000 | SY | 3.65 |
| | 25,001 - 50,000 | SY | 3.25 |
| | 50,001 AND OVER | SY | 3.15 |
| PC-009 | FOG SEAL | | |
| | 0 - 25,000 | SY | 0.55 |
| | 25,001 - 50,000 | SY | 0.4 |
| | 50,001 AND OVER | SY | 0.35 |
| 902-2 | Silica Sand | SY | 0.15 |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 2500 |
| | Work Order Total \$50,001 - \$100,000 | LS | 2500 |
| | Work Order Total \$100,001 - \$500,000 | LS | 2500 |
| | Work Order Total Over \$500,000 | LS | 2500 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$26,284.50

| ADDITIONAL PRICING FOR INFORMATION | | | |
|------------------------------------|--|----|------|
| SHOULDER AND ROADSIDE | | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |

ASPHALT PAVING SYSTEMS, INC
Company Name

BID SHEET
PC-007 COLD-IN-PLACE RECYCLING (CIP)

| Item No. | Description | Unit | Unit Price |
|---------------|--|-------|------------|
| PC-001 | Milling from 0 to 1,000 Square Yards | | |
| PC-001-1 | 0" - 1" | Sq Yd | 6 |
| PC-001-2 | 1.01" - 2" | Sq Yd | 8 |
| PC-001-3 | 2.01" - 3" | Sq Yd | 9 |
| PC-001-4 | 3.01" -4" | Sq Yd | 10 |
| PC-001-5 | greater than 4" | Sq Yd | 11 |
| | Milling from 1,001 to 5,000 Square Yards | | |
| PC-001-6 | 0" - 1" | Sq Yd | 4.75 |
| PC-001-7 | 1.01" - 2" | Sq Yd | 5.5 |
| PC-001-8 | 2.01" - 3" | Sq Yd | 6.25 |
| PC-001-9 | 3.01" -4" | Sq Yd | 6.5 |
| PC-001-10 | greater than 4" | Sq Yd | 6.75 |
| | Milling from 5,001 to 25,000 Square Yards | | |
| PC-001-11 | 0" - 1" | Sq Yd | 2.5 |
| PC-001-12 | 1.01" - 2" | Sq Yd | 3 |
| PC-001-13 | 2.01" - 3" | Sq Yd | 3.5 |
| PC-001-14 | 3.01" -4" | Sq Yd | 4 |
| PC-001-15 | greater than 4" | Sq Yd | 4.5 |
| | Milling over 25,000 Square Yards | | |
| PC-001-16 | 0" - 1" | Sq Yd | 1.75 |
| PC-001-17 | 1.01" - 2" | Sq Yd | 2.25 |
| PC-001-18 | 2.01" - 3" | Sq Yd | 2.75 |
| PC-001-19 | 3.01" -4" | Sq Yd | 3.25 |
| PC-001-20 | greater than 4" | Sq Yd | 3.75 |
| 334 | Asphalt Types from 0 to 100 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 109 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 107 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 120 |
| 334 | Asphalt Types from 101 to 1,000 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 99 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 97 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 110 |
| 334 | Asphalt Types over 1,001 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 94 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 92 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 105 |
| PC-007 | Cold-in-Place Recycling (CIP) | | |
| PC-007-1 | Excavation for Widening or Unsuitable Material | CY | 25 |
| PC-007-2 | Added RAP or Aggregate | Ton | 18 |
| | CIP from 0 to 25,000 Square Yards | | |
| PC-007-3 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 7.25 |
| PC-007-4 | Asphalt Emulsion | Gal | 2.45 |
| | CIP from 25,001 to 50,000 Square Yards | | |
| PC-007-5 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 5.75 |
| PC-007-6 | Asphalt Emulsion | Gal | 2.45 |
| | CIP over 50,000 Square Yards | | |
| PC-007-7 | Cold-in-Place Recycling (CIP)Bituminous Paving | Sq Yd | 4.95 |
| PC-007-8 | Asphalt Emulsion | Gal | 2.45 |
| | SHOULDER AND ROADSIDE | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |

BID SHEET
PC-007 COLD-IN-PLACE RECYCLING (CIP)

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 7000 |
| | Work Order Total \$50,001 - \$100,000 | LS | 7000 |
| | Work Order Total \$100,001 - \$500,000 | LS | 7000 |
| | Work Order Total Over \$500,000 | LS | 7000 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$45,587.35

ASPHALT PAVING SYSTEMS, INC

 Company Name

BID SHEET
PC-008 FULL DEPTH RECLAMATION (FDR)

| Item No. | Description | Unit | Unit Price |
|---------------|--|--------|------------|
| PC-001 | Milling from 0 to 1,000 Square Yards | | |
| PC-001-1 | 0" - 1" | Sq Yd | 6 |
| PC-001-2 | 1.01" - 2" | Sq Yd | 8 |
| PC-001-3 | 2.01" - 3" | Sq Yd | 9 |
| PC-001-4 | 3.01" - 4" | Sq Yd | 10 |
| PC-001-5 | greater than 4" | Sq Yd | 11 |
| | Milling from 1,001 to 5,000 Square Yards | | |
| PC-001-6 | 0" - 1" | Sq Yd | 4.75 |
| PC-001-7 | 1.01" - 2" | Sq Yd | 5.5 |
| PC-001-8 | 2.01" - 3" | Sq Yd | 6.25 |
| PC-001-9 | 3.01" - 4" | Sq Yd | 6.5 |
| PC-001-10 | greater than 4" | Sq Yd | 6.75 |
| | Milling from 5,001 to 25,000 Square Yards | | |
| PC-001-11 | 0" - 1" | Sq Yd | 2.5 |
| PC-001-12 | 1.01" - 2" | Sq Yd | 3 |
| PC-001-13 | 2.01" - 3" | Sq Yd | 3.5 |
| PC-001-14 | 3.01" - 4" | Sq Yd | 4 |
| PC-001-15 | greater than 4" | Sq Yd | 4.5 |
| | Milling over 25,000 Square Yards | | |
| PC-001-16 | 0" - 1" | Sq Yd | 1.75 |
| PC-001-17 | 1.01" - 2" | Sq Yd | 2.25 |
| PC-001-18 | 2.01" - 3" | Sq Yd | 2.75 |
| PC-001-19 | 3.01" - 4" | Sq Yd | 3.25 |
| PC-001-20 | greater than 4" | Sq Yd | 3.75 |
| 334 | Asphalt Types from 0 to 100 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 109 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 107 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 120 |
| 334 | Asphalt Types from 101 to 1,000 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 99 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 97 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 110 |
| 334 | Asphalt Types over 1,001 Tons | | |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 9.5) (PG 67-22) | Ton | 94 |
| 334-1 | Superpave Asphaltic Concrete (Traffic C, SP 12.5) (PG 67-22) | Ton | 92 |
| 337-1 | Superpave Asphaltic Concrete (Traffic C, FC-9.5) (PG 76-22) | Ton | 105 |
| PC-008 | Full Depth Reclamation (FDR) | | |
| PC-008-1 | Excavation for Widening or Unsuitable Material | CY | 25 |
| PC-008-2 | Added RAP or Aggregate | Ton | 18 |
| | Full Depth Reclamation (FDR) from 0 to 25,000 Square Yards | | |
| PC-008-3 | Pulverization | Sq Yd | 7.1 |
| PC-008-4 | Cement - Cement Treatment | Ton | 145 |
| PC-008-5 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 |
| PC-008-6 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 |
| | Full Depth Reclamation (FDR) from 25,001 to 50,000 Square Yards | | |
| PC-008-7 | Pulverization | Sq Yd | 5.5 |
| PC-008-8 | Cement - Cement Treatment | Ton | 145 |
| PC-008-9 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 |
| PC-008-10 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 |
| | Full Depth Reclamation (FDR) over 50,000 Square Yards | | |
| PC-008-11 | Pulverization | Sq Yd | 4.5 |
| PC-008-12 | Cement - Cement Treatment | Ton | 145 |
| PC-008-13 | Asphaltic Cement - Foamed Asphalt Base | Gallon | 6 |
| PC-008-14 | Asphaltic Emulsion - Emulsion Treated Base | Gallon | 2.45 |
| | SHOULDER AND ROADSIDE | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |

BID SHEET
PC-008 FULL DEPTH RECLAMATION (FDR)

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 7000 |
| | Work Order Total \$50,001 - \$100,000 | LS | 7000 |
| | Work Order Total \$100,001 - \$500,000 | LS | 7000 |
| | Work Order Total Over \$500,000 | LS | 7000 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$46,039.50

ASPHALT PAVING SYSTEMS, INC

Company Name

**BID SHEET
PC-009 FOG SEAL**

| Item No. | Description | Unit | Unit Price |
|---------------|---|---------|------------|
| PC-009 | FOG SEAL | | |
| | 0 - 25,000 | SY | 0.55 |
| | 25,001 - 50,000 | SY | 0.4 |
| | 50,001 AND OVER | SY | 0.35 |
| 902-2 | Silica Sand | SY | 0.15 |
| PC-011 | STRIPING AND PAVEMENT MARKING REMOVAL | | |
| PC-011-1 | REMOVAL BY WATER BLASTING | SF | 1 |
| PC-011-2 | REMOVAL BY GRINDING | SF | 0.5 |
| PC-012 | REFLECTIVE PAVEMENT MARKERS | | |
| PC-012-1 | REFLECTIVE PAVEMENT MARKERS (REMOVE) | EA | 1 |
| PC-012-2 | FURNISH/INSTALL BI-DIRECTIONAL YELLOW MARKER (A/A) | EA | 5 |
| PC-012-3 | FURNISH/INSTALL BI-DIRECTIONAL WHITE/RED MARKER (C/R) | EA | 5 |
| PC-012-4 | FURNISH/INSTALL MONO-DIRECTIONAL YELLOW MARKER (M/A) | EA | 5 |
| 710 | PAINTED PAVEMENT MARKINGS | | |
| 11-111 | Standard, White, Solid 6" | NM | 1585 |
| 11-122 | Standard, White, Solid 8" | LF | 0.5 |
| 11-123 | Standard, White, Solid 12" | LF | 1.5 |
| 11-124 | Standard, White, Solid 18" | LF | 2.25 |
| 11-125 | Standard, White, Solid 24" | LF | 3 |
| 11-131 | Standard, White Skip 6" | GM | 530 |
| 11-151 | Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 11-160 | Standard, White, Message | EA | 50 |
| 11-170 | Standard, White, Arrows | EA | 25 |
| 11-180 | Standard, White, Yield Line | LF | 5 |
| 11-211 | Standard, Yellow, Solid 6" | NM | 1585 |
| 11-222 | Standard, Yellow, Solid 8" | LF | 0.5 |
| 11-223 | Standard, Yellow, Solid 12" | LF | 1.5 |
| 11-224 | Standard, Yellow, Solid 18" | LF | 2.25 |
| 11-225 | Standard, Yellow, Solid 24" | LF | 3 |
| 11-231 | Standard, Yellow, Skip 6" | GM | 675 |
| 11-251 | Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 0.5 |
| 711 | Thermoplastic Pavement Markings (711) | | |
| 11-111 | Thermo, Standard, White, Solid 6" | NM | 4000 |
| 11-122 | Thermo, Standard, White, Solid 8" | LF | 1.2 |
| 11-123 | Thermo, Standard, White, Solid 12" | LF | 2.5 |
| 11-124 | Thermo, Standard, White, Solid 18" | LF | 3.75 |
| 11-125 | Thermo, Standard, White, Solid 24" | LF | 5 |
| 11-131 | Thermo, Standard, White Skip 6" | GM | 1125 |
| 11-151 | Thermo, Standard, White, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 11-160 | Thermo, Standard, White, Message | EA | 190 |
| 11-170 | Thermo, Standard, White, Arrows | EA | 60 |
| 11-180 | Thermo, Standard, White, Yield Line | LF | 8 |
| 11-211 | Thermo, Standard, Yellow, Solid 6" | NM | 4000 |
| 11-222 | Thermo, Standard, Yellow, Solid 8" | LF | 1.1 |
| 11-223 | Thermo, Standard, Yellow, Solid 12" | LF | 2.5 |
| 11-224 | Thermo, Standard, Yellow, Solid 18" | LF | 3.75 |
| 11-225 | Thermo, Standard, Yellow, Solid 24" | LF | 5 |
| 11-231 | Thermo, Standard, Yellow, Skip 6" | GM | 1125 |
| 11-251 | Thermo, Standard, Yellow, Dotted/Guideline 6-10 Gap, 6" | LF | 1.1 |
| 101-1 | MOBILIZATION | | |
| | Work Order Total \$0.00 - \$50,000 | LS | 200 |
| | Work Order Total \$50,001 - \$100,000 | LS | 200 |
| | Work Order Total \$100,001 - \$500,000 | LS | 200 |
| | Work Order Total Over \$500,000 | LS | 200 |
| 102-1 | Maintenance of Traffic (MOT) | | |
| | Standard Index 600 Series MOT for 2-Lane, 2-Way Closure | Per Day | 1250 |

BASIS FOR AWARD TOTAL BID: \$17,074.45

| ADDITIONAL PRICING FOR INFORMATION | | | |
|------------------------------------|--|----|------|
| | SHOULDER AND ROADSIDE | | |
| 570-1-1 | PERFORMANCE TURF - SEED AND MULCH | SY | 1.95 |
| 570-1-2A | PERFORMANCE TURF - SOD (ST. AUGUSTINE) | SY | 2.75 |
| 570-1-2B | PERFORMANCE TURF - SOD (BAHIA) | SY | 2.25 |
| 577-70 | SHOULDER REWORK | SY | 1.75 |
| 104-13-1 | SILT FENCE TYPE III | LF | 0.85 |
| 110-10 | MAILBOX (REMOVE AND REPLACE) | EA | 200 |

ASPHALT PAVING SYSTEMS, INC

Company Name

GENERAL CONDITIONS

1. Award will be made based on the lowest responsive bid per alternative method meeting specifications. Bidders are not required to bid on all alternative methods, but must bid on all items contained within each alternative method bid in order for their bid to be considered responsive. All bid items that are part of the basis of award should be bid at a fair and reasonable price; failure to do so may cause the bid to be non-responsive. The Procurement Director shall be the sole judge of what is fair and reasonable. The Procurement Director reserves the right to reject any or all bids and/or waive any minor irregularities in the bids received, whichever would be in the best interest of the County.
2. **PERFORMANCE OF WORK:** Portions of the work required under this bid may be performed by subcontractors. Should the successful vendor plan to use subcontractors from the beginning to perform the required work, the vendor must provide a list of subcontractors to the Procurement Division for approval prior to bid award. **Should the successful vendor require subcontractors to perform any work during the course of the work assigned under this bid, the vendor must also provide a list of subcontractors to the Procurement Division for approval.** The vendor shall be fully responsible for all acts and omissions of their subcontractors and of persons directly or indirectly employed by them and of persons for those acts any of them may be liable to the same extent as if they were employed by the vendor. All submittals required of the prime vendor shall also be required from the subcontractor. Any work performed by the successful vendor or sub-contracted out must meet all regulated deadlines.
3. The period of performance for this bid begins on the date of award through September 30, 2016. The bid will automatically renew for two (2) one (1) year periods, unless otherwise terminated in accordance with General Information Items #12 and #13.
4. All prices bid shall remain unchanged during the period of performance, as specified herein, and as may be adjusted in accordance with General Information Item # 19.
5. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/boccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.
6. Vendors must possess a Polk County Local Business Tax Receipt (f/k/a Business License) in order to do business with the County. A copy of such license must be provided to the Procurement Division before award is made to the successful vendor.
7. Upon execution of the bid, the County reserves the right to conduct an audit of the contractor's records pertaining to the project. The County or its representatives may conduct an audit, or audits, at any time prior to final payment, or thereafter. The County may also require submittal of the records from the contractor, the subcontractor, or both as the County deems necessary, records include all books of account, supporting documents, and papers pertaining to the cost of performance of the project work.

8. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/bocccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.

9. **Bidders are advised that in the interests of waste reduction and maximizing the potential for recycling, they are asked to abide by the following in preparing their bids:**
 - Return only the required bid submittal pages
 - Avoid comb, velo binding, and plastic binders
 - Avoid plastic dividers and/or plastic tabs
 - Print and/or copy double-sided to the extent feasible
 - Use at least 30% post-consumer recycled content paper to the extent practicable

SPECIAL CONDITIONS

1. **BIDDER QUALIFICATIONS:** Bidders should submit a list of three (3) asphalt maintenance projects for each alternative method bid upon, successfully completed within the last five (5) years in which the Contractor's portion of the work exceeded \$50,000.00. The projects must be for FDOT or for local government agencies. The list shall include the names of the projects, names of the governmental agencies, names of the Project Managers for the governmental agencies, phone numbers for the Project Managers, and the dollar amounts of the contracts.
2. The contractor(s) shall provide all services to properly complete the work described in the Bid document, including but not limited to all labor, materials, supervision, equipment, tools, transportation and supplies. The contractor(s) is required to have a qualified superintendent on the job site at all times. If multiple jobs are under construction concurrently, each job is required to have a qualified superintendent on site. If the County determines that a job site is not being adequately supervised, a deficiency letter will be issued to the contractor(s).
3. Except as amended in the Bid document or otherwise directed by the Director User Division, all work shall conform to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction; the Florida Department of Transportation Roadway and Traffic Design Standards; and the Manual of Uniform Traffic Control Devices, all current editions.
4. No work shall be performed under the provisions of this bid on any properties outside the limits of the project area without prior written permission of the lawful affected landowner. Any such permission shall be obtained by the contractor(s) and shall identify the provisions under which such work is to be performed and written permission obtained shall be provided to the County Project Manager prior to the associated work being performed. The contractor(s) shall not be compensated for any work outside the project area and shall hold the County harmless for all liabilities associated with said work outside the project area.
5. **DEFINITIONS:** The definitions as stated in Section 1-3 of the FDOT Specifications are modified as follows:
 - a. The Department or FDOT: Reference is to the County as the owner of the project.
 - b. Inspector: The person designated as an agent or representative of the County to perform construction inspection.
 - c. The Engineer: This term has the same meaning as "Polk County Project Manager" as defined in the bid document.
 - d. State Road: Any public roadway.
 - e. The Department's Acceptance Tests: Tests adopted by the County.
 - f. The District and/or Central Labs: The contractor's testing subcontractor, as authorized by the County.
6. **FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION**
 - a. The current Division II Construction Details and Division III Materials in the FDOT Standard Specifications for Road and Bridge Construction, including all revisions

current at the time of the bid, shall apply to this Bid except as modified by Special Provisions or Technical Specifications attached to Bid document.

- i. For Shoulder Rework, refer to Section 577-70 of the 2000 Edition of FDOT Standard Specifications for Road and Bridge Construction.
- b. If any conflicts exist between the specifications prescribed in the Bid document, the more stringent requirement shall apply.

7. PROJECT QUOTES AND WORK ORDERS

- a. This annual bid includes asphalt roadway treatments and/or recycling for multiple project work orders at various locations throughout Polk County, according to the requirements of the Bid document. The project work order locations may be anywhere within Polk County.
 - b. The County will perform a preliminary estimate for each project using the unit prices from the awarded vendors bid submittal for the alternative method to be used. The preliminary estimates may also include out of scope work items determined by the Project Manager. The contractor's final estimates will be returned the County Project Manager, including those out of scope cost previously identified by the Project Manager, prior to the deadline stated in the request for final estimate. When the final estimate is approved, a purchase order will be issued and notice to proceed given to the contractor. A work order with the approved final estimate must be attached to the purchase order. The contractor will then commence work and proceed in accordance with the approved schedule, if applicable. Payment for each project will be based on actual quantities used and unit prices from the bid, as approved by the County.
 - c. The approved quote amount on any individual work order shall be the maximum compensation payable to the contractor for that work order. The work order price may only be changed for altered quantities authorized by the County. If the contractor desires to make a claim for a change in quantity or schedule of an authorized work order, any such claim shall be submitted to the County Project Manager in writing within three (3) working days of the occurrence of the event giving rise to the claim.
- 8. PROJECT SCHEDULES:** The County will require that the contractor submit time estimates for specific projects, at the County's request.
- 9. Working Hours:** The regular working hours for Polk County are Monday – Friday, 7:00 AM to 5:30 PM. Permission to work outside of the regular work hours must be requested a minimum of 5 working days in advance from the County Project Management Section. Permission to work on County holidays must be requested a minimum of 5 working days in advance from the County Project Management Section.
- 10. OUT OF SCOPE WORK:** When preparing a preliminary estimate, if it is known or reasonably anticipated that there are necessary items of construction that are not included on the price sheets of the bid or, during the course of executing a work order, the County Project Manager determines that there are necessary items of construction that are not included on the price sheets of the bid, then the County Project Manager will request a cost proposal from the Contractor for the "out of scope" work. . The "out of scope" proposal shall contain all necessary costs, expenses and time; the County shall not be obligated in any event for payment over the amounts identified in the proposal. The "out of scope" services shall not be greater than fifteen-percent (15%) of the "in-

scope” services. Contractor shall not commence work on any “out of scope” services until approval is received from the County Project Manager.

11. TESTING AND INSPECTIONS

- a. The contractor is responsible for all required testing on the project except when the Bid document, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction specifically require any Work to be inspected or tested by someone other than the contractor. For these inspections and testing, the contractor shall give the County Project Management Section a minimum of 48 hours’ notice to prepare for the required inspections or testing.
- b. For all required inspections, tests and approvals on any work prepared, performed or assembled away from the site, the Contractor will furnish the County Project Management Section with the required Certificates of Inspection, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Material (ASTM) or such other applicable organizations as may be required by law or the Bid document.
- c. Material or work in place that fail to pass acceptability tests shall be removed and reconstructed according to the bid requirements at the contractor’s expense.
- d. No work shall be performed, nor materials used, without supervision and/or inspections by a representative of the County. The County representative shall have the authority to test and reject any materials and suspend the subject work at any time.

12. EMERGENCIES: In the event of an emergency, the contractor shall immediately notify the County Project Management Section.

13. SUSPENSION OR STOPPING WORK BY THE CONTRACTOR: The contractor shall not stop work on any project work order without the consent of the County Project Manager.

14. MAINTENANCE OF TRAFFIC

- a. The terms Traffic Control Plan (TCP) and Maintenance of Traffic Plan (MOT Plan) are intended to be synonymous. The term Maintenance of Traffic (MOT) is the function presented in the TCP.
- b. The contractor shall provide, install and maintain traffic devices for any assigned work according to the FDOT Design Standards Index 600 series, latest edition, and applicable laws and ordinances. The traffic control shall provide a safe work zone and safe flow of traffic in and through the project site.

15. SURVEY

- a. The County Survey Section will provide any construction layout services necessary to construct a project under this contract.
- b. The County Survey Section will provide any “as-built” surveys necessary after construction is completed.

16. UTILITY COORDINATION: The contractor shall be responsible for “Sunshine One Call” for all locations incorporated into the work orders.

17. MATERIALS

- a. The contractor shall provide copies of all delivery tickets, or invoices, for all materials and equipment to be used for the project to the County Project Management Section immediately upon delivery or as soon thereafter as is practical.
- b. Arrangements for storage areas for materials and equipment shall be the responsibility of the contractor. Before mobilizing or storing any materials or equipment, the contractor shall identify the areas to be used for storage in writing to the County. If property other than County right-of-way is proposed for storage, the contractor shall provide the County a copy of the written approval or agreement from the property owner before mobilizing or storing any materials or equipment on said property. The contractor shall be responsible for restoring any and all damages to storage areas. Restoration of damage to public right-of-ways, easements, or private properties outside of the work zone area shall be the contractor's responsibility. Reimbursement for restoration of storage areas outside of the work zones shall be included in the contractor's Mobilization bid price.

18. **WORKSITE VISIBILITY:** No work shall be performed when the visibility is less than two (2) times the Stopping Sight Distance for the highest regulatory posted speed through the project area as defined in the FDOT Manual of Uniform Standards for Design, Construction and Maintenance for Streets and Highways. Visibility distance shall be measured in all directions of travel and at locations and directed by the County. Project time extensions for substandard visibility shall be assessed according to FDOT Standard Specification Section 8-7.3.2.

19. **HISTORICAL AND ARCHAEOLOGICAL:** If historical or archaeological artifacts are discovered at any time on the project site, the contractor must notify the County, the Water Management District, the Florida Department of State and the Division of Historical Resources. The contractor shall follow any rules or requests from agencies with jurisdiction. If required to stop work, delay work or perform extra work in the affected area, delays and additional costs will be considered an unforeseen difficulty. If the contractor desires to make a delay claim, any such claim shall be submitted to the County Project Manager in writing within three working days of the occurrence of the event giving rise to the claim.

20. **CONTAMINATION:** Any equipment that is leaking fuel, lubricant, coolant, hydraulic fluid or any other hazardous material shall immediately be repaired by the contractor to stop the leak. The contractor shall clean up and dispose of any leaked fluids according to all applicable laws, ordinances, rules and regulations within 24-hours of occurrence. All repairs, removal, clean-up and/or disposal shall be at no cost to the County.

21. SAFETY

- a. The contractor is responsible for providing for the safety of all contractor's or subcontractor's personnel working in the Project Area.
- b. The contractor is required to comply with Florida Statute (F.S.), Chapter 556, Underground Facility Damage Prevention and Safety Act. The contractor is responsible for contacting Sunshine State One-Call of Florida, Inc., at 811 or www.callsunshine.com, no less than two (2) business days (48 hours) and no

more than 5 business days before beginning any excavation, the contractor provide notification according to the procedures of the F.S. Chapter 556.

22. **WORK AREA CLEAN-UP REQUIREMENTS**

- a. During the progress of the Work, the contractor shall keep the premises and maintained travel lanes free from accumulations of waste, discarded or surplus material, rubbish and other debris or contaminates resulting from the work.
- b. Following completion of the Work, contractor shall remove all waste material, rubbish, debris, tools, construction equipment, machinery, and surplus material from public right-of-ways, easements, and private properties. The contractor shall leave the site clean and ready for occupancy by the County at final completion of the work.

23. **WORK STOPPAGE:** From time to time, it may be necessary for the contractor to stop a portion of the work or all work to accommodate a civic function. If the contractor will be required to stop work, the County Project Management Section shall notify the Contractor a minimum of five (5) Working Days before any requested work stoppage. Following resuming work, the contractor and the County Project Manager shall agree to and document the number of additional days to be added to the project completion time to accommodate the requested work stoppage.

24. **WARRANTY:** The vendor shall warrant against all defects in material and workmanship for a period of one year after acceptance, unless otherwise indicated in the material's specification.

TECHNICAL SPECIFICATIONS

1. Bid Item No. PC-002 - Asphalt Rejuvenator

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of an asphalt rejuvenating agent to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Asphalt Rejuvenator will be measured by the square yard as provided for in the Bid Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

2. Bid Item No. PC-003 – Crack Sealing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the preparation and sealing of all surface cracks ¼" inch wide or greater.
- b. Method of Measurement: Crack Sealing shall be measured in gallons of crack seal applied to the road, as provided in the Contract Documents.
- c. Basis of Payment: 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 complete the work as specified.

3. Bid Item No. PC-004 – Chip Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for single or double application of combined layers of polymer modified liquid asphalt emulsion and spread aggregate.
- b. Method of Measurement: Chip seal, single or double application, will be measured by the square yard as provided for in the Contract Documents.
- d. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

4. Bid Item No. PC-005 – Micro-Surfacing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the placement of a polymer modified microsurface on a prepared existing paved road to the thickness specified by the County.
- b. Method of Measurement: Microsurfacing will be measured by the square yard, with the exception of that used for rut filling. The later will be measured per ton, as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

5. Bid Item No. PC-006 - Scrub Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a Scrub seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Scrub Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

6. Bid Item No. PC-007 – Cold-In-Place Recycling (CIP)

- a. Description: Furnish all labor, materials and equipment necessary to perform all operations for the in-place construction of Cold Recycled Bituminous Base Course or CIR, as set forth in the Contract Documents.
- b. Method of Measurement: CIR will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to CIR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

7. Bid Item No. PC-008-3 and PC-008-4 – Full Depth Reclamation (FDR)

- a. Description: Furnish all labor, materials, and equipment necessary to perform all operations in the preparation of a stabilized base course done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives as called for under the technical specifications.
- b. Method of Measurement: Full Depth Reclamation will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to FDR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

8. Bid Item No. PC-009- Bituminous Fog Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a bituminous fog seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Fog Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

PC-002 – ASPHALT REJUVENATOR

I. Description

This work shall consist of furnishing all labor, material, and equipment necessary to perform all operations for the application of an asphalt rejuvenating agent to asphalt concrete surface courses. The rejuvenation of surface courses shall be by spray application of a cationic rejuvenating agent composed of petroleum oils and resins emulsified with water. All work shall be in accordance with the specifications, the applicable drawings, and subject to the terms and conditions of this contract.

II. Material

A. Rejuvenator Agent:

The asphalt rejuvenating agent shall be an emulsion composed of a petroleum resin oil base uniformly emulsified with water. Each bidder must submit with their bid a certified statement from the asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the required physical and chemical requirements.

| TESTS | TEST METHOD | | REQUIREMENTS | |
|---|-------------|------------|----------------|------|
| | ASTM | AASHTO | MIN. | MAX. |
| Tests on Emulsion: | | | | |
| Viscosity # 25°C, SFS | D-244 | T-59 | 15 | 40 |
| Residue, % W ¹ | D-244 (mod) | T-59 (mod) | 60 | 65 |
| Miscibility Test ² | D-244 (mod) | T-59 (mod) | No Coagulation | |
| Sieve Test, %W ³ | D-244 (mod) | T-59 (mod) | -- | 0.1 |
| Particle Charge Test | D-244 | T-59 | Positive | |
| Percentage Light Transmittance ⁴ | GB | GB | -- | 30 |
| Tests on Residue from Distillation: | | | | |
| Flash Point, COC, °C | D-92 | T-48 | 196 | -- |
| Viscosity @ 60°C, cst | D-445 | -- | 100 | 200 |
| Asphaltenes, %w | D-2006-70 | -- | -- | 1.00 |
| Maltene Dist. Ratio | D-2006-70 | -- | 0.3 | 0.60 |
| $\frac{PC + A_1^5}{S + A_2}$ | | | | |
| PC/S Ratio ⁵ | D-2006-70 | -- | 0.5 | -- |
| Saturated Hydrocarbons, S ⁵ | D-2006-70 | -- | 21 | 28 |

¹ ASTM D-244 Modified Evaporation Test for percent of residue is made by heating 50 gram sample to 149 C (300 F) until foaming ceases, then cool immediately and calculate results.

² Test procedure identical with ASTM D-244-60 except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

³ Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

⁴ Test procedure is attached.

⁵ Chemical composition by ASTM Method D-2006-70:

PC = Polar Compounds A₁ = First Acidaffins
 A₂ = Second Acidaffins S = Saturated Hydrocarbons

B. Material Performance

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. The asphalt rejuvenating agent shall have the capability to penetrate the asphalt pavement surface. The asphalt rejuvenating agent shall be absorbed and incorporated into the asphalt binder. Verification that said incorporation of the asphalt rejuvenating agent into the asphalt binder has been effected shall be by analysis of the chemical properties of said asphalt

binder i.e. viscosity shall be improved to the following extent. The viscosity shall be reduced by a minimum of forty, (40%) percent as determined by dynamic shear rheometer (DSR) method for asphalt testing in accord with AASHTO T315-05. This analysis shall apply to extracted asphalt binder, taken from cores extracted fifteen to thirty days following application, in the upper 3/8" of pavement. In addition the treated areas shall be sealed in-depth to the intrusion of air and water.

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. Satisfactory service shall be based on the capability of the material to decrease the viscosity of the asphalt binder and provide an in-depth seal.

The bidder must submit with their bid the manufacturer's certification that the material proposed for use is in compliance with the specification requirements. The bidder must submit with their bid, previous use documentation and test data conclusively demonstrating that; the rejuvenating agent has been used successfully for a period of five years by government agencies such as cities, counties, etc.; and that the asphalt rejuvenating agent has been proven to perform, as heretofore required, through field testing by government agencies as to the required change in the asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance on a sufficient number of projects, each being tested for a minimum period of three years to insure reasonable longevity of the treatment, as well as product consistency. In addition, testing data shall be submitted to indicate said product performance over a testing period of three years to ensure reasonable life expectancy.

III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. Distributer Tank:

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the asphalt rejuvenating agent uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

B. Sand Truck:

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

IV. Experience

The asphalt rejuvenating agent shall be applied by an experienced applicator of such material. The bidder shall have a minimum of three years' experience in applying the product proposed for use. They must submit with their bid a list of five projects on which they applied said rejuvenator. They shall indicate the project dates, number of square yards treated in each, and the name and phone number of the representative in charge of each project. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience outline of the project superintendent.

V. Construction**A. Storm Water Pollution Prevention Plan**

The contractor responsible for applying the asphalt rejuvenating agent shall maintain a current, written Storm Water Pollution Prevention Plan (SWPPP) that complies with all relevant Environmental Protection Agency (EPA) regulatory requirements. Prior to the commencement of application operations, the contractor shall conduct SWPPP training of all personnel actually applying the asphalt rejuvenating agent. At all times, the contractor shall ensure that a current copy of their SWPPP is present on-site, wherever the asphalt rejuvenating agent is being applied.

B. Handling of Asphalt Rejuvenating Agent

Contents in tank cars or storage tanks shall be circulated at least forty-five minutes before withdrawing any material for application. When loading the distributor, the asphalt rejuvenating agent concentrate shall be loaded first and then the required amount of water shall be added. The water shall be added into the distributor with enough force to cause agitation and thorough mixing of the two materials. To prevent foaming, the discharge end of the water hose or pipe shall be kept below the surface of the material in the distributor which shall be used as a spreader. The distributor truck will be cleaned of all its asphalt materials, and washed out to the extent that no discoloration of the emulsion may be perceptible. Cleanliness of the spreading equipment shall be subject to the approval and satisfaction of the Engineer.

C. Weather and Seasonal Limitations

The temperature of the asphalt rejuvenating emulsion, at the time of application shall be as recommended by the manufacturer. The asphalt rejuvenating agent shall be applied only when the existing surface to be treated is thoroughly dry. Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent. The contractor shall perform follow-up inspections of stormwater inlets, culverts, and drainage ditches (in accordance with the contractor's SWPPP) in the vicinity of the asphalt rejuvenating agent application operations, whenever a precipitation event, in excess of 0.10 inches of rain, occurs during a two day period following application of the asphalt rejuvenating agent. The asphalt rejuvenating agent shall not be applied when the ambient temperature is below 40° F.

D. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

E. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

F. Application of Rejuvenating Agent

The asphalt rejuvenating agent shall be applied by a distributor truck at the temperature recommended by the manufacturer and at the pressure required for the proper distribution. The emulsion shall be applied so that uniform distribution is obtained at all points of the areas to be treated. Distribution shall be commenced with a running start to insure full rate of spread over the entire area to be treated. Areas inadvertently missed shall receive additional treatment as may be required by hand sprayer application.

Application of asphalt rejuvenating agent shall be on one-half width of the pavement at a time. When the second half of the surface is treated, the distributor nozzle nearest the center of the road shall overlap the previous application by at least one-half the width of the nozzle spray. In any event the centerline construction joint of the pavement

shall be treated in both application passes of the distributor truck.

Before spreading, the asphalt rejuvenating agent shall be blended with water at the rate of two (2) parts rejuvenating agent to one (1) part water, by volume or as specified by the manufacturer. The combined mixture of asphalt rejuvenating agent and water shall be spread at the rate of 0.05 to 0.10 gallons per square yard, or as approved by the Engineer.

Where more than one application is to be made, succeeding applications shall be made as soon as penetration of the preceding application has been completed and approval is granted for additional applications by the Engineer.

Grades or super elevations of surfaces that may cause excessive runoff, in the opinion of the Engineer, shall have the required amounts applied in two or more applications as directed.

After the street has been treated, the area within one foot of the curb line on both sides of the road shall receive additional treatment of the asphalt rejuvenating emulsion. Said treatment shall be uniformly applied by a method acceptable by the Engineer.

After the rejuvenating agent has penetrated, a coating of dry sand shall be applied to the surface in sufficient amount to protect the traveling public as required by the Engineer.

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent.

If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

G. Quality Assurance and Testing

The Contractor shall furnish a quality inspection report showing the source, manufacturer, and the date shipped, for each load of asphalt rejuvenating agent. When directed by the Engineer, the Contractor shall take representative samples of material for testing.

The County, at their option, may require testing to be performed on extracted asphalt cement from a pavement to a depth of three eighths inch (3/8"). The testing protocol shall be extraction and recovery of the top 3/8" layer from a 4-inch or 6-inch core by ASTM D2172 and ASTM D1856. The recovered binder can be tested for complex viscosity @ 60°C, Pas, using the Dynamic Shear Rheometer (DSR) by AASHTO T315, or viscosity @ 60°C, Poises, using the Absolute viscosity @ 60°C, Poises, by ASTM D2171.

Test sections shall be at least one squared yard in area. The test sections shall have

various application rates for each pavement type that exists on the project and shall be conducted prior to the application of product to define application rates which meet and/or exceed the above targets.

Costs associated with testing shall be included in bid price.

VI. Traffic Control

The Contractor shall schedule his operations and carry out the work in a manner to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated. Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the Engineer, has become complete and the area is suitable for traffic.

When, in the opinion of the Engineer, traffic must be maintained at all times on a particular street, then the Contractor shall apply asphalt rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until traffic may be switched to the completed lane.

The contractor shall be responsible for all traffic control and signing required to ensure safe travel. The contractor shall notify the police and fire departments as to the streets that are to be treated each day. If, in the opinion of the Engineer, proper signing is not being used, the Contractor shall stop all operations until safe signing and barricading is achieved.

VII. Method of Measurement

Asphalt rejuvenating agent will be measured by the square yard as provided for in the Contract Documents. The accepted quantities, measured as provided for above, will be paid for at the contract unit price for asphalt rejuvenating agent.

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Asphalt Rejuvenating Agent, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|----------------------------|-----------------|
| Asphalt Rejuvenating Agent | Square Yard |

END OF SECTION PC-002

PROCEDURE FOR DETERMINING PERCENT LIGHT TRANSMITTANCE**I. Scope**

This procedure covers the determination of percent light transmittance of the asphalt rejuvenating agent.

II. Equipment

- A. Container may be either glass, plastic or metal having a capacity of 6,000 ml.
- B. Graduated cylinder, 1,000 ml, or greater.
- C. Light transmittance measuring apparatus, such as Bausch and Lomb or Lumertron spectrophotometer.
- D. Graduated pipette having 1 ml capacity to 0.01 ml accuracy.
- E. Suction bulb for use with the pipette.
- F. Test tubes compatible with spectrophotometer, $\frac{3}{4}$ " x 6, Bausch and Lomb, Catalog No. 33-17-81, (B&L).

III. Spectrophotometer Calibration

- A. Calibrate spectrophotometer as follows:
 - 1. Set wavelength at 580 m μ
 - 2. Allow spectrophotometer to warm up for thirty minutes.
 - 3. Zero percent light transmittance (%LT) scale.
 - 4. Rinse test tube three times with tap water and fill to top of circle marking on B&L test tube, or approximately 2/3 full.
 - 5. Place tube in spectrophotometer and set %LT scale at 100
 - 6. Repeat steps 3 and 5 two times or until no further adjustments are necessary.

IV. Procedure

- A. Shake, stir or otherwise thoroughly mix emulsion to be tested. Place sample of emulsion in beaker and allow to stand one minute.
- B. Place 2.000 ml tap water in container.
- C. Such 1.00 ml emulsion into pipette using suction bulb. Wipe off outside of pipette.
- D. Using suction bulb, blow emulsion into container.
- E. Rinse pipette by sucking in diluted emulsion solution and blowing out.
- F. Clean pipette with soap or solvent and water. Rinse with acetone.
- G. Stir diluted emulsion thoroughly.
- H. Rinse out tube to be used with the diluted emulsion three times and fill to top of circle.
- I. Calibrate spectrophotometer.
- J. Place diluted emulsion sample tube in spectrophotometer, cover and read %LT to nearest tenth.
- K. Repeat steps I and J until three identical consecutive readings are achieved.
- L. The elapsed time between addition of emulsion to dilution of water and final %LT reading should not exceed 5 minutes.

PC-003 CRACK SEALING

I. Description

The work consists of applying a hot-applied, single component polymer/rubber modified asphalt material supplied in solid form, to seal or fill cracks or joints in asphalt concrete or Portland cement concrete pavements. Cracks or joints that will be sealed shall be a minimum of one quarter (1/4) inch, and have a maximum width of one (1) inch.

II. Materials

- A. Polymer/rubber Modified Asphalt Material: Materials shall be a premixed, single component mixture of asphalt cement, aromatic extender oils, polymers, and granulized rubber in a closely controlled manufacturing process. Materials shall conform to the following specifications when heated in accordance to ASTM D5078 to the manufacturer’s maximum safe heating temperatures.

| Property | Specification |
|---------------------------------------|----------------------|
| Cone Penetration, 77.0°F (ASTM D5329) | 30 – 60 dmm |
| Resilience, 77.0°F (ASTM D5329) | 30 % minimum |
| Softening Point (ASTM D113) | 200°F minimum |
| Ductility, 77.0°F (ASTM D113) | 300 mm minimum |
| Flow 140°F (60°C) (ASTM D5329) | 3mm maximum |
| Asphalt Compatibility (ASTM D5329) | Pass |
| Bitumen Content (ASTM D4) | 60% minimum |
| Tension Adhesion (ASTM D5329) | 400% minimum |
| Maximum Heating Temperature | 400°F (204°C) |
| Minimum Heating Temperature | 380°F (193°C) |

- 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.

III. Equipment

- A. 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 with transmittal of heat through heat transfer oil. It shall be equipped with an on board automatic heat controlling device to permit the attainment of a predetermined temperature, and then maintain that temperature as long as required. The unit shall also have an agitation system to meet the requirements of Appendix X1.1. of ASTM 6690. The sealant shall be applied to the pavement under pressure supplied by a gear pump with hose and wand and direct connecting applicator tip. The pump shall have sufficient pressure to apply designated sealant at a rate of at least three (3) gallons (11.4L) per minute. Melter applicators shall be approved for use by the sealant

manufacturer. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints.

- B. Hot Compressed Air (HCA) 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.
- C. 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.
- D. Crack Cleaning Equipment: Cleaning of excess debris shall be done by means of power sweepers, hand brooms, or air brooms.

IV. Submittals

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.

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:

- Road name, date, time application process starts, amount installed, time application process ends.
- Date, time and amount added to the melter.
- The lot number from each box added shall be also recorded.
- Weather conditions

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.

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.

V. Preparations

- 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: No sealant shall be installed until all cracks and joints have been cleaned free of all deleterious materials, including any dust, old sealant, incompressibles, and organic material, and are sufficiently dry. Following the initial routing and cleaning operation, all cracks and joints shall be HCA lanced within 10 minutes of application of the sealant. Equipment for the two operations should be kept in a compact configuration such that not more than 50 feet separates equipment required by the two operations. Extreme care shall be used to ensure the crack sidewalls do not become overheated and burned.
- 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. 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.

VI. Construction Methods

- A. 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.
- B. General Sealant Application: All single transverse cracks in the travel lanes shall be sealed by the Cut and seal method. All other cracks in the travel lanes, shoulders, and auxiliary areas may be filled by either the Cut and Seal method or the Crack Fill method. If a surface treatment, such as resurfacing or surface sealing shall follow, the Crack filling material must cure for a minimum of 30 days prior to application of the final surface treatment.
- C. Cut and Seal Method: Cut, clean and seal cracks and joints that are 1/16 inch or greater in width. Cut along the crack or joint to construct a uniform rectangular reservoir in which the sealant is to be placed. The reservoir shall be between 1/2 inch and 3/4 inch in width. The depth of the reservoir shall be between 1/2 inch and 1 inch. The cut reservoir shall have vertical, intact sides with no loosely bonded aggregate. Following cutting, the reservoir shall be cleaned using the air blast method or other acceptable

method. The reservoir shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. If the reservoirs are not clean and dry, they shall be re-cleaned to achieve the required condition. 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

- D. Crack Fill Method: Clean and seal joints and cracks that are 1/16 inch or greater in width. Clean joints and cracks with air blast cleaning or other acceptable methods to a depth of at least twice the joint or crack width. Joints and cracks shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. Apply sealing material with a pressure nozzle. Completely fill cracks and joints. Sealant shall be applied to slightly overfill the crack or joint 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

- E. Pavement Cleaning and Protection: The pavement surface and all work areas shall be left in a clean condition. Vehicular traffic shall not be permitted on the pavement in treated areas during the initial curing period recommended by the manufacturer. The Contractor shall provide all temporary traffic control devices to protect the treated areas, as required by the Engineer.

Prevent tracking with an application of fine sand, unless it can be demonstrated that the crack and joint sealer will not track without its application. Other methods may be used if approved by the Engineer. Repair any pavement striping or markings affected by the application of the sealant. Any excessive or spilled sealant shall be removed by the Contractor using approved methods. Any damage to uncured sealant shall be repaired at the contractor's expense.

VII. Liability and Deficiencies

- A. 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 County from all such claims. Claims not handled by the Contractor or their representative in the proper manner, will be settled by the County. The County 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.

- B. 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.

The sealant shall be removed, the routed crack rerouted at the Project Manager's discretion, and resealed if any of the following occur:

1. The sealant contains imbedded foreign material other than dusting material.
2. The sealant contains entrapped air bubbles;
3. The sealant has de-bonded or pulled away from the crack; or
4. The sealant has been excessively heated.

VIII. 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 Crack Sealing-Filling, and not specifically listed in another item in the Bid Form, shall be included in this item.

The measurement shall be made in amount of linear feet of cracks or joints completed and accepted, determined by field measure, and shall be supported by the submittals. The amount of crack sealer shall be reported and invoiced for each road.

IX. Basis of Payment.

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Crack and Joint Sealing/Filling, 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 County.

Payment will be made under:

| Pay Item | Pay Unit |
|------------------------------------|-----------------|
| Bituminous Crack and Joint Sealing | per Gallon |

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 COUNTY representative.

END OF SECTION PC-003

PC-004 CHIP SEAL

I. Description

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 County 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.

II. Materials:

- A. 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.
- B. 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 County.

Cationic Asphalt Emulsion

| Material Designation | Minimum | Maximum |
|--|----------------|----------------|
| Test on Emulsion: | | |
| 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 | --- |

C. Material Samples:

The County 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 County 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 County 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.

III. Equipment:

A. 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.

B. 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.

C. 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.

D. 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. Brooming is required before and after the chip seal operation.

E. 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.

IV. 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.

V. Construction:**A. Layout:**

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

B. 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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

C. Site and Surface Preparation:

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

D. 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 County 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.

Traffic shall not be allowed on the roadway after placement of the chip seal for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

E. 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.

F. 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.

G. 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.

H. 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.

I. 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.

VI. 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.

VII. 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 Specification for Fog Seal

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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 County. If applied, Fog Seal shall be paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| Pay Item | Pay Unit |
|--------------------------------|-----------------|
| Chip Seal (Single application) | Square Yard |
| Chip Seal (Double application) | Square Yard |

END OF SECTION PC-004

PC-005 MICROSURFACING

I. Description

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 County.

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 County. The end product should maintain a skid-resistant surface in variable thick sections throughout the service life of the micro surfacing.

II. Materials:

- A. **Emulsified Asphalt:** **Provide 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.**

B.

| 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.

- C. **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 |
|-----------------|---------------|---------------------|--|
| T176 | D2419 | Sand Equivalent | 65 Minimum |
| T104 | C88 | Soundness | 15% Maximum using NA2 SO4 or 25% Maximum using MgSO4 |
| T96 | 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 % PASSING | TYPE III % PASSING | STOCKPILE TOLERANCE |
|---------------|-------------------|--------------------|---------------------|
| ¾ (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 is 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.

D. 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.

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

F. **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.

III. Mix Design:

The Contractor shall submit to the County for approval a complete mix design with an aggregate source used on five (5) similar micro surfacing projects. 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 County. 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 |
|---------------|--|--|
| TB-139 | Wet Cohesion @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic) | 12 Kg-cm Minimum 20 Kg-cm Minimum or Near Spin |
| TB-109 | Excess Asphalt by LWT Sand Adhesion | 50 g/ft ² Maximum (538 g/m ² Maximum) |
| TB-114 | Wet Stripping | Pass (90% Minimum) |
| TB-100 | Wet-Track Abrasion Loss One-hour Soak Six-day Soak | 50 g/ft ² (538 g/m ²) Maximum 75 g/ft ² (807 g/m ²) 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 |
|---------------|--|--|
| TB-147 | Lateral Displacement Specific Gravity after 1,000 Cycles of 125 Pounds (56.71 Kg) | 5% Maximum 2.10% Maximum |
| 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 |

IV. 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 County 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.

V. 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.

VI. EQUIPMENT:

- A. **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.

- B. **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.
- C. **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.

- D. **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.
- E. **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 ($\frac{1}{2}$) 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 ($\frac{1}{2}$) inch (12.7 mm) in depth, a full-width scratch-coat pass may be used as directed by the County. Ruts that are in excess of one and one-half ($1\frac{1}{2}$) 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.
- F. **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 County requires) to perform the work.
- G. **General:** Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the County 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**.

VII. Construction:

- A. **Test Strip:** A test strip 1000 feet long and the width of one lane shall be provided. The test must include all courses specified and must be constructed at the same time of day as the scheduled full scale production. The test strip will be evaluated for 24 hours after placement and will be subject to approval from the engineer before any further production. If unsatisfactory, the test strip shall be removed and another strip placed for evaluation at the contractor's expense.
- B. **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 County.
- C. **Site and Surface Preparation:** The first step of surface preparation is to restore the pavement's structural integrity and functional performance characteristics through

patching and crack sealing.

All pavement marking shall be removed, maintained, and compensated for in accordance to FDOT Standard Specification Section 102-5.8. Immediately prior to applying the Microsurfacing, the surface shall be cleared of all loose material, silt spots, vegetation, and other objectionable material. 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. 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. Utility inlets should be covered with heavy paper or roofing felt adhered to the surface of the inlet. The paper is removed once the micro-surfacing has sufficiently cured. In addition to covering the inlets, all starts, stops, and handwork on turnouts should be done on roofing felt to ensure sharp, uniform joints and edges. The County 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.

D. **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/yd² (0.23 to 0.45 l/m²). 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.

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

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 yd² (25 m²) area. No transverse ripples or longitudinal streaks of one-fourth (¼) inch in depth (6.4 m²) 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 ² (+/- 2 lbs) |
| TYPE II Double application | Urban, Residential, and Primary Routes | 30 - 34 lb/yd² (+/- 2 lbs) |
| TYPE II Heavy single application | Primary and Cold Mix Roads as directed | 24 - 28 lb/yd ² (+/- 2 lbs) |
| TYPE II Heavy double application | Primary and Cold Mix Roads as directed | 38 - 42 lb/ yd ² (+/- 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/yd² (8.1 – 16.3 kg/m²).

- F. **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.
- G. **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.
- H. **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.

- I. **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 ± 2 inches (± 50 mm) horizontal variance in any 96 feet (30 m) of length.
- J. **Clean-up:** All areas, such as man-ways, gutters, and intersections, shall have the Microsurfacing mix removed as specified by the County. 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 County. In addition, the contractor shall, at the request of the County pressure wash any area such as, curb and gutter, private driveways, etc. removing any and all stains associated with the placement of the Microsurfacing.
- K. **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.
- L. **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 and the current MUTCD. 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.

VIII. 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.

IX. Warranty:

The Contractor shall provide the County 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 or County.

X. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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.

Payment will be made under:

| Pay Item | Pay Unit |
|--------------------------------------|-----------------|
| Microsurfacing (Single application) | Square Yard |
| Microsurfacing (Double application), | Square Yard |
| Microsurfacing (Rut filling) | Ton |

END OF SECTION PC-005

PC-006 SCRUB SEAL

I. Description

Scrub Seal shall consist of the application of a slow setting, anionic or cationic asphalt emulsion or specialty emulsions developed specifically for scrub sealing, followed by a cover aggregate. The emulsion may be polymer modified.

II. Materials

A. Asphalt Emulsions

The asphalt emulsions employed for Scrub Seals shall be slow to medium setting anionic or cationic SS-1, SS-1H, CSS-1H; ASTM specifications for anionic (SS) emulsions are listed in D977 and for cationic (CSS) emulsion in D2397. Suppliers of other specialty emulsions for Scrub Sealing must supply specifications for these emulsions. Asphalt emulsions may be modified with a polymer additive.

B. Cover Aggregates

Mineral Aggregates for scrub seal shall conform to **Table 1**.

| Table 1: Scrub Seal Aggregate Gradation Limits | | |
|---|------------------------|------------------|
| Sieve Size | Percent Passing | Tolerance |
| 3/8 inch (9.5mm) | 100 | 0 |
| No. 4 (4.75mm) | 96 | +3 |
| No. 10 (2.0mm) | 60 | ±20 |
| No. 50 (300µm) | 18 | ±12 |
| No. 100 (150µm) | 5 | ±5 |
| No. 200 (74µm) | 5 | ±3 |

Where washed aggregates are used, they must be 'surface dry' at the time of application. Moisture content shall not exceed 1.5% by weight of aggregate. 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.

C. Material Samples:

The County 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 County 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 County 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.

III. Equipment

A. Emulsion 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.

B. Emulsion Scrub Broom

Furnish an emulsion scrub broom assembly of similar design to Figures 1 or 2, or as approved by the Engineer, and having the following characteristics:

- Rigid frame construction
- Attached to, and pulled by, the Emulsion Distributor
- Of such weight that it does not squeegee the emulsion off the road surface
- Leading and trailing broom heads angled at 10 to 15 degrees of the centerline of the supporting member
- Stiff bristles with a minimum height of five inches
- Hinged wing assemblies or other means of adjusting the total broom width.
- Be attached to and pulled by the distributor truck.
- Have means to mechanically lift the scrub broom off of the roadway surface at intermediate points of completion and remain elevated during transit.

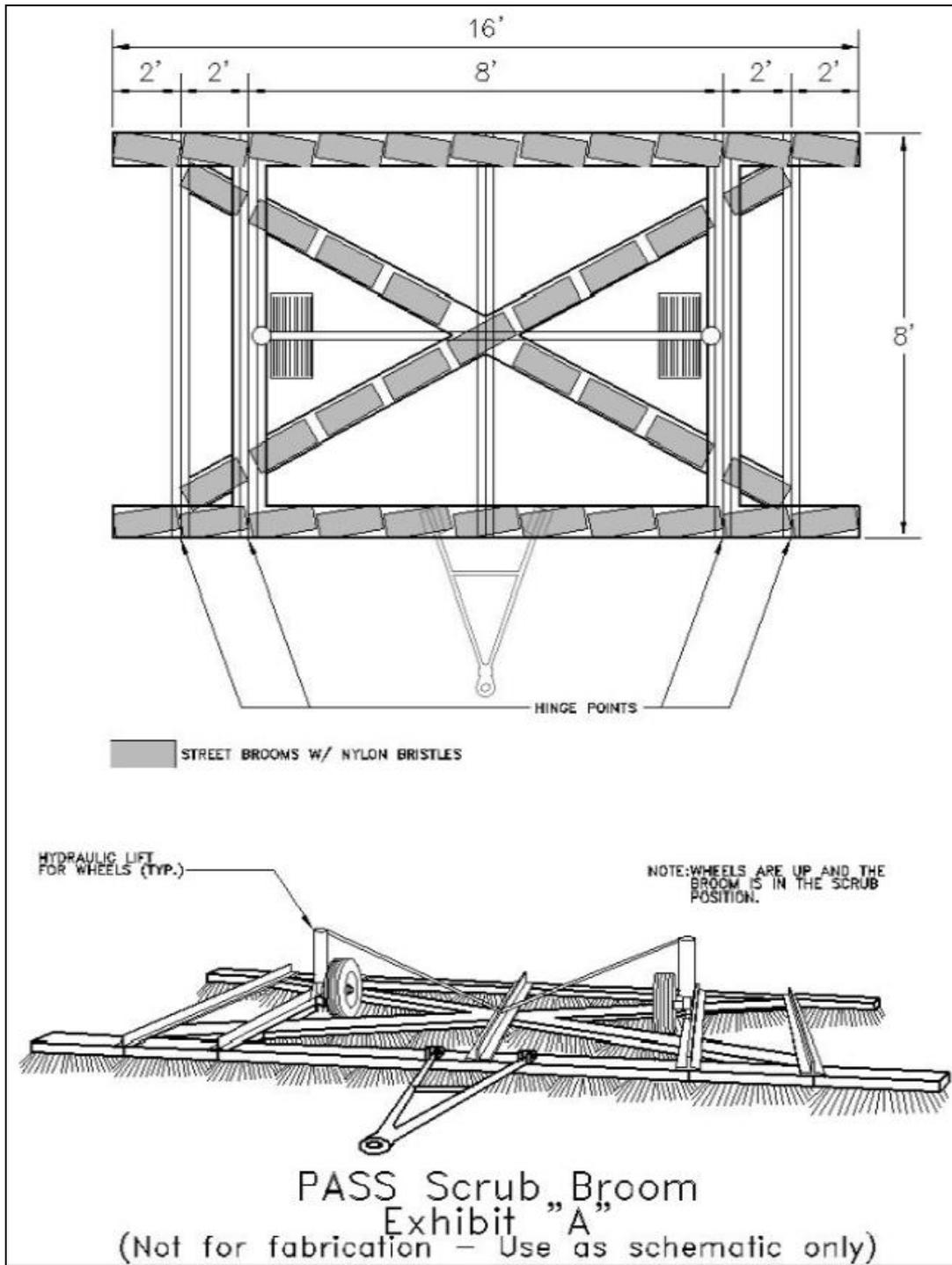


Figure 1: Typical Emulsion Scrub Broom Assembly

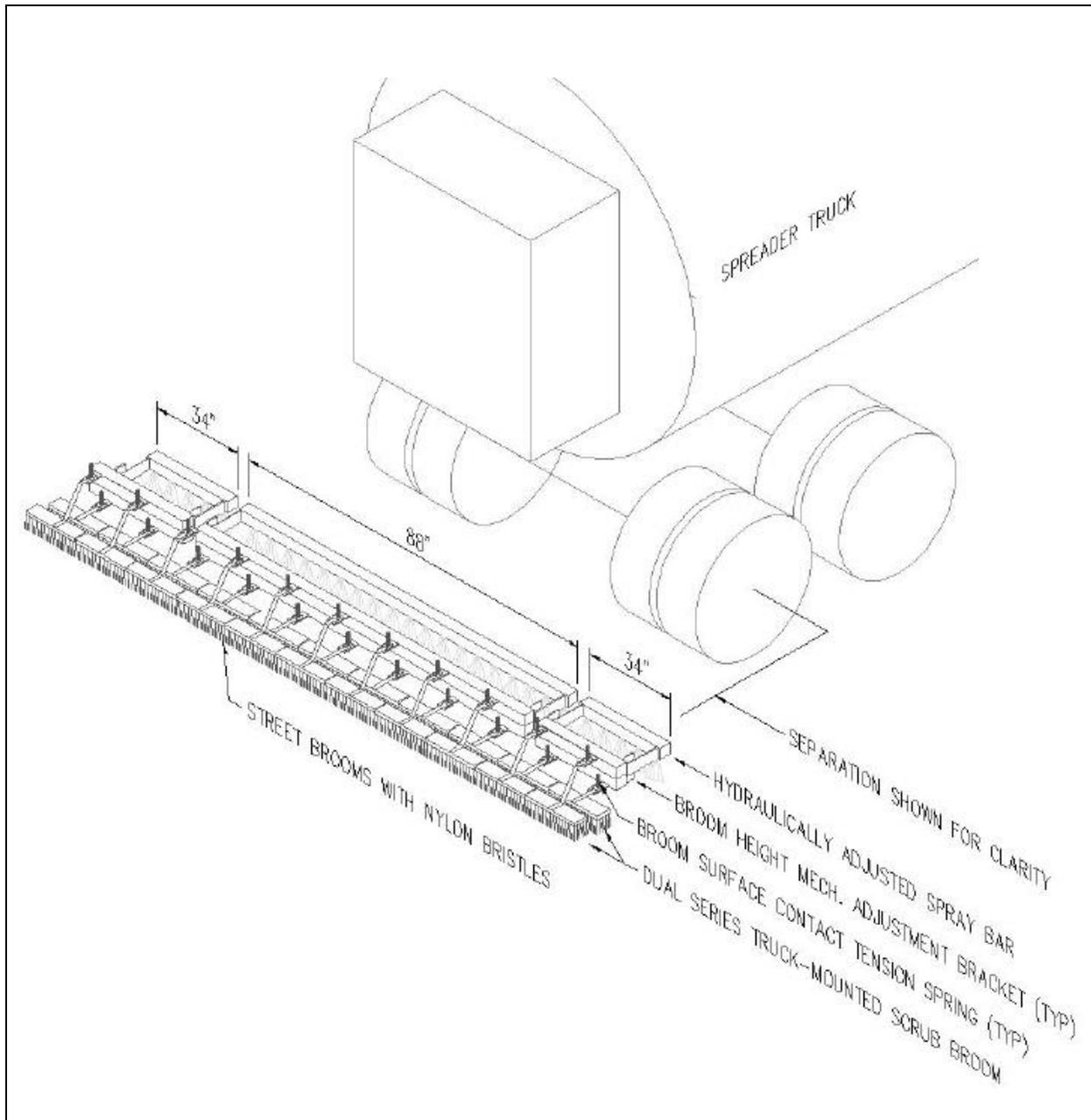


Figure 2: Truck Mounted Emulsion Scrub Broom Assembly

C. 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.

D. 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.

E. 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. Brooming is required before and after the chip seal operation.

F. 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

IV. Experience

Bidders must submit a minimum of five Scrub 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.

V. Construction

A. Weather

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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

B. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The

contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

C. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

D. Traffic

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 indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County 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.

Traffic shall not be allowed on the roadway after placement of the aggregate cover for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

E. Application of Asphalt Emulsion:

Asphalt emulsion 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.

F. Scrubbing

Immediately following application, the asphalt emulsion shall be scrubbed into the existing pavement surface with a scrub broom conforming to Section III-B. Scrubbing shall fill cracks and voids, force the emulsion into the existing pavement surface, and distribute the emulsion uniformly over the roadway cross section.

G. Termination

Application of the emulsion shall be terminated on building paper or other similar material approved by the Engineer, spread over the entire application width. Building paper shall also be placed over the treated surface for a sufficient length at the beginning of a spread to avoid spraying existing pavement or previously placed screenings, and so that the nozzles are spreading properly when the uncovered surface is reached. The building paper shall then be removed and disposed of in a manner satisfactory to the Engineer.

H. Application of cover Aggregate:

Screenings shall be uniformly spread by the aggregate spreader immediately following the scrubbing. The spreading rate shall be from 18 to 30 pounds per square yard. The initial rate of spreading shall be 24 pounds per square yard. The Contractor may propose a different initial rate. The Contractor shall spread screenings on a 100-foot test strip as requested by the Engineer to verify and determine the initial rate of spreading. The spreading rate shall be adjusted up or down so that no bleeding occurs during rolling. The initial rate of spreading, and any adjustments thereto during spreading, shall be subject to approval by the Engineer.

The joint between adjacent applications of screenings shall coincide with the line between designated traffic lanes.

Operating the chip spreader at speeds which causes the chips to roll after striking the emulsion covered surface will not be permitted.

The transverse termination of screenings shall be complete and any excess screenings shall be removed from the surface prior to resuming operations.

Stockpiling of screenings prior to placing will be permitted where space allows, however, any contamination resulting during storage or from reloading operations will be cause for rejection.

Screenings shall be surface damp at the time of application, but excess water on the aggregate surface will not be permitted. Screenings shall be re-dampened in the haul trucks prior to delivery to the chip spreader when so directed by the Engineer.

The scrubbed pavement surface shall be covered with screenings before setting or "breaking" of the emulsion occurs.

After the screenings have been spread, piles, ridges, or uneven distribution shall be carefully removed to ensure against permanent ridges, bumps or depressions in the completed surface. Additional screenings shall be spread in whatever quantities may be required to prevent picking up by the rollers or traffic.

I. Rolling:

Initial rolling shall begin immediately behind the chip spreader and shall consist of one pass completely covering the screenings applied. Asphalt emulsion and screenings shall not be spread more than 2,500 feet ahead of completion of initial rolling operations.

Secondary rolling shall begin immediately after completion of the initial rolling. The amount of secondary rolling shall be that necessary to seat the screenings and in no case shall be less than 2 passes.

J. Sweeping:

After rolling of the 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.

VI. Finishing:

A. Flush Coat

Flush Coat shall consist of an application of a fog seal coat followed by a sand cover to the surface of the scrub seal coat.

Flush coat shall be applied at the discretion of the Engineer, immediately after initial sweeping and removal of excess screenings and prior to opening the lane to uncontrolled (not controlled with pilot cars) traffic.

B. Fog Seal

Fog seal coat shall not be applied when the atmospheric temperature is below 40°F.

When surface treatment has set, a fog seal is to be applied at a rate of 0.03 to 0.06 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.

C. Sand Cover

Sand cover shall be applied immediately following application of the fog seal coat. Sand shall be spread by a chip spreader at a rate of 1 to 2 pounds per square yard. The exact rate will be determined by the Engineer. Spreading shall not vary more than 5 percent from the exact application rate.

D. Maintenance

Scrub seal coated surfaces shall be maintained, including the traffic control required for maintenance operations, for a period of 4 consecutive calendar days, beginning on the day screenings are applied to the asphalt emulsion. Maintenance shall include sweeping and distribution of screenings over the surface to absorb any free emulsion, to cover any area deficient in cover material and to prevent formation of corrugations. Clean sand may be used in lieu of screenings to cover any excess emulsion which comes to the surface. The use of roadside material for this purpose will not be permitted.

The surface shall be swept as often as necessary during the 4-day maintenance period to maintain the surface free of loose screenings. At the end of the fourth day, any excess screenings shall be removed from the paved area.

VII. 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 Scrub 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 the Scrub Seal, it shall be measured separately as listed in the Technical Specification for Fog Seal

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Scrub 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 county, Fog Seal shall be applied and paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|-----------------|-----------------|
| Scrub Seal | Square Yard |

END OF SECTION PC-006

PC-007 COLD-IN-PLACE RECYCLING (CIP)

I. Description

The work specified in this Technical Provision consists of the in-place construction of a Cold Recycled Bituminous Base Course, using either reclaimed asphalt pavement (RAP) material and/or reclaimed aggregate material (RAM), combined with virgin aggregates and/or bituminous material. It is the intent of this contract to recycle 100% of the existing asphalt pavement to ensure that the completed recycled base course will be of a consistent material and thickness throughout, including, but not limited to, all existing asphalt pavement adjacent to all concrete curbing, storm sewer inlets, manholes, sanitary sewer manholes, and all utility valve boxes. The existing asphalt pavement in the above-described locations must be included in the recycling process in order to construct a bituminous base course with a uniform thickness throughout 100% of the proposed area. The intent of this contract is to utilize the specified process which is clearly defined within this specification. Therefore Full Depth Reclamation or any variation of Full Depth Reclamation will not be accepted.

II. Materials:

A. Asphalt Emulsion

The type of asphalt emulsion to be used shall be determined by the mixture design. Bituminous material shall conform to the applicable requirements of the *current* *FDOT Standard Specifications for Road and Bridge Construction, Section 916*. At the request of the county, a representative from the asphalt emulsion supplier shall be available at the job site to monitor the characteristics and performance of the asphalt emulsion. Throughout the job, the representative will monitor the project and make adjustments to the asphalt emulsion formulation as required.

B. Cold Pulverized Material

The cold pulverized recycled asphalt pavement (hereinafter referred to as RAP) material shall meet the following gradation requirement prior to the addition of the asphalt emulsion.

| STANDARD | | METRIC | |
|-----------------|----------|---------------|----------|
| Sieve Size | %Passing | Sieve Size | %Passing |
| 2" | 95 | 51 mm | 95 |

C. Portland Cement

Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.

III. Mixture Design:

A mix design(s) conducted by an independent, AASHTO Materials Reference Laboratory (AMRL) accredited laboratory using materials obtained directly from the project site, conforming to the requirements of this Technical Specification shall be submitted to the County at the Pre-Construction Conference. Based on RAP consistency throughout project limits, more than one mix design may be required. A traffic control plan may be required in accordance with TP-102 for collecting materials. Mix design formulations shall be conducted in accordance with the following guidelines:

A. Mix Design Procedures

1. **Sampling and Processing** - Prior to materials sampling in the roadway, obtain approval from the County. A traffic control plan may be required in accordance with TP-102 for collecting materials. Obtain 6" minimum inside diameter cores from the areas to be recycled. If cores show significant differences in various areas, such as different type or thickness of layers between cores, then separate mix designs shall be performed for each of these pavement segments. It is recommended that a minimum of one location be sampled for each 1000' in each lane. Additionally, samples should be taken where visual differences in the pavement are noticed. Immediately patch all core holes neatly with asphalt cold patch. Cores shall be cut in the laboratory to the depth specified for the CIR project. Cores shall be crushed in the laboratory.

The mix design shall be performed on this crushed sample. Gradation of the sample after crushing shall be determined by ASTM C117 and C136 (dried at no greater than 40°C). Samples shall be prepared with a sample splitter. An alternative method is to dry, screen and recombine the sample in the laboratory to target gradation.

2. **Mixing** - Calculate the amount of RAP required to produce a 61.0 mm to 66.0 mm (2.4 to 2.6 inch) tall specimen by determining the maximum specific gravity of the RAP in accordance with ASTM D2041.

Number of specimens: 4 per emulsion content for a total of 4 for long-term stability and 4 for moisture testing for the 3 emulsion contents. Two specimens are required for Rice specific gravity; test at the highest emulsion content in the design and back calculate for the lower emulsion contents.

Recommended emulsion contents: 2.0%, 2.5%, 3.0%, 3.5%. Choose three emulsion contents that bracket the estimated recommended emulsion content.

Add moisture that is expected to be added at the milling head, typically 1.5 to 2.5 percent.

If any additives are in the mixture, introduce the additives in a similar manner that they will be added during field production.

Mixing of test specimens shall be performed with a mechanical bucket mixer. Mix the CIR RAP millings thoroughly with water first, then mix with emulsion. Mixing shall occur at ambient temperature. One specimen shall be mixed at a time. Mixing time with emulsion should not exceed 60 seconds.

3. **Compaction** - Specimens shall be compacted immediately after mixing. Place paper disks on the top and bottom of the specimen before compaction. Specimens shall be compacted with a Superpave gyratory compactor (SGC) in a 100 mm mold at 1.25° angle, 600 kPa ram pressure, and 30 gyrations. The mold shall not be heated.

4. **Curing after compaction** - Extrude specimens from molds immediately after compaction. Carefully remove paper disks.

Place specimens in 60°C forced draft oven with ventilation on sides and top. Place each specimen in a small container to account for material loss from the specimens. Care should be taken not to over-dry the specimens. Cure compacted specimens to constant weight but no more than 48 hours and no less than 16 hours. Constant weight is defined here as 0.05% change in weight in 2 hours. After curing, cool specimens at ambient temperature a minimum of 12 hours and a maximum of 24 hours.

5. **Measurements** - Determine bulk specific gravity (density) of each compacted (cured and cooled) specimen according to ASTM D2726.

Determine specimen heights according to ASTM D3549 or equivalent. Alternatively, the height can be obtained from the SGC readout.

Determine Rice (maximum theoretical) specific gravity, ASTM D2041, except as noted in Item 4 of this procedure, and do not break any agglomerates which will not easily reduce with a flexible spatula. Perform the supplemental dry-back procedure to adjust for uncoated particles.

Determine percent air voids in accordance with ASTM D3203 for each design emulsion content.

Determine corrected Marshall Stability by ASTM D1559 at 40°C after 2 hour temperature conditioning in a forced draft oven.

6. **Moisture Susceptibility** - Perform same conditioning and volumetric measurements on moisture-conditioned specimens as on other specimens. Vacuum saturate to 55 to 75 percent, soak in a 25°C water bath for 23 hours, followed by a one hour soak at 40°C. Determine corrected Marshall Stability. The average moisture conditioned specimen strength divided by the average dry specimen strength is referred to as retained stability.

7. **Emulsion Content Selection** - The properties of the specimens at design emulsion content shall meet the properties in Table 1.

8. **Report** - The report shall contain the following minimum information: Gradation of RAP; amount and gradation of virgin aggregate or additional RAP, if any; recommended water content range as a percentage of dry RAP; optimum emulsion content as a percentage of dry RAP and corresponding density; air void percentage; absorbed water percentage; Marshall Stability and Retained Stability at design moisture and emulsion contents; Raveling percentage; and Thermal Cracking initiation temperature. Include the mix design emulsion designation, supplier name, plant location, and emulsion testing results detailed in *Table 4*.

The mix design(s) shall meet the Mix Design Performance Criteria of **Table 1** and be approved by the County prior to construction.

9. **Other Additives:**

If necessary, additives may be used to meet the requirements in **Table 1**. In the case that an additive is used, the type and allowable usage percentage must be described in the submitted design recommendation.

10. Addition of Imported Crushed Reclaimed Asphalt Pavement (RAP) material:

If available, imported RAP material may be added at the discretion of the County Engineer if the RAP material meets the requirements in **Table 2**. The crushed RAP shall be free from vegetation and all other deleterious materials, including silt and clay balls. It shall meet the requirements for Deleterious Materials given in **Table 2**. The crushed RAP shall not exceed the maximum size requirement in this Technical Specification and when blended with the design millings, shall produce a product which meets the specifications given in **Table 1**.

| Table 1 – Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyratory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyratory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | Optimum Strength | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 -Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| * Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight. | | |
| **Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath | | |

| Table 2 - Imported Crushed RAP Criteria | | |
|---|---------------------------|-------------------------|
| Property | Method | Limit |
| Deleterious Materials: Clay Lumps and Friable Particles in Aggregate, % | ASTM C 142 or AASHTO T112 | 0.2% maximum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | 5% retained on 2" seive |

11. Additional Aggregate:

Based on the results of mix design testing or other requirements, the CIR contractor shall determine if additional aggregate is required to comply with mix design performance criteria specified in **Table 1**. Any additional aggregate shall meet the criteria specified in **Table 3**, and it shall be graded to produce a pavement layer which meets the mix design performance criteria specified in **Table 1**.

| Table 3 - Additional Aggregate Criteria | | |
|--|---------------------------|-----------------|
| Property | Method | Limit |
| Los Angeles abrasion value, % loss | AASHTO T96 | 40% maximum |
| Sand Equivalent,% | ASTM D2419 | 60% minimum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | Section 334-2.2 |
| Water absorption % | AASHTO T 85 | 5%_ maximum |

IV. Equipment:

Maintain all equipment in a satisfactory operating condition and in accordance with the 2010 *FDOT Standard Specifications for Road and Bridge Construction, Section 100-2*. The Cold In-Place Recycling shall be conducted with the equipment specified herein.

A. Milling Machine:

A self-propelled, down-cutting, lateral/horizontal mixing, cold milling machine capable of pulverizing the existing asphalt (and base material as needed) in a single pass to the depth shown on the plans will be required. The machine shall have automatic depth controls to maintain the cutting depth to within $\pm \frac{1}{4}$ in (6 mm) of that shown on the plans, and shall have a positive means for controlling cross slope elevations. A 30 foot non-contact averaging beam must be used on the mill. The use of a heating device to soften the pavement will not be permitted. Up-cutting machines shall not be permitted. Machines that only provide vertical mixing will not be permitted.

The milling machine must be equipped with a liquid metering device capable of adjusting the flow of asphalt emulsion to compensate for any variation in the speed of the machine. The metering device shall deliver the amount of asphalt emulsion to within ± 0.2 percent of the required design amount by weight of pulverized bituminous material (for example, if the design requires 3.0 percent, the metering device shall maintain the emulsion amount between 2.8 percent and 3.2 percent). The asphalt emulsion pump should be of sufficient capacity to allow emulsion contents up to 3.5% by weight of pulverized bituminous material. Also, automatic digital readings will be displayed for both the flow rate and total amount of pulverized bituminous material and asphalt emulsion in appropriate units of weight and time.

B. Bituminous Paver:

A self-propelled conventional bituminous paver having electronic grade and cross slope control for the screed shall be utilized. The equipment shall be of sufficient size and power to spread and lay the mixture in one smooth continuous pass to the specified section and according to the plans. A 30 foot non-contact averaging beam must be used on the bituminous paver. To reduce material segregation, the bituminous paver must utilize a hopper insert.

C. Rollers:

All rollers shall be self-propelled. The number, weight and types of rollers shall be as necessary to obtain the required compaction. At least one pneumatic-tired roller shall have a minimum gross operating weight of not less than 50,000 lbs. (22,600 kg). Pneumatic rollers must have properly working scrapers and water spraying systems. At least one double drum vibratory steel-wheeled roller shall have a gross operating weight of not less than 20,000 lbs. (9,000 kg) and a width of 78 inches (1980 mm). Double drum vibratory rollers must have properly working scrapers and water spraying systems.

V. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five CIR 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.

VI. Construction:

A. *Weather Limitations*

Cold In-Place recycling operations shall be completed when the atmospheric temperature measured in the shade and away from artificial heat is 500 F (10°C) and rising. Also, the weather shall not be foggy or rainy. The weather forecast shall not call for freezing temperature within 48 hours after placement of any portion of the project.

B. *Removal of Vegetation:*

Grass, vegetation and other deleterious material shall be removed from the edge of the existing pavement to prevent contamination of the pulverized bituminous material during the milling operation.

C. *Milling:*

The existing pavement shall be milled to the required depth and width as indicated on the plans. Recycling shall be in a manner that does not disturb the underlying material in the existing roadway. The milling operation shall be conducted so that the amount of fines occurring along the vertical faces of the cut will not prevent bonding of the cold recycled materials. Use a small milling machine, if necessary, to mill longitudinally to the required depth as indicated on the plans along all curbs and gutters, radius returns, utilities, inlets, around all manholes and any other structures not accessible or practical to be milled by the milling/mixing machine utilities. The millings produced by the small mill will be the same as the large mill and of equal gradation to produce a uniform recycled pavement layer. Inlets/Catch Basins must be covered during the milling and recycling operation to prevent milled material from entering the catch basin area where it could contaminate and/or block the storm water system.

D. *Processing:*

When a paving fabric is encountered during the CIR operation, the Contractor shall make the necessary adjustments in equipment or operations so that at least ninety percent (90%) of the shredded fabric in the recycled material is no more than 5 in² (3200 mm²). Additionally, no fabric piece shall have any dimension exceeding a length of 4 inches (100 mm). These changes may include, but not be limited to, adjusting the milling rate and adding or removing screens in order to obtain a specification recycled material. The Contractor shall be required to waste material containing over-sized pieces of paving fabric as directed by the Engineer.

E. *Spreading:*

The material shall be spread using a self-propelled paver meeting the requirements under *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 320-5*. Heating of the paver screed will not be permitted. The recycled material shall be spread in one continuous pass, without segregation and to the lines and grades established by the Engineer.

F. Compaction:

Compaction of the recycled mix shall be completed using rollers meeting the requirements of the *2010 FDOT Standard Specifications for Road and Bridge Construction Section 330-10*. During initial construction, rolling patterns and sequences shall be established through the construction of a control strip produced with the CIR equipment and within the pavement section, to determine the target wet density, using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. In all cases, the longitudinal joint must first be rolled followed by the rolling pattern established by the test strip. The initial pass for the rolling pattern established by the test strip should begin on the low side and progress to the high side by overlapping of longitudinal passes parallel to the pavement centerline. Initial rolling should not begin until the emulsion has started to break. Rollers shall be operated at speeds appropriate for the type of roller and necessary to obtain the required degree of compaction and prevent defects in the mat. Rolling shall be continued until no displacement is occurring or until the pneumatic roller(s) is (are) walking out of the mixture. Final rolling to eliminate pneumatic tire marks and to achieve density shall be done by double drum steel roller(s), either operating in a static or vibratory mode. Vibratory mode should only be operated at a speed, frequency and amplitude shown not to damage the pavement. The selected rolling pattern shall be followed unless changes in the recycled mix or placement conditions occur and the established rolling pattern is causing damage to the mat or the required degree of compaction is unachievable. These circumstances require the establishment of new rolling patterns and sequences through the construction of a control strip produced with the CIR equipment and within the pavement section. Rolling shall start no more than 30 minutes behind the paver. Finish rolling shall be completed no more than one hour after milling is completed. When possible, rolling shall not be started or stopped on uncompacted material but with rolling patterns established so that they begin or end on previously compacted material or the existing pavement.

G. Return of Traffic:

After the completion of compaction of the recycled pavement layer, no traffic shall be permitted on the completed recycled material for at least one (1) hour. After one hour rolling traffic may be permitted on the recycled material. This time may be adjusted by the contractor to allow establishment of sufficient cure so traffic will not initiate raveling. After opening to traffic, the surface of the recycled pavement layer shall be maintained in a condition suitable for the safe movement of traffic.

H. Protection and Damage:

Protect the recycled pavement layer in accordance with the *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 330-13*. Prime and sand the recycled pavement layer prior to opening the roadway to traffic. Any damage to the completed Cold In Place Recycled bituminous material shall be repaired by the contractor prior to the placement of the hot mix asphalt concrete surface course, or other applicable surface treatment, and as directed by the Engineer.

I. Finished Recycled Pavement Layer Smoothness:

The completed cold recycled pavement layer surface shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline at locations selected by the County.

Irregularities exceeding the specified limit shall be corrected at the expense of the contractor by grinding/cold milling or leveling with cold or hot mix asphalt. The corrected areas shall be retested to determine compliance with smoothness.

VII. Quality Control

A. Contractor Responsibility:

The contractor shall be responsible for providing field and laboratory quality control testing of materials during construction. The County or its subconsultant may conduct sampling and testing whenever or as often as desired for verification purposes. The contractor shall acquire an adequate amount of material for each sample to be tested in the laboratory so that an ample amount of material is left over in case of the need for resolution testing. Resolution testing will be required and provided at the expense of the contractor if similar laboratory samples tested by the contractor and the County do not coincide within reasonable values as determined by the County. The resolution laboratory will be selected by the County and the testing results provided by this lab will be used for materials acceptance purposes. All materials testing laboratories shall be accredited by the AASHTO Materials Reference Laboratory (AMRL) or Construction Materials Engineering Council (CMEC). The contractor shall submit all documentation of field inspection and laboratory testing results required herein to the County Engineer prior to payment and upon request. Copies of all delivery tickets and notes regarding any materials brought to the project site shall be given to the County upon delivery to the project site. These tickets shall be signed by an approved representative of the Contractor at the time of delivery.

B. Crushed RAP Material Sizing:

A sample shall be obtained from the receiving hopper of the paver each ½ mile or as specified by engineer (0.8 km) and screened using a 2 in. (51mm) sieve (or smaller sieve if required) to determine maximum particle size requirement compliance. The resulting gradations shall be compared to the mix design gradations to determine any necessary changes to emulsion content. Gradation results shall be shared with the County by the end of the following day. Sampling procedures shall be in accordance with ASTM D979 or AASHTO T168.

C. Asphalt Emulsion:

The asphalt emulsion shall be received on the job site within the temperature ranges specified by the emulsion supplier. The emulsion supplier shall provide testing results for each shipment indicating the emulsion is in compliance with the criteria specified in **Table 4**. The County Engineer may require the contractor to obtain emulsion samples from each shipping trailer prior to unloading into the contractor’s storage units for quality control testing if desired. The testing shall meet the following requirements:

| Table 4 – Emulsion Criteria | | |
|---|---------------|----------------|
| Property | Method | Limit |
| *Residue from distillation, % | ASTM D244 | 64.0 to 66.0 % |
| *Oil distillate by distillation, % | ASTM D244 | 0.5% maximum |
| Sieve Test, % | ASTM D244 | 0.1% maximum |
| **Residue Penetration, 25°C, dmm | ASTM D5 | -25 to +25% |
| <i>*Modified ASTM D244 procedure – distillation temperature of 177°C with 20 minute hold.</i> | | |
| <i>*To be determined during CIR design phase prior to emulsion formulation and</i> | | |

manufacture for project. Penetration value range will be determined and submitted to the County Engineer for approval prior to project start

D. *Asphalt Emulsion Content and Yield:*

Total emulsion quantity and yield shall be monitored and recorded daily and for each segment in which the target emulsion percentage is adjusted. This information shall be gathered from the calibrated emulsion metering device. Emulsion content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist.

E. *Water Content and Yield:*

Total water quantity and yield shall be monitored and recorded daily and for each segment in which the target water percentage is adjusted. This information shall be gathered from the water metering device. Water content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist. Water content adjustments shall also be made based on mixture consistency, coating, and dispersion of the recycled materials.

F. *Mixture Testing:*

At the discretion of the County Engineer and if the recycled pavement layer quality and workmanship seem suspect, the contractor may be required to sample, in accordance with ASTM D3665 and D979, the recycled mixture for determining compliance with design criteria specified in **Table 1**. If samples of the recycled asphalt pavement mixture are taken after the addition of additives and emulsion, the specimens must be compacted within 15 minutes of sampling and tested as required in **Table 1**. If the recycled mixture is sampled prior to the addition of additives and emulsion, the sample must immediately be transferred to air-tight plastic container to prohibit loss of moisture. Samples must be mixed in the laboratory with the field additives and emulsion within 24 hours and tested as required in **Table 1**.

G. *Depth of Pulverization (Milling):*

The depth shall be checked and recorded daily and every 1/8 mile (0.2 km) on both outside vertical faces of the cut. Measure depth by placing a rigid measuring device perpendicular to the bottom of the milled surface and near the vertical faces of the cut.

H. *Compacted Density:*

Degree of compaction of the recycled pavement layer shall be monitored for compliance with target wet density established during the initial control strip construction. Wet density shall be determined every 1/4 mile (0.4 km) using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. Ensure that all nuclear gauges are operated by licensed individuals and have been calibrated within the last 12 months. The acceptable degree of compaction shall be 96 to 98 percent of target wet density. Care shall be taken not to over-roll the mat based on visual observations of check cracking or shoving. A new control strip and target density shall be established if the consistency of the material being recycled changes. The County shall be notified prior to the construction of a new control strip.

I. *Cross-Slope and Smoothness:*

The recycled pavement layer cross slope shall be checked regularly during spreading. A minimum 2 % Cross-Slope shall be maintained through the length of the project. The recycled pavement layer shall be checked for smoothness regularly behind the paver and after rolling. The smoothness shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline after rolling is completed. The edge of the mat should be rolled first and progress to the center or high side to prevent excessive edge sloughing.

| Table 5 – Quality Control Testing and Inspection Criteria | | |
|--|--|--|
| Property | Method | Limit |
| RAP Maximum Particle Size | ASTM C 136 or AASHTO T27 | Section 334-2.2 |
| RAP Particle Size Distribution | ASTM C 136 or AASHTO T27 | Determined by Mix Design(s) |
| Emulsion and Water Yield | Calibrated Metering Device | Determined by Mix Design(s) |
| *Mixture Testing **Depth of Milling Compacted Density Cross-Slope Smoothness | Table 1 Section 334-5.7 ASTM D2950 FM 5-509 FM 5-509 | Table 1 Determined by Mix Design(s) 96 to 98% of target density Minimum 2% Maximum 0.5 in (12 mm) deviation from planeness |
| <i>*Mixture Testing frequency shall be at the County Engineer's discretion</i> | | |
| <i>**Depth of Milling may need to be adjusted for localized unexpected pavement conditions</i> | | |

J. *Documentation*

Delivery Tickets - All delivery tickets and notes regarding any materials brought to the project site to complete this item shall be given to the County upon delivery. Tickets shall be signed by an approved representative of the Contractor at the time of delivery.

VIII. 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 Cold-In-Place Recycled Bituminous Paving, and not specifically listed in another item in the Bid Form, shall be included in this item, including but not limited to Maintenance of Traffic as specified in TP-102.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. Prices shall be full compensation for the removal and processing of the existing pavement; for preparing, hauling, and placing all materials; for all freight involved; for all manipulations, including rolling and prime and sand for all labor, tools, equipment, quality control testing and incidentals necessary to complete the work. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Cold-In-Place Recycled Bituminous Paving, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Cold-In-Place Recycled Bituminous Paving | Square Yard |
| Liquid Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| Added RAP or Aggregates for Mixing | Ton |
| Cement | Ton |

END OF SECTION PC-007

PC-008-A FULL DEPTH RECLAMTION (FDR) WITH PORTLAND CEMENT**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material, Portland cement and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, the introduction of cement additives, and other additives (if called for in the Mix Design). The process which results in a stabilized base course, shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. RAP: Materials must meet all requirements specified in the current Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. Additional Base Materials: Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. Portland Cement: Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.
- D. Water: The water for the base course shall be clean and free from sewage, oil, acid, strong alkalis, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- E. Soil: The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. Road Reclaimer: Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of water and cement material into the mixture. The reclaiming machine shall mix the cement additive thoroughly with the RAP and soil materials. The pump shall be mechanically or

electronically interlocked with the ground speed of the machine. The cement metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and cement applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. Motor Grader: Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. Rollers: Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. Cement Delivery Equipment: A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.
- E. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (cement stabilization) 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.

V. Construction:

- A. Layout: The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the engineer.
- B. Weather and Seasonal limitations: The soil-cement base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that

the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen.

- C. Mix Design: Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of cement needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of cement required in the mix. Test specimens containing various amounts of cement are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of cement is to be determined. Actual application quantities for the Portland cement will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer of record. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

- D. Widening: When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

- E. Additional Material: When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.

- F. Pulverization: The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The cement and water shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. Alternately, the cement may be introduced by means of a spreader bar with curtain on the cement distributor. Cement shall not be introduced by means of a spreader bar or hose from the cement delivery tanker. The reclaimed material, cement and water shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of cement applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- G. Compaction: Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the cement-treated base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- H. Finishing: Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density. Correct all irregularities greater than ½" over ten feet to the satisfaction of the engineer.
- I. Protection and Curing: After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- J. Thickness: The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county’s option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Cement, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of cement into the mixture shall be included in the per TN cost for Cement. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the CY Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Cement, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Cement | Ton |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |

END OF SECTION PC-008-3

PC-008-B FULL DEPTH RECLAMATION WITH ASPHALT EMULSION**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material and emulsified asphalt and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives if called for in the Special Conditions or design mix formula. The process which results in a stabilized base course shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. **RAP:** Materials must meet all requirements specified in the 2015 Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. **Additional Base Materials:** Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. **Asphalt Emulsion:** When asphalt emulsion treatment is specified, asphalt emulsion, type CSS-1h or CMS-2h mod., meeting the requirements of ASTM D2397-98, shall be utilized.
- D. **Portland Cement:** When a blend of asphalt emulsion and Portland cement is specified the Portland cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85. If cement is added with emulsion no more than 4% shall be used on the project.
- E. **Water:** The water for the base course compaction and foaming additive shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- F. **Soil:** The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. **Road Reclaimer:** Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including

horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of asphalt emulsion into the mixture. The reclaiming machine shall mix the emulsified asphalt additive thoroughly with the RAP and soil materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The asphalt metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and asphalt applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. **Motor Grader:** Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. **Rollers:** Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. **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.
- E. **Cement Delivery Equipment:** A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (with emulsion stabilization) 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.

V. Construction:

- A. **Layout:** The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final

surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the Engineer.

B. Weather and Seasonal limitations: The base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen. A high ambient temperature (> 32°C, 90°F) increases the chance of breaking off large chunks (“slabbing”) in front of the cutting machine.

A. Mix Design: Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of asphalt emulsion or foamed asphalt needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of asphalt emulsion or foamed asphalt required in the mix. Test specimens containing various amounts of asphalt emulsion or foamed asphalt are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of either is to be determined. Actual application quantities for the additives will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

| Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyratory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyratory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | 1,250 lb min. | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 - Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| <i>* Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight.</i> | | |
| <i>**Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath</i> | | |

- B. **Widening:** When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

- C. **Additional Material:** When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.
- D. **Pulverization:** The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The asphalt emulsion or asphalt and water (to produce a foamed asphalt) shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. The reclaimed material and additives shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of asphalt emulsion applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician or superintendent to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- E. **Compaction:** Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- F. **Finishing:** Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density. Correct all irregularities greater than 1/2" over ten feet to the satisfaction of the engineer.
- G. **Protection and Curing:** After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material is applied.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- H. **Thickness:** The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county's option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Asphalt Emulsion, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of asphaltic cement into the mixture shall be included in the per GL cost for Asphalt Emulsion. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the per TON Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Asphalt Emulsion, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |
| Cement | Ton |

END OF SECTION PC-008-4

PC-009 BITUMINOUS FOG SEAL**I. Description**

The work consists of applying a bituminous fog seal to an existing pavement surface or to a newly constructed chip seal surface.

II. Materials:

- A. **Bituminous Material:** Provide a CSS-1 or CSS-1h, bituminous material for fog seal, as specified in FI/DOT 916-3.1. The temperature of the bituminous material at the time of application shall be above the minimum temperature of 120°F.

B. **Material Samples:**

The County will require the Contractor to sample and test the first load of emulsion prior to delivery. The Contractor will also provide a sample of the emulsion for every 10,000 gallons, on site, prior to commencing work. The County 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 County 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.

III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. **Distributor Tank:**

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the bituminous fog seal uniformly on variable widths of surface at readily determined and controlled rates from 0.07 to 0.12 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

B. **Sand Truck:**

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

D. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Fog Seal project references in the State of Florida that have been completed within the past three years. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience outline of the project superintendent. 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.

V. Construction:

A. Layout:

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

B. 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 60 degrees Fahrenheit in the shade, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 60°F. No construction is allowed in foggy weather.

C. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract

D. Site and Surface Preparation:

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 fog seal operation to make sure the road is free of loose aggregate and other debris.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

The fog seal material shall not be applied until an inspection of the street surface has been done by the Engineer and determined to be suitable.

E. 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 Contractor shall do a 100' test strip, applied between 0.07 to 0.12 gallons per square yard, diluted with potable water. A dilution rate of 50% (1:1 water to emulsion) is recommended. An application rate between 0.09 to 0.23 gallons per square yard may be used for open surfaces. The Engineer shall review the test strip and recommend application rate adjustments as needed.

F. Progress of Work:

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent. If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

Interim pavement markings can be placed after the fog seal has cured. Permanent pavement markings shall not be placed for three days after placing the fog seal.

When applying to a new chip seal surface, the bituminous chip seal shall be allowed to cure a minimum of 24 hours under dry conditions and temperatures above 60 degrees Fahrenheit.

VI. 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.

VII. 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 seal until it has cured. The Contractor shall submit an M.O.T plan indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County prior to commencing any work. All traffic control shall be in accordance with the FDOT Roadway Design Standards' most current edition. 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.

Traffic shall not be allowed on the roadway after placement of the fog seal for a minimum of two hours, or until the Engineer has determined it has cured.

VIII. 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 Fog Seal, and not specifically listed in another item in the Bid Form, shall be included in this item.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Fog 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 County.

Payment will be made under:

| Pay Item | Pay Unit |
|----------------------------------|-----------------|
| Bituminous Material for Fog Seal | Square Yard |

END OF SECTION PC-009

Date: August 21, 2015

**POLK COUNTY, A POLITICAL SUBDIVISION OF THE
STATE OF FLORIDA**

**ADDENDUM #1
Bid No. 15-601**

Pavement Management Alternative Methods

This addendum is issued to clarify, add to, revise and/or delete items of the solicitation document(s) for this work. This Addendum is a part of the solicitation document(s) and acknowledgment of its receipt shall be noted below and on the Bid Submittal Form.

The Procurement and Transportation Division will conduct **a pre-bid conference to be held Thursday, August 27, 2015, 12:30 p.m.** in the Procurement Division conference room, located at 330 W. Church St, Room 150, Bartow, FL 3830.

Tammy G. Spearman

Tammy G. Spearman, CPPO, CPPB
Procurement Specialist
Procurement Division

**This Addendum sheet must be signed and faxed to the
Procurement Division at 863-534-6789.**

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Date: September 1, 2015

**POLK COUNTY, A POLITICAL SUBDIVISION OF THE
STATE OF FLORIDA**

**ADDENDUM #2
Bid No. 15-601**

Pavement Management Alternative Methods

This addendum is issued to clarify, add to, revise and/or delete items of the solicitation document(s) for this work. This Addendum is a part of the solicitation document(s) and acknowledgment of its receipt shall be noted below and on the Bid Submittal Form.

The question deadline has been extended one (1) week. The **revised** Question deadline is Tuesday, September 8, 2015 by 4:00 p.m.

The Bid Receiving Date has been extended one (1) week. The **revised** Bid Receiving Date is Wednesday, September 16, 2015, prior to 2:00 p.m.

Tammy G. Spearman

Tammy G. Spearman, CPPO, CPPB
Procurement Specialist
Procurement Division

**This Addendum sheet must be signed and faxed to the
Procurement Division at 863-534-6789.**

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Date: September 3, 2015

**POLK COUNTY, A POLITICAL SUBDIVISION OF THE
STATE OF FLORIDA**

**ADDENDUM #3
BID# 15-601**

Pavement Management Alternative Methods

This addendum is issued to clarify, add to, revise and/or delete items of the Contract Documents for this work. This Addendum is a part of the Contract Documents and acknowledgment of its receipt shall be noted below and on the Bid Submittal Form.

The bid document and bid submittal sheets has been modified significantly and included in this addendum; responses to questions received are included also.

Tammy G. Spearman

Tammy G. Spearman, CPPO, CPPB
Procurement Specialist
Procurement Division

**This Addendum sheet must be signed and faxed to the
Procurement Division at 863-534-6789.**

Signature: _____

Printed Name: _____

Title: _____

Company: _____

ATTACHMENTS:

1. ADDENDUM ATTACHMENT NO. 1 – Redlined document
2. ADDENDUM ATTACHMENT NO. 2 – Document with all modification included.
3. BID SUBMITTAL SHEETS. (Bid Sheets are to be submitted on a cd as the Excel document, do not PDF the file)

REVISIONS:

There are substantial changes to the Special Conditions and the Technical Specifications of the bid document. Additionally, there are new bid documents for your cost submittal to accommodate the change in the bid requirements.

Attached you will find two documents for your review. **Addendum Attachment No. 1** is a redline document that shows additions and deletions in red; the deletions will be strike through with a read line. **Addendum Attachment No. 2** is a clear version that incorporates all additions and deletions.

Note that each Bid Sheet for each method has been modified to identify what items are to be included in the Basis of Award and the items that are necessary to be responsive but will not be included in the Basis of Award. All bid items on the bid sheet you are responding with must be completed for your bid to be responsive. Remember **Bid Sheets are to be submitted on a cd as the Excel document (do not PDF the file)** with your Bid Package along with the hard copy. The CD must be labeled with the company name and Bid number. Deviation from the Bid Sheets is strictly prohibited and will not be accepted.

QUESTIONS:

Question 1. General Information Item 19 – Price Adjustment: Will asphalt based material products pricing be adjusted per the FDOT index? If so only after the first year or will it be determined at each call out/PO?

Answer: As stated in the bid: The Procurement Director Reserves the right to increase/decrease prices after the bid has been in place for a minimum of 12-months, when it is in the best interest of the County. Increases/decreases will be determined by the appropriate price index.

Question 2. Special Conditions Item 15 – Survey: States County will do all stake out. Under the FDR and CIR specifications it says contractor is responsible for stake out before overlay. Will County do initial stake out and contractor is required to confirm grades before final paving?

Answer: The Special Conditions have been amended to eliminate section 15. The Contractor shall be responsible for the necessary survey work.

Question 3. PC-004 Chip Seal price sheet doesn't have a double application item but one is mentioned in the specifications. Will the County add a price line for double?

Answer: The Double application item has been added to the bid sheet.

Question 4. PC-006 Scrub Seal specifications mention using a Flush Coat (Fog & Sand) at the engineer's request. Since it may or may not be used will the County considers adding a pay item to cover it on the Scrub Seal price sheet?

Answer: A pay item for Sand has been added to the Rejuvenator, Fog, Scrub and Chip seal applications.

Question 5. For items PC-007 and PC-008 (Recycle and Full Depth) if the roads need to be lowered to increase curb reveal or correct cross slopes is it considered incidental to the Recycle or Full Depth unit price? Would it be paid for under the items for excavation or milling? The concern being if it is incidental the County will be paying for the removal even on "country" roads where none is required.

Answer: This cost is not incidental to FDR or CIP unit prices, and will be covered under Milling.

Question 6. Would the County consider having a mandatory pre-bid to go over some of these items?

Answer: Yes, a pre-bid meeting has been scheduled for Thursday August 27, 2015 at 12:30pm.

Question 7. Will the County provide a list of roads or projects as part of the Bid?

Answer: The County will not provide a list of projects as part of the bid. The roads may be anywhere within the County limits. Upon award, the County PM will meet with the Contractor to review candidate projects previously identified

by the County for each treatment. The projects will then be done on a work order basis.

Question 8. Must the bidders bid on all treatment or can they bid on specific treatments?

Answer: Each alternative treatment will have a separate bid sheet. The bidders may bid on any one of the alternative treatments, but must bid on every line item on that treatment's bid sheet.

Question 9. There are tasks included on the bid sheets for some treatments that are not commonly needed for those treatments. Must the bidder provide pricing for those as well?

Answer: For those treatments that are confined to the paved roadway, the tasks associated to the shoulders and roadside have been eliminated. However, notes have been added to the respective specifications whereby should any damages be caused beyond the edge of pavement, the contractor shall be responsible for restoring said areas at their expense.

Question 10. Regarding the Asphalt Rejuvenator Treatment, the pavement painting and markings line items are not required for the product standard; must the bidder still provide pricing for those line items?

Answer: The line items for pavement markings and striping will remain as part of the bid sheet for the County's information, but will be excluded from the bid total. They will be shown separately below the bid total. Because bidders may submit an alternate product that impacts pavement markings, a separate bid sheet will be added for the alternate asphalt rejuvenator (PC-002-2). This bid sheet will include pavement markings and striping as part of the bid total. Similarly, line items that have been included on other treatment bid sheets as a precaution, will be excluded from the bid totals.

The terms of award have been modified in the Special Conditions to reflect these changes.

Question 11. What is PC-001?

Answer: PC-001 refers to milling of existing asphalt pavement, and shall be done in accordance with FDOT Standard Specification Section 327.

Question 12. Does the County have any history or records of documented performance for any of these treatments?

Answer: The County has had limited experience in the past with alternate pavement preservation treatments, mostly Hot-in-Place. The County can provide some information on those, if necessary. However, in essence this will be the first formal incursion into this area of pavement preservation, and considered a pilot program for this first year.

Question 13. In regards to line item 337-1 for the Full Depth Reclamation and Cold-in-Place, is the indication of a PG for the ARB referring to an older FDOT specification?

Answer: This line item has been revised to reflect the current FDOT standard.

Question 14. Will the County provide any cores (boring) information for the Full Depth Reclamation?

Answer: The contractor will do cores before as per the specification in order to finalize the design. If there are any historical boring logs for the particular road available, the County will provide the contractor with those as a reference.

Question 15. Can line items PC-007-2 and PC-008-2 for Added RAP be used for shoulder widening to achieve final grades?

Answer: RAP may be added as part of the homogeneous mixed material that will form the widened area.

Question 16. Will the work orders be independent streets or groups of streets?

Answer: With the exception of the asphalt recycling treatments, which are more appropriate for single long road stretches, the roads will be grouped by proximity when possible, such as in the case of subdivisions.

Question 17. Will the funding for these projects be from carried over funds or the next fiscal year?

Answer: These projects will be funded from the FY15-16 budget which starts on October 1st.

Question 18. In the Special Conditions, Bidder Qualifications, it states "bidders should submit 3 maintenance projects for each alternative method bid upon, successfully completed within the last 5 years in which the contractor's portion of the work exceeded \$50,000.00. The projects must be for FDOT or for local government agencies." This prequalification condition will limit the number of qualified bidders due to the fact that the FDOT does not contract this type of work. Very few government agencies contract this type of work as well. Since so little of this type of work is contracted by these agencies Polk County will have a very limited number of bidders. Please review this prequalification condition.

Answer: The condition has been revised to indicate experience in projects exceeding \$30K and they may be for any government agency, local or out of state.

Question 19. In Category PC-005 Micro-surfacing, Item IX. Warranty, calls for a 3 year warranty, is a maintenance bond required with this?

Answer: No maintenance bond will be required.

Question 20. Can a list of streets be given to us for each method? If we do not have a list of streets then the pricing for Maintenance of Traffic, Testing and Daily Production will be a guess and the pricing will reflect this.

Answer: A list will not be provided at this time. Refer to the answer for Question 7.

BID REGISTRATION

You **MUST** register using this form in order to receive notice of any addenda to these documents. Please fax the completed form to the Procurement Division as soon as possible. It is the vendor's responsibility to verify if addenda have been issued.

Bid Number: 15-601, Pavement Management Alternative Methods
Description: Provide the necessary labor, material, equipment and supervision for pavement management alternative methods.
Receiving Period: Wednesday, September 16, 2015, prior to 2:00 p.m.
Bid Opening: Wednesday, September 16, 2015, 2:00 p.m.

NOTE: This is an annual bid therefore, there is no established budget. The services contained within this bid are utilized on an as-needed basis. This is a new annual bid; there is no prior bid information available.

This form is for bid registration only. Please scroll down for additional information.

**BIDDER REGISTRATION
FAX THIS FORM BACK IMMEDIATELY
FAX: (863) 534-6789**

Carefully complete this form and e-mail or fax it to the Procurement Division. You must submit one form for each bid that you are registering for.

Company Name: _____

Contact Person: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____ E-mail: _____

POLK COUNTY

**Procurement Division
Fran McAskill
Procurement Director**

**Bid #15-601
PAVEMENT MANAGEMENT ALTERNATIVE METHODS**

Polk County, a political subdivision of the State of Florida, requests the submittal of bids from vendors that are interested in providing pavement management alternative methods as described herein. Sealed bids will be received in the Procurement Division, **prior to 2:00p.m, Wednesday, September 9, 2015.** Bids will be opened at 2:00p.m., September 9, 2015.

Attached are important instructions and specifications regarding responses to this Bid. Failure to follow these instructions could result in Bid disqualification.

Questions regarding this bid should be in writing and should reference the above Bid number. Submit all questions to **Tammy G. Spearman, CPPO, CPPB Procurement Specialist**, via email at tammywinton-spearman@polk-county.net or via fax at (863) 534-6789 by 4:00 p.m., **Tuesday, September 8, 2015.**

Bids may be mailed, express mailed or hand delivered to:

**Procurement Division
330 W Church St, Rm 150
Bartow, Florida 33830
(863) 534-6757
STATEMENT OF NO BID**

If you do not intend to submit a bid, please complete the information below and return to the Procurement Division via fax or e-mail. If returning by mail, please be sure the bid number and title are clearly marked on the front of the envelope.

- | | |
|---|---|
| <input type="checkbox"/> Insufficient time to respond | <input type="checkbox"/> Unable to meet specifications |
| <input type="checkbox"/> Do not offer this product | <input type="checkbox"/> Unable to meet bond/insurance requirements |
| <input type="checkbox"/> Specifications unclear | <input type="checkbox"/> Schedule would not permit us to perform |
| <input type="checkbox"/> Specifications too restrictive | <input type="checkbox"/> Other (please specify below) |

Company Name: _____ Date: _____

Telephone Number: _____ Signature: _____

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BIDDER INSTRUCTIONS AND GENERAL INFORMATION

BIDDER INSTRUCTIONS: To ensure acceptance of this bid, follow these instructions.

BID DOCUMENTS MUST BE DELIVERED TO THE PROCUREMENT DIVISION PRIOR TO 2:00P.M. ON THE DATE SPECIFIED. THERE WILL BE NO EXCEPTIONS.

1. **EXECUTION OF BID:** Bid must contain an original signature of an authorized representative in the space provided on the signature page. Bid must be typed or printed in black ink. Erasable ink is not permitted. Corrections made by bidder to any bid entry must be initialed by the person who signs the bid.
2. **NO BID:** Bidders not interested in submitting a bid should return a “no bid,” with an indication of the reason for no bid and the interest in future bid solicitations.
3. **BID OPENING:** It is the responsibility of the bidder to assure that their bid is delivered at the proper time and place prior to the bid opening. All bid openings shall be public, at 2:00 p.m., on the date specified in the Notice to Bidders. Bids, which for any reason are not so delivered, will not be considered. **BID SUBMITTAL FORMS USING FACSIMILE OR EMAIL WILL NOT BE ACCEPTED.**

NOTE: In accordance with Florida Statute 119.071, a listing of vendors that provide a bid submittal shall be posted to the County’s website at <http://www.polk-county.net/boccsite/departments/budget-and-procurement/bids/bid-status/> . The sealed bids shall remain exempt from disclosure, including bid amounts, until recommendation of award or 30 days after bid opening, whichever event occurs first.

Should the Procurement Director reject all bids, before the recommendation of award or 30 days after bid opening, and concurrently provide notice of the County’s intent to reissue the bid, the rejected bids will remain exempt from Florida Statute 119.07 until such time as the County provides notice of recommendation of award of the reissued bid or until the County withdraws the reissued bid. The bid is not exempt for longer than 12 months after the notice of rejection of all bids.

4. **COUNTY AS GATEKEEPER OF DOCUMENTS:** This document is issued by Polk County and as such shall be the sole distributor of all addendums and/or changes to these documents. It is the responsibility of the bidder to determine issuance of documents directly with the Procurement Division. The County is not responsible for any solicitations issued through subscriber, publications, or other sources not connected with the County and the bidder should not rely on such sources for information regarding the solicitation.
5. **TAXES:** Bidders are responsible for the payment of any applicable taxes that are connected to the purchase of any materials or subcontractors used in the execution of this bid.

6. **DISCOUNTS:** Bidders may offer a cash discount for prompt payment; however, such discounts shall NOT be considered in determining the lowest net cost for bid evaluation purposes. Bidders are encouraged to reflect cash discounts in the unit prices quoted.
7. **MISTAKES:** Bidders are required to examine the specifications, delivery schedule, bid prices and all instructions pertaining to the requirements of this bid. Failure to do so will be at bidder's risk. In case of a mistake in extension of a unit price, the unit price will govern. Corrections made by bidder to any bid entry must be initialed by the person who signs the bid.
8. **INVOICING AND PAYMENT:** The successful bidder shall submit a properly certified invoice to the County at the prices bid. **An original invoice shall be submitted to the appropriate User Division.** The vendor shall include the bid number and/or the purchase order number on all invoices. The vendor's Project Manager or any authorized officer shall, by affidavit, attest to the correctness and accuracy of all charges. Invoices will be processed for payment when approved by the appropriate Division's Project Manager or designee.
9. **CONFLICT OF INTEREST:** All bidders must disclose, with their bid, the name of any officer, director or agent who is also an employee of the County or any of their agencies. Furthermore, all bidders must disclose the name of any County employee who owns, directly or indirectly, any interest of any amount in the bidder's firms or any of their branches. Award of this bid shall be subject to the provisions of Chapter 112, Florida Statutes.
10. **WARRANTY:** Unless otherwise specified, the bidder agrees that the services furnished under this bid shall be covered by the most favorable commercial warranty the bidder gives to any customer for comparable services, and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the County by any other provision of this bid.
11. **ADDENDUM:** Any changes in the bid shall be made in the form of a written addendum by the Procurement Director or their designee. No other person shall be authorized to make changes verbally or in writing. If an addendum is issued, the addendum sheet should be signed and submitted with your bid submittal.
12. **LIABILITY:** The vendor shall hold and save the County, its officers, agents and employees harmless from liability of any kind in the performance of this bid and against claims by third parties resulting from the supplier's breach of contract or the supplier's negligence.
13. **PATENTS AND ROYALTIES:** The bidder, without exception, shall indemnify and save harmless the County and its employees from liability of any nature or kind, including cost and expenses for, or on account of, any copyrighted, patented or non-patented invention, process, or article manufactured and used in the performance of this bid. If the bidder uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or cost arising from the use of such design, device or material in any way involved in the work.

14. **BID PROTEST:** Any bidder desiring to file a bid protest, with respect to a recommended award of any bid, shall do so by filing a written protest. The written protest must be in the possession of the Procurement Division within three (3) working days of the Notice of Recommended Award mailing date. All bidders who bid will be sent a Notice of Recommended Award, unless only one bid was received.

A copy of the bid protest procedures may be obtained from the Polk County Procurement Division or can be downloaded from the County's website at <http://www.polk-county.net/boccsite/departments/budget-and-procurement/bids/bid-status/>.

FAILURE TO FOLLOW BID PROTEST PROCEDURE REQUIREMENTS WITHIN THE TIME FRAMES PRESCRIBED HEREIN AS ESTABLISHED BY POLK COUNTY, FLORIDA, SHALL CONSTITUTE A WAIVER OF THE BIDDER'S RIGHT TO PROTEST AND ANY RESULTING CLAIM.

15. **INDEMNIFICATION:** Vendor, to the extent permitted by law, shall indemnify, defend (by counsel reasonably acceptable to County), protect and hold the County, and its officers, employees and agents, harmless from and against any and all, claims, actions, causes of action, liabilities, penalties, forfeitures, damages, losses, and expenses whatsoever (including, without limitation, attorneys' fees, costs, and expenses incurred during negotiation, through litigation and all appeals therefrom) including, without limitation, those pertaining to the death of or injury to any person, or damage to any property, arising out of or resulting from (i) the failure of Vendor to comply with applicable laws, rules or regulations, (ii) the breach by Vendor of its obligations under any Agreement with the County entered into pursuant to this solicitation, (iii) any claim for trademark, patent, or copyright infringement arising out of the scope of Vendor's performance or nonperformance of the Agreement, or (iv) the negligent acts, errors or omissions, or intentional or willful misconduct, of Vendor, its professional associates, subcontractors, agents, and employees; provided, however, that Vendor shall not be obligated to defend or indemnify the County with respect to any such claims or damages arising out of the County's sole negligence. The obligations imposed by this Section shall survive the expiration or earlier termination of the Agreement.
16. **PUBLIC ENTITY:** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list. When submitting this bid, the bidder hereby certifies that they have complied with said statute.
17. **PREFERENCE FOR DRUG FREE WORKPLACE:** Whenever two or more bids, which are equal with respect to price, quality and service, are received, preference shall be given to a bid received from a business that certifies that it has implemented a drug free workplace program in accordance with Section 287.087, Florida Statutes. In order to

receive preference, a signed certification of compliance must be submitted with the bid response.

18. **CODE OF ETHICS:** If any bidder violates or is a party to a violation of the code of ethics of Polk County or the State of Florida, with respect to this bid, such bidder may be disqualified from performing the work described in this bid or from furnishing the goods or services for which the bid is submitted and shall be further disqualified from bidding on any future bids for work, goods, or services for the County.
19. **SEALED BIDS:** All bid submittals must be completed and submitted in a sealed parcel. **(DO NOT INCLUDE MORE THAN ONE BID SUBMITTAL PER ENVELOPE. BID SUBMITTAL SHALL INCLUDE ONE (1) ORIGINAL AND ONE (1) COPY OF ORIGINAL.)** The **Original** bid submittal(s) shall be submitted on the forms provided by Polk County. All bids are subject to the conditions herein; failure to comply will subject bid to rejection.

GENERAL INFORMATION

1. **DEFINITIONS:** The term “County” means the Polk County Board of County Commissioners, a political subdivision of the State of Florida, and its authorized designees, agents or employees.
2. **AWARD(S):** The award of this bid shall be based on low bid per each alternative method. As the best interest of the County may require, the right is reserved to make award(s) by individual item, group of items or as indicated in the bid form; to reject all bids or waive any minor irregularities or technicalities in bids received. In determining the lowest responsive and responsible bidder, in addition to price, the following may be considered:
 - Vendor’s evaluation – quality of performance on previous projects.
 - The ability, capacity, equipment and skill of the bidder to fulfill the contract.
 - Whether or not the bidder can fulfill the contract within the time specified, without delay or interference.
 - The character, integrity, reputation, judgment, experience and efficiency of the bidder.
 - The previous and existing compliance by the bidder with laws and ordinances relating to the contract.
 - The sufficiency of the financial resources to fulfill the contract to provide the goods and/or services.
 - The quality, availability and adaptability of the suppliers or contractual services to the particular use required.
 - The ability of the bidder to provide future maintenance and service, as required or needed.
 - The number and scope of conditions attached to the bid.
3. **LOCAL PREFERENCE:** It is the policy of the Board of County Commissioners to afford local preference to Polk County entities in the award of bids. Preference shall be administered in accordance with the following:

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When bids are received that do not exceed \$3,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within 2% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

When bids are received that are greater than \$3,000,000.00 but do not exceed \$5,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within 1% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

When bids are received that are greater than \$5,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within .5% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

For purposes of this provision the term "Polk County entity" means any business having a physical location within the boundaries of Polk County, Florida, at which employees are located and business activity is managed and controlled on a day to day basis. Additionally, the business must have been located within the boundaries of Polk County for a minimum of 12 months prior to the date the applicable solicitation is issued. This requirement may be evidenced through a recorded deed, an executed lease agreement, or other form of written documentation acceptable to the County. The County shall have the right, but not the obligation, to verify the foregoing requirements.

If a contract is being funded in whole or in part by assistance of any federal, state or local agency which disallows local preference, the County will adhere to those requirements by not applying this section.

This policy does not apply if this bid qualifies as a Sheltered Market bid.

4. **VENDOR PREFERENCE:** It is the policy of the Board of County Commissioners to afford vendor preference to women or minority owned businesses in the award of bids. Preference shall be administered in accordance with the following:

When sealed bids are received that do not exceed \$3,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within 2% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached,

the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

When sealed bids are received that are greater than \$3,000,000.00 but do not exceed \$5,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within 1% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match lowest price is reached, the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

When sealed bids are received that are greater than \$5,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within .5% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match lowest price is reached, the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

The term "Women or Minority Owned Entity" means any business having at least 51% ownership by women or minority group members who independently control the management and day-to-day operations of the firm. Group members are Females, African Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, and Asian-Indian Americans.

If a contract is being funded in whole or in part by assistance of any deferral, state or local agency which disallows this form of preference, the County will adhere to those requirements by not applying this section.

This policy in no way supersedes the Local Preference Policy.

This policy does not apply if this bid qualifies as a Sheltered Market bid.

5. **NON-CONFORMANCE TO BID CONDITIONS:** Services not delivered as per delivery date in bid and purchase order may result in bidder being found in default, in which event any and all re-procurement costs may be charged against the defaulting vendor. This non-conformance to bid conditions may result in immediate cancellation of the purchase order.
6. **ASSIGNMENT:** Any purchase order issued pursuant to this bid and the monies which may become due herein is not assignable except with the prior written approval of the Procurement Director.
7. **DISPUTES:** In the event of any doubt or difference of opinion as to the methods provided herein, or the level of performance rendered, the decision of the user department/division director shall be final and binding on both parties.
8. **FACILITIES:** The County reserves the right to inspect the bidder's facilities at any time, with prior notice.

9. **PLACING OF ORDERS:** The award of this bid does not constitute an order. Before any services can be performed, the successful bidder must receive written or oral notification in accordance with the practices of the User Division.
10. **PRECEDENCE:** Any requirement set forth in any section of the bid documents shall be binding as if called for by all sections. If there is a difference in the terms anywhere in this document, the most restrictive shall prevail.
11. **ADDITIONS/REVISIONS/DELETIONS:** Additions, revisions or deletions to the general conditions, specifications or bid price sheets that change the intent of the bid will cause the bid to be non-responsive and the bid will not be considered. The Procurement Director shall be the sole judge as to whether or not any addition, revision or deletion changes the intent of the bid.
12. **TERMINATION/SUSPENSION:** The County may terminate this Bid at any time, in whole or in part, either for the County's convenience or because of the Bidder's material default of its Bid obligations, by delivering a written notice of termination to the Bidder. Upon receipt of such notice, the Bidder shall:
 - Immediately discontinue all work unless the County's notice directs otherwise, and
 - Deliver to the County any and all data, reports, summaries, and all other information and materials of any type or nature whatsoever, whether completed or in process, the Bidder may have accumulated or generated in the course of performing the work of the Bid.

If at any time the User Division determines that the Bidder is in material default of its Bid obligations, then the User Division shall complete and deliver a Vendor Complaint Form to the Bidder that specifically states the basis for the Bidder's default. Within ten (10) days after its receipt of the Vendor Complaint Form, the Bidder shall correct all events of default. If, however, the Bidder's material default is such that it cannot be reasonably cured within the ten (10) day time period, then the County will not terminate the Bid for such default if the Bidder commences the necessary curative actions within ten (10) days after its receipt of the Vendor Complaint Form and thereafter diligently pursues the cure to completion.

If the Bidder's default continues beyond the allotted cure period, the Procurement Director: (i) may terminate the Bid, and (ii) may also suspend the Bidder in accordance with the Suspension and Debarment Section of the County Procurement Procedures Manual.

13. **CANCELLATION:** All annual bid obligations shall prevail for at least one hundred eighty (180) days after effective date of the bid, unless bid conditions are breached as specified herein. After that period, for the protection of both parties, either party may cancel this bid in whole or part by giving thirty (30) days prior notice in writing to the other party. The County reserves the right to cancel any bid after reasonable written notice to the successful bidder should the service not be in the best interest of the

County. Should the service rendered for any bid cause or threaten endangerment to public safety or welfare, the Procurement Director may cancel the bid immediately.

14. **PRICE ADJUSTMENTS:** Any price decrease executed during the contract period, either by reason of market change or on the part of the contractor to other customers, shall be passed on to the County.
15. **PLANS AND SPECIFICATIONS:** The specifications and other bid documents upon which the prices in the vendor's bid proposal are based on are hereby made a part of the purchase order by reference thereto.
16. **PERFORMANCE AND PAYMENT BOND:** If a bond is required, it will be called out in the Special Conditions section of the bid. The vendor shall furnish a performance and payment bond, in an amount equal to the amount awarded, as security for the faithful performance and payment of all the vendor's obligations under the bid documents. The bond shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the bid documents. All bonds shall be in the form prescribed by the bid document except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department and A.M. Best rated A VIII or better.
17. **UNAUTHORIZED ALIEN(S):** The vendor agrees that unauthorized aliens shall not be employed nor utilized in the performance of the requirements of this solicitation. The County shall consider the employment or utilization of unauthorized aliens a violation of Section 274A(e) of the Immigration and Naturalization Act (8 U.S.C. 1324a). Such violation shall be cause for unilateral termination of this Agreement by the County. As part of the response to this solicitation, the successful vendor will complete and submit the attached form "AFFIDAVIT CERTIFICATION IMMIGRATION LAWS."

Employers may avail themselves of a program by the U.S. Immigration and Customs Enforcement called E-Verify. E-Verify is an Internet-based system operated by U.S. Citizenship and Immigration Services (USCIS), part of the Department of Homeland Security (DHS), in partnership with the Social Security Administration (SSA). E-Verify is currently free to employers. E-Verify provides an automated link to Federal databases to help employers determine employment eligibility of new hires and the validity of their Social Security numbers.

If your company wishes to avail themselves of this program, you can register online for E-Verify at <http://www.dhs.gov/how-do-i/verify-employment-eligibility-e-verify> which provides instructions for completing the registration process. At the end of the registration process, you will be required to sign a Memorandum of Understanding (MOU) that provides the terms of agreement between you as the employer, the SSA, and DHS. An employee who has signatory authority for the employer can sign the MOU. Employers can use their discretion in identifying the best method by which to sign up their locations for E-Verify. To find out more about E-Verify, please visit www.dhs.gov/e-verify or contact USCIS at **1-888-464-4218**.

18. **ANNUAL APPROPRIATIONS:** The vendor acknowledges that the County, during any fiscal year, shall not expend money, incur any liability, or enter into any agreement which, by its terms, involves the expenditure of money in excess of the amounts budgeted or the reduction of revenues for those budgeted agreements that may be available for expenditure during such fiscal year. Any agreement, verbal or written, made in violation of this subsection is null and void, and no money may be paid on such agreement. Nothing herein contained shall prevent the making of agreements for a period exceeding one year, but any agreement so made shall be executory only for the value of the services to be rendered or agreed to be paid for in succeeding fiscal years. Accordingly, the County's performance and obligation to pay under this agreement is contingent upon annual appropriation.
19. **PRICE INCREASES:** The Procurement Director Reserves the right to increase/decrease prices after the bid has been in place for a minimum of 12-months, when it is in the best interest of the County. Increases/decreases will be determined by the appropriate price index.
20. **UNCONTROLLABLE FORCES (FORCE MAJEURE):** When events occur that are not of the Contractor or County's doing, neither the Contractor nor the County will be deemed in default should the events meet the definition of "Uncontrollable Forces", also known as "Force Majeure". The term "Uncontrollable Forces" or "Force Majeure" shall mean any event which results in the prevention or delay of performance by a party of its obligations and which is beyond the reasonable control of the non-performing party. The events include, but are not limited to, fire, flood, earthquakes, storms, hurricanes, lightning, epidemic, war, riot, civil disturbance, sabotage, and governmental actions.

Neither party shall be excused from performance if non-performance is due to forces which are reasonably preventable, removable, or remediable and which the non-performing party could have, with the exercise of reasonable diligence, prevented, removed, or remedied the event prior to its occurrence.

The non-performing party shall, within five (5) calendar days after being prevented or delayed from performance by an uncontrollable force, deliver written notice to the other party particularly describing the circumstance that prevented its continued performance of the obligations of the work and a good faith estimate as to the anticipated duration of the delay and the means and methods for correcting the delay.

21. In the event of default by the successful Bidder, the County reserves the right to utilize the next lowest Bidder as the new Awardee when the default occurs within the first term of the bid. Should this occur, the next lowest Bidder will be required to provide the bid items at the prices as noted on their bid submittal.

ATTENTION BIDDERS

The Successful Bidder must register in our new Vendor Database if you have not already done so prior to award of this bid. A purchase order cannot be issued to a vendor until they have registered.

You may register by going to the following link:

<http://www.polk-county.net/boccsite/Doing-Business/Vendor-Registration/>

Registered vendors will receive a User ID and Password to access their company information. All registered vendors must provide their owner gender, owner ethnicity, corporate status, and a minimum of one (1) commodity code to be considered registered. It is the responsibility of all vendors to update their vendor information.

Only registered vendors will receive notifications of future bids and quotes.

GENERAL CONDITIONS

1. Award will be made based on the lowest responsive bid per alternative method meeting specifications. Bidders are not required to bid on all alternative methods, but must bid on all items contained within each alternative method bid in order for their bid to be considered responsive. All bid items that are part of the basis of award should be bid at a fair and reasonable price; failure to do so may cause the bid to be non-responsive. The Procurement Director shall be the sole judge of what is fair and reasonable. The Procurement Director reserves the right to reject any or all bids and/or waive any minor irregularities in the bids received, whichever would be in the best interest of the County.
2. **PERFORMANCE OF WORK:** Portions of the work required under this bid may be performed by subcontractors. Should the successful vendor plan to use subcontractors from the beginning to perform the required work, the vendor must provide a list of subcontractors to the Procurement Division for approval prior to bid award. Should the successful vendor require subcontractors to perform any work during the course of the work assigned under this bid, the vendor must also provide a list of subcontractors to the Procurement Division for approval. The vendor shall be fully responsible for all acts and omissions of their subcontractors and of persons directly or indirectly employed by them and of persons for those acts any of them may be liable to the same extent as if they were employed by the vendor. All submittals required of the prime vendor shall also be required from the subcontractor. Any work performed by the successful vendor or sub-contracted out must meet all regulated deadlines.
3. The period of performance for this bid begins on the date of award through September 30, 2016. The bid will automatically renew for two (2) one (1) year periods, unless otherwise terminated in accordance with General Information Items #12 and #13.
4. All prices bid shall remain unchanged during the period of performance, as specified herein, and as may be adjusted in accordance with General Information Item # 19.
5. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/boccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.
6. Vendors must possess a Polk County Local Business Tax Receipt (f/k/a Business License) in order to do business with the County. A copy of such license must be provided to the Procurement Division before award is made to the successful vendor.
7. Upon execution of the bid, the County reserves the right to conduct an audit of the contractor's records pertaining to the project. The County or its representatives may conduct an audit, or audits, at any time prior to final payment, or thereafter. The County may also require submittal of the records from the contractor, the subcontractor, or both as the County deems necessary, records include all books of account, supporting documents, and papers pertaining to the cost of performance of the project work.

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8. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/boccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.

9. **Bidders are advised that in the interests of waste reduction and maximizing the potential for recycling, they are asked to abide by the following in preparing their bids:**
 - Return only the required bid submittal pages
 - Avoid comb, velo binding, and plastic binders
 - Avoid plastic dividers and/or plastic tabs
 - Print and/or copy double-sided to the extent feasible
 - Use at least 30% post-consumer recycled content paper to the extent practicable

SPECIAL CONDITIONS

1. **BIDDER QUALIFICATIONS:** Bidders should submit a list of three (3) asphalt maintenance projects for each alternative method bid upon, successfully completed within the last five (5) years in which the Contractor's portion of the work exceeded \$5930,000.00—~~The projects must be for FDOT or for local for any government agencies~~agency, local or out of state. The list shall include the names of the projects, names of the governmental agencies, names of the Project Managers for the governmental agencies, phone numbers for the Project Managers, and the dollar amounts of the contracts.
2. The contractor(s) shall provide all services to properly complete the work described in the Bid document, including but not limited to all labor, materials, supervision, equipment, tools, transportation and supplies. The contractor(s) is required to have a qualified superintendent on the job site at all times. If multiple jobs are under construction concurrently, each job is required to have a qualified superintendent on site. If the County determines that a job site is not being adequately supervised, a deficiency letter will be issued to the contractor(s).
3. Except as amended in the Bid document or otherwise directed by the Director User Division, all work shall conform to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction; the Florida Department of Transportation Roadway and Traffic Design Standards; and the Manual of Uniform Traffic Control Devices, all current editions.
4. No work shall be performed under the provisions of this bid on any properties outside the limits of the project area without prior written permission of the lawful affected landowner. Any such permission shall be obtained by the contractor(s) and shall identify the provisions under which such work is to be performed and written permission obtained shall be provided to the County Project Manager prior to the associated work being performed. The contractor(s) shall not be compensated for any work outside the project area and shall hold the County harmless for all liabilities associated with said work outside the project area.
5. **DEFINITIONS:** The definitions as stated in Section 1-3 of the FDOT Specifications are modified as follows:
 - a. The Department or FDOT: Reference is to the County as the owner of the project.
 - b. Inspector: The person designated as an agent or representative of the County to perform construction inspection.
 - c. The Engineer: This term has the same meaning as "Polk County Project Manager" as defined in the bid document.
 - d. State Road: Any public roadway.
 - e. The Department's Acceptance Tests: Tests adopted by the County.
 - f. The District and/or Central Labs: The contractor's testing subcontractor, as authorized by the County.
6. **FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION**
 - a. The current Division II Construction Details and Division III Materials in the FDOT Standard Specifications for Road and Bridge Construction, including all revisions

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current at the time of the bid, shall apply to this Bid except as modified by Special Provisions or Technical Specifications attached to Bid document.

a.i. For Shoulder Rework, refer to Section 577-70 of the 2000 Edition of FDOT Standard Specifications for Road and Bridge Construction.

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b. If any conflicts exist between the specifications prescribed in the Bid document, the more stringent requirement shall apply.

7. PROJECT QUOTES AND WORK ORDERS

a. This annual bid includes asphalt roadway treatments and/or recycling for multiple project work orders at various locations throughout Polk County, according to the requirements of the Bid document. The project work order locations may be anywhere within Polk County.

b. The County will perform a preliminary estimate for each project using the unit prices from the awarded vendors bid submittal for the alternative method to be used. The preliminary estimates may also include out of scope work items determined by the Project Manager. The contractor's final estimates will be returned to the County Project Manager, including those out of scope cost previously identified by the Project Manager, prior to the deadline stated in the request for final estimate. When the ~~low~~-final estimate is approved, a purchase order will be issued and notice to proceed given to the contractor. A work order with the approved ~~low~~-final estimate must be attached to the purchase order. The contractor will then commence work and proceed in accordance with the approved schedule, if applicable. Payment for each project will be based on actual quantities used and unit prices from the bid, as approved by the County.

c. The approved quote amount on any individual work order shall be the maximum compensation payable to the contractor for that work order. The work order price may only be changed for altered quantities authorized by the County. If the contractor desires to make a claim for a change in quantity or schedule of an authorized work order, any such claim shall be submitted to the County Project Manager in writing within three (3) working days of the occurrence of the event giving rise to the claim.

8. **PROJECT SCHEDULES:** The County will require that the contractor submit time estimates for specific projects, at the County's request.

9. **Working Hours:** The regular working hours for Polk County are Monday – Friday, 7:00 AM to 5:30 PM. Permission to work outside of the regular work hours must be requested a minimum of 5 working days in advance from the County Project Management Section. Permission to work on County holidays must be requested a minimum of 5 working days in advance from the County Project Management Section.

10. **OUT OF SCOPE WORK:** When preparing a preliminary estimate, if it is known or reasonably anticipated that there are necessary items of construction that are not included on the price sheets of the bid or, during the course of executing a work order, the County Project Manager determines that there are necessary items of construction that are not included on the price sheets of the bid, then the County Project Manager will request a cost proposal from the Contractor for the "out of scope" work. The "out of scope" proposal shall contain all necessary costs, expenses and time; the County shall not be obligated in any event for payment over the amounts identified in the proposal. The "out of scope" services shall not be greater than fifteen-percent (15%) of

the “in-scope” services. Contractor shall not commence work on any “out of scope” services until approval is received from the County Project Manager.

11. TESTING AND INSPECTIONS

- a. The contractor is responsible for all required testing on the project except when the Bid document, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction specifically require any Work to be inspected or tested by someone other than the contractor. For these inspections and testing, the contractor shall give the County Project Management Section a minimum of 48 hours’ notice to prepare for the required inspections or testing.
- b. For all required inspections, tests and approvals on any work prepared, performed or assembled away from the site, the Contractor will furnish the County Project Management Section with the required Certificates of Inspection, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Material (ASTM) or such other applicable organizations as may be required by law or the Bid document.
- c. Material or work in place that fail to pass acceptability tests shall be removed and reconstructed according to the bid requirements at the contractor’s expense.
- d. No work shall be performed, nor materials used, without supervision and/or inspections by a representative of the County. The County representative shall have the authority to test and reject any materials and suspend the subject work at any time.

12. EMERGENCIES: In the event of an emergency, the contractor shall immediately notify the County Project Management Section.

13. SUSPENSION OR STOPPING WORK BY THE CONTRACTOR: The contractor shall not stop work on any project work order without the consent of the County Project Manager.

14. MAINTENANCE OF TRAFFIC

- a. The terms Traffic Control Plan (TCP) and Maintenance of Traffic Plan (MOT Plan) are intended to be synonymous. The term Maintenance of Traffic (MOT) is the function presented in the TCP.
- b. The contractor shall provide, install and maintain traffic devices for any assigned work according to the FDOT Design Standards Index 600 series, latest edition, and applicable laws and ordinances. The traffic control shall provide a safe work zone and safe flow of traffic in and through the project site.

~~c. Price for MOT shall be based on individual projects and will be estimated and inserted into the final estimate by the contractor(s).~~

~~**15. SURVEY**~~

- ~~a. The County Survey Section will provide any construction layout services necessary to construct a project under this contract.~~
- ~~b. The County Survey Section will provide any “as-built” surveys necessary after construction is completed.~~

~~**16.15. UTILITY COORDINATION:** The contractor shall be responsible for “Sunshine One Call” for all locations incorporated into the work orders.~~

47.16. MATERIALS

- a. The contractor shall provide copies of all delivery tickets, or invoices, for all materials and equipment to be used for the project to the County Project Management Section immediately upon delivery or as soon thereafter as is practical.
- b. Arrangements for storage areas for materials and equipment shall be the responsibility of the contractor. Before mobilizing or storing any materials or equipment, the contractor shall identify the areas to be used for storage in writing to the County. If property other than County right-of-way is proposed for storage, the contractor shall provide the County a copy of the written approval or agreement from the property owner before mobilizing or storing any materials or equipment on said property. The contractor shall be responsible for restoring any and all damages to storage areas. Restoration of damage to public right-of-ways, easements, or private properties outside of the work zone area shall be the contractor's responsibility. Reimbursement for restoration of storage areas outside of the work zones shall be included in the contractor's ~~site-specific~~ Mobilization bid price.

~~48.17.~~ **WORKSITE VISIBILITY:** No work shall be performed when the visibility is less than two (2) times the Stopping Sight Distance for the highest regulatory posted speed through the project area as defined in the FDOT Manual of Uniform Standards for Design, Construction and Maintenance for Streets and Highways. Visibility distance shall be measured in all directions of travel and at locations and directed by the County. Project time extensions for substandard visibility shall be assessed according to FDOT Standard Specification Section 8-7.3.2.

~~49.18.~~ **HISTORICAL AND ARCHAEOLOGICAL:** If historical or archaeological artifacts are discovered at any time on the project site, the contractor must notify the County, the Water Management District, the Florida Department of State and the Division of Historical Resources. The contractor shall follow any rules or requests from agencies with jurisdiction. If required to stop work, delay work or perform extra work in the affected area, delays and additional costs will be considered an unforeseen difficulty. If the contractor desires to make a delay claim, any such claim shall be submitted to the County Project Manager in writing within three working days of the occurrence of the event giving rise to the claim.

~~20.19.~~ **CONTAMINATION:** Any equipment that is leaking fuel, lubricant, coolant, hydraulic fluid or any other hazardous material shall immediately be repaired by the contractor to stop the leak. The contractor shall clean up and dispose of any leaked fluids according to all applicable laws, ordinances, rules and regulations within 24-hours of occurrence. All repairs, removal, clean-up and/or disposal shall be at no cost to the County.

24.20. SAFETY

- a. The contractor is responsible for providing for the safety of all contractor's or subcontractor's personnel working in the Project Area.
- b. The contractor is required to comply with Florida Statute (F.S.), Chapter 556, Underground Facility Damage Prevention and Safety Act. The contractor is

responsible for contacting Sunshine State One-Call of Florida, Inc., at 811 or www.callsunshine.com, no less than two (2) business days (48 hours) and no more than 5 business days before beginning any excavation, the contractor provide notification according to the procedures of the F.S. Chapter 556.

22.21. WORK AREA CLEAN-UP REQUIREMENTS

- a. During the progress of the Work, the contractor shall keep the premises and maintained travel lanes free from accumulations of waste, discarded or surplus material, rubbish and other debris or contaminates resulting from the work.
- b. Following completion of the Work, contractor shall remove all waste material, rubbish, debris, tools, construction equipment, machinery, and surplus material from public right-of-ways, easements, and private properties. The contractor shall leave the site clean and ready for occupancy by the County at final completion of the work.

23.22. WORK STOPPAGE: From time to time, it may be necessary for the contractor to stop a portion of the work or all work to accommodate a civic function. If the contractor will be required to stop work, the County Project Management Section shall notify the Contractor a minimum of five (5) Working Days before any requested work stoppage. Following resuming work, the contractor and the County Project Manager shall agree to and document the number of additional days to be added to the project completion time to accommodate the requested work stoppage.

24.23. WARRANTY: The vendor shall warrant against all defects in material and workmanship for a period of one year after acceptance, unless otherwise indicated in the material's specification.

TECHNICAL SPECIFICATIONS

1) Bid Item No. PC-002 - Asphalt Rejuvenator

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of an asphalt rejuvenating agent to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Asphalt Rejuvenator will be measured by the square yard as provided for in the Bid Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

2) Bid Item No. PC-003 – Crack Sealing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the preparation and sealing of all surface cracks $\frac{1}{4}$ " inch wide or greater.
- b. Method of Measurement: Crack Sealing shall be measured in gallons of crack seal applied to the road, as provided in the Contract Documents.
- c. Basis of Payment: 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 complete the work as specified.

3) Bid Item No. PC-004 – Chip Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for single or double application of combined layers of polymer modified liquid asphalt emulsion and spread aggregate.
- b. Method of Measurement: Chip seal, single or double application, will be measured by the square yard as provided for in the Contract Documents.
- d. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

4) Bid Item No. PC-005 – Micro-Surfacing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the placement of a polymer modified microsurface on a prepared existing paved road to the thickness specified by the County.
- b. Method of Measurement: Microsurfacing will be measured by the square yard, with the exception of that used for rut filling. The later will be measured per ton, as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

5) Bid Item No. PC-006 - Scrub Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a Scrub seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Scrub Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

6) Bid Item No. PC-007 – Cold-In-Place Recycling (CIP)

- a. Description: Furnish all labor, materials and equipment necessary to perform all operations for the in-place construction of Cold Recycled Bituminous Base Course or CIR, as set forth in the Contract Documents.
- b. Method of Measurement: CIR will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to CIR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

7) Bid Item No. PC-008-3 and PC-008-4 – Full Depth Reclamation (FDR)

- a. Description: Furnish all labor, materials, and equipment necessary to perform all operations in the preparation of a stabilized base course done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives as called for under the technical specifications.
- b. Method of Measurement: Full Depth Reclamation will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to FDR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

8) Bid Item No. PC-009- Bituminous Fog Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a bituminous fog seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Fog Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

PC-002 – ASPHALT REJUVENATOR

I. Description

This work shall consist of furnishing all labor, material, and equipment necessary to perform all operations for the application of an asphalt rejuvenating agent to asphalt concrete surface courses. The rejuvenation of surface courses shall be by spray application of a cationic rejuvenating agent composed of petroleum oils and resins emulsified with water. All work shall be in accordance with the specifications, the applicable drawings, and subject to the terms and conditions of this contract.

II. Material

A. Rejuvenator Agent:

The asphalt rejuvenating agent shall be an emulsion composed of a petroleum resin oil base uniformly emulsified with water. Each bidder must submit with their bid a certified statement from the asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the required physical and chemical requirements.

| TESTS | TEST METHOD | | REQUIREMENTS | |
|---|-------------|------------|----------------|------|
| | ASTM | AASHTO | MIN. | MAX. |
| Tests on Emulsion: | | | | |
| Viscosity # 25°C, SFS | D-244 | T-59 | 15 | 40 |
| Residue, % W ¹ | D-244 (mod) | T-59 (mod) | 60 | 65 |
| Miscibility Test ² | D-244 (mod) | T-59 (mod) | No Coagulation | |
| Sieve Test, %W ³ | D-244 (mod) | T-59 (mod) | -- | 0.1 |
| Particle Charge Test | D-244 | T-59 | Positive | |
| Percentage Light Transmittance ⁴ | GB | GB | -- | 30 |
| Tests on Residue from Distillation: | | | | |
| Flash Point, COC, °C | D-92 | T-48 | 196 | -- |
| Viscosity @ 60°C, cst | D-445 | -- | 100 | 200 |
| Asphaltenes, %w | D-2006-70 | -- | -- | 1.00 |
| Maltene Dist. Ratio | D-2006-70 | -- | 0.3 | 0.60 |
| $\frac{PC + A_1}{S + A_2}$ ⁵ | | | | |
| PC/S Ratio ⁵ | D-2006-70 | -- | 0.5 | -- |
| Saturated Hydrocarbons, S ⁵ | D-2006-70 | -- | 21 | 28 |

¹ ASTM D-244 Modified Evaporation Test for percent of residue is made by heating 50 gram sample to 149 C (300 F) until foaming ceases, then cool immediately and calculate results.

² Test procedure identical with ASTM D-244-60 except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

³ Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

⁴ Test procedure is attached.

⁵ Chemical composition by ASTM Method D-2006-70:

PC = Polar Compounds A₁ = First Acidaffins
 A₂ = Second Acidaffins S = Saturated Hydrocarbons

B. Material Performance

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. The asphalt rejuvenating agent shall have the capability to penetrate the asphalt pavement surface. The asphalt rejuvenating agent shall be absorbed and incorporated into the asphalt binder. Verification that said incorporation of the asphalt rejuvenating agent into the asphalt binder has been effected shall be by analysis of the chemical properties of said asphalt

binder i.e. viscosity shall be improved to the following extent. The viscosity shall be reduced by a minimum of forty, (40%) percent as determined by dynamic shear rheometer (DSR) method for asphalt testing in accord with AASHTO T315-05. This analysis shall apply to extracted asphalt binder, taken from cores extracted fifteen to thirty days following application, in the upper 3/8" of pavement. In addition the treated areas shall be sealed in-depth to the intrusion of air and water.

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. Satisfactory service shall be based on the capability of the material to decrease the viscosity of the asphalt binder and provide an in-depth seal.

The bidder must submit with their bid the manufacturer's certification that the material proposed for use is in compliance with the specification requirements. The bidder must submit with their bid, previous use documentation and test data conclusively demonstrating that; the rejuvenating agent has been used successfully for a period of five years by government agencies such as cities, counties, etc.; and that the asphalt rejuvenating agent has been proven to perform, as heretofore required, through field testing by government agencies as to the required change in the asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance on a sufficient number of projects, each being tested for a minimum period of three years to insure reasonable longevity of the treatment, as well as product consistency. In addition, testing data shall be submitted to indicate said product performance over a testing period of three years to ensure reasonable life expectancy.

C. Product Standards and Alternates

The product "Reclamite" is the standard for this specification. Bidders may offer an ALTERNATE for the Standard specified, provided the bidder adheres to the following and submits the same with their bid.

1. List the proposed alternate on the Alternate Bid Sheet form giving the product name and price.
2. Furnish complete specifications and descriptive literature for the alternate, as well as a one-gallon sample of the material proposed for use. Such description and detailed information shall be complete and at least equal in detail to the County's requirements for the standard item for which the alternate is offered.
3. Submit a current Material Safety Data Sheet (MSDS) for the alternate materials.
4. Submit a list of all projects on which the Alternate has been used by the bidder within the state of Florida during the past five (5) eyars with said list containing location, dates of the project, contact name, address and phone number.

The alternate will be given consideration by the County. The Contractor may furnish only those alternate items included in their bid proposal and approved by the County prior to award of the contract. If no Alternate is indicated in the bid proposal, the Contractor shall furnish the Standard (brand) specified.

Should the Alternate be found unacceptable by the County based on the data submitted with the bid and no bid is entered on the Bid Sheet for the Standard, then said bid will be considered non-responsive.

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III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. Distributer Tank:

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the asphalt rejuvenating agent uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

B. Sand Truck:

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

IV. Experience

The asphalt rejuvenating agent shall be applied by an experienced applicator of such material. The bidder shall have a minimum of three years' experience in applying the product proposed for use. They must submit with their bid a list of five projects on which they applied said rejuvenator. They shall indicate the project dates, number of square yards treated in each, and the name and phone number of the representative in charge of each project. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience

outline of the project superintendent.

V. Construction

A. Storm Water Pollution Prevention Plan

The contractor responsible for applying the asphalt rejuvenating agent shall maintain a current, written Storm Water Pollution Prevention Plan (SWPPP) that complies with all relevant Environmental Protection Agency (EPA) regulatory requirements. Prior to the commencement of application operations, the contractor shall conduct SWPPP training of all personnel actually applying the asphalt rejuvenating agent. At all times, the contractor shall ensure that a current copy of their SWPPP is present on-site, wherever the asphalt rejuvenating agent is being applied.

B. Handling of Asphalt Rejuvenating Agent

Contents in tank cars or storage tanks shall be circulated at least forty-five minutes before withdrawing any material for application. When loading the distributor, the asphalt rejuvenating agent concentrate shall be loaded first and then the required amount of water shall be added. The water shall be added into the distributor with enough force to cause agitation and thorough mixing of the two materials. To prevent foaming, the discharge end of the water hose or pipe shall be kept below the surface of the material in the distributor which shall be used as a spreader. The distributor truck will be cleaned of all its asphalt materials, and washed out to the extent that no discoloration of the emulsion may be perceptible. Cleanliness of the spreading equipment shall be subject to the approval and satisfaction of the Engineer.

C. Weather and Seasonal Limitations

The temperature of the asphalt rejuvenating emulsion, at the time of application shall be as recommended by the manufacturer. The asphalt rejuvenating agent shall be applied only when the existing surface to be treated is thoroughly dry. Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent. The contractor shall perform follow-up inspections of stormwater inlets, culverts, and drainage ditches (in accordance with the contractor's SWPPP) in the vicinity of the asphalt rejuvenating agent application operations, whenever a precipitation event, in excess of 0.10 inches of rain, occurs during a two day period following application of the asphalt rejuvenating agent. The asphalt rejuvenating agent shall not be applied when the ambient temperature is below 40° F.

D. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

E. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

E.F. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

E.G. Application of Rejuvenating Agent

The asphalt rejuvenating agent shall be applied by a distributor truck at the temperature recommended by the manufacturer and at the pressure required for the proper distribution. The emulsion shall be applied so that uniform distribution is obtained at all points of the areas to be treated. Distribution shall be commenced with a running start to insure full rate of spread over the entire area to be treated. Areas inadvertently missed shall receive additional treatment as may be required by hand sprayer application.

Application of asphalt rejuvenating agent shall be on one-half width of the pavement at a time. When the second half of the surface is treated, the distributor nozzle nearest the center of the road shall overlap the previous application by at least one-half the width of the nozzle spray. In any event the centerline construction joint of the pavement shall be treated in both application passes of the distributor truck.

Before spreading, the asphalt rejuvenating agent shall be blended with water at the rate of two (2) parts rejuvenating agent to one (1) part water, by volume or as specified by the manufacturer. The combined mixture of asphalt rejuvenating agent and water shall be spread at the rate of 0.05 to 0.10 gallons per square yard, or as approved by the Engineer.

Where more than one application is to be made, succeeding applications shall made as soon as penetration of the preceding application has been completed and approval is

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granted for additional applications by the Engineer.

Grades or super elevations of surfaces that may cause excessive runoff, in the opinion of the Engineer, shall have the required amounts applied in two or more applications as directed.

After the street has been treated, the area within one foot of the curb line on both sides of the road shall receive additional treatment of the asphalt rejuvenating emulsion. Said treatment shall be uniformly applied by a method acceptable by the Engineer.

After the rejuvenating agent has penetrated, a coating of dry sand shall be applied to the surface in sufficient amount to protect the traveling public as required by the Engineer.

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent.

If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

H. Pavement Marking Restoration

If the Contractor is using an approved Alternate to the Product Standard specified, the Contractor shall include as part of the project tasks, the restoration of all pavement markings and striping after the product has been satisfactorily applied. These tasks will be paid under the FDOT series 710 and 711 pay items indicated on the Alternate Bid Sheet.

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G.I. Quality Assurance and Testing

The Contractor shall furnish a quality inspection report showing the source, manufacturer, and the date shipped, for each load of asphalt rejuvenating agent. When directed by the Engineer, the Contractor shall take representative samples of material for testing.

The County, at their option, may require testing to be performed on extracted asphalt cement from a pavement to a depth of three eights inch (3/8"). The testing protocol shall be extraction and recovery of the top 3/8" layer from a 4-inch or 6-inch core by ASTM D2172 and ASTM D1856. The recovered binder can be tested for complex viscosity @ 60°C, Pas, using the Dynamic Shear Rheometer (DSR) by AASHTO T315, or viscosity @ 60°C, Poises, using the Absolute viscosity @ 60°C, Poises, by ASTM D2171.

Test sections shall be at least one squared yard in area. The test sections shall have various application rates for each pavement type that exists on the project and shall be conducted prior to the application of product to define application rates which meet and/or exceed the above targets.

Costs associated with testing shall be included in bid price.

VI. Traffic Control

The Contractor shall schedule his operations and carry out the work in a manner to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated. Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the Engineer, has become complete and the area is suitable for traffic.

When, in the opinion of the Engineer, traffic must be maintained at all times on a particular street, then the Contractor shall apply asphalt rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until traffic may be switched to the completed lane.

The contractor shall be responsible for all traffic control and signing required to ensure safe travel. The contractor shall notify the police and fire departments as to the streets that are to be treated each day. If, in the opinion of the Engineer, proper signing is not being used, the Contractor shall stop all operations until safe signing and barricading is achieved.

VII. Method of Measurement

Asphalt rejuvenating agent will be measured by the square yard as provided for in the Contract Documents. The accepted quantities, measured as provided for above, will be paid for at the contract unit price for asphalt rejuvenating agent.

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Asphalt Rejuvenating Agent, 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.

Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|----------------------------|-----------------|
| Asphalt Rejuvenating Agent | Square Yard |
| Silica Sand | Square Yard |

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END OF SECTION PC-002

PROCEDURE FOR DETERMINING PERCENT LIGHT TRANSMITTANCE**I. Scope**

This procedure covers the determination of percent light transmittance of the asphalt rejuvenating agent.

II. Equipment

- A. Container may be either glass, plastic or metal having a capacity of 6,000 ml.
- B. Graduated cylinder, 1,000 ml, or greater.
- C. Light transmittance measuring apparatus, such as Bausch and Lomb or Lumertron spectrophotometer.
- D. Graduated pipette having 1 ml capacity to 0.01 ml accuracy.
- E. Suction bulb for use with the pipette.
- F. Test tubes compatible with spectrophotometer, $\frac{3}{4}$ " x 6, Bausch and Lomb, Catalog No. 33-17-81, (B&L).

III. Spectrophotometer Calibration

- A. Calibrate spectrophotometer as follows:
 - 1. Set wavelength at 580 m μ
 - 2. Allow spectrophotometer to warm up for thirty minutes.
 - 3. Zero percent light transmittance (%LT) scale.
 - 4. Rinse test tube three times with tap water and fill to top of circle marking on B&L test tube, or approximately 2/3 full.
 - 5. Place tube in spectrophotometer and set %LT scale at 100
 - 6. Repeat steps 3 and 5 two times or until no further adjustments are necessary.

IV. Procedure

- A. Shake, stir or otherwise thoroughly mix emulsion to be tested. Place sample of emulsion in beaker and allow to stand one minute.
- B. Place 2.000 ml tap water in container.
- C. Such 1.00 ml emulsion into pipette using suction bulb. Wipe off outside of pipette.
- D. Using suction bulb, blow emulsion into container.
- E. Rinse pipette by sucking in diluted emulsion solution and blowing out.
- F. Clean pipette with soap or solvent and water. Rinse with acetone.
- G. Stir diluted emulsion thoroughly.
- H. Rinse out tube to be used with the diluted emulsion three times and fill to top of circle.
- I. Calibrate spectrophotometer.
- J. Place diluted emulsion sample tube in spectrophotometer, cover and read %LT to nearest tenth.
- K. Repeat steps I and J until three identical consecutive readings are achieved.
- L. The elapsed time between addition of emulsion to dilution of water and final %LT reading should not exceed 5 minutes.

PC-003 CRACK SEALING

I. Description

The work consists of applying a hot-applied, single component polymer/rubber modified asphalt material supplied in solid form, to seal or fill cracks or joints in asphalt concrete or Portland cement concrete pavements. Cracks or joints that will be sealed shall be a minimum of one quarter (1/4) inch, and have a maximum width of one (1) inch.

II. Materials

- A. Polymer/rubber Modified Asphalt Material: Materials shall be a premixed, single component mixture of asphalt cement, aromatic extender oils, polymers, and granulated rubber in a closely controlled manufacturing process. Materials shall conform to the following specifications when heated in accordance to ASTM D5078 to the manufacturer’s maximum safe heating temperatures.

| Property | Specification |
|---------------------------------------|----------------|
| Cone Penetration, 77.0°F (ASTM D5329) | 30 – 60 dmm |
| Resilience, 77.0°F (ASTM D5329) | 30 % minimum |
| Softening Point (ASTM D113) | 200°F minimum |
| Ductility, 77.0°F (ASTM D113) | 300 mm minimum |
| Flow 140°F (60°C) (ASTM D5329) | 3mm maximum |
| Asphalt Compatibility (ASTM D5329) | Pass |
| Bitumen Content (ASTM D4) | 60% minimum |
| Tension Adhesion (ASTM D5329) | 400% minimum |
| Maximum Heating Temperature | 400°F (204°C) |
| Minimum Heating Temperature | 380°F (193°C) |

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- B. Blotting Material: If required, the blotting material shall be an aggregate such as cement dust, Crafcoc Detack or equivalent, or other cover aggregate approved by the Project Manager.

III. Equipment

- A. 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 with transmittal of heat through heat transfer oil. It shall be equipped with an on board automatic heat controlling device to permit the attainment of a predetermined temperature, and then maintain that temperature as long as required. The unit shall also have an agitation system to meet the requirements of Appendix X1.1. of ASTM 6690. The sealant shall be applied to the pavement under pressure supplied by a gear pump with hose and wand and direct connecting applicator tip. The pump shall have sufficient pressure to apply designated sealant at a rate of at least three (3) gallons (11.4L) per minute. Melter applicators shall be approved for use by the sealant

manufacturer. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints.

- B. Hot Compressed Air (HCA) 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.
- C. 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.
- D. Crack Cleaning Equipment: Cleaning of excess debris shall be done by means of power sweepers, hand brooms, or air brooms.

IV. Submittals

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.

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:

- Road name, date, time application process starts, amount installed, time application process ends.
- Date, time and amount added to the melter.
- The lot number from each box added shall be also recorded.
- Weather conditions

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.

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.

V. Preparations

- 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.

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B. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

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Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

A.

B-C. Surface Preparation: No sealant shall be installed until all cracks and joints have been cleaned free of all deleterious materials, including any dust, old sealant, incompressibles, and organic material, and are sufficiently dry. Following the initial routing and cleaning operation, all cracks and joints shall be HCA lanced within 10 minutes of application of the sealant. Equipment for the two operations should be kept in a compact configuration such that not more than 50 feet separates equipment required by the two operations. Extreme care shall be used to ensure the crack sidewalls do not become overheated and burned.

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C-D. 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. 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.

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VI. Construction Methods

A-C. 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.

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B-D. General Sealant Application: All single transverse cracks in the travel lanes shall be sealed by the Cut and seal method. All other cracks in the travel lanes, shoulders, and auxiliary areas may be filled by either the Cut and Seal method or the Crack Fill method. If a surface treatment, such as resurfacing or surface sealing shall follow, the Crack filling material must cure for a minimum of 30 days prior to application of the final surface treatment.

C-E. Cut and Seal Method: Cut, clean and seal cracks and joints that are 1/16 inch or greater in width. Cut along the crack or joint to construct a uniform rectangular reservoir in which the sealant is to be placed. The reservoir shall be between 1/2 inch and 3/4 inch in width. The depth of the reservoir shall be between 1/2 inch and 1 inch. The cut reservoir shall have vertical, intact sides with no loosely bonded aggregate. Following cutting, the reservoir shall be cleaned using the air blast method or other acceptable method. The reservoir shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. If the reservoirs are not clean and dry, they shall be re-cleaned to achieve the required condition. 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

D-F. Crack Fill Method: Clean and seal joints and cracks that are 1/16 inch or greater in width. Clean joints and cracks with air blast cleaning or other acceptable methods to a depth of at least twice the joint or crack width. Joints and cracks shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. Apply sealing material with a pressure nozzle. Completely fill cracks and joints. Sealant shall be applied to slightly overfill the crack or joint 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

E-G. Pavement Cleaning and Protection: The pavement surface and all work areas shall be left in a clean condition. Vehicular traffic shall not be permitted on the pavement in treated areas during the initial curing period recommended by the manufacturer. The Contractor shall provide all temporary traffic control devices to protect the treated areas, as required by the Engineer.

Prevent tracking with an application of fine sand, unless it can be demonstrated that the crack and joint sealer will not track without its application. Other methods may be used if approved by the Engineer. Repair any pavement striping or markings affected by the application of the sealant. Any excessive or spilled sealant shall be removed by the Contractor using approved methods. Any damage to uncured sealant shall be repaired at the contractor's expense.

VII. Liability and Deficiencies

A-C. 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

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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 County from all such claims. Claims not handled by the Contractor or their representative in the proper manner, will be settled by the County. The County 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.

B-D. 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.

The sealant shall be removed, the routed crack rerouted at the Project Manager's discretion, and resealed if any of the following occur:

- 1. The sealant contains imbedded foreign material other than dusting material.
- 2. The sealant contains entrapped air bubbles;
- 3. The sealant has de-bonded or pulled away from the crack; or
- 4. The sealant has been excessively heated.

VIII. 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 Crack Sealing-Filling, and not specifically listed in another item in the Bid Form, shall be included in this item.

The measurement shall be made in amount of linear feet of cracks or joints completed and accepted, determined by field measure, and shall be supported by the submittals. The amount of crack sealer shall be reported and invoiced for each road.

IX. Basis of Payment.

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Crack and Joint Sealing/Filling, 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 County.

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Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|------------------------------------|--|
| Bituminous Crack and Joint Sealing | per Linear Foot <u>Gallon</u> |

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 COUNTY representative.

END OF SECTION PC-003

PC-004 CHIP SEAL

I. Description

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 County.

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 County. The end product should maintain a skid-resistant surface in variable thick sections throughout the service life of the micro-surfacing.

II. Materials:

A. **Emulsified Asphalt:** Provide 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.

B.

| 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 | SPEGIFICATION |
|-----------------|---------------|---------------------------------------|------------------------|
| 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.~~

~~C. **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 |
|----------------------------|--------------------------|--------------------------------|---|
| T176 | D2419 | Sand Equivalent | 65-Minimum |
| T104 | C88 | Soundness | 15% Maximum using NA2-SO4 or 25% Maximum using MgSO4 |
| T96 | 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 % PASSING | TYPE III % PASSING | STOCKPILE TOLERANCE |
|--------------------------|------------------------------|-------------------------------|--------------------------------|
| ¾ (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 Contractor will be responsible for the cost of the testing. The County 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.

III. Equipment:

A. 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.

B. 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.

C. 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.

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D. 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. Brooming is required before and after the chip seal operation.

E. 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.

IV. 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.

V. Construction:

A. Layout:

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

B. 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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

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Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

D. Site and Surface Preparation:

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

E. 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 indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County 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.

Traffic shall not be allowed on the roadway after placement of the chip seal for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

F. 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.

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- **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.

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G. 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.

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H. 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.

I. 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.

J. 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.

VI. 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.

VII. 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 Specification for Fog Seal

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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 County, If applied, Fog Seal shall be paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|--------------------------------|-----------------|
| Chip Seal (Single application) | Square Yard |
| Chip Seal (Double application) | Square Yard |

~~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 is 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.~~

~~D. **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~~

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~~times.~~

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

~~F. **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.~~

~~III. **Mix Design:**~~

~~The Contractor shall submit to the County for approval a complete mix design with an aggregate source used on five (5) similar micro-surfacing projects. 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 County. 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:~~

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

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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.

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

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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 |

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IV. 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 County 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.

V. 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.

VI. EQUIPMENT:

A. 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.

B. 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.

C. 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.~~

~~D. **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.~~

~~E. **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 County. 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.~~

~~F. **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 County requires) to perform the work.~~

~~G. **General:** Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the County 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**.~~

~~VII. Construction:~~

~~A. **Test Strip:** A test strip 1000 feet long and the width of one lane shall be provided. The test must include all courses specified and must be constructed at the same time of day as the scheduled full scale production. The test strip will be evaluated for 24 hours after placement and will be subject to approval from the engineer before any further production. If unsatisfactory, the test strip shall be removed and another strip placed for evaluation at the contractor's expense.~~

~~B. **Weather Limitations:** Microsurfacing shall not be applied if either the pavement or air~~

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~~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 County.~~

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~~C. **Surface Preparation:** The first step of surface preparation is to restore the pavement's structural integrity and functional performance characteristics through patching and crack sealing.~~

~~D. 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.~~

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~~All pavement marking shall be removed, maintained, and compensated for in accordance to FDOT Standard Specification Section 102-5.8. 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.~~

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~~Manholes, valve boxes, drop inlets and other service entrances shall be protected from the Microsurfacing by a suitable method. Utility inlets should be covered with heavy paper or roofing felt adhered to the surface of the inlet. The paper is removed once the micro-surfacing has sufficiently cured. In addition to covering the inlets, all starts, stops, and handwork on turnouts should be done on roofing felt to ensure sharp, uniform joints and edges. The County 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.~~

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~~E. **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/yd² (0.23 to 0.45 l/m²). 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.~~

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

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~~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 (1/2) 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 yd² (25 m²) area. No transverse ripples or longitudinal streaks of one-fourth (1/4) inch in depth (6.4 m²) 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/yd² (+/- 2 lbs) |
| TYPE II Double application | Urban, Residential, and Primary Routes | 30-34 lb/yd² (+/- 2 lbs) |
| TYPE II Heavy single application | Primary and Cold Mix Roads as directed | 24-28 lb/yd² (+/- 2 lbs) |
| TYPE II Heavy double application | Primary and Cold Mix Roads as directed | 38-42 lb/yd² (+/- 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/yd² (8.1-16.3 kg/m²).~~

~~G. 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 (1/4) 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~~

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drop-off.

~~H. **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.~~

~~I. **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.~~

~~J. **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 ± 2 inches (± 50 mm) horizontal variance in any 96 feet (30 m) of length.~~

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~~K. **Clean-up:** All areas, such as man-ways, gutters, and intersections, shall have the Microsurfacing mix removed as specified by the County. 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 County. In addition, the contractor shall, at the request of the County pressure wash any area such as, curb and gutter, private driveways, etc. removing any and all stains associated with the placement of the Microsurfacing.~~

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~~L. **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.~~

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~~M. **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 and the current MUTCD. 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.~~

VIII.— 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.~~

IX.— Warranty:

~~The Contractor shall provide the County 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 or County.~~

~~X. — Basis of Payment:~~

~~The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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.~~

Payment will be made under:-

| Pay Item | Pay Unit |
|-------------------------------------|-----------------|
| Microsurfacing (Single application) | Square Yard |
| Microsurfacing (Double application) | Square Yard |
| Microsurfacing (Rut filling) | Ton |

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END OF SECTION PC-004

PC-005 MICROSURFACING

I. Description

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 County.

~~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 County. The end product should maintain a skid-resistant surface in variable thick sections throughout the service life of the micro surfacing.

II. Materials:

A. **Emulsified Asphalt:** Provide 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.

B.

| 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

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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.

- C. **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 |
|-----------------|---------------|---------------------|--|
| T176 | D2419 | Sand Equivalent | 65 Minimum |
| T104 | C88 | Soundness | 15% Maximum using NA2 SO4 or 25% Maximum using MgSO4 |
| T96 | 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 % PASSING | TYPE III % PASSING | STOCKPILE TOLERANCE |
|---------------|----------------------|-----------------------|------------------------|
| ¾ (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 is 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.

- D. **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.
- E. **Water:** Potable and free of harmful or deleterious materials.
- F. **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.

III. Mix Design:

The Contractor shall submit to the County for approval a complete mix design with an aggregate source used on five (5) similar micro surfacing projects. 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 County. 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:

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| ISSA TEST NO. | DESCRIPTION | SPECIFICATION |
|---------------|--|--|
| TB-139 | Wet Cohesion @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic) | 12 Kg-cm Minimum 20 Kg-cm Minimum or Near Spin |
| TB-109 | Excess Asphalt by LWT Sand Adhesion | 50 g/ft ² Maximum (538 g/m ² Maximum) |
| TB-114 | Wet Stripping | Pass (90% Minimum) |
| TB-100 | Wet-Track Abrasion Loss One-hour Soak Six-day Soak | 50 g/ft ² (538 g/m ²) Maximum 75 g/ft ² (807 g/m ²) 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 |
|---------------|--|--|
| TB-147 | Lateral Displacement Specific Gravity after 1,000 Cycles of 125 Pounds (56.71 Kg) | 5% Maximum 2.10% Maximum |
| 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 |

IV. 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 County 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.

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V. 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.

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VI. EQUIPMENT:

- A. **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.

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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.

- B. **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.
- C. **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.

- D. **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.
- E. **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 County. 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.
- F. **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 County requires) to perform the work.
- G. **General:** Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the County 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**.

VII. Construction:

- A. **Test Strip:** A test strip 1000 feet long and the width of one lane shall be provided. The test must include all courses specified and must be constructed at the same time of day as the scheduled full scale production. The test strip will be evaluated for 24 hours after placement and will be subject to approval from the engineer before any further production. If unsatisfactory, the test strip shall be removed and another strip placed for evaluation at the contractor's expense.
- B. **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 County.

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C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

~~B.~~

C.D. Site and Surface Preparation: The first step of surface preparation is to restore the pavement's structural integrity and functional performance characteristics through patching and crack sealing.

All pavement marking shall be removed, maintained, and compensated for in accordance to FDOT Standard Specification Section 102-5.8. Immediately prior to applying the Microsurfacing, the surface shall be cleared of all loose material, silt spots, vegetation, and other objectionable material. 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. 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. Utility inlets should be covered with heavy paper or roofing felt adhered to the surface of the inlet. The paper is removed once the micro-surfacing has sufficiently cured. In addition to covering the inlets, all starts, stops, and handwork on turnouts should be done on roofing felt to ensure sharp, uniform joints and edges. The County 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.

~~D.E.~~ 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/yd² (0.23 to 0.45 l/m²). 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.

~~E.F.~~ Application: A test strip shall be placed in conditions similar to those expected to be encountered during the project unless specifically waived by the county.

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

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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 yd² (25 m²) area. No transverse ripples or longitudinal streaks of one-fourth (¼) inch in depth (6.4 m²) 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 ² (+/- 2 lbs) |
| TYPE II Double application | Urban, Residential, and Primary Routes | 30 - 34 lb/yd ² (+/- 2 lbs) |
| TYPE II Heavy single application | Primary and Cold Mix Roads as directed | 24 - 28 lb/yd ² (+/- 2 lbs) |
| TYPE II Heavy double application | Primary and Cold Mix Roads as directed | 38 - 42 lb/ yd ² (+/- 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/yd² (8.1 – 16.3 kg/m²).

F.G. 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

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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.

G.H. 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.

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H.I. 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.

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I.J. 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 ± 2 inches (± 50 mm) horizontal variance in any 96 feet (30 m) of length.

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J.K. Clean-up: All areas, such as man-ways, gutters, and intersections, shall have the Microsurfacing mix removed as specified by the County. 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 County. In addition, the contractor shall, at the request of the County pressure wash any area such as, curb and gutter, private driveways, etc. removing any and all stains associated with the placement of the Microsurfacing.

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K.L. 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.

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L.M. 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 and the current MUTCD. 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.

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VIII. 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

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included in this item.

IX. Warranty:

The Contractor shall provide the County 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 or County. A maintenance bond is not required.

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X. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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.

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Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|--------------------------------------|-----------------|
| Microsurfacing (Single application) | Square Yard |
| Microsurfacing (Double application), | Square Yard |
| Microsurfacing (Rut filling) | Ton |

END OF SECTION PC-005

PC-006 SCRUB SEAL

I. Description

Scrub Seal shall consist of the application of a slow setting, anionic or cationic asphalt emulsion or specialty emulsions developed specifically for scrub sealing, followed by a cover aggregate. The emulsion may be polymer modified.

II. Materials

A. Asphalt Emulsions

The asphalt emulsions employed for Scrub Seals shall be slow to medium setting anionic or cationic SS-1, SS-1H, CSS-1H; ASTM specifications for anionic (SS) emulsions are listed in D977 and for cationic (CSS) emulsion in D2397. Suppliers of other specialty emulsions for Scrub Sealing must supply specifications for these emulsions. Asphalt emulsions may be modified with a polymer additive.

B. Cover Aggregates

Mineral Aggregates for scrub seal shall conform to **Table 1**.

| Sieve Size | Percent Passing | Tolerance |
|------------------|-----------------|-----------|
| 3/8 inch (9.5mm) | 100 | 0 |
| No. 4 (4.75mm) | 96 | +3 |
| No. 10 (2.0mm) | 60 | ±20 |
| No. 50 (300µm) | 18 | ±12 |
| No. 100 (150µm) | 5 | ±5 |
| No. 200 (74µm) | 5 | ±3 |

Where washed aggregates are used, they must be 'surface dry' at the time of application. Moisture content shall not exceed 1.5% by weight of aggregate. 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.

C. Material Samples:

The County 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 County 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 County 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.

III. Equipment

A. Emulsion 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.

B. Emulsion Scrub Broom

Furnish an emulsion scrub broom assembly of similar design to Figures 1 or 2, or as approved by the Engineer, and having the following characteristics:

- Rigid frame construction
- Attached to, and pulled by, the Emulsion Distributor
- Of such weight that it does not squeegee the emulsion off the road surface
- Leading and trailing broom heads angled at 10 to 15 degrees of the centerline of the supporting member
- Stiff bristles with a minimum height of five inches
- Hinged wing assemblies or other means of adjusting the total broom width.
- Be attached to and pulled by the distributor truck.
- Have means to mechanically lift the scrub broom off of the roadway surface at intermediate points of completion and remain elevated during transit.

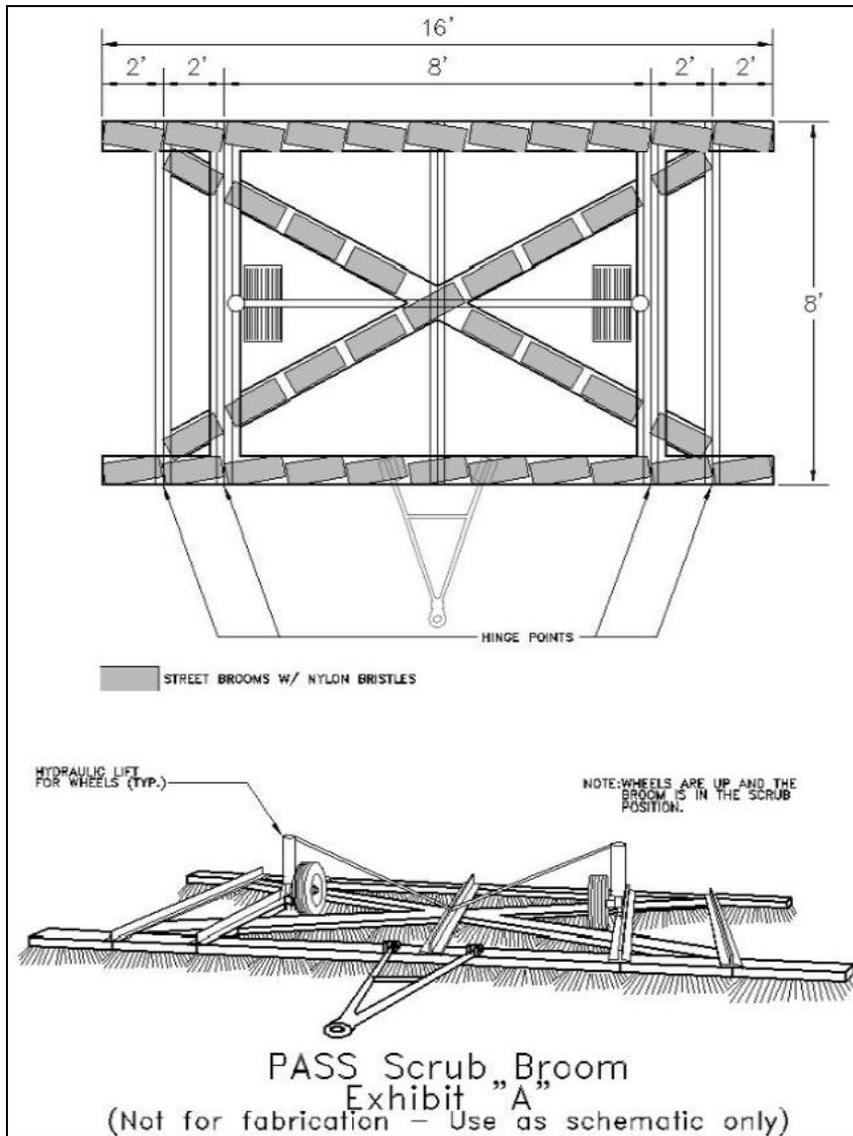


Figure 1: Typical Emulsion Scrub Broom Assembly

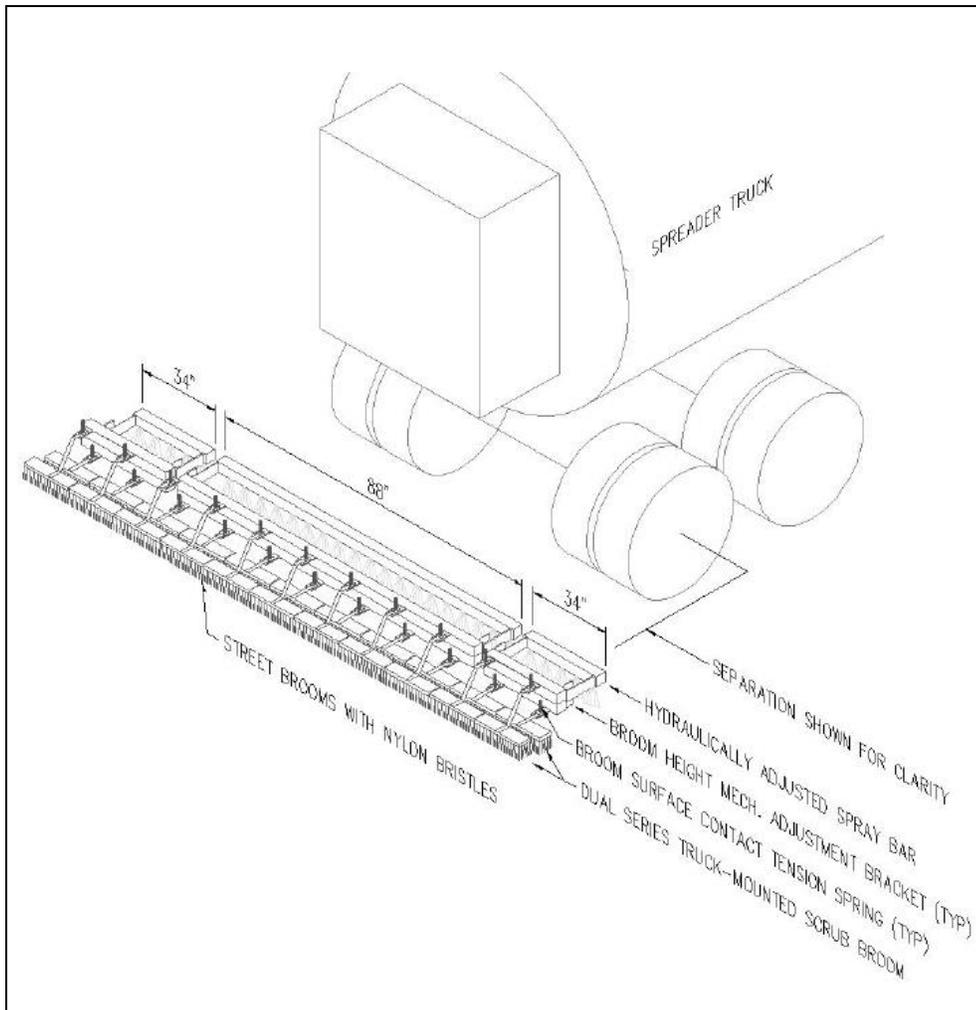


Figure 2: Truck Mounted Emulsion Scrub Broom Assembly

C. 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.

D. 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.

E. 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. Brooming is required before and after the chip seal operation.

F. 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

IV. Experience

Bidders must submit a minimum of five Scrub 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.

V. Construction

A. Weather

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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

B. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The

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contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

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D. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

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D.E. Traffic

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 indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County 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.

Traffic shall not be allowed on the roadway after placement of the aggregate cover for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

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E.F. Application of Asphalt Emulsion:

Asphalt emulsion 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.

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F.G. Scrubbing

Immediately following application, the asphalt emulsion shall be scrubbed into the existing pavement surface with a scrub broom conforming to Section III-B. Scrubbing shall fill cracks and voids, force the emulsion into the existing pavement surface, and distribute the emulsion uniformly over the roadway cross section.

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G.H. Termination

Application of the emulsion shall be terminated on building paper or other similar material approved by the Engineer, spread over the entire application width. Building paper shall also be placed over the treated surface for a sufficient length at the beginning of a spread to avoid spraying existing pavement or previously placed screenings, and so that the nozzles are spreading properly when the uncovered surface is reached. The building paper shall then be removed and disposed of in a manner satisfactory to the Engineer.

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H.I. Application of cover Aggregate:

Screenings shall be uniformly spread by the aggregate spreader immediately following the scrubbing. The spreading rate shall be from 18 to 30 pounds per square yard. The initial rate of spreading shall be 24 pounds per square yard. The Contractor may propose a different initial rate. The Contractor shall spread screenings on a 100-foot test strip as requested by the Engineer to verify and determine the initial rate of spreading. The spreading rate shall be adjusted up or down so that no bleeding occurs during rolling. The initial rate of spreading, and any adjustments thereto during spreading, shall be subject to approval by the Engineer.

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The joint between adjacent applications of screenings shall coincide with the line between designated traffic lanes.

Operating the chip spreader at speeds which causes the chips to roll after striking the emulsion covered surface will not be permitted.

The transverse termination of screenings shall be complete and any excess screenings shall be removed from the surface prior to resuming operations.

Stockpiling of screenings prior to placing will be permitted where space allows, however, any contamination resulting during storage or from reloading operations will be cause for rejection.

Screenings shall be surface damp at the time of application, but excess water on the aggregate surface will not be permitted. Screenings shall be re-dampened in the haul trucks prior to delivery to the chip spreader when so directed by the Engineer.

The scrubbed pavement surface shall be covered with screenings before setting or "breaking" of the emulsion occurs.

After the screenings have been spread, piles, ridges, or uneven distribution shall be carefully removed to ensure against permanent ridges, bumps or depressions in the completed surface. Additional screenings shall be spread in whatever quantities may be required to prevent picking up by the rollers or traffic.

J.J. Rolling:

Initial rolling shall begin immediately behind the chip spreader and shall consist of one pass completely covering the screenings applied. Asphalt emulsion and screenings shall not be spread more than 2,500 feet ahead of completion of initial rolling operations.

Secondary rolling shall begin immediately after completion of the initial rolling. The amount of secondary rolling shall be that necessary to seat the screenings and in no case shall be less than 2 passes.

J.K. Sweeping:

After rolling of the 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.

VI. Finishing:

A.D. Flush Coat

Flush Coat shall consist of an application of a fog seal coat followed by a sand cover to the surface of the scrub seal coat.

Flush coat shall be applied at the discretion of the Engineer, immediately after initial sweeping and removal of excess screenings and prior to opening the lane to uncontrolled (not controlled with pilot cars) traffic.

B.E. Fog Seal

Fog seal coat shall not be applied when the atmospheric temperature is below 40°F.

When surface treatment has set, a fog seal is to be applied at a rate of 0.03 to 0.06 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.

C.F. Sand Cover

Sand cover shall be applied immediately following application of the fog seal coat. Sand shall be spread by a chip spreader at a rate of 1 to 2 pounds per square yard. The exact rate will be determined by the Engineer. Spreading shall not vary more than 5 percent from the exact application rate.

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D.G. Maintenance

Scrub seal coated surfaces shall be maintained, including the traffic control required for maintenance operations, for a period of 4 consecutive calendar days, beginning on the day screenings are applied to the asphalt emulsion. Maintenance shall include sweeping and distribution of screenings over the surface to absorb any free emulsion, to cover any area deficient in cover material and to prevent formation of corrugations. Clean sand may be used in lieu of screenings to cover any excess emulsion which comes to the surface. The use of roadside material for this purpose will not be permitted.

The surface shall be swept as often as necessary during the 4-day maintenance period to maintain the surface free of loose screenings. At the end of the fourth day, any excess screenings shall be removed from the paved area.

VII. 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 Scrub 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 the Scrub Seal, it shall be measured separately as listed in the Technical Specification for Fog Seal.

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Scrub 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 county, Fog Seal shall be applied and paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| Pay Item | Pay Unit |
|-----------------|-----------------|
| Scrub Seal | Square Yard |

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PC-007 COLD-IN-PLACE RECYCLING (CIP)

I. Description

The work specified in this Technical Provision consists of the in-place construction of a Cold Recycled Bituminous Base Course, using either reclaimed asphalt pavement (RAP) material and/or reclaimed aggregate material (RAM), combined with virgin aggregates and/or bituminous material. It is the intent of this contract to recycle 100% of the existing asphalt pavement to ensure that the completed recycled base course will be of a consistent material and thickness throughout, including, but not limited to, all existing asphalt pavement adjacent to all concrete curbing, storm sewer inlets, manholes, sanitary sewer manholes, and all utility valve boxes. The existing asphalt pavement in the above-described locations must be included in the recycling process in order to construct a bituminous base course with a uniform thickness throughout 100% of the proposed area. The intent of this contract is to utilize the specified process which is clearly defined within this specification. Therefore Full Depth Reclamation or any variation of Full Depth Reclamation will not be accepted.

II. Materials:

A. *Asphalt Emulsion*

The type of asphalt emulsion to be used shall be determined by the mixture design. Bituminous material shall conform to the applicable requirements of the ~~2010-current~~ *FDOT Standard Specifications for Road and Bridge Construction, Section 916*. At the request of the county, a representative from the asphalt emulsion supplier shall be available at the job site to monitor the characteristics and performance of the asphalt emulsion. Throughout the job, the representative will monitor the project and make adjustments to the asphalt emulsion formulation as required.

B. *Cold Pulverized Material*

The cold pulverized recycled asphalt pavement (hereinafter referred to as RAP) material shall meet the following gradation requirement prior to the addition of the asphalt emulsion.

| STANDARD | | METRIC | |
|-----------------|----------|---------------|----------|
| Sieve Size | %Passing | Sieve Size | %Passing |
| 2" | 95 | 51 mm | 95 |

C. *Portland Cement*

Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.

III. Mixture Design:

A mix design(s) conducted by an independent, AASHTO Materials Reference Laboratory (AMRL) accredited laboratory using materials obtained directly from the project site, conforming to the requirements of this Technical Specification shall be submitted to the County at the Pre-Construction Conference. Based on RAP consistency throughout project limits, more than one mix design may be required. A traffic control plan may be required in accordance with TP-102 for collecting materials. Mix design formulations shall be conducted in accordance with the following guidelines:

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A. Mix Design Procedures

1. **Sampling and Processing** - Prior to materials sampling in the roadway, obtain approval from the County. A traffic control plan may be required in accordance with TP-102 for collecting materials. Obtain 6" minimum inside diameter cores from the areas to be recycled. If cores show significant differences in various areas, such as different type or thickness of layers between cores, then separate mix designs shall be performed for each of these pavement segments. It is recommended that a minimum of one location be sampled for each 1000' in each lane. Additionally, samples should be taken where visual differences in the pavement are noticed. Immediately patch all core holes neatly with asphalt cold patch. Cores shall be cut in the laboratory to the depth specified for the CIR project. Cores shall be crushed in the laboratory.

The mix design shall be performed on this crushed sample. Gradation of the sample after crushing shall be determined by ASTM C117 and C136 (dried at no greater than 40°C). Samples shall be prepared with a sample splitter. An alternative method is to dry, screen and recombine the sample in the laboratory to target gradation.

2. **Mixing** - Calculate the amount of RAP required to produce a 61.0 mm to 66.0 mm (2.4 to 2.6 inch) tall specimen by determining the maximum specific gravity of the RAP in accordance with ASTM D2041.

Number of specimens: 4 per emulsion content for a total of 4 for long-term stability and 4 for moisture testing for the 3 emulsion contents. Two specimens are required for Rice specific gravity; test at the highest emulsion content in the design and back calculate for the lower emulsion contents.

Recommended emulsion contents: 2.0%, 2.5%, 3.0%, 3.5%. Choose three emulsion contents that bracket the estimated recommended emulsion content.

Add moisture that is expected to be added at the milling head, typically 1.5 to 2.5 percent.

If any additives are in the mixture, introduce the additives in a similar manner that they will be added during field production.

Mixing of test specimens shall be performed with a mechanical bucket mixer. Mix the CIR RAP millings thoroughly with water first, then mix with emulsion. Mixing shall occur at ambient temperature. One specimen shall be mixed at a time. Mixing time with emulsion should not exceed 60 seconds.

3. **Compaction** - Specimens shall be compacted immediately after mixing. Place paper disks on the top and bottom of the specimen before compaction. Specimens shall be compacted with a Superpave gyratory compactor (SGC) in a 100 mm mold at 1.25° angle, 600 kPa ram pressure, and 30 gyrations. The mold shall not be heated.

4. **Curing after compaction** - Extrude specimens from molds immediately after compaction. Carefully remove paper disks.

Place specimens in 60°C forced draft oven with ventilation on sides and top. Place each specimen in a small container to account for material loss from the specimens. Care should be taken not to over-dry the specimens. Cure compacted specimens to constant weight but no more than 48 hours and no less than 16 hours. Constant weight is defined here as 0.05% change in weight in 2 hours. After curing, cool specimens at ambient temperature a minimum of 12 hours and a maximum of 24 hours.

5. **Measurements** - Determine bulk specific gravity (density) of each compacted (cured and cooled) specimen according to ASTM D2726.

Determine specimen heights according to ASTM D3549 or equivalent. Alternatively, the height can be obtained from the SGC readout.

Determine Rice (maximum theoretical) specific gravity, ASTM D2041, except as noted in Item 4 of this procedure, and do not break any agglomerates which will not easily reduce with a flexible spatula. Perform the supplemental dry-back procedure to adjust for uncoated particles.

Determine percent air voids in accordance with ASTM D3203 for each design emulsion content.

Determine corrected Marshall Stability by ASTM D1559 at 40°C after 2 hour temperature conditioning in a forced draft oven.

6. **Moisture Susceptibility** - Perform same conditioning and volumetric measurements on moisture-conditioned specimens as on other specimens. Vacuum saturate to 55 to 75 percent, soak in a 25°C water bath for 23 hours, followed by a one hour soak at 40°C. Determine corrected Marshall Stability. The average moisture conditioned specimen strength divided by the average dry specimen strength is referred to as retained stability.

7. **Emulsion Content Selection** - The properties of the specimens at design emulsion content shall meet the properties in Table 1.

8. **Report** - The report shall contain the following minimum information: Gradation of RAP; amount and gradation of virgin aggregate or additional RAP, if any; recommended water content range as a percentage of dry RAP; optimum emulsion content as a percentage of dry RAP and corresponding density; air void percentage; absorbed water percentage; Marshall Stability and Retained Stability at design moisture and emulsion contents; Raveling percentage; and Thermal Cracking initiation temperature. Include the mix design emulsion designation, supplier name, plant location, and emulsion testing results detailed in *Table 4*.

The mix design(s) shall meet the Mix Design Performance Criteria of **Table 1** and be approved by the County prior to construction.

9. **Other Additives:**

If necessary, additives may be used to meet the requirements in **Table 1**. In the case that an additive is used, the type and allowable usage percentage must be described in the submitted design recommendation.

10. **Addition of Imported Crushed Reclaimed Asphalt Pavement (RAP) material:**

If available, imported RAP material may be added at the discretion of the County Engineer if the RAP material meets the requirements in **Table 2**. The crushed RAP shall be free from vegetation and all other deleterious materials, including silt and clay balls. It shall meet the requirements for Deleterious Materials given in **Table 2**. The crushed RAP shall not exceed the maximum size requirement in this Technical Specification and when blended with the design millings, shall produce a product which meets the specifications given in **Table 1**.

| Table 1 – Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyratory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyratory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | Optimum Strength | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 -Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| * Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight. | | |
| **Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath | | |

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| Table 2 - Imported Crushed RAP Criteria | | |
|---|---------------------------|-------------------------|
| Property | Method | Limit |
| Deleterious Materials: Clay Lumps and Friable Particles in Aggregate, % | ASTM C 142 or AASHTO T112 | 0.2% maximum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | 5% retained on 2" sieve |

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11. **Additional Aggregate:**

Based on the results of mix design testing or other requirements, the CIR contractor shall determine if additional aggregate is required to comply with mix design performance criteria specified in **Table 1**. Any additional aggregate shall meet the criteria specified in **Table 3**, and it shall be graded to produce a pavement layer which meets the mix design performance criteria specified in **Table 1**.

| Table 3 - Additional Aggregate Criteria | | |
|--|---------------------------|-----------------|
| Property | Method | Limit |
| Los Angeles abrasion value, % loss | AASHTO T96 | 40% maximum |
| Sand Equivalent,% | ASTM D2419 | 60% minimum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | Section 334-2.2 |
| Water absorption % | AASHTO T 85 | 5%_ maximum |

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IV. Equipment:

Maintain all equipment in a satisfactory operating condition and in accordance with the 2010 *FDOT Standard Specifications for Road and Bridge Construction, Section 100-2*. The Cold In-Place Recycling shall be conducted with the equipment specified herein.

A. Milling Machine:

A self-propelled, down-cutting, lateral/horizontal mixing, cold milling machine capable of pulverizing the existing asphalt (and base material as needed) in a single pass to the depth shown on the plans will be required. The machine shall have automatic depth controls to maintain the cutting depth to within $\pm \frac{1}{4}$ in (6 mm) of that shown on the plans, and shall have a positive means for controlling cross slope elevations. A 30 foot non-contact averaging beam must be used on the mill. The use of a heating device to soften the pavement will not be permitted. Up-cutting machines shall not be permitted. Machines that only provide vertical mixing will not be permitted.

The milling machine must be equipped with a liquid metering device capable of adjusting the flow of asphalt emulsion to compensate for any variation in the speed of the machine. The metering device shall deliver the amount of asphalt emulsion to within ± 0.2 percent of the required design amount by weight of pulverized bituminous material (for example, if the design requires 3.0 percent, the metering device shall maintain the emulsion amount between 2.8 percent and 3.2 percent). The asphalt emulsion pump should be of sufficient capacity to allow emulsion contents up to 3.5% by weight of pulverized bituminous material. Also, automatic digital readings will be displayed for both the flow rate and total amount of pulverized bituminous material and asphalt emulsion in appropriate units of weight and time.

B. Bituminous Paver:

A self-propelled conventional bituminous paver having electronic grade and cross slope control for the screed shall be utilized. The equipment shall be of sufficient size and power to spread and lay the mixture in one smooth continuous pass to the specified section and according to the plans. A 30 foot non-contact averaging beam must be used on the bituminous paver. To reduce material segregation, the bituminous paver must utilize a hopper insert.

C. Rollers:

All rollers shall be self-propelled. The number, weight and types of rollers shall be as necessary to obtain the required compaction. At least one pneumatic-tired roller shall have a minimum gross operating weight of not less than 50,000 lbs. (22,600 kg). Pneumatic rollers must have properly working scrapers and water spraying systems. At least one double drum vibratory steel-wheeled roller shall have a gross operating weight of not less than 20,000 lbs. (9,000 kg) and a width of 78 inches (1980 mm). Double drum vibratory rollers must have properly working scrapers and water spraying systems.

V. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five CIR 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.

VI. Construction:

A. *Weather Limitations*

Cold In-Place recycling operations shall be completed when the atmospheric temperature measured in the shade and away from artificial heat is 500 F (10°C) and rising. Also, the weather shall not be foggy or rainy. The weather forecast shall not call for freezing temperature within 48 hours after placement of any portion of the project.

B. *Removal of Vegetation:*

Grass, vegetation and other deleterious material shall be removed from the edge of the existing pavement to prevent contamination of the pulverized bituminous material during the milling operation.

C. *Milling:*

The existing pavement shall be milled to the required depth and width as indicated on the plans. Recycling shall be in a manner that does not disturb the underlying material in the existing roadway. The milling operation shall be conducted so that the amount of fines occurring along the vertical faces of the cut will not prevent bonding of the cold recycled materials. Use a small milling machine, if necessary, to mill longitudinally to the required depth as indicated on the plans along all curbs and gutters, radius returns, utilities, inlets, around all manholes and any other structures not accessible or practical to be milled by the milling/mixing machine utilities. The millings produced by the small mill will be the same as the large mill and of equal gradation to produce a uniform recycled pavement layer. Inlets/Catch Basins must be covered during the milling and recycling operation to prevent milled material from entering the catch basin area where it could contaminate and/or block the storm water system.

D. *Processing:*

When a paving fabric is encountered during the CIR operation, the Contractor shall make the necessary adjustments in equipment or operations so that at least ninety percent (90%) of the shredded fabric in the recycled material is no more than 5 in² (3200 mm²). Additionally, no fabric piece shall have any dimension exceeding a length of 4 inches (100 mm). These changes may include, but not be limited to, adjusting the milling rate and adding or removing screens in order to obtain a specification recycled material. The Contractor shall be required to waste material containing over-sized pieces of paving fabric as directed by the Engineer.

E. *Spreading:*

The material shall be spread using a self-propelled paver meeting the requirements under *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 320-5*. Heating of the paver screed will not be permitted. The recycled material shall be spread in one continuous pass, without segregation and to the lines and grades established by the Engineer.

F. *Compaction:*

Compaction of the recycled mix shall be completed using rollers meeting the requirements of the *2010 FDOT Standard Specifications for Road and Bridge Construction Section 330-10*. During initial construction, rolling patterns and sequences shall be established through the construction of a control strip produced with the CIR equipment and within the pavement section, to determine the target wet density, using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. In all cases, the longitudinal joint must first be rolled followed by the rolling pattern established by the test strip. The initial pass for the rolling pattern established by the test strip should begin on the low side and progress to the high side by overlapping of longitudinal passes parallel to the pavement centerline. Initial rolling should not begin until the emulsion has started to break. Rollers shall be operated at speeds appropriate for the type of roller and necessary to obtain the required degree of compaction and prevent defects in the mat. Rolling shall be continued until no displacement is occurring or until the pneumatic roller(s) is (are) walking out of the mixture. Final rolling to eliminate pneumatic tire marks and to achieve density shall be done by double drum steel roller(s), either operating in a static or vibratory mode. Vibratory mode should only be operated at a speed, frequency and amplitude shown not to damage the pavement. The selected rolling pattern shall be followed unless changes in the recycled mix or placement conditions occur and the established rolling pattern is causing damage to the mat or the required degree of compaction is unachievable. These circumstances require the establishment of new rolling patterns and sequences through the construction of a control strip produced with the CIR equipment and within the pavement section. Rolling shall start no more than 30 minutes behind the paver. Finish rolling shall be completed no more than one hour after milling is completed. When possible, rolling shall not be started or stopped on uncompacted material but with rolling patterns established so that they begin or end on previously compacted material or the existing pavement.

G. *Return of Traffic:*

After the completion of compaction of the recycled pavement layer, no traffic shall be permitted on the completed recycled material for at least one (1) hour. After one hour rolling traffic may be permitted on the recycled material. This time may be adjusted by the contractor to allow establishment of sufficient cure so traffic will not initiate raveling. After opening to traffic, the surface of the recycled pavement layer shall be maintained in a condition suitable for the safe movement of traffic.

H. *Protection and Damage:*

Protect the recycled pavement layer in accordance with the *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 330-13*. Prime and sand the recycled pavement layer prior to opening the roadway to traffic. Any damage to the completed Cold In Place Recycled bituminous material shall be repaired by the contractor prior to the placement of the hot mix asphalt concrete surface course, or other applicable surface treatment, and as directed by the Engineer.

I. *Finished Recycled Pavement Layer Smoothness:*

The completed cold recycled pavement layer surface shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline at locations selected by the County.

Irregularities exceeding the specified limit shall be corrected at the expense of the contractor by grinding/cold milling or leveling with cold or hot mix asphalt. The corrected areas shall be retested to determine compliance with smoothness.

VII. Quality Control

A. Contractor Responsibility:

The contractor shall be responsible for providing field and laboratory quality control testing of materials during construction. The County or its subconsultant may conduct sampling and testing whenever or as often as desired for verification purposes. The contractor shall acquire an adequate amount of material for each sample to be tested in the laboratory so that an ample amount of material is left over in case of the need for resolution testing. Resolution testing will be required and provided at the expense of the contractor if similar laboratory samples tested by the contractor and the County do not coincide within reasonable values as determined by the County. The resolution laboratory will be selected by the County and the testing results provided by this lab will be used for materials acceptance purposes. All materials testing laboratories shall be accredited by the AASHTO Materials Reference Laboratory (AMRL) or Construction Materials Engineering Council (CMEC). The contractor shall submit all documentation of field inspection and laboratory testing results required herein to the County Engineer prior to payment and upon request. Copies of all delivery tickets and notes regarding any materials brought to the project site shall be given to the County upon delivery to the project site. These tickets shall be signed by an approved representative of the Contractor at the time of delivery.

B. Crushed RAP Material Sizing:

A sample shall be obtained from the receiving hopper of the paver each 1/2 mile or as specified by engineer (0.8 km) and screened using a 2 in. (51mm) sieve (or smaller sieve if required) to determine maximum particle size requirement compliance. The resulting gradations shall be compared to the mix design gradations to determine any necessary changes to emulsion content. Gradation results shall be shared with the County by the end of the following day. Sampling procedures shall be in accordance with ASTM D979 or AASHTO T168.

C. Asphalt Emulsion:

The asphalt emulsion shall be received on the job site within the temperature ranges specified by the emulsion supplier. The emulsion supplier shall provide testing results for each shipment indicating the emulsion is in compliance with the criteria specified in **Table 4**. The County Engineer may require the contractor to obtain emulsion samples from each shipping trailer prior to unloading into the contractor's storage units for quality control testing if desired. The testing shall meet the following requirements:

| Table 4 – Emulsion Criteria | | |
|---|---------------|----------------|
| Property | Method | Limit |
| *Residue from distillation, % | ASTM D244 | 64.0 to 66.0 % |
| *Oil distillate by distillation, % | ASTM D244 | 0.5% maximum |
| Sieve Test, % | ASTM D244 | 0.1% maximum |
| **Residue Penetration, 25°C, dmm | ASTM D5 | -25 to +25% |
| <i>*Modified ASTM D244 procedure – distillation temperature of 177°C with 20 minute hold.</i> | | |
| <i>*To be determined during CIR design phase prior to emulsion formulation and</i> | | |

manufacture for project. Penetration value range will be determined and submitted to the County Engineer for approval prior to project start

D. *Asphalt Emulsion Content and Yield:*

Total emulsion quantity and yield shall be monitored and recorded daily and for each segment in which the target emulsion percentage is adjusted. This information shall be gathered from the calibrated emulsion metering device. Emulsion content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist.

E. *Water Content and Yield:*

Total water quantity and yield shall be monitored and recorded daily and for each segment in which the target water percentage is adjusted. This information shall be gathered from the water metering device. Water content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist. Water content adjustments shall also be made based on mixture consistency, coating, and dispersion of the recycled materials.

F. *Mixture Testing:*

At the discretion of the County Engineer and if the recycled pavement layer quality and workmanship seem suspect, the contractor may be required to sample, in accordance with ASTM D3665 and D979, the recycled mixture for determining compliance with design criteria specified in **Table 1**. If samples of the recycled asphalt pavement mixture are taken after the addition of additives and emulsion, the specimens must be compacted within 15 minutes of sampling and tested as required in **Table 1**. If the recycled mixture is sampled prior to the addition of additives and emulsion, the sample must immediately be transferred to air-tight plastic container to prohibit loss of moisture. Samples must be mixed in the laboratory with the field additives and emulsion within 24 hours and tested as required in **Table 1**.

G. *Depth of Pulverization (Milling):*

The depth shall be checked and recorded daily and every 1/8 mile (0.2 km) on both outside vertical faces of the cut. Measure depth by placing a rigid measuring device perpendicular to the bottom of the milled surface and near the vertical faces of the cut.

H. *Compacted Density:*

Degree of compaction of the recycled pavement layer shall be monitored for compliance with target wet density established during the initial control strip construction. Wet density shall be determined every 1/4 mile (0.4 km) using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. Ensure that all nuclear gauges are operated by licensed individuals and have been calibrated within the last 12 months. The acceptable degree of compaction shall be 96 to 98 percent of target wet density. Care shall be taken not to over-roll the mat based on visual observations of check cracking or shoving. A new control strip and target density shall be established if the consistency of the material being recycled changes. The County shall be notified prior to the construction of a new control strip.

I. *Cross-Slope and Smoothness:*

The recycled pavement layer cross slope shall be checked regularly during spreading. A minimum 2 % Cross-Slope shall be maintained through the length of the project. The recycled pavement layer shall be checked for smoothness regularly behind the paver and after rolling. The smoothness shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline after rolling is completed. The edge of the mat should be rolled first and progress to the center or high side to prevent excessive edge sloughing.

| Property | Method | Limit |
|--|--|--|
| RAP Maximum Particle Size | ASTM C 136 or AASHTO T27 | Section 334-2.2 |
| RAP Particle Size Distribution | ASTM C 136 or AASHTO T27 | Determined by Mix Design(s) |
| Emulsion and Water Yield | Calibrated Metering Device | Determined by Mix Design(s) |
| *Mixture Testing **Depth of Milling Compacted Density Cross-Slope Smoothness | Table 1 Section 334-5.7 ASTM D2950 FM 5-509 FM 5-509 | Table 1 Determined by Mix Design(s) 96 to 98% of target density Minimum 2% Maximum 0.5 in (12 mm) deviation from planeness |
| <i>*Mixture Testing frequency shall be at the County Engineer's discretion</i> | | |
| <i>**Depth of Milling may need to be adjusted for localized unexpected pavement conditions</i> | | |

J. *Documentation*

Delivery Tickets - All delivery tickets and notes regarding any materials brought to the project site to complete this item shall be given to the County upon delivery. Tickets shall be signed by an approved representative of the Contractor at the time of delivery.

VIII. 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 Cold-In-Place Recycled Bituminous Paving, and not specifically listed in another item in the Bid Form, shall be included in this item, including but not limited to Maintenance of Traffic as specified in TP-102.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. Prices shall be full compensation for the removal and processing of the existing pavement; for preparing, hauling, and placing all materials; for all freight involved; for all manipulations, including rolling and prime and sand for all labor, tools, equipment, quality control testing and incidentals necessary to complete the work. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Cold-In-Place Recycled Bituminous Paving, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Cold-In-Place Recycled Bituminous Paving | Square Yard |
| Liquid Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| Added RAP or Aggregates for Mixing | Ton |
| Cement | Ton |

END OF SECTION PC-007

PC-008-3-A FULL DEPTH RECLAMTION (FDR) WITH PORTLAND CEMENT**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material, Portland cement and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, the introduction of cement additives, and other additives (if called for in the Mix Design). The process which results in a stabilized base course, shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. RAP: Materials must meet all requirements specified in the 2010-current Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. Additional Base Materials: Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. Portland Cement: Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.
- D. Water: The water for the base course shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- E. Soil: The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. Road Reclaimer: Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of water and cement material into the mixture. The reclaiming machine shall mix the cement additive

thoroughly with the RAP and soil materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The cement metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and cement applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. Motor Grader: Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. Rollers: Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. Cement Delivery Equipment: A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.
- E. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (cement stabilization) 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.

V. Construction:

- A. Layout: The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the engineer.
- B. Weather and Seasonal limitations: The soil-cement base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that

the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen.

C. Mix Design: Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of cement needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of cement required in the mix. Test specimens containing various amounts of cement are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of cement is to be determined. Actual application quantities for the Portland cement will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer of record. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

D. Widening: When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

E. Additional Material: When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.

F. Pulverization: The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The cement and water shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. Alternately, the cement may be introduced by means of a spreader bar with curtain on the cement distributor. Cement shall not be introduced by means of a spreader bar or hose from the cement delivery tanker. The reclaimed material, cement and water shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of cement applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- G. Compaction: Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the cement-treated base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- H. Finishing: Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompact to the required density. Correct all irregularities greater than 1/2" over ten feet to the satisfaction of the engineer.
- I. Protection and Curing: After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- J. Thickness: The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county's option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Cement, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of cement into the mixture shall be included in the per TN cost for Cement. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the CY Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Cement, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Cement | Ton |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |

END OF SECTION PC-008-3

PC-008-4B FULL DEPTH RECLAMATION WITH ASPHALT EMULSION**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material and emulsified asphalt and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives if called for in the Special Conditions or design mix formula. The process which results in a stabilized base course shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. **RAP:** Materials must meet all requirements specified in the 2015 Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. **Additional Base Materials:** Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. **Asphalt Emulsion:** When asphalt emulsion treatment is specified, asphalt emulsion, type CSS-1h or CMS-2h mod., meeting the requirements of ASTM D2397-98, shall be utilized.
- D. **Portland Cement:** When a blend of asphalt emulsion and Portland cement is specified the Portland cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85. If cement is added with emulsion no more than 4% shall be used on the project.
- E. **Water:** The water for the base course compaction and foaming additive shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- F. **Soil:** The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. **Road Reclaimer:** Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including

horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of asphalt emulsion into the mixture. The reclaiming machine shall mix the emulsified asphalt additive thoroughly with the RAP and soil materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The asphalt metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and asphalt applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. **Motor Grader:** Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. **Rollers:** Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. **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.
- E. **Cement Delivery Equipment:** A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (with emulsion stabilization) 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.

V. Construction:

- A. **Layout:** The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final

surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the Engineer.

- B. **Weather and Seasonal limitations:** The base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen. A high ambient temperature (> 32°C, 90°F) increases the chance of breaking off large chunks (“slabbing”) in front of the cutting machine.

- A. **Mix Design:** Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of asphalt emulsion or foamed asphalt needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of asphalt emulsion or foamed asphalt required in the mix. Test specimens containing various amounts of asphalt emulsion or foamed asphalt are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of either is to be determined. Actual application quantities for the additives will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

| Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyrotory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyrotory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | 1,250 lb min. | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 - Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| <i>* Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight.</i> | | |
| <i>**Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath</i> | | |

- B. **Widening:** When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

- C. **Additional Material:** When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.

- D. **Pulverization:** The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The asphalt emulsion or asphalt and water (to produce a foamed asphalt) shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. The reclaimed material and additives shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of asphalt emulsion applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician or superintendent to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- E. **Compaction:** Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- F. **Finishing:** Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density. Correct all irregularities greater than 1/2" over ten feet to the satisfaction of the engineer.
- G. **Protection and Curing:** After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material is applied.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- H. **Thickness:** The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county's option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Asphalt Emulsion, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of asphaltic cement into the mixture shall be included in the per GL cost for Asphalt Emulsion. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the per TON Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Asphalt Emulsion, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |
| Cement | Ton |

END OF SECTION PC-008-4

PC-009 BITUMINOUS FOG SEAL**I. Description**

The work consists of applying a bituminous fog seal to an existing pavement surface or to a newly constructed chip seal surface.

II. Materials:

- A. **Bituminous Material:** Provide a CSS-1 or CSS-1h, bituminous material for fog seal, as specified in FI/DOT 916-3.1. The temperature of the bituminous material at the time of application shall be above the minimum temperature of 120°F.

B. **Material Samples:**

The County will require the Contractor to sample and test the first load of emulsion prior to delivery. The Contractor will also provide a sample of the emulsion for every 10,000 gallons, on site, prior to commencing work. The County 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 County 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.

III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. **Distributor Tank:**

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the bituminous fog seal uniformly on variable widths of surface at readily determined and controlled rates from 0.07 to 0.12 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

B. **Sand Truck:**

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

D. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Fog Seal project references in the State of Florida that have been completed within the past three years. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience outline of the project superintendent. 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.

V. Construction:

A. Layout:

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

B. 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 60 degrees Fahrenheit in the shade, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 60°F. No construction is allowed in foggy weather.

C. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract

D. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work

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and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

D.E. ~~Preparation of Surface~~Site and Surface Preparation:

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 fog seal operation to make sure the road is free of loose aggregate and other debris.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

The fog seal material shall not be applied until an inspection of the street surface has been done by the Engineer and determined to be suitable.

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E.F. 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 Contractor shall do a 100' test strip, applied between 0.07 to 0.12 gallons per square yard, diluted with potable water. A dilution rate of 50% (1:1 water to emulsion) is recommended. An application rate between 0.09 to 0.23 gallons per square yard may be used for open surfaces. The Engineer shall review the test strip and recommend application rate adjustments as needed.

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F.G. Progress of Work:

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent. If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

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Interim pavement markings can be placed after the fog seal has cured. Permanent pavement markings shall not be placed for three days after placing the fog seal.

When applying to a new chip seal surface, the bituminous chip seal shall be allowed to cure a minimum of 24 hours under dry conditions and temperatures above 60 degrees Fahrenheit.

VI. 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.

VII. 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 seal until it has cured. 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 County 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.

Traffic shall not be allowed on the roadway after placement of the fog seal for a minimum of two hours, or until the Engineer has determined it has cured.

VIII. 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 Fog Seal, and not specifically listed in another item in the Bid Form, shall be included in this item.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Fog 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 County.

Payment will be made under:

| Pay Item | Pay Unit |
|----------------------------------|-------------------------------|
| Bituminous Material for Fog Seal | Gallon Square Yard |
| <u>Silica Sand</u> | <u>Square Yard</u> |

END OF SECTION PC-009

BID SHEET

The Bid Sheets for this bid are available on the web at <http://www.polk-county.net/boccsite/doing-business/bids/>. All Bid Sheets are in Excel format and **are to be submitted on a cd with your Bid Package along with the hard copy. The CD must be labeled with the company name and Bid number.**

Deviation from the Bid Sheets is strictly prohibited and will not be accepted. The Bid Sheets are locked and you need only enter the unit cost in the same column. The Bid Sheet will automatically calculate the extension, therefore you must enter the Unit Cost per the Unit Packaging as requested on the Bid Sheets. Any notes you wish to make are to be made in the Remarks section below.

REMARKS: _____

VENDOR NAME

**SIGNATURE ACKNOWLEDGEMENT
(SUBMITTAL PAGE)**

To Polk County, a Political Subdivision of the State of Florida

Date: _____

I certify that this bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same construction, service or material and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I have read and understand the bidding documents. I have completed and submitted all bid submittal forms, and I am authorized to sign this bid for the bidder. In submitting a bid to the County, the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the County all rights, titles and interests in and to all causes of action it may now or hereafter acquire under the Anti-Trust Laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the County. At the County's discretion, such assignment shall be made and become effective at the time the County tenders final payment to the bidder.

VENDOR NAME

AUTHORIZED SIGNATURE (MANUAL)

MAILING ADDRESS

NAME (TYPED OR PRINTED)

CITY, STATE AND ZIP CODE

TITLE (TYPED OR PRINTED)

(AREA CODE) TELEPHONE NUMBER

TOLL FREE NUMBER

E-MAIL ADDRESS

This bid may be used by any other Government Agency. [] YES [] NO [] N/A

**DRUG-FREE WORKPLACE FORM
(SUBMITTAL PAGE)**

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies

that _____ does:
(Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation programs, employee assistance programs and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, plea of guilty or nolo contendere to, any violation of Chapter 1893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program, if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder's Signature

Date

**NON-COLLUSION AFFIDAVIT OF PRIME BIDDER
(SUBMITTAL PAGE)**

State of _____)

County of _____)

_____, being first
duly sworn, deposes and says that:

1. He/she is _____ of _____, the Bidder that has submitted the attached Bid;
2. He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstance respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidders nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with such Contract or has in any manner, directly or indirectly, sought by agreement or collusion of communication or conference with any other Bidder, firm or person to fix the price or prices in the attached bid of any other Bidder, or to fix any overhead, profit or cost element of the Bid Price or the Bid Price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the County or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties in interest, including this affiant.

Signed: _____

Title: _____

Subscribed and sworn to before me this _____ day of _____, 20_____

(Title)

My Commission Expires: _____

INSURANCE REQUIREMENTS

The successful vendor shall purchase and maintain in force during the contract period the insurance as specified with an insurer licensed to do business in the State of Florida; rated "A VIII" or better by A.M. Best Rating Company for Class VIII financial size category. Polk County, a political subdivision of the State of Florida, must be named as an additional insured with respect to liability arising from all work being performed for Polk County, for Automobile and General Liability policies of insurance. The certificate holder must be Polk County, a political subdivision of the State of Florida, 330 W Church St, Rm 150, Bartow, Florida 33830. Workers' Compensation Insurance is required to provide statutory benefits, including those that may be required by any applicable federal statute. Any sole proprietor or partner actively engaged in the construction industry, and any corporate officer of a construction or non-construction industry corporation who elects to be exempt from the provisions of the workers' compensation law must provide either a workers' compensation exemption certificate (construction industry) or a letter stating the exemption status and number of employees (non-construction industry). For non-exempt vendors, Employers Liability in the amount of \$1,000,000. Commercial General Liability Insurance \$1,000,000 combined single limit of liability for bodily injuries, death, and property damage, and personal injury resulting from any one occurrence, including the following coverages: Completed Operations, Broad Form CG. Comprehensive Automobile Liability Insurance \$1,000,000; combined single limit of liability for bodily injuries, death and property damage resulting from any one occurrence, including all owned, hired and non-owned vehicles. The general liability and worker's compensation policies shall contain a waiver of subrogation in favor of Polk County. An original certificate of insurance must be on file in the Procurement Division before a purchase order will be issued.

**INSURANCE
(SUBMITTAL PAGE)**

By signing below the Bidder is stating that they fully understand the insurance requirements for the project and if awarded the bid will provide all insurance coverage as required in Bid No. 15-601.

The requirements are as follows:

- Bidder is insured with a company licensed to do business in the State of Florida
- The insurance company is rated A VIII or better by A.M. Best Rating Company (Workers Compensation, General and Automobile policies)
- Polk County will be named as an additional insured for general and automobile liability
- The General Liability and Worker's Compensation policies will contain waiver of subrogation in favor of Polk County

Company Name

Bidder (signature)

SAFETY REQUIREMENTS/REGULATIONS

1.0 All Bidders are required to submit, with their Bid Proposal, the Safety Requirements/Regulations form. Any questions regarding compliance with the safety requirements/regulations provision shall be directed to the County Safety Officer, Risk Management, at (863) 534-5267.

1.1 The Contractor is responsible for observing all OSHA regulations and shall self-inspect to ensure this is accomplished. The Contractor shall ensure that all personnel are properly trained and shall be able to provide documentation for their personnel that have attended training courses. Examples of such training courses are: Hazard Communications, Traffic Work Zone Safety, Personal Protective Equipment, First Aid/CPR, Permit Required Confined Space, Lock out/Tag Out of Hazardous Energy. All contractors are required to comply with OSHA Standards regardless of the number of employees they may have.

1.2 A County representative may periodically monitor work site safety. Should there be safety and/or health violations, classified as Serious, Willful or Criminal/Willful Violations, the County's representative may have the authority, but not the duty, to require the Contractor to correct the violation in an expeditious manner. Inspections shall be based on requirements contained in law. The definitions of serious, willful and criminal/willful violations are as follows:

Serious Violation: A serious violation shall be deemed to exist in a place of employment if there is a substantial probability that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment unless the employer did not, and could not, with the exercise of reasonable diligence, know of the presence of the violation.

Willful Violation: May exist where evidence shows that the employer committed an intentional and knowing violation of the Act.

Criminal/Willful Violation: A repeat violation of a previously cited willful violation.

Violation of Serious, Willful or Criminal violation may have the following consequences:

First violation: correction may be a verbal warning and the correction shall be done the same day. Written documentation may be maintained by the County.

Second violation: may result in work stoppage until the violation is corrected. The work stoppage shall not entitle the Contractor to additional contract time or compensation. Liquidated damages provision will remain in full force and effect.

Third violation: this may constitute a breach of contract for safety violations and may result in termination of the contract at the sole discretion of the County.

Note: The County Safety Officer may stop any job to ensure the safety of all concerned.

1.3 Should the work site be in a hazardous area, the County shall furnish the Contractor with information concerning hazards such as types or identification of known toxic material, machine hazards, Material Safety Data Sheets, or any other information that would assist the Contractor in the planning of a safe work site.

1.4 The Contractor shall be aware that while working for the County, representatives from agencies such as the United States Department of Labor, Occupational Safety and Health Administration (OSHA), and the Division of Safety, State of Florida, are invitees and need not have warrants or permission to enter the work site. These agencies, as well as the County Safety Officer, enter at the pleasure of the County.

1.5 The Contractor shall designate a competent person of its organization whose duty shall be the prevention of accidents at the site. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the County. All communications to the superintendent shall be as binding as if given to the Contractor.

SAFETY REQUIREMENTS/REGULATIONS FORM

Bidder must sign and have notarized:

The undersigned bidder hereby certifies that they fully understand the safety requirements/regulation provisions and will comply.

Dated this _____ day of _____, 20_____

Name of Firm _____

By _____

Title of Person Signing (SEAL)

SWORN TO AND SUBSCRIBED BEFORE ME

This _____ day of _____, 20 _____

Notary Public: _____

My Commission Expires: _____

BID REGISTRATION

You **MUST** register using this form in order to receive notice of any addenda to these documents. Please fax the completed form to the Procurement Division as soon as possible. It is the vendor's responsibility to verify if addenda have been issued.

Bid Number: 15-601, Pavement Management Alternative Methods
Description: Provide the necessary labor, material, equipment and supervision for pavement management alternative methods.
Receiving Period: Wednesday, September 16, 2015, prior to 2:00 p.m.
Bid Opening: Wednesday, September 16, 2015, 2:00 p.m.

NOTE: This is an annual bid therefore, there is no established budget. The services contained within this bid are utilized on an as-needed basis. This is a new annual bid; there is no prior bid information available.

This form is for bid registration only. Please scroll down for additional information.

**BIDDER REGISTRATION
FAX THIS FORM BACK IMMEDIATELY
FAX: (863) 534-6789**

Carefully complete this form and e-mail or fax it to the Procurement Division. You must submit one form for each bid that you are registering for.

Company Name: _____

Contact Person: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____ E-mail: _____

POLK COUNTY

**Procurement Division
Fran McAskill
Procurement Director**

**Bid #15-601
PAVEMENT MANAGEMENT ALTERNATIVE METHODS**

Polk County, a political subdivision of the State of Florida, requests the submittal of bids from vendors that are interested in providing pavement management alternative methods as described herein. Sealed bids will be received in the Procurement Division, **prior to 2:00p.m, Wednesday, September 9, 2015.** Bids will be opened at 2:00p.m., September 9, 2015.

Attached are important instructions and specifications regarding responses to this Bid. Failure to follow these instructions could result in Bid disqualification.

Questions regarding this bid should be in writing and should reference the above Bid number. Submit all questions to **Tammy G. Spearman, CPPO, CPPB Procurement Specialist**, via email at tammywinton-spearman@polk-county.net or via fax at (863) 534-6789 by 4:00 p.m., Tuesday, September 8, 2015.

Bids may be mailed, express mailed or hand delivered to:

**Procurement Division
330 W Church St, Rm 150
Bartow, Florida 33830
(863) 534-6757
STATEMENT OF NO BID**

If you do not intend to submit a bid, please complete the information below and return to the Procurement Division via fax or e-mail. If returning by mail, please be sure the bid number and title are clearly marked on the front of the envelope.

- | | |
|---|---|
| <input type="checkbox"/> Insufficient time to respond | <input type="checkbox"/> Unable to meet specifications |
| <input type="checkbox"/> Do not offer this product | <input type="checkbox"/> Unable to meet bond/insurance requirements |
| <input type="checkbox"/> Specifications unclear | <input type="checkbox"/> Schedule would not permit us to perform |
| <input type="checkbox"/> Specifications too restrictive | <input type="checkbox"/> Other (please specify below) |

Company Name: _____ Date: _____

Telephone Number: _____ Signature: _____

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BIDDER INSTRUCTIONS AND GENERAL INFORMATION

BIDDER INSTRUCTIONS: To ensure acceptance of this bid, follow these instructions.

BID DOCUMENTS MUST BE DELIVERED TO THE PROCUREMENT DIVISION PRIOR TO 2:00P.M. ON THE DATE SPECIFIED. THERE WILL BE NO EXCEPTIONS.

1. **EXECUTION OF BID:** Bid must contain an original signature of an authorized representative in the space provided on the signature page. Bid must be typed or printed in black ink. Erasable ink is not permitted. Corrections made by bidder to any bid entry must be initialed by the person who signs the bid.
2. **NO BID:** Bidders not interested in submitting a bid should return a “no bid,” with an indication of the reason for no bid and the interest in future bid solicitations.
3. **BID OPENING:** It is the responsibility of the bidder to assure that their bid is delivered at the proper time and place prior to the bid opening. All bid openings shall be public, at 2:00 p.m., on the date specified in the Notice to Bidders. Bids, which for any reason are not so delivered, will not be considered. **BID SUBMITTAL FORMS USING FACSIMILE OR EMAIL WILL NOT BE ACCEPTED.**

NOTE: In accordance with Florida Statute 119.071, a listing of vendors that provide a bid submittal shall be posted to the County’s website at <http://www.polk-county.net/boccsite/departments/budget-and-procurement/bids/bid-status/> . The sealed bids shall remain exempt from disclosure, including bid amounts, until recommendation of award or 30 days after bid opening, whichever event occurs first.

Should the Procurement Director reject all bids, before the recommendation of award or 30 days after bid opening, and concurrently provide notice of the County’s intent to reissue the bid, the rejected bids will remain exempt from Florida Statute 119.07 until such time as the County provides notice of recommendation of award of the reissued bid or until the County withdraws the reissued bid. The bid is not exempt for longer than 12 months after the notice of rejection of all bids.

4. **COUNTY AS GATEKEEPER OF DOCUMENTS:** This document is issued by Polk County and as such shall be the sole distributor of all addendums and/or changes to these documents. It is the responsibility of the bidder to determine issuance of documents directly with the Procurement Division. The County is not responsible for any solicitations issued through subscriber, publications, or other sources not connected with the County and the bidder should not rely on such sources for information regarding the solicitation.
5. **TAXES:** Bidders are responsible for the payment of any applicable taxes that are connected to the purchase of any materials or subcontractors used in the execution of this bid.

6. **DISCOUNTS:** Bidders may offer a cash discount for prompt payment; however, such discounts shall NOT be considered in determining the lowest net cost for bid evaluation purposes. Bidders are encouraged to reflect cash discounts in the unit prices quoted.
7. **MISTAKES:** Bidders are required to examine the specifications, delivery schedule, bid prices and all instructions pertaining to the requirements of this bid. Failure to do so will be at bidder's risk. In case of a mistake in extension of a unit price, the unit price will govern. Corrections made by bidder to any bid entry must be initialed by the person who signs the bid.
8. **INVOICING AND PAYMENT:** The successful bidder shall submit a properly certified invoice to the County at the prices bid. **An original invoice shall be submitted to the appropriate User Division.** The vendor shall include the bid number and/or the purchase order number on all invoices. The vendor's Project Manager or any authorized officer shall, by affidavit, attest to the correctness and accuracy of all charges. Invoices will be processed for payment when approved by the appropriate Division's Project Manager or designee.
9. **CONFLICT OF INTEREST:** All bidders must disclose, with their bid, the name of any officer, director or agent who is also an employee of the County or any of their agencies. Furthermore, all bidders must disclose the name of any County employee who owns, directly or indirectly, any interest of any amount in the bidder's firms or any of their branches. Award of this bid shall be subject to the provisions of Chapter 112, Florida Statutes.
10. **WARRANTY:** Unless otherwise specified, the bidder agrees that the services furnished under this bid shall be covered by the most favorable commercial warranty the bidder gives to any customer for comparable services, and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the County by any other provision of this bid.
11. **ADDENDUM:** Any changes in the bid shall be made in the form of a written addendum by the Procurement Director or their designee. No other person shall be authorized to make changes verbally or in writing. If an addendum is issued, the addendum sheet should be signed and submitted with your bid submittal.
12. **LIABILITY:** The vendor shall hold and save the County, its officers, agents and employees harmless from liability of any kind in the performance of this bid and against claims by third parties resulting from the supplier's breach of contract or the supplier's negligence.
13. **PATENTS AND ROYALTIES:** The bidder, without exception, shall indemnify and save harmless the County and its employees from liability of any nature or kind, including cost and expenses for, or on account of, any copyrighted, patented or non-patented invention, process, or article manufactured and used in the performance of this bid. If the bidder uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or cost arising from the use of such design, device or material in any way involved in the work.

14. **BID PROTEST:** Any bidder desiring to file a bid protest, with respect to a recommended award of any bid, shall do so by filing a written protest. The written protest must be in the possession of the Procurement Division within three (3) working days of the Notice of Recommended Award mailing date. All bidders who bid will be sent a Notice of Recommended Award, unless only one bid was received.

A copy of the bid protest procedures may be obtained from the Polk County Procurement Division or can be downloaded from the County's website at <http://www.polk-county.net/boccsite/departments/budget-and-procurement/bids/bid-status/>.

FAILURE TO FOLLOW BID PROTEST PROCEDURE REQUIREMENTS WITHIN THE TIME FRAMES PRESCRIBED HEREIN AS ESTABLISHED BY POLK COUNTY, FLORIDA, SHALL CONSTITUTE A WAIVER OF THE BIDDER'S RIGHT TO PROTEST AND ANY RESULTING CLAIM.

15. **INDEMNIFICATION:** Vendor, to the extent permitted by law, shall indemnify, defend (by counsel reasonably acceptable to County), protect and hold the County, and its officers, employees and agents, harmless from and against any and all, claims, actions, causes of action, liabilities, penalties, forfeitures, damages, losses, and expenses whatsoever (including, without limitation, attorneys' fees, costs, and expenses incurred during negotiation, through litigation and all appeals therefrom) including, without limitation, those pertaining to the death of or injury to any person, or damage to any property, arising out of or resulting from (i) the failure of Vendor to comply with applicable laws, rules or regulations, (ii) the breach by Vendor of its obligations under any Agreement with the County entered into pursuant to this solicitation, (iii) any claim for trademark, patent, or copyright infringement arising out of the scope of Vendor's performance or nonperformance of the Agreement, or (iv) the negligent acts, errors or omissions, or intentional or willful misconduct, of Vendor, its professional associates, subcontractors, agents, and employees; provided, however, that Vendor shall not be obligated to defend or indemnify the County with respect to any such claims or damages arising out of the County's sole negligence. The obligations imposed by this Section shall survive the expiration or earlier termination of the Agreement.
16. **PUBLIC ENTITY:** A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list. When submitting this bid, the bidder hereby certifies that they have complied with said statute.
17. **PREFERENCE FOR DRUG FREE WORKPLACE:** Whenever two or more bids, which are equal with respect to price, quality and service, are received, preference shall be given to a bid received from a business that certifies that it has implemented a drug free workplace program in accordance with Section 287.087, Florida Statutes. In order to

receive preference, a signed certification of compliance must be submitted with the bid response.

18. **CODE OF ETHICS:** If any bidder violates or is a party to a violation of the code of ethics of Polk County or the State of Florida, with respect to this bid, such bidder may be disqualified from performing the work described in this bid or from furnishing the goods or services for which the bid is submitted and shall be further disqualified from bidding on any future bids for work, goods, or services for the County.
19. **SEALED BIDS:** All bid submittals must be completed and submitted in a sealed parcel. **(DO NOT INCLUDE MORE THAN ONE BID SUBMITTAL PER ENVELOPE. BID SUBMITTAL SHALL INCLUDE ONE (1) ORIGINAL AND ONE (1) COPY OF ORIGINAL.)** The **Original** bid submittal(s) shall be submitted on the forms provided by Polk County. All bids are subject to the conditions herein; failure to comply will subject bid to rejection.

GENERAL INFORMATION

1. **DEFINITIONS:** The term “County” means the Polk County Board of County Commissioners, a political subdivision of the State of Florida, and its authorized designees, agents or employees.
2. **AWARD(S):** The award of this bid shall be based on low bid per each alternative method. As the best interest of the County may require, the right is reserved to make award(s) by individual item, group of items or as indicated in the bid form; to reject all bids or waive any minor irregularities or technicalities in bids received. In determining the lowest responsive and responsible bidder, in addition to price, the following may be considered:
 - Vendor’s evaluation – quality of performance on previous projects.
 - The ability, capacity, equipment and skill of the bidder to fulfill the contract.
 - Whether or not the bidder can fulfill the contract within the time specified, without delay or interference.
 - The character, integrity, reputation, judgment, experience and efficiency of the bidder.
 - The previous and existing compliance by the bidder with laws and ordinances relating to the contract.
 - The sufficiency of the financial resources to fulfill the contract to provide the goods and/or services.
 - The quality, availability and adaptability of the suppliers or contractual services to the particular use required.
 - The ability of the bidder to provide future maintenance and service, as required or needed.
 - The number and scope of conditions attached to the bid.
3. **LOCAL PREFERENCE:** It is the policy of the Board of County Commissioners to afford local preference to Polk County entities in the award of bids. Preference shall be administered in accordance with the following:

When bids are received that do not exceed \$3,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within 2% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

When bids are received that are greater than \$3,000,000.00 but do not exceed \$5,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within 1% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest-price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

When bids are received that are greater than \$5,000,000.00, and the lowest price is offered by an entity located outside of Polk County, and the next lowest price is offered by an entity located in Polk County, and is within .5% of the lowest price offered, then the Polk County entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached, the Polk County entity will be awarded the bid if the Polk County entity is otherwise fully qualified and meets all county requirements.

For purposes of this provision the term "Polk County entity" means any business having a physical location within the boundaries of Polk County, Florida, at which employees are located and business activity is managed and controlled on a day to day basis. Additionally, the business must have been located within the boundaries of Polk County for a minimum of 12 months prior to the date the applicable solicitation is issued. This requirement may be evidenced through a recorded deed, an executed lease agreement, or other form of written documentation acceptable to the County. The County shall have the right, but not the obligation, to verify the foregoing requirements.

If a contract is being funded in whole or in part by assistance of any federal, state or local agency which disallows local preference, the County will adhere to those requirements by not applying this section.

This policy does not apply if this bid qualifies as a Sheltered Market bid.

4. **VENDOR PREFERENCE:** It is the policy of the Board of County Commissioners to afford vendor preference to women or minority owned businesses in the award of bids. Preference shall be administered in accordance with the following:

When sealed bids are received that do not exceed \$3,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within 2% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match the lowest price is reached,

the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

When sealed bids are received that are greater than \$3,000,000.00 but do not exceed \$5,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within 1% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match lowest price is reached, the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

When sealed bids are received that are greater than \$5,000,000.00, and the lowest price is offered by a non-women or minority owned entity located outside of Polk County, and a price is offered by a women or minority owned entity that is within .5% of the lowest price offered, then the women or minority owned entity shall be given the opportunity to match the lowest price offered, and if agreement to match lowest price is reached, the women or minority owned entity will be awarded the bid if the women or minority owned entity is otherwise fully qualified and meets all County requirements.

The term "Women or Minority Owned Entity" means any business having at least 51% ownership by women or minority group members who independently control the management and day-to-day operations of the firm. Group members are Females, African Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, and Asian-Indian Americans.

If a contract is being funded in whole or in part by assistance of any deferral, state or local agency which disallows this form of preference, the County will adhere to those requirements by not applying this section.

This policy in no way supersedes the Local Preference Policy.

This policy does not apply if this bid qualifies as a Sheltered Market bid.

5. **NON-CONFORMANCE TO BID CONDITIONS:** Services not delivered as per delivery date in bid and purchase order may result in bidder being found in default, in which event any and all re-procurement costs may be charged against the defaulting vendor. This non-conformance to bid conditions may result in immediate cancellation of the purchase order.
6. **ASSIGNMENT:** Any purchase order issued pursuant to this bid and the monies which may become due herein is not assignable except with the prior written approval of the Procurement Director.
7. **DISPUTES:** In the event of any doubt or difference of opinion as to the methods provided herein, or the level of performance rendered, the decision of the user department/division director shall be final and binding on both parties.
8. **FACILITIES:** The County reserves the right to inspect the bidder's facilities at any time, with prior notice.

9. **PLACING OF ORDERS:** The award of this bid does not constitute an order. Before any services can be performed, the successful bidder must receive written or oral notification in accordance with the practices of the User Division.
10. **PRECEDENCE:** Any requirement set forth in any section of the bid documents shall be binding as if called for by all sections. If there is a difference in the terms anywhere in this document, the most restrictive shall prevail.
11. **ADDITIONS/REVISIONS/DELETIONS:** Additions, revisions or deletions to the general conditions, specifications or bid price sheets that change the intent of the bid will cause the bid to be non-responsive and the bid will not be considered. The Procurement Director shall be the sole judge as to whether or not any addition, revision or deletion changes the intent of the bid.
12. **TERMINATION/SUSPENSION:** The County may terminate this Bid at any time, in whole or in part, either for the County's convenience or because of the Bidder's material default of its Bid obligations, by delivering a written notice of termination to the Bidder. Upon receipt of such notice, the Bidder shall:
 - Immediately discontinue all work unless the County's notice directs otherwise, and
 - Deliver to the County any and all data, reports, summaries, and all other information and materials of any type or nature whatsoever, whether completed or in process, the Bidder may have accumulated or generated in the course of performing the work of the Bid.

If at any time the User Division determines that the Bidder is in material default of its Bid obligations, then the User Division shall complete and deliver a Vendor Complaint Form to the Bidder that specifically states the basis for the Bidder's default. Within ten (10) days after its receipt of the Vendor Complaint Form, the Bidder shall correct all events of default. If, however, the Bidder's material default is such that it cannot be reasonably cured within the ten (10) day time period, then the County will not terminate the Bid for such default if the Bidder commences the necessary curative actions within ten (10) days after its receipt of the Vendor Complaint Form and thereafter diligently pursues the cure to completion.

If the Bidder's default continues beyond the allotted cure period, the Procurement Director: (i) may terminate the Bid, and (ii) may also suspend the Bidder in accordance with the Suspension and Debarment Section of the County Procurement Procedures Manual.

13. **CANCELLATION:** All annual bid obligations shall prevail for at least one hundred eighty (180) days after effective date of the bid, unless bid conditions are breached as specified herein. After that period, for the protection of both parties, either party may cancel this bid in whole or part by giving thirty (30) days prior notice in writing to the other party. The County reserves the right to cancel any bid after reasonable written notice to the successful bidder should the service not be in the best interest of the

County. Should the service rendered for any bid cause or threaten endangerment to public safety or welfare, the Procurement Director may cancel the bid immediately.

14. **PRICE ADJUSTMENTS:** Any price decrease executed during the contract period, either by reason of market change or on the part of the contractor to other customers, shall be passed on to the County.
15. **PLANS AND SPECIFICATIONS:** The specifications and other bid documents upon which the prices in the vendor's bid proposal are based on are hereby made a part of the purchase order by reference thereto.
16. **PERFORMANCE AND PAYMENT BOND:** If a bond is required, it will be called out in the Special Conditions section of the bid. The vendor shall furnish a performance and payment bond, in an amount equal to the amount awarded, as security for the faithful performance and payment of all the vendor's obligations under the bid documents. The bond shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the bid documents. All bonds shall be in the form prescribed by the bid document except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department and A.M. Best rated A VIII or better.
17. **UNAUTHORIZED ALIEN(S):** The vendor agrees that unauthorized aliens shall not be employed nor utilized in the performance of the requirements of this solicitation. The County shall consider the employment or utilization of unauthorized aliens a violation of Section 274A(e) of the Immigration and Naturalization Act (8 U.S.C. 1324a). Such violation shall be cause for unilateral termination of this Agreement by the County. As part of the response to this solicitation, the successful vendor will complete and submit the attached form "AFFIDAVIT CERTIFICATION IMMIGRATION LAWS."

Employers may avail themselves of a program by the U.S. Immigration and Customs Enforcement called E-Verify. E-Verify is an Internet-based system operated by U.S. Citizenship and Immigration Services (USCIS), part of the Department of Homeland Security (DHS), in partnership with the Social Security Administration (SSA). E-Verify is currently free to employers. E-Verify provides an automated link to Federal databases to help employers determine employment eligibility of new hires and the validity of their Social Security numbers.

If your company wishes to avail themselves of this program, you can register online for E-Verify at <http://www.dhs.gov/how-do-i/verify-employment-eligibility-e-verify> which provides instructions for completing the registration process. At the end of the registration process, you will be required to sign a Memorandum of Understanding (MOU) that provides the terms of agreement between you as the employer, the SSA, and DHS. An employee who has signatory authority for the employer can sign the MOU. Employers can use their discretion in identifying the best method by which to sign up their locations for E-Verify. To find out more about E-Verify, please visit www.dhs.gov/e-verify or contact USCIS at 1-888-464-4218.

18. **ANNUAL APPROPRIATIONS:** The vendor acknowledges that the County, during any fiscal year, shall not expend money, incur any liability, or enter into any agreement which, by its terms, involves the expenditure of money in excess of the amounts budgeted or the reduction of revenues for those budgeted agreements that may be available for expenditure during such fiscal year. Any agreement, verbal or written, made in violation of this subsection is null and void, and no money may be paid on such agreement. Nothing herein contained shall prevent the making of agreements for a period exceeding one year, but any agreement so made shall be executory only for the value of the services to be rendered or agreed to be paid for in succeeding fiscal years. Accordingly, the County's performance and obligation to pay under this agreement is contingent upon annual appropriation.
19. **PRICE INCREASES:** The Procurement Director Reserves the right to increase/decrease prices after the bid has been in place for a minimum of 12-months, when it is in the best interest of the County. Increases/decreases will be determined by the appropriate price index.
20. **UNCONTROLLABLE FORCES (FORCE MAJEURE):** When events occur that are not of the Contractor or County's doing, neither the Contractor nor the County will be deemed in default should the events meet the definition of "Uncontrollable Forces", also known as "Force Majeure". The term "Uncontrollable Forces" or "Force Majeure" shall mean any event which results in the prevention or delay of performance by a party of its obligations and which is beyond the reasonable control of the non-performing party. The events include, but are not limited to, fire, flood, earthquakes, storms, hurricanes, lightning, epidemic, war, riot, civil disturbance, sabotage, and governmental actions.

Neither party shall be excused from performance if non-performance is due to forces which are reasonably preventable, removable, or remediable and which the non-performing party could have, with the exercise of reasonable diligence, prevented, removed, or remedied the event prior to its occurrence.

The non-performing party shall, within five (5) calendar days after being prevented or delayed from performance by an uncontrollable force, deliver written notice to the other party particularly describing the circumstance that prevented its continued performance of the obligations of the work and a good faith estimate as to the anticipated duration of the delay and the means and methods for correcting the delay.

21. In the event of default by the successful Bidder, the County reserves the right to utilize the next lowest Bidder as the new Awardee when the default occurs within the first term of the bid. Should this occur, the next lowest Bidder will be required to provide the bid items at the prices as noted on their bid submittal.

ATTENTION BIDDERS

The Successful Bidder must register in our new Vendor Database if you have not already done so prior to award of this bid. A purchase order cannot be issued to a vendor until they have registered.

You may register by going to the following link:

<http://www.polk-county.net/boccsite/Doing-Business/Vendor-Registration/>

Registered vendors will receive a User ID and Password to access their company information. All registered vendors must provide their owner gender, owner ethnicity, corporate status, and a minimum of one (1) commodity code to be considered registered. It is the responsibility of all vendors to update their vendor information.

Only registered vendors will receive notifications of future bids and quotes.

GENERAL CONDITIONS

1. Award will be made based on the lowest responsive bid per alternative method meeting specifications. Bidders are not required to bid on all alternative methods, but must bid on all items contained within each alternative method bid in order for their bid to be considered responsive. All bid items that are part of the basis of award should be bid at a fair and reasonable price; failure to do so may cause the bid to be non-responsive. The Procurement Director shall be the sole judge of what is fair and reasonable. The Procurement Director reserves the right to reject any or all bids and/or waive any minor irregularities in the bids received, whichever would be in the best interest of the County.
2. **PERFORMANCE OF WORK:** Portions of the work required under this bid may be performed by subcontractors. Should the successful vendor plan to use subcontractors from the beginning to perform the required work, the vendor must provide a list of subcontractors to the Procurement Division for approval prior to bid award. Should the successful vendor require subcontractors to perform any work during the course of the work assigned under this bid, the vendor must also provide a list of subcontractors to the Procurement Division for approval. The vendor shall be fully responsible for all acts and omissions of their subcontractors and of persons directly or indirectly employed by them and of persons for those acts any of them may be liable to the same extent as if they were employed by the vendor. All submittals required of the prime vendor shall also be required from the subcontractor. Any work performed by the successful vendor or sub-contracted out must meet all regulated deadlines.
3. The period of performance for this bid begins on the date of award through September 30, 2016. The bid will automatically renew for two (2) one (1) year periods, unless otherwise terminated in accordance with General Information Items #12 and #13.
4. All prices bid shall remain unchanged during the period of performance, as specified herein, and as may be adjusted in accordance with General Information Item # 19.
5. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/boccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.
6. Vendors must possess a Polk County Local Business Tax Receipt (f/k/a Business License) in order to do business with the County. A copy of such license must be provided to the Procurement Division before award is made to the successful vendor.
7. Upon execution of the bid, the County reserves the right to conduct an audit of the contractor's records pertaining to the project. The County or its representatives may conduct an audit, or audits, at any time prior to final payment, or thereafter. The County may also require submittal of the records from the contractor, the subcontractor, or both as the County deems necessary, records include all books of account, supporting documents, and papers pertaining to the cost of performance of the project work.

8. If it becomes necessary to revise or amend any part of this bid, an addendum will be issued and will be posted on the County's website at <http://www.polk-county.net/bocccsite/doing-business/bids/>. It is the sole responsibility of the bidders to check the website to ensure that all available information has been received prior to submitting a bid.
9. **Bidders are advised that in the interests of waste reduction and maximizing the potential for recycling, they are asked to abide by the following in preparing their bids:**
 - Return only the required bid submittal pages
 - Avoid comb, velo binding, and plastic binders
 - Avoid plastic dividers and/or plastic tabs
 - Print and/or copy double-sided to the extent feasible
 - Use at least 30% post-consumer recycled content paper to the extent practicable

SPECIAL CONDITIONS

1. **BIDDER QUALIFICATIONS:** Bidders should submit a list of three (3) asphalt maintenance projects for each alternative method bid upon, successfully completed within the last five (5) years in which the Contractor's portion of the work exceeded \$30,000.00 for any government agency, local or out of state. The list shall include the names of the projects, names of the governmental agencies, names of the Project Managers for the governmental agencies, phone numbers for the Project Managers, and the dollar amounts of the contracts.
2. The contractor(s) shall provide all services to properly complete the work described in the Bid document, including but not limited to all labor, materials, supervision, equipment, tools, transportation and supplies. The contractor(s) is required to have a qualified superintendent on the job site at all times. If multiple jobs are under construction concurrently, each job is required to have a qualified superintendent on site. If the County determines that a job site is not being adequately supervised, a deficiency letter will be issued to the contractor(s).
3. Except as amended in the Bid document or otherwise directed by the Director User Division, all work shall conform to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction; the Florida Department of Transportation Roadway and Traffic Design Standards; and the Manual of Uniform Traffic Control Devices, all current editions.
4. No work shall be performed under the provisions of this bid on any properties outside the limits of the project area without prior written permission of the lawful affected landowner. Any such permission shall be obtained by the contractor(s) and shall identify the provisions under which such work is to be performed and written permission obtained shall be provided to the County Project Manager prior to the associated work being performed. The contractor(s) shall not be compensated for any work outside the project area and shall hold the County harmless for all liabilities associated with said work outside the project area.
5. **DEFINITIONS:** The definitions as stated in Section 1-3 of the FDOT Specifications are modified as follows:
 - a. The Department or FDOT: Reference is to the County as the owner of the project.
 - b. Inspector: The person designated as an agent or representative of the County to perform construction inspection.
 - c. The Engineer: This term has the same meaning as "Polk County Project Manager" as defined in the bid document.
 - d. State Road: Any public roadway.
 - e. The Department's Acceptance Tests: Tests adopted by the County.
 - f. The District and/or Central Labs: The contractor's testing subcontractor, as authorized by the County.
6. **FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION**
 - a. The current Division II Construction Details and Division III Materials in the FDOT Standard Specifications for Road and Bridge Construction, including all revisions

current at the time of the bid, shall apply to this Bid except as modified by Special Provisions or Technical Specifications attached to Bid document.

- i. For Shoulder Rework, refer to Section 577-70 of the 2000 Edition of FDOT Standard Specifications for Road and Bridge Construction.
- b. If any conflicts exist between the specifications prescribed in the Bid document, the more stringent requirement shall apply.

7. **PROJECT QUOTES AND WORK ORDERS**

- a. This annual bid includes asphalt roadway treatments and/or recycling for multiple project work orders at various locations throughout Polk County, according to the requirements of the Bid document. The project work order locations may be anywhere within Polk County.
 - b. The County will perform a preliminary estimate for each project using the unit prices from the awarded vendors bid submittal for the alternative method to be used. The preliminary estimates may also include out of scope work items determined by the Project Manager. The contractor's final estimates will be returned the County Project Manager, including those out of scope cost previously identified by the Project Manager, prior to the deadline stated in the request for final estimate. When the final estimate is approved, a purchase order will be issued and notice to proceed given to the contractor. A work order with the approved final estimate must be attached to the purchase order. The contractor will then commence work and proceed in accordance with the approved schedule, if applicable. Payment for each project will be based on actual quantities used and unit prices from the bid, as approved by the County.
 - c. The approved quote amount on any individual work order shall be the maximum compensation payable to the contractor for that work order. The work order price may only be changed for altered quantities authorized by the County. If the contractor desires to make a claim for a change in quantity or schedule of an authorized work order, any such claim shall be submitted to the County Project Manager in writing within three (3) working days of the occurrence of the event giving rise to the claim.
8. **PROJECT SCHEDULES:** The County will require that the contractor submit time estimates for specific projects, at the County's request.
9. **Working Hours:** The regular working hours for Polk County are Monday – Friday, 7:00 AM to 5:30 PM. Permission to work outside of the regular work hours must be requested a minimum of 5 working days in advance from the County Project Management Section. Permission to work on County holidays must be requested a minimum of 5 working days in advance from the County Project Management Section.
10. **OUT OF SCOPE WORK:** When preparing a preliminary estimate, if it is known or reasonably anticipated that there are necessary items of construction that are not included on the price sheets of the bid or, during the course of executing a work order, the County Project Manager determines that there are necessary items of construction that are not included on the price sheets of the bid, then the County Project Manager will request a cost proposal from the Contractor for the "out of scope" work.. The "out of scope" proposal shall contain all necessary costs, expenses and time; the County shall not be obligated in any event for payment over the amounts identified in the proposal. The "out of scope" services shall not be greater than fifteen-percent (15%) of the "in-

scope” services. Contractor shall not commence work on any “out of scope” services until approval is received from the County Project Manager.

11. TESTING AND INSPECTIONS

- a. The contractor is responsible for all required testing on the project except when the Bid document, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction specifically require any Work to be inspected or tested by someone other than the contractor. For these inspections and testing, the contractor shall give the County Project Management Section a minimum of 48 hours’ notice to prepare for the required inspections or testing.
- b. For all required inspections, tests and approvals on any work prepared, performed or assembled away from the site, the Contractor will furnish the County Project Management Section with the required Certificates of Inspection, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Material (ASTM) or such other applicable organizations as may be required by law or the Bid document.
- c. Material or work in place that fail to pass acceptability tests shall be removed and reconstructed according to the bid requirements at the contractor’s expense.
- d. No work shall be performed, nor materials used, without supervision and/or inspections by a representative of the County. The County representative shall have the authority to test and reject any materials and suspend the subject work at any time.

12. EMERGENCIES: In the event of an emergency, the contractor shall immediately notify the County Project Management Section.

13. SUSPENSION OR STOPPING WORK BY THE CONTRACTOR: The contractor shall not stop work on any project work order without the consent of the County Project Manager.

14. MAINTENANCE OF TRAFFIC

- a. The terms Traffic Control Plan (TCP) and Maintenance of Traffic Plan (MOT Plan) are intended to be synonymous. The term Maintenance of Traffic (MOT) is the function presented in the TCP.
- b. The contractor shall provide, install and maintain traffic devices for any assigned work according to the FDOT Design Standards Index 600 series, latest edition, and applicable laws and ordinances. The traffic control shall provide a safe work zone and safe flow of traffic in and through the project site.

15. UTILITY COORDINATION: The contractor shall be responsible for “Sunshine One Call” for all locations incorporated into the work orders.

16. MATERIALS

- a. The contractor shall provide copies of all delivery tickets, or invoices, for all materials and equipment to be used for the project to the County Project Management Section immediately upon delivery or as soon thereafter as is practical.
- b. Arrangements for storage areas for materials and equipment shall be the responsibility of the contractor. Before mobilizing or storing any materials or equipment, the contractor shall identify the areas to be used for storage in writing

to the County. If property other than County right-of-way is proposed for storage, the contractor shall provide the County a copy of the written approval or agreement from the property owner before mobilizing or storing any materials or equipment on said property. The contractor shall be responsible for restoring any and all damages to storage areas. Restoration of damage to public right-of-ways, easements, or private properties outside of the work zone area shall be the contractor's responsibility. Reimbursement for restoration of storage areas outside of the work zones shall be included in the contractor's Mobilization bid price.

17. **WORKSITE VISIBILITY:** No work shall be performed when the visibility is less than two (2) times the Stopping Sight Distance for the highest regulatory posted speed through the project area as defined in the FDOT Manual of Uniform Standards for Design, Construction and Maintenance for Streets and Highways. Visibility distance shall be measured in all directions of travel and at locations and directed by the County. Project time extensions for substandard visibility shall be assessed according to FDOT Standard Specification Section 8-7.3.2.
18. **HISTORICAL AND ARCHAEOLOGICAL:** If historical or archaeological artifacts are discovered at any time on the project site, the contractor must notify the County, the Water Management District, the Florida Department of State and the Division of Historical Resources. The contractor shall follow any rules or requests from agencies with jurisdiction. If required to stop work, delay work or perform extra work in the affected area, delays and additional costs will be considered an unforeseen difficulty. If the contractor desires to make a delay claim, any such claim shall be submitted to the County Project Manager in writing within three working days of the occurrence of the event giving rise to the claim.
19. **CONTAMINATION:** Any equipment that is leaking fuel, lubricant, coolant, hydraulic fluid or any other hazardous material shall immediately be repaired by the contractor to stop the leak. The contractor shall clean up and dispose of any leaked fluids according to all applicable laws, ordinances, rules and regulations within 24-hours of occurrence. All repairs, removal, clean-up and/or disposal shall be at no cost to the County.
20. **SAFETY**
 - a. The contractor is responsible for providing for the safety of all contractor's or subcontractor's personnel working in the Project Area.
 - b. The contractor is required to comply with Florida Statute (F.S.), Chapter 556, Underground Facility Damage Prevention and Safety Act. The contractor is responsible for contacting Sunshine State One-Call of Florida, Inc., at 811 or www.callsunshine.com, no less than two (2) business days (48 hours) and no more than 5 business days before beginning any excavation, the contractor provide notification according to the procedures of the F.S. Chapter 556.
21. **WORK AREA CLEAN-UP REQUIREMENTS**
 - a. During the progress of the Work, the contractor shall keep the premises and maintained travel lanes free from accumulations of waste, discarded or surplus material, rubbish and other debris or contaminates resulting from the work.
 - b. Following completion of the Work, contractor shall remove all waste material, rubbish, debris, tools, construction equipment, machinery, and surplus material from public right-of-ways, easements, and private properties. The contractor

shall leave the site clean and ready for occupancy by the County at final completion of the work.

22. **WORK STOPPAGE:** From time to time, it may be necessary for the contractor to stop a portion of the work or all work to accommodate a civic function. If the contractor will be required to stop work, the County Project Management Section shall notify the Contractor a minimum of five (5) Working Days before any requested work stoppage. Following resuming work, the contractor and the County Project Manager shall agree to and document the number of additional days to be added to the project completion time to accommodate the requested work stoppage.
23. **WARRANTY:** The vendor shall warrant against all defects in material and workmanship for a period of one year after acceptance, unless otherwise indicated in the material's specification.

TECHNICAL SPECIFICATIONS

1) Bid Item No. PC-002 - Asphalt Rejuvenator

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of an asphalt rejuvenating agent to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Asphalt Rejuvenator will be measured by the square yard as provided for in the Bid Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

2) Bid Item No. PC-003 – Crack Sealing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the preparation and sealing of all surface cracks ¼" inch wide or greater.
- b. Method of Measurement: Crack Sealing shall be measured in gallons of crack seal applied to the road, as provided in the Contract Documents.
- c. Basis of Payment: 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 complete the work as specified.

3) Bid Item No. PC-004 – Chip Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for single or double application of combined layers of polymer modified liquid asphalt emulsion and spread aggregate.
- b. Method of Measurement: Chip seal, single or double application, will be measured by the square yard as provided for in the Contract Documents.
- d. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

4) Bid Item No. PC-005 – Micro-Surfacing

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the placement of a polymer modified microsurface on a prepared existing paved road to the thickness specified by the County.
- b. Method of Measurement: Microsurfacing will be measured by the square yard, with the exception of that used for rut filling. The later will be measured per ton, as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

5) Bid Item No. PC-006 - Scrub Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a Scrub seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Scrub Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

6) Bid Item No. PC-007 – Cold-In-Place Recycling (CIP)

- a. Description: Furnish all labor, materials and equipment necessary to perform all operations for the in-place construction of Cold Recycled Bituminous Base Course or CIR, as set forth in the Contract Documents.
- b. Method of Measurement: CIR will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to CIR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

7) Bid Item No. PC-008-3 and PC-008-4 – Full Depth Reclamation (FDR)

- a. Description: Furnish all labor, materials, and equipment necessary to perform all operations in the preparation of a stabilized base course done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives as called for under the technical specifications.
- b. Method of Measurement: Full Depth Reclamation will be measured by the square yard. Refer to the technical specification for the method of measurements of additional tasks or materials associated to FDR, as per the technical specification.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

8) Bid Item No. PC-009- Bituminous Fog Seal

- a. Description: Furnish all labor, material and equipment necessary to perform all operations for the sprayed application of a bituminous fog seal material to bituminous asphaltic concrete surface courses.
- b. Method of Measurement: Fog Seal will be measured by the gallon as provided for in the Contract Documents.
- c. Basis of Payment: Price and payment will be full compensation for furnishing of all materials, equipment, labor and incidentals necessary to complete the work as specified.

PC-002 – ASPHALT REJUVENATOR

I. Description

This work shall consist of furnishing all labor, material, and equipment necessary to perform all operations for the application of an asphalt rejuvenating agent to asphalt concrete surface courses. The rejuvenation of surface courses shall be by spray application of a cationic rejuvenating agent composed of petroleum oils and resins emulsified with water. All work shall be in accordance with the specifications, the applicable drawings, and subject to the terms and conditions of this contract.

II. Material

A. Rejuvenator Agent:

The asphalt rejuvenating agent shall be an emulsion composed of a petroleum resin oil base uniformly emulsified with water. Each bidder must submit with their bid a certified statement from the asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the required physical and chemical requirements.

| TESTS | TEST METHOD | | REQUIREMENTS | |
|---|-------------|------------|----------------|------|
| | ASTM | AASHTO | MIN. | MAX. |
| Tests on Emulsion: | | | | |
| Viscosity # 25°C, SFS | D-244 | T-59 | 15 | 40 |
| Residue, % W ¹ | D-244 (mod) | T-59 (mod) | 60 | 65 |
| Miscibility Test ² | D-244 (mod) | T-59 (mod) | No Coagulation | |
| Sieve Test, %W ³ | D-244 (mod) | T-59 (mod) | -- | 0.1 |
| Particle Charge Test | D-244 | T-59 | Positive | |
| Percentage Light Transmittance ⁴ | GB | GB | -- | 30 |
| Tests on Residue from Distillation: | | | | |
| Flash Point, COC, °C | D-92 | T-48 | 196 | -- |
| Viscosity @ 60°C, cst | D-445 | -- | 100 | 200 |
| Asphaltenes, %w | D-2006-70 | -- | -- | 1.00 |
| Maltene Dist. Ratio | D-2006-70 | -- | 0.3 | 0.60 |
| $\frac{PC + A_1^5}{S + A_2}$ | | | | |
| PC/S Ratio ⁵ | D-2006-70 | -- | 0.5 | -- |
| Saturated Hydrocarbons, S ⁵ | D-2006-70 | -- | 21 | 28 |

¹ ASTM D-244 Modified Evaporation Test for percent of residue is made by heating 50 gram sample to 149 C (300 F) until foaming ceases, then cool immediately and calculate results.

² Test procedure identical with ASTM D-244-60 except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

³ Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

⁴ Test procedure is attached.

⁵ Chemical composition by ASTM Method D-2006-70:

PC = Polar Compounds A₁ = First Acidaffins
 A₂ = Second Acidaffins S = Saturated Hydrocarbons

B. Material Performance

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. The asphalt rejuvenating agent shall have the capability to penetrate the asphalt pavement surface. The asphalt rejuvenating agent shall be absorbed and incorporated into the asphalt binder. Verification that said incorporation of the asphalt rejuvenating agent into the asphalt binder has been effected shall be by analysis of the chemical properties of said asphalt

binder i.e. viscosity shall be improved to the following extent. The viscosity shall be reduced by a minimum of forty, (40%) percent as determined by dynamic shear rheometer (DSR) method for asphalt testing in accord with AASHTO T315-05. This analysis shall apply to extracted asphalt binder, taken from cores extracted fifteen to thirty days following application, in the upper 3/8" of pavement. In addition the treated areas shall be sealed in-depth to the intrusion of air and water.

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. Satisfactory service shall be based on the capability of the material to decrease the viscosity of the asphalt binder and provide an in-depth seal.

The bidder must submit with their bid the manufacturer's certification that the material proposed for use is in compliance with the specification requirements. The bidder must submit with their bid, previous use documentation and test data conclusively demonstrating that; the rejuvenating agent has been used successfully for a period of five years by government agencies such as cities, counties, etc.; and that the asphalt rejuvenating agent has been proven to perform, as heretofore required, through field testing by government agencies as to the required change in the asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance on a sufficient number of projects, each being tested for a minimum period of three years to insure reasonable longevity of the treatment, as well as product consistency. In addition, testing data shall be submitted to indicate said product performance over a testing period of three years to ensure reasonable life expectancy.

C. Product Standards and Alternates

The product "Reclamite" is the standard for this specification. Bidders may offer an ALTERNATE for the Standard specified, provided the bidder adheres to the following and submits the same with their bid.

1. List the proposed alternate on the Alternate Bid Sheet form giving the product name and price.
2. Furnish complete specifications and descriptive literature for the alternate, as well as a one-gallon sample of the material proposed for use. Such description and detailed information shall be complete and at least equal in detail to the County's requirements for the standard item for which the alternate is offered.
3. Submit a current Material Safety Data Sheet (MSDS) for the alternate materials.
4. Submit a list of all projects on which the Alternate has been used by the bidder within the state of Florida during the past five (5) eyars with said list containing location, dates of the project, contact name, address and phone number.

The alternate will be given consideration by the County. The Contractor may furnish only those alternate items included in their bid proposal and approved by the County prior to award of the contract. If no Alternate is indicated in the bid proposal, the Contractor shall furnish the Standard (brand) specified.

Should the Alternate be found unacceptable by the County based on the data submitted with the bid and no bid is entered on the Bid Sheet for the Standard, then said bid will be considered non-responsive.

III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. Distributer Tank:

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the asphalt rejuvenating agent uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

B. Sand Truck:

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

IV. Experience

The asphalt rejuvenating agent shall be applied by an experienced applicator of such material. The bidder shall have a minimum of three years' experience in applying the product proposed for use. They must submit with their bid a list of five projects on which they applied said rejuvenator. They shall indicate the project dates, number of square yards treated in each, and the name and phone number of the representative in charge of each project. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience

outline of the project superintendent.

V. Construction

A. Storm Water Pollution Prevention Plan

The contractor responsible for applying the asphalt rejuvenating agent shall maintain a current, written Storm Water Pollution Prevention Plan (SWPPP) that complies with all relevant Environmental Protection Agency (EPA) regulatory requirements. Prior to the commencement of application operations, the contractor shall conduct SWPPP training of all personnel actually applying the asphalt rejuvenating agent. At all times, the contractor shall ensure that a current copy of their SWPPP is present on-site, wherever the asphalt rejuvenating agent is being applied.

B. Handling of Asphalt Rejuvenating Agent

Contents in tank cars or storage tanks shall be circulated at least forty-five minutes before withdrawing any material for application. When loading the distributor, the asphalt rejuvenating agent concentrate shall be loaded first and then the required amount of water shall be added. The water shall be added into the distributor with enough force to cause agitation and thorough mixing of the two materials. To prevent foaming, the discharge end of the water hose or pipe shall be kept below the surface of the material in the distributor which shall be used as a spreader. The distributor truck will be cleaned of all its asphalt materials, and washed out to the extent that no discoloration of the emulsion may be perceptible. Cleanliness of the spreading equipment shall be subject to the approval and satisfaction of the Engineer.

C. Weather and Seasonal Limitations

The temperature of the asphalt rejuvenating emulsion, at the time of application shall be as recommended by the manufacturer. The asphalt rejuvenating agent shall be applied only when the existing surface to be treated is thoroughly dry. Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent. The contractor shall perform follow-up inspections of stormwater inlets, culverts, and drainage ditches (in accordance with the contractor's SWPPP) in the vicinity of the asphalt rejuvenating agent application operations, whenever a precipitation event, in excess of 0.10 inches of rain, occurs during a two day period following application of the asphalt rejuvenating agent. The asphalt rejuvenating agent shall not be applied when the ambient temperature is below 40° F.

D. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

E. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

F. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

G. Application of Rejuvenating Agent

The asphalt rejuvenating agent shall be applied by a distributor truck at the temperature recommended by the manufacturer and at the pressure required for the proper distribution. The emulsion shall be applied so that uniform distribution is obtained at all points of the areas to be treated. Distribution shall be commenced with a running start to insure full rate of spread over the entire area to be treated. Areas inadvertently missed shall receive additional treatment as may be required by hand sprayer application.

Application of asphalt rejuvenating agent shall be on one-half width of the pavement at a time. When the second half of the surface is treated, the distributor nozzle nearest the center of the road shall overlap the previous application by at least one-half the width of the nozzle spray. In any event the centerline construction joint of the pavement shall be treated in both application passes of the distributor truck.

Before spreading, the asphalt rejuvenating agent shall be blended with water at the rate of two (2) parts rejuvenating agent to one (1) part water, by volume or as specified by the manufacturer. The combined mixture of asphalt rejuvenating agent and water shall be spread at the rate of 0.05 to 0.10 gallons per square yard, or as approved by the Engineer.

Where more than one application is to be made, succeeding applications shall be made as soon as penetration of the preceding application has been completed and approval is

granted for additional applications by the Engineer.

Grades or super elevations of surfaces that may cause excessive runoff, in the opinion of the Engineer, shall have the required amounts applied in two or more applications as directed.

After the street has been treated, the area within one foot of the curb line on both sides of the road shall receive additional treatment of the asphalt rejuvenating emulsion. Said treatment shall be uniformly applied by a method acceptable by the Engineer.

After the rejuvenating agent has penetrated, a coating of dry sand shall be applied to the surface in sufficient amount to protect the traveling public as required by the Engineer.

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent.

If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

H. Pavement Marking Restoration

If the Contractor is using an approved Alternate to the Product Standard specified, the Contractor shall include as part of the project tasks, the restoration of all pavement markings and striping after the product has been satisfactorily applied. These tasks will be paid under the FDOT series 710 and 711 pay items indicated on the Alternate Bid Sheet.

I. Quality Assurance and Testing

The Contractor shall furnish a quality inspection report showing the source, manufacturer, and the date shipped, for each load of asphalt rejuvenating agent. When directed by the Engineer, the Contractor shall take representative samples of material for testing.

The County, at their option, may require testing to be performed on extracted asphalt cement from a pavement to a depth of three eighths inch (3/8"). The testing protocol shall be extraction and recovery of the top 3/8" layer from a 4-inch or 6-inch core by ASTM D2172 and ASTM D1856. The recovered binder can be tested for complex viscosity @ 60°C, Pas, using the Dynamic Shear Rheometer (DSR) by AASHTO T315, or viscosity @ 60°C, Poises, using the Absolute viscosity @ 60°C, Poises, by ASTM D2171.

Test sections shall be at least one squared yard in area. The test sections shall have various application rates for each pavement type that exists on the project and shall be conducted prior to the application of product to define application rates which meet and/or exceed the above targets.

Costs associated with testing shall be included in bid price.

VI. Traffic Control

The Contractor shall schedule his operations and carry out the work in a manner to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated. Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the Engineer, has become complete and the area is suitable for traffic.

When, in the opinion of the Engineer, traffic must be maintained at all times on a particular street, then the Contractor shall apply asphalt rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until traffic may be switched to the completed lane.

The contractor shall be responsible for all traffic control and signing required to ensure safe travel. The contractor shall notify the police and fire departments as to the streets that are to be treated each day. If, in the opinion of the Engineer, proper signing is not being used, the Contractor shall stop all operations until safe signing and barricading is achieved.

VII. Method of Measurement

Asphalt rejuvenating agent will be measured by the square yard as provided for in the Contract Documents. The accepted quantities, measured as provided for above, will be paid for at the contract unit price for asphalt rejuvenating agent.

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Asphalt Rejuvenating Agent, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|----------------------------|-----------------|
| Asphalt Rejuvenating Agent | Square Yard |
| Silica Sand | Square Yard |

END OF SECTION PC-002

PROCEDURE FOR DETERMINING PERCENT LIGHT TRANSMITTANCE**I. Scope**

This procedure covers the determination of percent light transmittance of the asphalt rejuvenating agent.

II. Equipment

- A. Container may be either glass, plastic or metal having a capacity of 6,000 ml.
- B. Graduated cylinder, 1,000 ml, or greater.
- C. Light transmittance measuring apparatus, such as Bausch and Lomb or Lumertron spectrophotometer.
- D. Graduated pipette having 1 ml capacity to 0.01 ml accuracy.
- E. Suction bulb for use with the pipette.
- F. Test tubes compatible with spectrophotometer, $\frac{3}{4}$ " x 6, Bausch and Lomb, Catalog No. 33-17-81, (B&L).

III. Spectrophotometer Calibration

- A. Calibrate spectrophotometer as follows:
 - 1. Set wavelength at 580 m μ
 - 2. Allow spectrophotometer to warm up for thirty minutes.
 - 3. Zero percent light transmittance (%LT) scale.
 - 4. Rinse test tube three times with tap water and fill to top of circle marking on B&L test tube, or approximately 2/3 full.
 - 5. Place tube in spectrophotometer and set %LT scale at 100
 - 6. Repeat steps 3 and 5 two times or until no further adjustments are necessary.

IV. Procedure

- A. Shake, stir or otherwise thoroughly mix emulsion to be tested. Place sample of emulsion in beaker and allow to stand one minute.
- B. Place 2.000 ml tap water in container.
- C. Such 1.00 ml emulsion into pipette using suction bulb. Wipe off outside of pipette.
- D. Using suction bulb, blow emulsion into container.
- E. Rinse pipette by sucking in diluted emulsion solution and blowing out.
- F. Clean pipette with soap or solvent and water. Rinse with acetone.
- G. Stir diluted emulsion thoroughly.
- H. Rinse out tube to be used with the diluted emulsion three times and fill to top of circle.
- I. Calibrate spectrophotometer.
- J. Place diluted emulsion sample tube in spectrophotometer, cover and read %LT to nearest tenth.
- K. Repeat steps I and J until three identical consecutive readings are achieved.
- L. The elapsed time between addition of emulsion to dilution of water and final %LT reading should not exceed 5 minutes.

PC-003 CRACK SEALING

I. Description

The work consists of applying a hot-applied, single component polymer/rubber modified asphalt material supplied in solid form, to seal or fill cracks or joints in asphalt concrete or Portland cement concrete pavements. Cracks or joints that will be sealed shall be a minimum of one quarter (1/4) inch, and have a maximum width of one (1) inch.

II. Materials

- A. Polymer/rubber Modified Asphalt Material: Materials shall be a premixed, single component mixture of asphalt cement, aromatic extender oils, polymers, and granulized rubber in a closely controlled manufacturing process. Materials shall conform to the following specifications when heated in accordance to ASTM D5078 to the manufacturer’s maximum safe heating temperatures.

| Property | Specification |
|---------------------------------------|----------------------|
| Cone Penetration, 77.0°F (ASTM D5329) | 30 – 60 dmm |
| Resilience, 77.0°F (ASTM D5329) | 30 % minimum |
| Softening Point (ASTM D113) | 200°F minimum |
| Ductility, 77.0°F (ASTM D113) | 300 mm minimum |
| Flow 140°F (60°C) (ASTM D5329) | 3mm maximum |
| Asphalt Compatibility (ASTM D5329) | Pass |
| Bitumen Content (ASTM D4) | 60% minimum |
| Tension Adhesion (ASTM D5329) | 400% minimum |
| Maximum Heating Temperature | 400°F (204°C) |
| Minimum Heating Temperature | 380°F (193°C) |

- 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.

III. Equipment

- A. 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 with transmittal of heat through heat transfer oil. It shall be equipped with an on board automatic heat controlling device to permit the attainment of a predetermined temperature, and then maintain that temperature as long as required. The unit shall also have an agitation system to meet the requirements of Appendix X1.1. of ASTM 6690. The sealant shall be applied to the pavement under pressure supplied by a gear pump with hose and wand and direct connecting applicator tip. The pump shall have sufficient pressure to apply designated sealant at a rate of at least three (3) gallons (11.4L) per minute. Melter applicators shall be approved for use by the sealant

manufacturer. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints.

- B. Hot Compressed Air (HCA) 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.
- C. 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.
- D. Crack Cleaning Equipment: Cleaning of excess debris shall be done by means of power sweepers, hand brooms, or air brooms.

IV. Submittals

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.

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:

- Road name, date, time application process starts, amount installed, time application process ends.
- Date, time and amount added to the melter.
- The lot number from each box added shall be also recorded.
- Weather conditions

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.

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.

V. Preparations

- 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. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

C. Surface Preparation: No sealant shall be installed until all cracks and joints have been cleaned free of all deleterious materials, including any dust, old sealant, incompressibles, and organic material, and are sufficiently dry. Following the initial routing and cleaning operation, all cracks and joints shall be HCA lanced within 10 minutes of application of the sealant. Equipment for the two operations should be kept in a compact configuration such that not more than 50 feet separates equipment required by the two operations. Extreme care shall be used to ensure the crack sidewalls do not become overheated and burned.

D. 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. 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.

VI. Construction Methods

C. 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.

D. General Sealant Application: All single transverse cracks in the travel lanes shall be sealed by the Cut and seal method. All other cracks in the travel lanes, shoulders,

and auxiliary areas may be filled by either the Cut and Seal method or the Crack Fill method. If a surface treatment, such as resurfacing or surface sealing shall follow, the Crack filling material must cure for a minimum of 30 days prior to application of the final surface treatment.

E. Cut and Seal Method: Cut, clean and seal cracks and joints that are 1/16 inch or greater in width. Cut along the crack or joint to construct a uniform rectangular reservoir in which the sealant is to be placed. The reservoir shall be between ½ inch and ¾ inch in width. The depth of the reservoir shall be between ½ inch and 1 inch. The cut reservoir shall have vertical, intact sides with no loosely bonded aggregate. Following cutting, the reservoir shall be cleaned using the air blast method or other acceptable method. The reservoir shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. If the reservoirs are not clean and dry, they shall be re-cleaned to achieve the required condition. 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

F. Crack Fill Method: Clean and seal joints and cracks that are 1/16 inch or greater in width. Clean joints and cracks with air blast cleaning or other acceptable methods to a depth of at least twice the joint or crack width. Joints and cracks shall be inspected prior to the application of the sealant to ensure that it is clean, dry and free of dirt, debris, adhered fines or other contaminants. Apply sealing material with a pressure nozzle. Completely fill cracks and joints. Sealant shall be applied to slightly overfill the crack or joint 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 remaining material be lower than the pavement surface or exceed 1/16 inch above the surface. In no case shall the width of excess material on the pavement surface exceed 3 inches.

G. Pavement Cleaning and Protection: The pavement surface and all work areas shall be left in a clean condition. Vehicular traffic shall not be permitted on the pavement in treated areas during the initial curing period recommended by the manufacturer. The Contractor shall provide all temporary traffic control devices to protect the treated areas, as required by the Engineer.

Prevent tracking with an application of fine sand, unless it can be demonstrated that the crack and joint sealer will not track without its application. Other methods may be used if approved by the Engineer. Repair any pavement striping or markings affected by the application of the sealant. Any excessive or spilled sealant shall be removed by the Contractor using approved methods. Any damage to uncured sealant shall be repaired at the contractor's expense.

VII. Liability and Deficiencies

C. 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 County from all such claims. Claims not handled by the Contractor or their representative in the proper manner, will be settled by the County. The County 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.

D. 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.

The sealant shall be removed, the routed crack rerouted at the Project Manager's discretion, and resealed if any of the following occur:

- 1. The sealant contains imbedded foreign material other than dusting material.
- 2. The sealant contains entrapped air bubbles;
- 3. The sealant has de-bonded or pulled away from the crack; or
- 4. The sealant has been excessively heated.

VIII. 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 Crack Sealing-Filling, and not specifically listed in another item in the Bid Form, shall be included in this item.

The measurement shall be made in amount of linear feet of cracks or joints completed and accepted, determined by field measure, and shall be supported by the submittals. The amount of crack sealer shall be reported and invoiced for each road.

IX. Basis of Payment.

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Crack and Joint Sealing/Filling, 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 County.

Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|------------------------------------|-----------------|
| Bituminous Crack and Joint Sealing | per Gallon |

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 COUNTY representative.

END OF SECTION PC-003

PC-004 CHIP SEAL

I. Description

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 County 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.

II. Materials:

- A. 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.
- B. 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 County.

Cationic Asphalt Emulsion

| Material Designation | Minimum | Maximum |
|--|----------------|----------------|
| Test on Emulsion: | | |
| 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 | --- |

C. Material Samples:

The County 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 County 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 County 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.

III. Equipment:

A. 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.

B. 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.

C. 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.

D. 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. Brooming is required before and after the chip seal operation.

E. 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.

IV. 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.

V. Construction:**A. Layout:**

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

B. 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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

D. Site and Surface Preparation:

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

E. 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 County 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.

Traffic shall not be allowed on the roadway after placement of the chip seal for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

F. 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.

G. 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.

H. 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.

I. 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.

J. 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.

VI. 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.

VII. 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 Specification for Fog Seal

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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 County. If applied, Fog Seal shall be paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| Pay Item | Pay Unit |
|--------------------------------|-----------------|
| Chip Seal (Single application) | Square Yard |
| Chip Seal (Double application) | Square Yard |

END OF SECTION PC-004

PC-005 MICROSURFACING

I. Description

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 County.

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 County. The end product should maintain a skid-resistant surface in variable thick sections throughout the service life of the micro surfacing.

II. Materials:

A. **Emulsified Asphalt:** Provide 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.

B.

| 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.

- C. **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 |
|-----------------|---------------|---------------------|--|
| T176 | D2419 | Sand Equivalent | 65 Minimum |
| T104 | C88 | Soundness | 15% Maximum using NA2 SO4 or 25% Maximum using MgSO4 |
| T96 | 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 % PASSING | TYPE III % PASSING | STOCKPILE TOLERANCE |
|---------------|-------------------|--------------------|---------------------|
| ¾ (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 is 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.

- D. **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.
- E. **Water:** Potable and free of harmful or deleterious materials.
- F. **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.

III. Mix Design:

The Contractor shall submit to the County for approval a complete mix design with an aggregate source used on five (5) similar micro surfacing projects. 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 County. 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 |
|---------------|--|--|
| TB-139 | Wet Cohesion @ 30 Minutes Minimum (Set) @ 60 Minutes Minimum (Traffic) | 12 Kg-cm Minimum 20 Kg-cm Minimum or Near Spin |
| TB-109 | Excess Asphalt by LWT Sand Adhesion | 50 g/ft ² Maximum (538 g/m ² Maximum) |
| TB-114 | Wet Stripping | Pass (90% Minimum) |
| TB-100 | Wet-Track Abrasion Loss One-hour Soak Six-day Soak | 50 g/ft ² (538 g/m ²) Maximum 75 g/ft ² (807 g/m ²) 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 |
|---------------|--|--|
| TB-147 | Lateral Displacement Specific Gravity after 1,000 Cycles of 125 Pounds (56.71 Kg) | 5% Maximum 2.10% Maximum |
| 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 |

IV. 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 County 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.

V. 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.

VI. EQUIPMENT:

- A. **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.

- B. **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.
- C. **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.

- D. **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.
- E. **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 ($\frac{1}{2}$) 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 ($\frac{1}{2}$) inch (12.7 mm) in depth, a full-width scratch-coat pass may be used as directed by the County. Ruts that are in excess of one and one-half ($1\frac{1}{2}$) 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.
- F. **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 County requires) to perform the work.
- G. **General:** Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the County 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**.

VII. Construction:

- A. **Test Strip:** A test strip 1000 feet long and the width of one lane shall be provided. The test must include all courses specified and must be constructed at the same time of day as the scheduled full scale production. The test strip will be evaluated for 24 hours after placement and will be subject to approval from the engineer before any further production. If unsatisfactory, the test strip shall be removed and another strip placed for evaluation at the contractor's expense.
- B. **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 County.

C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

- D. Site and Surface Preparation:** The first step of surface preparation is to restore the pavement's structural integrity and functional performance characteristics through patching and crack sealing.

All pavement marking shall be removed, maintained, and compensated for in accordance to FDOT Standard Specification Section 102-5.8. Immediately prior to applying the Microsurfacing, the surface shall be cleared of all loose material, silt spots, vegetation, and other objectionable material. 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. 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. Utility inlets should be covered with heavy paper or roofing felt adhered to the surface of the inlet. The paper is removed once the micro-surfacing has sufficiently cured. In addition to covering the inlets, all starts, stops, and handwork on turnouts should be done on roofing felt to ensure sharp, uniform joints and edges. The County 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.

- E. 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/yd² (0.23 to 0.45 l/m²). 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.
- F. Application:** A test strip shall be placed in conditions similar to those expected to be encountered during the project unless specifically waived by the county.

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 yd² (25 m²) area. No transverse ripples or longitudinal streaks of one-fourth (¼) inch in depth (6.4 m²) 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 ² (+/- 2 lbs) |
| TYPE II Double application | Urban, Residential, and Primary Routes | 30 - 34 lb/yd ² (+/- 2 lbs) |
| TYPE II Heavy single application | Primary and Cold Mix Roads as directed | 24 - 28 lb/yd ² (+/- 2 lbs) |
| TYPE II Heavy double application | Primary and Cold Mix Roads as directed | 38 – 42 lb/ yd ² (+/- 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/yd² (8.1 – 16.3 kg/m²).

- G. **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 ($\frac{1}{4}$) 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.

- H. **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.
- I. **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.
- J. **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 ± 2 inches (± 50 mm) horizontal variance in any 96 feet (30 m) of length.
- K. **Clean-up:** All areas, such as man-ways, gutters, and intersections, shall have the Microsurfacing mix removed as specified by the County. 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 County. In addition, the contractor shall, at the request of the County pressure wash any area such as, curb and gutter, private driveways, etc. removing any and all stains associated with the placement of the Microsurfacing.
- L. **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.
- M. **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 and the current MUTCD. 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.

VIII. 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.

IX. Warranty:

The Contractor shall provide the County 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 or County. A maintenance bond is not required.

X. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. 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.

Payment will be made under:

| Pay Item | Pay Unit |
|--------------------------------------|-----------------|
| Microsurfacing (Single application) | Square Yard |
| Microsurfacing (Double application), | Square Yard |
| Microsurfacing (Rut filling) | Ton |

END OF SECTION PC-005

PC-006 SCRUB SEAL

I. Description

Scrub Seal shall consist of the application of a slow setting, anionic or cationic asphalt emulsion or specialty emulsions developed specifically for scrub sealing, followed by a cover aggregate. The emulsion may be polymer modified.

II. Materials

A. Asphalt Emulsions

The asphalt emulsions employed for Scrub Seals shall be slow to medium setting anionic or cationic SS-1, SS-1H, CSS-1H; ASTM specifications for anionic (SS) emulsions are listed in D977 and for cationic (CSS) emulsion in D2397. Suppliers of other specialty emulsions for Scrub Sealing must supply specifications for these emulsions. Asphalt emulsions may be modified with a polymer additive.

B. Cover Aggregates

Mineral Aggregates for scrub seal shall conform to **Table 1**.

| Table 1: Scrub Seal Aggregate Gradation Limits | | |
|---|------------------------|------------------|
| Sieve Size | Percent Passing | Tolerance |
| 3/8 inch (9.5mm) | 100 | 0 |
| No. 4 (4.75mm) | 96 | +3 |
| No. 10 (2.0mm) | 60 | ±20 |
| No. 50 (300µm) | 18 | ±12 |
| No. 100 (150µm) | 5 | ±5 |
| No. 200 (74µm) | 5 | ±3 |

Where washed aggregates are used, they must be 'surface dry' at the time of application. Moisture content shall not exceed 1.5% by weight of aggregate. 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.

C. Material Samples:

The County 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 County 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 County 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.

III. Equipment

A. Emulsion 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.

B. Emulsion Scrub Broom

Furnish an emulsion scrub broom assembly of similar design to Figures 1 or 2, or as approved by the Engineer, and having the following characteristics:

- Rigid frame construction
- Attached to, and pulled by, the Emulsion Distributor
- Of such weight that it does not squeegee the emulsion off the road surface
- Leading and trailing broom heads angled at 10 to 15 degrees of the centerline of the supporting member
- Stiff bristles with a minimum height of five inches
- Hinged wing assemblies or other means of adjusting the total broom width.
- Be attached to and pulled by the distributor truck.
- Have means to mechanically lift the scrub broom off of the roadway surface at intermediate points of completion and remain elevated during transit.

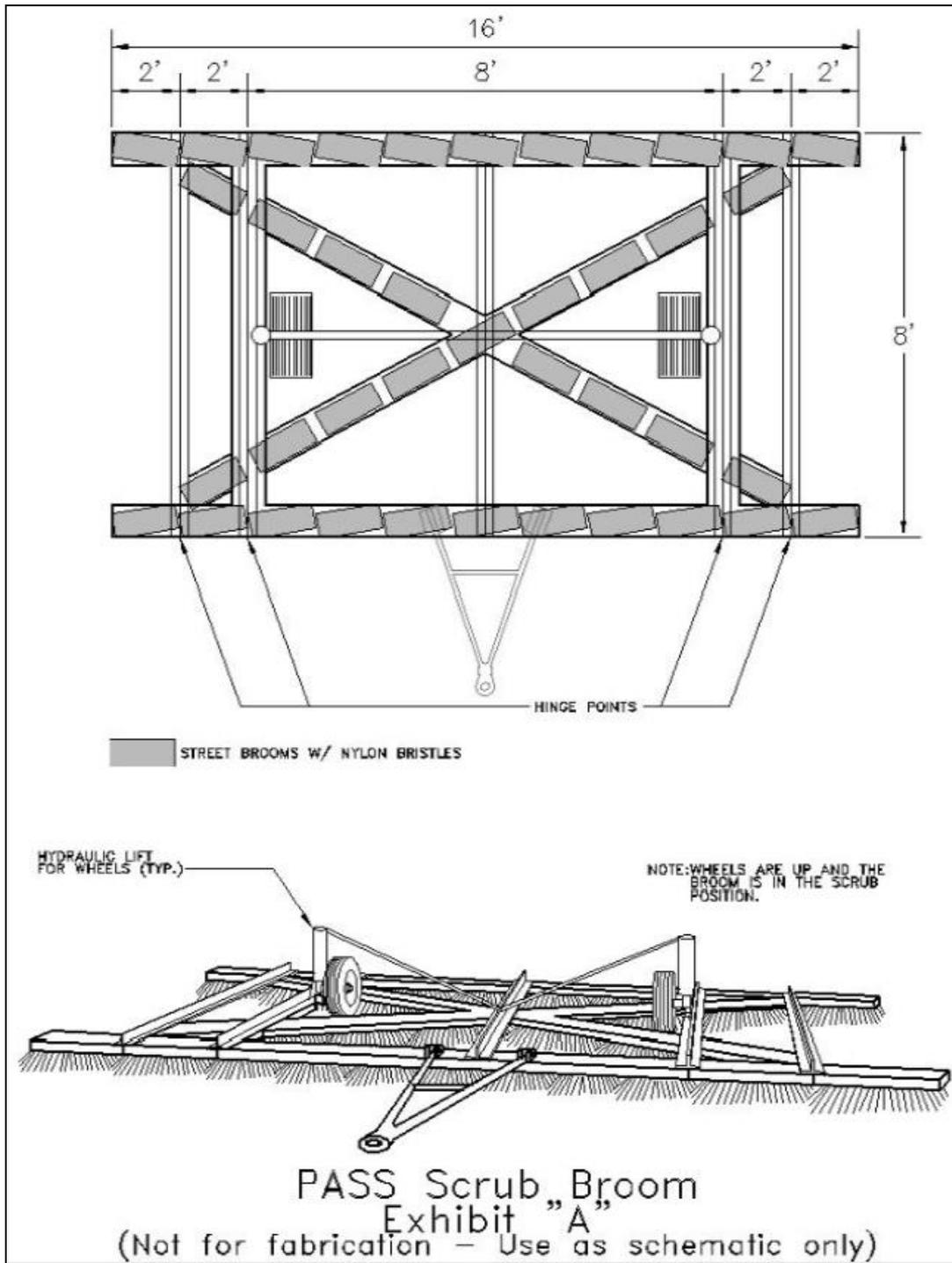


Figure 1: Typical Emulsion Scrub Broom Assembly

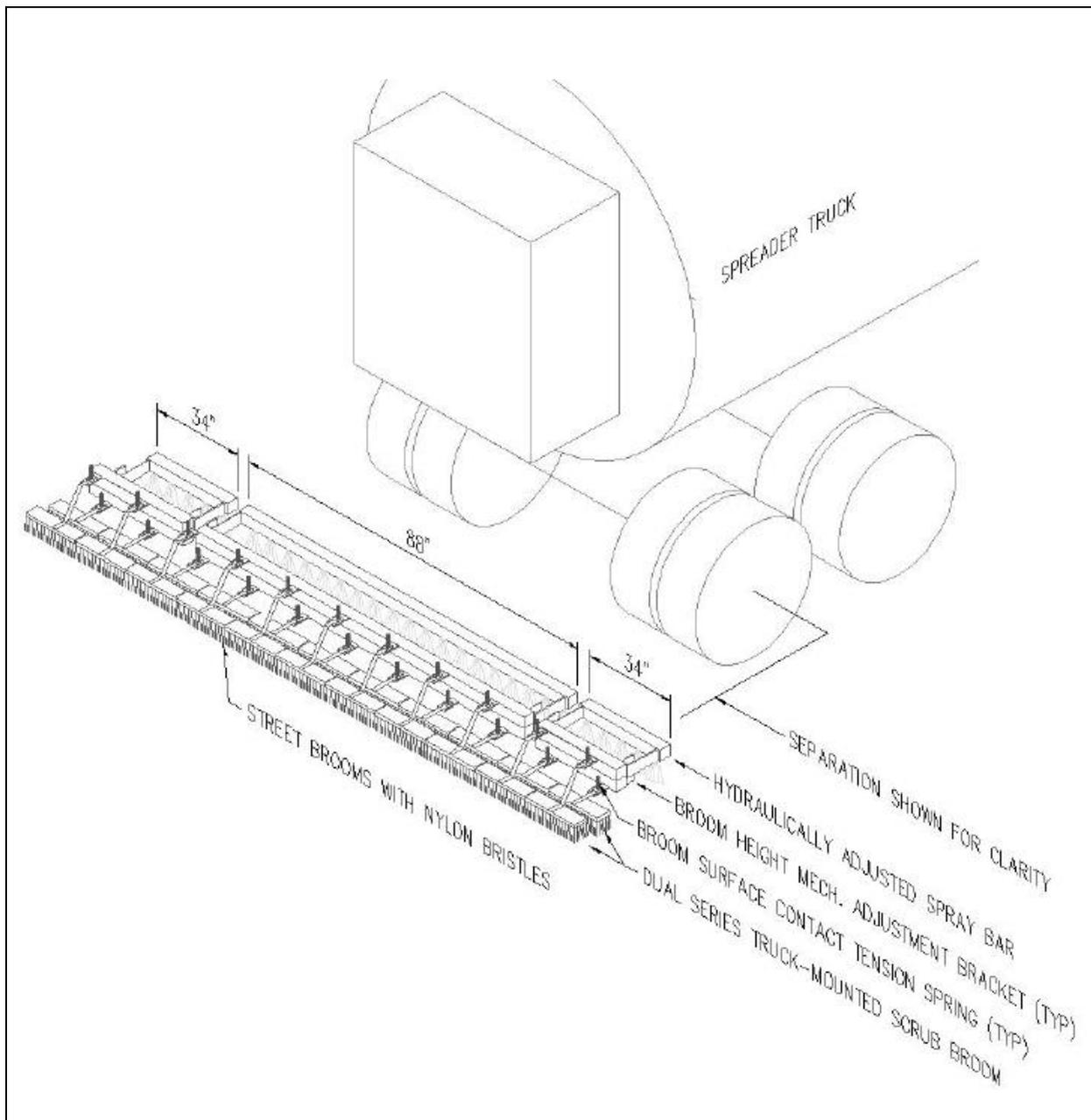


Figure 2: Truck Mounted Emulsion Scrub Broom Assembly

C. 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.

D. 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.

E. 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. Brooming is required before and after the chip seal operation.

F. 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

IV. Experience

Bidders must submit a minimum of five Scrub 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.

V. Construction

A. Weather

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, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 55°F, and no more than 140°F.

Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt rejuvenating agent.

B. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The

contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

C. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

D. Site Preparation

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 operation to make sure the road is free of loose aggregate and other debris, as well as sweeping and cleaning the streets after treatment. If, in the opinion of the Engineer, the hand cleaning is not sufficient then a self-propelled street sweeper shall be used.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

Thermoplastic striping and pavement markings, raised pavement markers, and raised pavement marker adhesive shall be removed.

E. Traffic

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 County 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.

Traffic shall not be allowed on the roadway after placement of the aggregate cover for a minimum of two hours. During and after placement of the chip seal, pilot cars should escort traffic at a speed of 20 mph (30 kph) over the chip sealed surface for two to 24 hours. Once all the loose aggregate is removed from the new chip seal surface, pilot cars are no longer needed.

F. Application of Asphalt Emulsion:

Asphalt emulsion 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.

G. Scrubbing

Immediately following application, the asphalt emulsion shall be scrubbed into the existing pavement surface with a scrub broom conforming to Section III-B. Scrubbing shall fill cracks and voids, force the emulsion into the existing pavement surface, and distribute the emulsion uniformly over the roadway cross section.

H. Termination

Application of the emulsion shall be terminated on building paper or other similar material approved by the Engineer, spread over the entire application width. Building paper shall also be placed over the treated surface for a sufficient length at the beginning of a spread to avoid spraying existing pavement or previously placed screenings, and so that the nozzles are spreading properly when the uncovered surface is reached. The building paper shall then be removed and disposed of in a manner satisfactory to the Engineer.

I. Application of cover Aggregate:

Screenings shall be uniformly spread by the aggregate spreader immediately following the scrubbing. The spreading rate shall be from 18 to 30 pounds per square yard. The initial rate of spreading shall be 24 pounds per square yard. The Contractor may propose a different initial rate. The Contractor shall spread screenings on a 100-foot test strip as requested by the Engineer to verify and determine the initial rate of spreading. The spreading rate shall be adjusted up or down so that no bleeding occurs during rolling. The initial rate of spreading, and any adjustments thereto during spreading, shall be subject to approval by the Engineer.

The joint between adjacent applications of screenings shall coincide with the line between designated traffic lanes.

Operating the chip spreader at speeds which causes the chips to roll after striking the emulsion covered surface will not be permitted.

The transverse termination of screenings shall be complete and any excess screenings shall be removed from the surface prior to resuming operations.

Stockpiling of screenings prior to placing will be permitted where space allows, however, any contamination resulting during storage or from reloading operations will be cause for rejection.

Screenings shall be surface damp at the time of application, but excess water on the aggregate surface will not be permitted. Screenings shall be re-dampened in the haul trucks prior to delivery to the chip spreader when so directed by the Engineer.

The scrubbed pavement surface shall be covered with screenings before setting or "breaking" of the emulsion occurs.

After the screenings have been spread, piles, ridges, or uneven distribution shall be carefully removed to ensure against permanent ridges, bumps or depressions in the completed surface. Additional screenings shall be spread in whatever quantities may be required to prevent picking up by the rollers or traffic.

J. Rolling:

Initial rolling shall begin immediately behind the chip spreader and shall consist of one pass completely covering the screenings applied. Asphalt emulsion and screenings shall not be spread more than 2,500 feet ahead of completion of initial rolling operations.

Secondary rolling shall begin immediately after completion of the initial rolling. The amount of secondary rolling shall be that necessary to seat the screenings and in no case shall be less than 2 passes.

K. Sweeping:

After rolling of the 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.

VI. Finishing:

D. Flush Coat

Flush Coat shall consist of an application of a fog seal coat followed by a sand cover to the surface of the scrub seal coat.

Flush coat shall be applied at the discretion of the Engineer, immediately after initial sweeping and removal of excess screenings and prior to opening the lane to uncontrolled (not controlled with pilot cars) traffic.

E. Fog Seal

Fog seal coat shall not be applied when the atmospheric temperature is below 40°F.

When surface treatment has set, a fog seal is to be applied at a rate of 0.03 to 0.06 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.

F. Sand Cover

Sand cover shall be applied immediately following application of the fog seal coat. Sand shall be spread by a chip spreader at a rate of 1 to 2 pounds per square yard. The exact rate will be determined by the Engineer. Spreading shall not vary more than 5 percent from the exact application rate.

G. Maintenance

Scrub seal coated surfaces shall be maintained, including the traffic control required for maintenance operations, for a period of 4 consecutive calendar days, beginning on the day screenings are applied to the asphalt emulsion. Maintenance shall include sweeping and distribution of screenings over the surface to absorb any free emulsion, to cover any area deficient in cover material and to prevent formation of corrugations. Clean sand may be used in lieu of screenings to cover any excess emulsion which comes to the surface. The use of roadside material for this purpose will not be permitted.

The surface shall be swept as often as necessary during the 4-day maintenance period to maintain the surface free of loose screenings. At the end of the fourth day, any excess screenings shall be removed from the paved area.

VII. 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 Scrub 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 the Scrub Seal, it shall be measured separately as listed in the Technical Specification for Fog Seal.

VIII. Basis of Payment

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Scrub 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 county, Fog Seal shall be applied and paid separately as listed in the Technical Specification for Fog Seal.

Payment will be made under:

| Pay Item | Pay Unit |
|-----------------|-----------------|
| Scrub Seal | Square Yard |

END OF SECTION PC-006

PC-007 COLD-IN-PLACE RECYCLING (CIP)

I. Description

The work specified in this Technical Provision consists of the in-place construction of a Cold Recycled Bituminous Base Course, using either reclaimed asphalt pavement (RAP) material and/or reclaimed aggregate material (RAM), combined with virgin aggregates and/or bituminous material. It is the intent of this contract to recycle 100% of the existing asphalt pavement to ensure that the completed recycled base course will be of a consistent material and thickness throughout, including, but not limited to, all existing asphalt pavement adjacent to all concrete curbing, storm sewer inlets, manholes, sanitary sewer manholes, and all utility valve boxes. The existing asphalt pavement in the above-described locations must be included in the recycling process in order to construct a bituminous base course with a uniform thickness throughout 100% of the proposed area. The intent of this contract is to utilize the specified process which is clearly defined within this specification. Therefore Full Depth Reclamation or any variation of Full Depth Reclamation will not be accepted.

II. Materials:

A. Asphalt Emulsion

The type of asphalt emulsion to be used shall be determined by the mixture design. Bituminous material shall conform to the applicable requirements of the *current* *FDOT Standard Specifications for Road and Bridge Construction, Section 916*. At the request of the county, a representative from the asphalt emulsion supplier shall be available at the job site to monitor the characteristics and performance of the asphalt emulsion. Throughout the job, the representative will monitor the project and make adjustments to the asphalt emulsion formulation as required.

B. Cold Pulverized Material

The cold pulverized recycled asphalt pavement (hereinafter referred to as RAP) material shall meet the following gradation requirement prior to the addition of the asphalt emulsion.

| STANDARD | | METRIC | |
|-----------------|----------|---------------|----------|
| Sieve Size | %Passing | Sieve Size | %Passing |
| 2" | 95 | 51 mm | 95 |

C. Portland Cement

Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.

III. Mixture Design:

A mix design(s) conducted by an independent, AASHTO Materials Reference Laboratory (AMRL) accredited laboratory using materials obtained directly from the project site, conforming to the requirements of this Technical Specification shall be submitted to the County at the Pre-Construction Conference. Based on RAP consistency throughout project limits, more than one mix design may be required. A traffic control plan may be required in accordance with TP-102 for collecting materials. Mix design formulations shall be conducted in accordance with the following guidelines:

A. Mix Design Procedures

1. **Sampling and Processing** - Prior to materials sampling in the roadway, obtain approval from the County. A traffic control plan may be required in accordance with TP-102 for collecting materials. Obtain 6" minimum inside diameter cores from the areas to be recycled. If cores show significant differences in various areas, such as different type or thickness of layers between cores, then separate mix designs shall be performed for each of these pavement segments. It is recommended that a minimum of one location be sampled for each 1000' in each lane. Additionally, samples should be taken where visual differences in the pavement are noticed. Immediately patch all core holes neatly with asphalt cold patch. Cores shall be cut in the laboratory to the depth specified for the CIR project. Cores shall be crushed in the laboratory.

The mix design shall be performed on this crushed sample. Gradation of the sample after crushing shall be determined by ASTM C117 and C136 (dried at no greater than 40°C). Samples shall be prepared with a sample splitter. An alternative method is to dry, screen and recombine the sample in the laboratory to target gradation.

2. **Mixing** - Calculate the amount of RAP required to produce a 61.0 mm to 66.0 mm (2.4 to 2.6 inch) tall specimen by determining the maximum specific gravity of the RAP in accordance with ASTM D2041.

Number of specimens: 4 per emulsion content for a total of 4 for long-term stability and 4 for moisture testing for the 3 emulsion contents. Two specimens are required for Rice specific gravity; test at the highest emulsion content in the design and back calculate for the lower emulsion contents.

Recommended emulsion contents: 2.0%, 2.5%, 3.0%, 3.5%. Choose three emulsion contents that bracket the estimated recommended emulsion content.

Add moisture that is expected to be added at the milling head, typically 1.5 to 2.5 percent.

If any additives are in the mixture, introduce the additives in a similar manner that they will be added during field production.

Mixing of test specimens shall be performed with a mechanical bucket mixer. Mix the CIR RAP millings thoroughly with water first, then mix with emulsion. Mixing shall occur at ambient temperature. One specimen shall be mixed at a time. Mixing time with emulsion should not exceed 60 seconds.

3. **Compaction** - Specimens shall be compacted immediately after mixing. Place paper disks on the top and bottom of the specimen before compaction. Specimens shall be compacted with a Superpave gyratory compactor (SGC) in a 100 mm mold at 1.25° angle, 600 kPa ram pressure, and 30 gyrations. The mold shall not be heated.

4. **Curing after compaction** - Extrude specimens from molds immediately after compaction. Carefully remove paper disks.

Place specimens in 60°C forced draft oven with ventilation on sides and top. Place each specimen in a small container to account for material loss from the specimens. Care should be taken not to over-dry the specimens. Cure compacted specimens to constant weight but no more than 48 hours and no less than 16 hours. Constant weight is defined here as 0.05% change in weight in 2 hours. After curing, cool specimens at ambient temperature a minimum of 12 hours and a maximum of 24 hours.

5. **Measurements** - Determine bulk specific gravity (density) of each compacted (cured and cooled) specimen according to ASTM D2726.

Determine specimen heights according to ASTM D3549 or equivalent. Alternatively, the height can be obtained from the SGC readout.

Determine Rice (maximum theoretical) specific gravity, ASTM D2041, except as noted in Item 4 of this procedure, and do not break any agglomerates which will not easily reduce with a flexible spatula. Perform the supplemental dry-back procedure to adjust for uncoated particles.

Determine percent air voids in accordance with ASTM D3203 for each design emulsion content.

Determine corrected Marshall Stability by ASTM D1559 at 40°C after 2 hour temperature conditioning in a forced draft oven.

6. **Moisture Susceptibility** - Perform same conditioning and volumetric measurements on moisture-conditioned specimens as on other specimens. Vacuum saturate to 55 to 75 percent, soak in a 25°C water bath for 23 hours, followed by a one hour soak at 40°C. Determine corrected Marshall Stability. The average moisture conditioned specimen strength divided by the average dry specimen strength is referred to as retained stability.

7. **Emulsion Content Selection** - The properties of the specimens at design emulsion content shall meet the properties in Table 1.

8. **Report** - The report shall contain the following minimum information: Gradation of RAP; amount and gradation of virgin aggregate or additional RAP, if any; recommended water content range as a percentage of dry RAP; optimum emulsion content as a percentage of dry RAP and corresponding density; air void percentage; absorbed water percentage; Marshall Stability and Retained Stability at design moisture and emulsion contents; Raveling percentage; and Thermal Cracking initiation temperature. Include the mix design emulsion designation, supplier name, plant location, and emulsion testing results detailed in *Table 4*.

The mix design(s) shall meet the Mix Design Performance Criteria of **Table 1** and be approved by the County prior to construction.

9. **Other Additives:**

If necessary, additives may be used to meet the requirements in **Table 1**. In the case that an additive is used, the type and allowable usage percentage must be described in the submitted design recommendation.

10. **Addition of Imported Crushed Reclaimed Asphalt Pavement (RAP) material:**

If available, imported RAP material may be added at the discretion of the County Engineer if the RAP material meets the requirements in **Table 2**. The crushed RAP shall be free from vegetation and all other deleterious materials, including silt and clay balls. It shall meet the requirements for Deleterious Materials given in **Table 2**. The crushed RAP shall not exceed the maximum size requirement in this Technical Specification and when blended with the design millings, shall produce a product which meets the specifications given in **Table 1**.

| Table 1 – Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyrotory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyrotory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | Optimum Strength | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 -Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| * Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight. | | |
| **Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath | | |

| Table 2 - Imported Crushed RAP Criteria | | |
|---|---------------------------|-------------------------|
| Property | Method | Limit |
| Deleterious Materials: Clay Lumps and Friable Particles in Aggregate, % | ASTM C 142 or AASHTO T112 | 0.2% maximum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | 5% retained on 2" sieve |

11. **Additional Aggregate:**

Based on the results of mix design testing or other requirements, the CIR contractor shall determine if additional aggregate is required to comply with mix design performance criteria specified in **Table 1**. Any additional aggregate shall meet the criteria specified in **Table 3**, and it shall be graded to produce a pavement layer which meets the mix design performance criteria specified in **Table 1**.

| Table 3 - Additional Aggregate Criteria | | |
|--|---------------------------|-----------------|
| Property | Method | Limit |
| Los Angeles abrasion value, % loss | AASHTO T96 | 40% maximum |
| Sand Equivalent,% | ASTM D2419 | 60% minimum |
| Maximum size and Distribution | ASTM C 136 or AASHTO T 27 | Section 334-2.2 |
| Water absorption % | AASHTO T 85 | 5%_ maximum |

IV. Equipment:

Maintain all equipment in a satisfactory operating condition and in accordance with the *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 100-2*. The Cold In-Place Recycling shall be conducted with the equipment specified herein.

A. Milling Machine:

A self-propelled, down-cutting, lateral/horizontal mixing, cold milling machine capable of pulverizing the existing asphalt (and base material as needed) in a single pass to the depth shown on the plans will be required. The machine shall have automatic depth controls to maintain the cutting depth to within $\pm \frac{1}{4}$ in (6 mm) of that shown on the plans, and shall have a positive means for controlling cross slope elevations. A 30 foot non-contact averaging beam must be used on the mill. The use of a heating device to soften the pavement will not be permitted. Up-cutting machines shall not be permitted. Machines that only provide vertical mixing will not be permitted.

The milling machine must be equipped with a liquid metering device capable of adjusting the flow of asphalt emulsion to compensate for any variation in the speed of the machine. The metering device shall deliver the amount of asphalt emulsion to within ± 0.2 percent of the required design amount by weight of pulverized bituminous material (for example, if the design requires 3.0 percent, the metering device shall maintain the emulsion amount between 2.8 percent and 3.2 percent). The asphalt emulsion pump should be of sufficient capacity to allow emulsion contents up to 3.5% by weight of pulverized bituminous material. Also, automatic digital readings will be displayed for both the flow rate and total amount of pulverized bituminous material and asphalt emulsion in appropriate units of weight and time.

B. Bituminous Paver:

A self-propelled conventional bituminous paver having electronic grade and cross slope control for the screed shall be utilized. The equipment shall be of sufficient size and power to spread and lay the mixture in one smooth continuous pass to the specified section and according to the plans. A 30 foot non-contact averaging beam must be used on the bituminous paver. To reduce material segregation, the bituminous paver must utilize a hopper insert.

C. Rollers:

All rollers shall be self-propelled. The number, weight and types of rollers shall be as necessary to obtain the required compaction. At least one pneumatic-tired roller shall have a minimum gross operating weight of not less than 50,000 lbs. (22,600 kg). Pneumatic rollers must have properly working scrapers and water spraying systems. At least one double drum vibratory steel-wheeled roller shall have a gross operating weight of not less than 20,000 lbs. (9,000 kg) and a width of 78 inches (1980 mm). Double drum vibratory rollers must have properly working scrapers and water spraying systems.

V. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five CIR 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.

VI. Construction:

A. *Weather Limitations*

Cold In-Place recycling operations shall be completed when the atmospheric temperature measured in the shade and away from artificial heat is 500 F (10°C) and rising. Also, the weather shall not be foggy or rainy. The weather forecast shall not call for freezing temperature within 48 hours after placement of any portion of the project.

B. *Removal of Vegetation:*

Grass, vegetation and other deleterious material shall be removed from the edge of the existing pavement to prevent contamination of the pulverized bituminous material during the milling operation.

C. *Milling:*

The existing pavement shall be milled to the required depth and width as indicated on the plans. Recycling shall be in a manner that does not disturb the underlying material in the existing roadway. The milling operation shall be conducted so that the amount of fines occurring along the vertical faces of the cut will not prevent bonding of the cold recycled materials. Use a small milling machine, if necessary, to mill longitudinally to the required depth as indicated on the plans along all curbs and gutters, radius returns, utilities, inlets, around all manholes and any other structures not accessible or practical to be milled by the milling/mixing machine utilities. The millings produced by the small mill will be the same as the large mill and of equal gradation to produce a uniform recycled pavement layer. Inlets/Catch Basins must be covered during the milling and recycling operation to prevent milled material from entering the catch basin area where it could contaminate and/or block the storm water system.

D. *Processing:*

When a paving fabric is encountered during the CIR operation, the Contractor shall make the necessary adjustments in equipment or operations so that at least ninety percent (90%) of the shredded fabric in the recycled material is no more than 5 in² (3200 mm²). Additionally, no fabric piece shall have any dimension exceeding a length of 4 inches (100 mm). These changes may include, but not be limited to, adjusting the milling rate and adding or removing screens in order to obtain a specification recycled material. The Contractor shall be required to waste material containing over-sized pieces of paving fabric as directed by the Engineer.

E. *Spreading:*

The material shall be spread using a self-propelled paver meeting the requirements under *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 320-5*. Heating of the paver screed will not be permitted. The recycled material shall be spread in one continuous pass, without segregation and to the lines and grades established by the Engineer.

F. Compaction:

Compaction of the recycled mix shall be completed using rollers meeting the requirements of the *2010 FDOT Standard Specifications for Road and Bridge Construction Section 330-10*. During initial construction, rolling patterns and sequences shall be established through the construction of a control strip produced with the CIR equipment and within the pavement section, to determine the target wet density, using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. In all cases, the longitudinal joint must first be rolled followed by the rolling pattern established by the test strip. The initial pass for the rolling pattern established by the test strip should begin on the low side and progress to the high side by overlapping of longitudinal passes parallel to the pavement centerline. Initial rolling should not begin until the emulsion has started to break. Rollers shall be operated at speeds appropriate for the type of roller and necessary to obtain the required degree of compaction and prevent defects in the mat. Rolling shall be continued until no displacement is occurring or until the pneumatic roller(s) is (are) walking out of the mixture. Final rolling to eliminate pneumatic tire marks and to achieve density shall be done by double drum steel roller(s), either operating in a static or vibratory mode. Vibratory mode should only be operated at a speed, frequency and amplitude shown not to damage the pavement. The selected rolling pattern shall be followed unless changes in the recycled mix or placement conditions occur and the established rolling pattern is causing damage to the mat or the required degree of compaction is unachievable. These circumstances require the establishment of new rolling patterns and sequences through the construction of a control strip produced with the CIR equipment and within the pavement section. Rolling shall start no more than 30 minutes behind the paver. Finish rolling shall be completed no more than one hour after milling is completed. When possible, rolling shall not be started or stopped on uncompacted material but with rolling patterns established so that they begin or end on previously compacted material or the existing pavement.

G. Return of Traffic:

After the completion of compaction of the recycled pavement layer, no traffic shall be permitted on the completed recycled material for at least one (1) hour. After one hour rolling traffic may be permitted on the recycled material. This time may be adjusted by the contractor to allow establishment of sufficient cure so traffic will not initiate raveling. After opening to traffic, the surface of the recycled pavement layer shall be maintained in a condition suitable for the safe movement of traffic.

H. Protection and Damage:

Protect the recycled pavement layer in accordance with the *2010 FDOT Standard Specifications for Road and Bridge Construction, Section 330-13*. Prime and sand the recycled pavement layer prior to opening the roadway to traffic. Any damage to the completed Cold In Place Recycled bituminous material shall be repaired by the contractor prior to the placement of the hot mix asphalt concrete surface course, or other applicable surface treatment, and as directed by the Engineer.

I. Finished Recycled Pavement Layer Smoothness:

The completed cold recycled pavement layer surface shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline at locations selected by the County.

Irregularities exceeding the specified limit shall be corrected at the expense of the contractor by grinding/cold milling or leveling with cold or hot mix asphalt. The corrected areas shall be retested to determine compliance with smoothness.

VII. Quality Control

A. Contractor Responsibility:

The contractor shall be responsible for providing field and laboratory quality control testing of materials during construction. The County or its subconsultant may conduct sampling and testing whenever or as often as desired for verification purposes. The contractor shall acquire an adequate amount of material for each sample to be tested in the laboratory so that an ample amount of material is left over in case of the need for resolution testing. Resolution testing will be required and provided at the expense of the contractor if similar laboratory samples tested by the contractor and the County do not coincide within reasonable values as determined by the County. The resolution laboratory will be selected by the County and the testing results provided by this lab will be used for materials acceptance purposes. All materials testing laboratories shall be accredited by the AASHTO Materials Reference Laboratory (AMRL) or Construction Materials Engineering Council (CMEC). The contractor shall submit all documentation of field inspection and laboratory testing results required herein to the County Engineer prior to payment and upon request. Copies of all delivery tickets and notes regarding any materials brought to the project site shall be given to the County upon delivery to the project site. These tickets shall be signed by an approved representative of the Contractor at the time of delivery.

B. Crushed RAP Material Sizing:

A sample shall be obtained from the receiving hopper of the paver each ½ mile or as specified by engineer (0.8 km) and screened using a 2 in. (51mm) sieve (or smaller sieve if required) to determine maximum particle size requirement compliance. The resulting gradations shall be compared to the mix design gradations to determine any necessary changes to emulsion content. Gradation results shall be shared with the County by the end of the following day. Sampling procedures shall be in accordance with ASTM D979 or AASHTO T168.

C. Asphalt Emulsion:

The asphalt emulsion shall be received on the job site within the temperature ranges specified by the emulsion supplier. The emulsion supplier shall provide testing results for each shipment indicating the emulsion is in compliance with the criteria specified in **Table 4**. The County Engineer may require the contractor to obtain emulsion samples from each shipping trailer prior to unloading into the contractor’s storage units for quality control testing if desired. The testing shall meet the following requirements:

| Table 4 – Emulsion Criteria | | |
|---|---------------|----------------|
| Property | Method | Limit |
| *Residue from distillation, % | ASTM D244 | 64.0 to 66.0 % |
| *Oil distillate by distillation, % | ASTM D244 | 0.5% maximum |
| Sieve Test, % | ASTM D244 | 0.1% maximum |
| **Residue Penetration, 25°C, dmm | ASTM D5 | -25 to +25% |
| <i>*Modified ASTM D244 procedure – distillation temperature of 177°C with 20 minute hold.</i> | | |
| <i>*To be determined during CIR design phase prior to emulsion formulation and</i> | | |

| |
|---|
| <i>manufacture for project. Penetration value range will be determined and submitted to the County Engineer for approval prior to project start</i> |
|---|

D. *Asphalt Emulsion Content and Yield:*

Total emulsion quantity and yield shall be monitored and recorded daily and for each segment in which the target emulsion percentage is adjusted. This information shall be gathered from the calibrated emulsion metering device. Emulsion content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist.

E. *Water Content and Yield:*

Total water quantity and yield shall be monitored and recorded daily and for each segment in which the target water percentage is adjusted. This information shall be gathered from the water metering device. Water content adjustments shall be made appropriately when multiple and specific mix designs for different road segments of varying composition exist. Water content adjustments shall also be made based on mixture consistency, coating, and dispersion of the recycled materials.

F. *Mixture Testing:*

At the discretion of the County Engineer and if the recycled pavement layer quality and workmanship seem suspect, the contractor may be required to sample, in accordance with ASTM D3665 and D979, the recycled mixture for determining compliance with design criteria specified in **Table 1**. If samples of the recycled asphalt pavement mixture are taken after the addition of additives and emulsion, the specimens must be compacted within 15 minutes of sampling and tested as required in **Table 1**. If the recycled mixture is sampled prior to the addition of additives and emulsion, the sample must immediately be transferred to air-tight plastic container to prohibit loss of moisture. Samples must be mixed in the laboratory with the field additives and emulsion within 24 hours and tested as required in **Table 1**.

G. *Depth of Pulverization (Milling):*

The depth shall be checked and recorded daily and every 1/8 mile (0.2 km) on both outside vertical faces of the cut. Measure depth by placing a rigid measuring device perpendicular to the bottom of the milled surface and near the vertical faces of the cut.

H. *Compacted Density:*

Degree of compaction of the recycled pavement layer shall be monitored for compliance with target wet density established during the initial control strip construction. Wet density shall be determined every 1/4 mile (0.4 km) using a nuclear moisture-density gauge in accordance with ASTM D2950, backscatter measurement mode. Ensure that all nuclear gauges are operated by licensed individuals and have been calibrated within the last 12 months. The acceptable degree of compaction shall be 96 to 98 percent of target wet density. Care shall be taken not to over-roll the mat based on visual observations of check cracking or shoving. A new control strip and target density shall be established if the consistency of the material being recycled changes. The County shall be notified prior to the construction of a new control strip.

I. *Cross-Slope and Smoothness:*

The recycled pavement layer cross slope shall be checked regularly during spreading. A minimum 2 % Cross-Slope shall be maintained through the length of the project. The recycled pavement layer shall be checked for smoothness regularly behind the paver and after rolling. The smoothness shall not vary more than ½ in (12 mm) from the lower edge of a 10-foot (3-meter) straight edge placed on the surface parallel and transversely to the centerline after rolling is completed. The edge of the mat should be rolled first and progress to the center or high side to prevent excessive edge sloughing.

| Table 5 – Quality Control Testing and Inspection Criteria | | |
|--|--|--|
| Property | Method | Limit |
| RAP Maximum Particle Size | ASTM C 136 or AASHTO T27 | Section 334-2.2 |
| RAP Particle Size Distribution | ASTM C 136 or AASHTO T27 | Determined by Mix Design(s) |
| Emulsion and Water Yield | Calibrated Metering Device | Determined by Mix Design(s) |
| *Mixture Testing **Depth of Milling Compacted Density Cross-Slope Smoothness | Table 1 Section 334-5.7 ASTM D2950 FM 5-509 FM 5-509 | Table 1 Determined by Mix Design(s) 96 to 98% of target density Minimum 2% Maximum 0.5 in (12 mm) deviation from planeness |
| <i>*Mixture Testing frequency shall be at the County Engineer's discretion</i> | | |
| <i>**Depth of Milling may need to be adjusted for localized unexpected pavement conditions</i> | | |

J. *Documentation*

Delivery Tickets - All delivery tickets and notes regarding any materials brought to the project site to complete this item shall be given to the County upon delivery. Tickets shall be signed by an approved representative of the Contractor at the time of delivery.

VIII. 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 Cold-In-Place Recycled Bituminous Paving, and not specifically listed in another item in the Bid Form, shall be included in this item, including but not limited to Maintenance of Traffic as specified in TP-102.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. Prices shall be full compensation for the removal and processing of the existing pavement; for preparing, hauling, and placing all materials; for all freight involved; for all manipulations, including rolling and prime and sand for all labor, tools, equipment, quality control testing and incidentals necessary to complete the work. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Cold-In-Place Recycled Bituminous Paving, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Cold-In-Place Recycled Bituminous Paving | Square Yard |
| Liquid Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| Added RAP or Aggregates for Mixing | Ton |
| Cement | Ton |

END OF SECTION PC-007

PC-008-A FULL DEPTH RECLAMTION (FDR) WITH PORTLAND CEMENT**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material, Portland cement and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, the introduction of cement additives, and other additives (if called for in the Mix Design). The process which results in a stabilized base course, shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. RAP: Materials must meet all requirements specified in the current Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. Additional Base Materials: Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. Portland Cement: Portland Cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85, for the type specified.
- D. Water: The water for the base course shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- E. Soil: The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. Road Reclaimer: Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of water and cement material into the mixture. The reclaiming machine shall mix the cement additive thoroughly with the RAP and soil materials. The pump shall be mechanically or

electronically interlocked with the ground speed of the machine. The cement metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and cement applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. Motor Grader: Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. Rollers: Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. Cement Delivery Equipment: A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.
- E. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (cement stabilization) 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.

V. Construction:

- A. Layout: The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the engineer.
- B. Weather and Seasonal limitations: The soil-cement base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that

the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen.

- C. Mix Design: Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of cement needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of cement required in the mix. Test specimens containing various amounts of cement are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of cement is to be determined. Actual application quantities for the Portland cement will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer of record. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

- D. Widening: When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

- E. Additional Material: When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.

- F. Pulverization: The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The cement and water shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. Alternately, the cement may be introduced by means of a spreader bar with curtain on the cement distributor. Cement shall not be introduced by means of a spreader bar or hose from the cement delivery tanker. The reclaimed material, cement and water shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of cement applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- G. Compaction: Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the cement-treated base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- H. Finishing: Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density. Correct all irregularities greater than ½" over ten feet to the satisfaction of the engineer.
- I. Protection and Curing: After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- J. Thickness: The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county’s option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Cement, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of cement into the mixture shall be included in the per TN cost for Cement. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the CY Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Cement, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Cement | Ton |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |

END OF SECTION PC-008-3

PC-008-B FULL DEPTH RECLAMATION WITH ASPHALT EMULSION**I. Description**

This work shall consist of the preparation of a stabilized base course composed of a mixture of the existing bituminous concrete pavement, existing base course material and emulsified asphalt and other additives. The manufacturing of the stabilized base course shall be done by in-place pulverizing and blending of the existing pavement and base materials, and the introduction of asphalt emulsion and additives if called for in the Special Conditions or design mix formula. The process which results in a stabilized base course shall be accomplished in accordance with these specifications and conform to the lines and grades established by the engineer.

Existing asphalt pavement shall be pulverized by a method that does not damage the material below the plan depth as shown on the appropriate roadway section.

II. Materials:

- A. **RAP:** Materials must meet all requirements specified in the 2015 Florida Department of Transportation Standard Specifications for Road and Bridge Construction 283-2, except that 98% of all material is required to pass through a 50 mm (2 inch) sieve.
- B. **Additional Base Materials:** Additional base materials may be needed for adjusting grade elevations as directed by the engineer, or for widening. When such additional material is required it shall be among those bases listed in FDOT Design Standards as General Use Optional Base Materials and meet applicable FDOT requirements for such.
- C. **Asphalt Emulsion:** When asphalt emulsion treatment is specified, asphalt emulsion, type CSS-1h or CMS-2h mod., meeting the requirements of ASTM D2397-98, shall be utilized.
- D. **Portland Cement:** When a blend of asphalt emulsion and Portland cement is specified the Portland cement shall be type I or II and conform to the latest standard requirements of ASTM C150 and AASHTO M85. If cement is added with emulsion no more than 4% shall be used on the project.
- E. **Water:** The water for the base course compaction and foaming additive shall be clean and free from sewage, oil, acid, strong alkalies, or vegetable matter and it shall be in sufficient supply for mixing and curing. Water of questionable quality shall be tested in accordance with the requirements of AASHTO T 26.
- F. **Soil:** The soil base to be reclaimed shall be evaluated by a professional geotechnical engineering laboratory to determine suitability in the stabilization process. The soil shall be free of roots, sod, weeds, and shall not contain gravel or stone retained on a 1-inch (25 mm) sieve, or more than 45% retained on a No. 4 (4.75 mm) sieve, as determined by ASTM C 136.

III. Equipment:

- A. **Road Reclaimer:** Shall be originally designed for pavement reclaiming of a size equal to or larger than a Caterpillar Model RM-350B with comparable specifications including

horsepower and rotor size. The reclaimer shall be capable of pulverizing and mixing pavement, base materials, and subgrade soil to depth of 16 inches. It shall have the capability of introducing and metering additives uniformly and accurately and that positive displacement pumps accurately meter the planned amount of asphalt emulsion into the mixture. The reclaiming machine shall mix the emulsified asphalt additive thoroughly with the RAP and soil materials. The pump shall be mechanically or electronically interlocked with the ground speed of the machine. The asphalt metering system and water metering system shall be capable of continuously monitoring (GPM) flow, and totaling the quantity of water and asphalt applied into the mixing chamber. Additives shall be uniformly distributed and mixed with the pulverized material, any existing underlying material as specified.

- B. **Motor Grader:** Shall be of sufficient size and horsepower to adequately rough grade the pulverized base and rough and finish grade the mixed and compacted base. The equipment shall be in good working order free from leaks and capable of maintaining an accurate grade and cross-slope.
- C. **Rollers:** Shall be in good working order free from leaks and capable of compacting the mix to the requirements of this specification: Vibratory rollers shall be a minimum of 10 tons and capable of rolling in either vibratory or static mode. Three wheel static rollers shall be a minimum of 11 tons. Pneumatic tire rollers shall have a minimum of 9 oscillating wheels with smooth, low pressure tires (pressure shall be equally matched in all tires within 5 PSI) and weigh at least 20 tons. Initial compaction shall be accomplished by either single or dual drum vibratory or three wheel roller static rollers.
- D. **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.
- E. **Cement Delivery Equipment:** A calibrated screw-type distributor shall be used with a curtain to accurately place the amount of cement required by the mix design onto the roadbed for mixing.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Full Depth Reclamation (with emulsion stabilization) 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.

V. Construction:

- A. **Layout:** The Contractor will be responsible for the string lining and lay out of the roadway prior to paving. Elevations of the existing road must be referenced at sufficient intervals to ensure the roadway elevation is not changed in any location after final

surface is placed. Method for layout and line and elevation reference must be approved by the engineer prior to beginning work. It is imperative that roadway elevations remain unchanged except cross slope correction or as approved by the Engineer.

B. Weather and Seasonal limitations: The base shall not be mixed or placed while the atmospheric temperature is below 35 F (2 C) or when conditions indicate that the temperature may fall below 35 F (2 C) within 24 hours, or when the weather is foggy or rainy, or when the soil or sub grade is frozen. A high ambient temperature (> 32°C, 90°F) increases the chance of breaking off large chunks (“slabbing”) in front of the cutting machine.

A. Mix Design: Prior to base course construction, a minimum of one (1) core sample must be taken for every 5,000 square yards of the roadway. Representative samples of the RAP material, underlying base material and virgin materials, where applicable, shall be supplied to a nationally accredited laboratory for preliminary testing to determine the optimum moisture content and proportions of asphalt emulsion or foamed asphalt needed to produce a finished base course with a mix design target of 300 PSI and a final in place base compressive strength of 200 to 400 PSI. Laboratory tests of material to be reclaimed and virgin materials for use as base shall be performed to determine compliance with 3-day and 7-day minimum compressive strength requirements of the mixture and the quantity of asphalt emulsion or foamed asphalt required in the mix. Test specimens containing various amounts of asphalt emulsion or foamed asphalt are to be compacted in accordance with ASTM D558, and the optimum moisture for each amount of either is to be determined. Actual application quantities for the additives will be derived from the mix design. The minimum compressive strength requirements of the mixture shall be determined by the engineer. The mix design and laboratory testing shall be performed by a geotechnical engineering laboratory and all reports sealed by a professional engineer.

| Mix Design Performance Criteria | | |
|--|---|--------------------------------------|
| <i>100 mm specimens shall be prepared in a Superpave Gyratory compactor. The mixture should meet the following criteria at the selected design asphalt emulsion content:</i> | | |
| Property | Criteria | Purpose |
| Compaction effort, Superpave Gyratory Compactor AASHTO T312 | 1.25° angle, 600 kPa stress, 30 gyrations | Density Indicator |
| Density, ASTM D2726 or equivalent | Report | Compaction Indicator |
| Gradation for Design Millings, ASTM C117 | Report | |
| *Marshall stability, ASTM D6926, D6927, 40°C | 1,250 lb min. | Stability Indicator |
| **Resistance of Compacted Bituminous Mixture to Moisture Induced Damage AASHTO T283 - Retained stability based on cured stability | 70 % min. | Ability to withstand moisture damage |
| <i>* Cured stability tested on compacted specimens after 60°C (140°F) curing to constant weight.</i> | | |
| <i>**Vacuum saturation of 55 to 75 percent, water bath 25°C 23 hours, last hour at 40°C water bath</i> | | |

- B. **Widening:** When the existing base is to be widened, the Contractor shall excavate the shoulder from the edge of the existing pavement to at least 6 inches beyond the planned new width of the base prior to pulverization. All costs involved in collecting, hauling, and disposing of these materials shall be borne by the Contractor.

The bottom of the trench shall be kept free of loose soil and vegetation. Approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed in the excavation uniformly and without loss or contamination. The Contractor shall correct all areas of irregular grade or deficient thickness and shall remove and replace material contaminated with soil, organic material, or debris.

After the final pass of the reclaimer, soil shall be drawn up against the widening material to close the excavation, and the shoulder shall be graded and compacted to produce a firm, even surface.

- C. **Additional Material:** When additional material is to be added to correct cross slope deficiencies or change elevation as directed by the engineer, approved base material (those bases listed in FDOT Design Standards as General Use Optional Base Materials) shall be placed on the roadway prior to final pass for pulverization and mixed uniformly with the existing material.
- D. **Pulverization:** The existing pavement and base material shall be pulverized and blended to the depth required so the entire mass of material shall be uniformly graded to the following gradation:

| SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 2" | 98 - 100 |
| 1-1/2" | 95 |

Material gradation may vary due to local aggregates and conditions. Multiple passes of the reclaimer may be necessary to achieve the required gradation.

The asphalt emulsion or asphalt and water (to produce a foamed asphalt) shall be introduced into the mix through the reclaimer uniformly and accurately and metered such that areas are of equal consistency and moisture content. The reclaimed material and additives shall be combined in place to meet the requirements specified in such proportions that the reclaimed mixture is of acceptable composition and stability. Before the start and at the end of each day's work and at any time requested, the engineer must be permitted access to the mixing equipment in order to read the meter to verify the quantity of asphalt emulsion applied during the day's work. Field adjustments shall be made as necessary to the recommended mix design under the guidance of a knowledgeable and competent technician or superintendent to obtain a satisfactory reclaimed mixture of consistent composition and stability throughout the Project.

After the material has been processed, it shall be compacted to the lines, grades, and depth required. Water may be applied to ensure optimum moisture content at the time of mixing and compaction.

- E. **Compaction:** Commence rolling with self-propelled rollers as required by this technical provision at the low side of the course, except leave 3 to 6 inches from any unsupported edge or edges unrolled initially to prevent distortion. Density readings shall be taken by Contractor's licensed nuclear gauge operator and witnessed by the Engineer/inspector. A control strip of not less than 500 feet shall be constructed to develop proper rolling/compaction patterns and methods to obtain desired density. Whenever there is a change in the reclaimed material or compaction method, equipment or unacceptable results occur, a new control strip shall be constructed, tested and analyzed.

Rollers shall move at a uniform speed that shall not exceed 8 km/hour (5 miles/hour). For static rollers, the drive drum normally shall be in the forward position or nearest to the paver. Vibratory rollers shall be operated at the speed, frequency and amplitude required to obtain the required density and prevent defects in the mat.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction of the reclaimed material. The field density of the compacted mixture shall be at least 95 percent of the maximum density of laboratory specimens prepared from samples of the base material taken from the material in place. The specimens shall be compacted in accordance with ASTM D 558. The in-place field density shall be determined in accordance with ASTM D 2922.

Any pavement shoving or other unacceptable displacement shall be corrected. The cause of the displacement shall be determined and corrective action taken immediately and before continuing rolling. Care shall be exercised in rolling the edges of the reclaimed mixture so the line and grade of the edge are maintained.

At the end of each day's production, a transverse construction joint shall be formed by a header or by cutting back into the compacted material to form a true vertical face free of loose material. The protection provided for construction joints shall permit the placing, spreading, and compacting of base material without injury to the work previously laid. Where it is necessary to operate or turn any equipment on the completed base course, sufficient protection and cover shall be provided to prevent damage to the finished surface. A supply of mats or wooden planks shall be maintained and used as approved and directed by the Engineer.

- F. **Finishing:** Finishing operations shall be completed and the base course shall conform to the required lines, grades, and cross section. If necessary, the surface shall be lightly scarified to eliminate any imprints made by the compacting or shaping equipment. The surface shall then be recompacted to the required density. Correct all irregularities greater than 1/2" over ten feet to the satisfaction of the engineer.
- G. **Protection and Curing:** After the base course has been finished as specified herein, it shall be protected against drying for a period of 5 to 7 days by the application of a prime coat as specified in FDOT Standard Specifications section 300 at a rate of not less than 0.15 gal/sy. The curing method shall begin as soon as possible, but no later than 24 hours after the completion of finishing operations. The finished base course shall be kept moist continuously until the curing material is placed.

At the time the prime coat is applied, the surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to prevent penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids immediately before the bituminous curing material is applied.

The curing material shall be maintained and re-applied as needed by the Contractor during the 7-day protection period so that all of the soil-cement will be covered effectively during this period. Finished portions of soil-cement that are used by equipment in constructing an adjoining section shall be protected to prevent equipment from marring or damaging the completed work.

When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for 7 days after its construction and until it has hardened.

- H. **Thickness:** The average thickness of the base constructed during one day shall be within 1/2 inch (12 mm) of the thickness required, except that the thickness of any one point may be within 3/4 inch (19 mm) of that required. Where the average thickness shown by the measurements made in one day's construction is not within the tolerance given, the Engineer shall evaluate the area and determine if, in his/her opinion, it shall be reconstructed at the Contractor's expense or the deficiency deducted from the total material in place.

VI. Sampling and Testing:

| Control Testing for Full Depth Reclamation Field Sampling and Testing | | | |
|--|---------------|---|--|
| Type of Test | Method | Frequency | Size and Location |
| RAP and Soil Cement Base Gradation | ASTM D-136 | Each 3000 SY (not less than once per day) | 20 lb min sampled from hopper |
| Moisture Density Relationship of Soil Cement Mixtures | ASTM D-558 | Each 1000 SY (not less than once per day) | 33 lb min sampled from pulverized base |
| Compressive Strength of Molded Soil Cement Cylinders | ASTM D-1633 | Each 3000 SY (not less than once per day) | 33 lb min sampled from pulverized and mixed base |
| In-place Field Density | ASTM D-2922 | Each 250 SY (not less than once per day) | Random locations after spreading and compacting |

The depth of Reclaimed Bituminous Base Course shall be determined by measuring uncompacted reclaimed material immediately behind the screed in conjunction with measuring the milling depth prior to placement of reclaimed material. One depth measurement for each 250 square yards of completed base course shall be made. Any section deficient by 0.5 in (12 mm) or more from the specified depth shall be removed and satisfactorily replaced by the contractor at no additional cost. At the county's option, cores may be taken by the engineer in the finished product to further ensure base thickness meets requirements.

All delivery tickets and notes regarding any materials brought to the project site to complete this Contract must be given to the Engineer/Inspector upon delivery to the project site.

Additional sampling and testing may be required if major changes in RAP characteristics are observed, such as a much coarser or finer gradation or a noticeable difference in asphalt content, or when considerable variability is occurring in the field test results.

VII. 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 Full Depth Reclamation with Asphalt Emulsion, and not specifically listed in another item in the Bid Form, shall be included in the SY Price for Pulverization including but not limited to shaping, compacting, finish grading, prime coat, sanding prime coat... Cost for introduction of asphaltic cement into the mixture shall be included in the per GL cost for Asphalt Emulsion. Cost for excavation for widening will be included in the CY Price for Excavation. Cost for additional materials needed for widening or adjustment of grade as directed by the engineer shall be included in the per TON Price for General Use Optional Base Material.

VIII. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit prices include all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Full Depth Reclamation with Asphalt Emulsion, 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.

Payment will be made under:

| Pay Item | Pay Unit |
|---|-----------------|
| Full Depth Reclamation (Pulverization) | Square Yard |
| Asphalt Emulsion | Gallon |
| Excavation for Widening or Unsuitable Materials | Cubic Yard |
| General Use Option Base Material | Cubic Yard |
| Cement | Ton |

END OF SECTION PC-008-4

PC-009 BITUMINOUS FOG SEAL**I. Description**

The work consists of applying a bituminous fog seal to an existing pavement surface or to a newly constructed chip seal surface.

II. Materials:

- A. **Bituminous Material:** Provide a CSS-1 or CSS-1h, bituminous material for fog seal, as specified in FI/DOT 916-3.1. The temperature of the bituminous material at the time of application shall be above the minimum temperature of 120°F.

B. **Material Samples:**

The County will require the Contractor to sample and test the first load of emulsion prior to delivery. The Contractor will also provide a sample of the emulsion for every 10,000 gallons, on site, prior to commencing work. The County 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 County 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.

III. Equipment

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

A. **Distributor Tank:**

The distributor for spreading the emulsion shall be self-propelled, and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the bituminous fog seal uniformly on variable widths of surface at readily determined and controlled rates from 0.07 to 0.12 gallons per square yard of surface, and with an allowable variation from any specified rate not to exceed 5 percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment as well as application rate accuracy and uniformity of distribution shall be made when directed by the Engineer.

B. **Sand Truck:**

Sand blotters may be used to allow early opening to traffic, if so determined by the Engineer. The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to 3 pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt stones, etc. Any wet sand shall be rejected from the job site.

C. 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.

D. 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.

IV. Experience:

All contractors and their subcontractors shall be FDOT prequalified. Bidders must submit a minimum of five Fog Seal project references in the State of Florida that have been completed within the past three years. A project superintendent knowledgeable and experienced in application of the asphalt rejuvenating agent must be in control of each day's work. The bidder shall submit a written experience outline of the project superintendent. 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.

V. Construction:

A. Layout:

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

B. 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 60 degrees Fahrenheit in the shade, and humidity should be 50% or lower. When applying emulsions, the temperature of the surface shall be a minimum of 60°F. No construction is allowed in foggy weather.

C. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residents and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that the residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract

D. Field Verification

It is understood that all treatment activities will take place within the paved roadway surface. Prior to beginning work, the Contractor shall carefully examine the site of work

and adjoining properties. It shall be the Contractor's responsibility to ensure that the treatment and construction activities are confined to the paved roadway, taking the necessary precautions to protect the areas outside of the edge of pavement during construction from damages or contamination.

Should the construction activities or application of the surface treatment cause damages to the adjoining properties outside of the edge of pavement, the Contractor shall be responsible for restoring these areas to their original condition or better, at their expense.

E. Site and Surface Preparation:

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 fog seal operation to make sure the road is free of loose aggregate and other debris.

All manhole and valve covers, inlets and other service entrances, etc., shall be protected from bituminous material by placing reinforced waterproof, all-purpose paper or other suitable material, approved by the Engineer.

The fog seal material shall not be applied until an inspection of the street surface has been done by the Engineer and determined to be suitable.

F. 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 Contractor shall do a 100' test strip, applied between 0.07 to 0.12 gallons per square yard, diluted with potable water. A dilution rate of 50% (1:1 water to emulsion) is recommended. An application rate between 0.09 to 0.23 gallons per square yard may be used for open surfaces. The Engineer shall review the test strip and recommend application rate adjustments as needed.

G. Progress of Work:

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc. must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent. If, after sand is swept and in the opinion of the Engineer, a hazardous condition exists on the roadway, the contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

Interim pavement markings can be placed after the fog seal has cured. Permanent pavement markings shall not be placed for three days after placing the fog seal.

When applying to a new chip seal surface, the bituminous chip seal shall be allowed to cure a minimum of 24 hours under dry conditions and temperatures above 60 degrees Fahrenheit.

VI. 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.

VII. 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 seal until it has cured. The Contractor shall submit an M.O.T plan indication all facets of traffic control for the project area. The MOT plan must be approved in writing by the County prior to commencing any work. All traffic control shall be in accordance with the FDOT Roadway Design Standards' most current edition. 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.

Traffic shall not be allowed on the roadway after placement of the fog seal for a minimum of two hours, or until the Engineer has determined it has cured.

VIII. 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 Fog Seal, and not specifically listed in another item in the Bid Form, shall be included in this item.

IX. Basis of Payment:

The accepted quantities, determined as provided above for each of the pay items listed below which is included in the contract, will be paid for at the contract unit price per unit of measurement. The Unit price includes all items listed in the contract, including all General Conditions, Special Conditions and Technical Provisions pertaining to Fog 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 County.

Payment will be made under:

| Pay Item | Pay Unit |
|----------------------------------|-----------------|
| Bituminous Material for Fog Seal | Square Yard |
| Silica Sand | Square Yard |

END OF SECTION PC-009

BID SHEET

The Bid Sheets for this bid are available on the web at <http://www.polk-county.net/boccsite/doing-business/bids/>. All Bid Sheets are in Excel format and **are to be submitted on a cd with your Bid Package along with the hard copy. The CD must be labeled with the company name and Bid number.**

Deviation from the Bid Sheets is strictly prohibited and will not be accepted. The Bid Sheets are locked and you need only enter the unit cost in the same column. The Bid Sheet will automatically calculate the extension, therefore you must enter the Unit Cost per the Unit Packaging as requested on the Bid Sheets. Any notes you wish to make are to be made in the Remarks section below.

REMARKS: _____

VENDOR NAME

**SIGNATURE ACKNOWLEDGEMENT
(SUBMITTAL PAGE)**

To Polk County, a Political Subdivision of the State of Florida

Date: _____

I certify that this bid is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same construction, service or material and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I have read and understand the bidding documents. I have completed and submitted all bid submittal forms, and I am authorized to sign this bid for the bidder. In submitting a bid to the County, the bidder offers and agrees that if the bid is accepted, the bidder will convey, sell, assign or transfer to the County all rights, titles and interests in and to all causes of action it may now or hereafter acquire under the Anti-Trust Laws of the United States and the State of Florida for price fixing relating to the particular commodities or services purchased or acquired by the County. At the County's discretion, such assignment shall be made and become effective at the time the County tenders final payment to the bidder.

VENDOR NAME

AUTHORIZED SIGNATURE (MANUAL)

MAILING ADDRESS

NAME (TYPED OR PRINTED)

CITY, STATE AND ZIP CODE

TITLE (TYPED OR PRINTED)

(AREA CODE) TELEPHONE NUMBER

TOLL FREE NUMBER

E-MAIL ADDRESS

This bid may be used by any other Government Agency. [] YES [] NO [] N/A

**DRUG-FREE WORKPLACE FORM
(SUBMITTAL PAGE)**

The undersigned vendor in accordance with Florida Statute 287.087 hereby certifies

that _____ does:
(Name of Business)

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business’s policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation programs, employee assistance programs and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, plea of guilty or nolo contendere to, any violation of Chapter 1893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program, if such is available in the employee’s community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Bidder’s Signature

Date

**NON-COLLUSION AFFIDAVIT OF PRIME BIDDER
(SUBMITTAL PAGE)**

State of _____)

County of _____)

_____, being first
duly sworn, deposes and says that:

1. He/she is _____ of _____, the Bidder that has submitted the attached Bid;
2. He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstance respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidders nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with such Contract or has in any manner, directly or indirectly, sought by agreement or collusion of communication or conference with any other Bidder, firm or person to fix the price or prices in the attached bid of any other Bidder, or to fix any overhead, profit or cost element of the Bid Price or the Bid Price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the County or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties in interest, including this affiant.

Signed: _____

Title: _____

Subscribed and sworn to before me this _____ day of _____, 20_____

(Title)

My Commission Expires: _____

INSURANCE REQUIREMENTS

The successful vendor shall purchase and maintain in force during the contract period the insurance as specified with an insurer licensed to do business in the State of Florida; rated "A VIII" or better by A.M. Best Rating Company for Class VIII financial size category. Polk County, a political subdivision of the State of Florida, must be named as an additional insured with respect to liability arising from all work being performed for Polk County, for Automobile and General Liability policies of insurance. The certificate holder must be Polk County, a political subdivision of the State of Florida, 330 W Church St, Rm 150, Bartow, Florida 33830. Workers' Compensation Insurance is required to provide statutory benefits, including those that may be required by any applicable federal statute. Any sole proprietor or partner actively engaged in the construction industry, and any corporate officer of a construction or non-construction industry corporation who elects to be exempt from the provisions of the workers' compensation law must provide either a workers' compensation exemption certificate (construction industry) or a letter stating the exemption status and number of employees (non-construction industry). For non-exempt vendors, Employers Liability in the amount of \$1,000,000. Commercial General Liability Insurance \$1,000,000 combined single limit of liability for bodily injuries, death, and property damage, and personal injury resulting from any one occurrence, including the following coverages: Completed Operations, Broad Form CG. Comprehensive Automobile Liability Insurance \$1,000,000; combined single limit of liability for bodily injuries, death and property damage resulting from any one occurrence, including all owned, hired and non-owned vehicles. The general liability and worker's compensation policies shall contain a waiver of subrogation in favor of Polk County. An original certificate of insurance must be on file in the Procurement Division before a purchase order will be issued.

INSURANCE (SUBMITTAL PAGE)

By signing below the Bidder is stating that they fully understand the insurance requirements for the project and if awarded the bid will provide all insurance coverage as required in Bid No. 15-601.

The requirements are as follows:

- Bidder is insured with a company licensed to do business in the State of Florida
- The insurance company is rated A VIII or better by A.M. Best Rating Company (Workers Compensation, General and Automobile policies)
- Polk County will be named as an additional insured for general and automobile liability
- The General Liability and Worker’s Compensation policies will contain waiver of subrogation in favor of Polk County

Company Name

Bidder (signature)

SAFETY REQUIREMENTS/REGULATIONS

1.0 All Bidders are required to submit, with their Bid Proposal, the Safety Requirements/Regulations form. Any questions regarding compliance with the safety requirements/regulations provision shall be directed to the County Safety Officer, Risk Management, at (863) 534-5267.

1.1 The Contractor is responsible for observing all OSHA regulations and shall self-inspect to ensure this is accomplished. The Contractor shall ensure that all personnel are properly trained and shall be able to provide documentation for their personnel that have attended training courses. Examples of such training courses are: Hazard Communications, Traffic Work Zone Safety, Personal Protective Equipment, First Aid/CPR, Permit Required Confined Space, Lock out/Tag Out of Hazardous Energy. All contractors are required to comply with OSHA Standards regardless of the number of employees they may have.

1.2 A County representative may periodically monitor work site safety. Should there be safety and/or health violations, classified as Serious, Willful or Criminal/Willful Violations, the County's representative may have the authority, but not the duty, to require the Contractor to correct the violation in an expeditious manner. Inspections shall be based on requirements contained in law. The definitions of serious, willful and criminal/willful violations are as follows:

Serious Violation: A serious violation shall be deemed to exist in a place of employment if there is a substantial probability that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment unless the employer did not, and could not, with the exercise of reasonable diligence, know of the presence of the violation.

Willful Violation: May exist where evidence shows that the employer committed an intentional and knowing violation of the Act.

Criminal/Willful Violation: A repeat violation of a previously cited willful violation.

Violation of Serious, Willful or Criminal violation may have the following consequences:

First violation: correction may be a verbal warning and the correction shall be done the same day. Written documentation may be maintained by the County.

Second violation: may result in work stoppage until the violation is corrected. The work stoppage shall not entitle the Contractor to additional contract time or compensation. Liquidated damages provision will remain in full force and effect.

Third violation: this may constitute a breach of contract for safety violations and may result in termination of the contract at the sole discretion of the County.

Note: The County Safety Officer may stop any job to ensure the safety of all concerned.

1.3 Should the work site be in a hazardous area, the County shall furnish the Contractor with information concerning hazards such as types or identification of known toxic material, machine hazards, Material Safety Data Sheets, or any other information that would assist the Contractor in the planning of a safe work site.

1.4 The Contractor shall be aware that while working for the County, representatives from agencies such as the United States Department of Labor, Occupational Safety and Health Administration (OSHA), and the Division of Safety, State of Florida, are invitees and need not have warrants or permission to enter the work site. These agencies, as well as the County Safety Officer, enter at the pleasure of the County.

1.5 The Contractor shall designate a competent person of its organization whose duty shall be the prevention of accidents at the site. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the County. All communications to the superintendent shall be as binding as if given to the Contractor.

SAFETY REQUIREMENTS/REGULATIONS FORM

Bidder must sign and have notarized:

The undersigned bidder hereby certifies that they fully understand the safety requirements/regulation provisions and will comply.

Dated this _____ day of _____, 20_____

Name of Firm _____

By _____

Title of Person Signing (SEAL)

SWORN TO AND SUBSCRIBED BEFORE ME

This _____ day of _____, 20 _____

Notary Public: _____

My Commission Expires: _____

**AFFIDAVIT CERTIFICATION
IMMIGRATION LAWS**

SOLICITATION NO.: 15-601

PROJECT NAME: Pavement Management Alternative Methods

POLK COUNTY WILL NOT INTENTIONALLY AWARD COUNTY CONTRACTS TO ANY CONTRACTOR WHO KNOWINGLY EMPLOYS UNAUTHORIZED ALIEN WORKERS, CONSTITUTING A VIOLATION OF THE EMPLOYMENT PROVISIONS CONTAINED IN 8 U.S.C. SECTION 1324 a(e) {SECTION 274A(e) OF THE IMMIGRATION AND NATIONALITY ACT ("INA").

POLK COUNTY MAY CONSIDER THE EMPLOYMENT BY ANY CONTRACTOR OF UNAUTHORIZED ALIENS A VIOLATION OF SECTION 274A(e) OF THE INA. **SUCH VIOLATION BY THE RECIPIENT OF THE EMPLOYMENT PROVISIONS CONTAINED IN SECTION 274A(e) OF THE INA SHALL BE GROUNDS FOR UNILATERAL CANCELLATION OF THE CONTRACT BY POLK COUNTY.**

BIDDER ATTESTS THAT THEY ARE FULLY COMPLIANT WITH ALL APPLICABLE IMMIGRATION LAWS (SPECIFICALLY TO THE 1986 IMMIGRATION ACT AND SUBSEQUENT AMENDMENTS).

Company Name: _____

Signature Title Date

STATE OF: _____
COUNTY OF: _____

The foregoing instrument was signed and acknowledged before me this ____day of _____, 20____, by _____ who has produced

(Print or Type Name)

_____ as identification.

(Type of Identification and Number)

Notary Public Signature

Printed Name of Notary Public

Notary Commission Number/Expiration