City of Santa Rosa

JULY 7, 2016

NEIGHBORHOOD STREETS INITIATIVE SLURRY SEAL 2016
CONTRACT NO. C02071
ADDENDUM NO. 1

Specifications:

1. Replace page 2, 26, 44, 45, 46, 47, 48, 49, 56 with 2R, 26R, 44R, 45R, 46R, 47R, 48R, 49R, 56R

2. Section 39 Hot Mix Asphalt shall be added as pages 49-1 through 49-10.

3. Section 124 Material Recycling shall be added as page 54-1.

4. Section 37-3.03F Designated Construction Zones, shall be replaced in its entirety with the following:

   37-3.03F Designated Construction Zones: Portions of City streets may be designated as construction zones (pit sites) for the purpose of transporting slurry seal.

   You shall provide your proposed construction zones to the Engineer prior to starting work.

DAVID MONTAGUE
Supervising Engineer

Transportation and Public Works Department
69 Stony Circle ● Santa Rosa, CA 95401
Phone: 707-543-3800 ● Fax: 707-543-3801
www.srcity.org

CITY OF SANTA ROSA ESTIMATED QUANTITIES
C02071 - NEIGHBORHOOD STREETS INITIATIVE SLURRY SEAL 2016

Item No.	Description	Quantity	Units
1	INCENTIVE TO COMPLETE WITHIN WORKING DAYS (I)	1	LS
2	DAILY COMPLETION INCENTIVE (I)	7	EA
3	TRAFFIC CONTROL	1	LS
4	WATER POLLUTION CONTROL	1	LS
5	REMOVE EXISTING TRAFFIC STRIPES AND PAVEMENT MARKINGS	1	LS
6	REMOVE EXISTING PAVEMENT MARKERS	1	LS
7	SLURRY SEAL	1,750,000	SF
8	CRACK SEAL	15,000	LF
9	PAVEMENT GRIND (.25')	1,811	SY
10	HMA SURFACE	315	TN
11	4-INCH THERMOPLASTIC	2,000	LF
12	8-INCH THERMOPLASTIC	200	LF
13	12-INCH THERMOPLASTIC	1,500	LF
14	THERMOPLASTIC TURN ARROW	15	EA
15	PAVEMENT MARKING	1,000	SF
16	PAVEMENT MARKERS RETRO-REFLECTIVE	100	EA
17	PAVEMENT MARKERS NON-REFLECTIVE	500	EA
18	TREE PRUNING AND TRIMMING	1	LS

City of Santa Rosa

TECHNICAL SPECIFICATIONS

FOR

NEIGHBORHOOD STREETS INITIATIVE SLURRY SEAL 2016

CONTRACT NO. C02071

2016

SLURRY LIST

NE Quadrant Area

REF #	Street	From	To	Area (SF)	*Pavement Grind (SY)
1	ALTA VISTA AVE	SUNRISE AVE	CHAPARRAL RD	12,792	71
2	BAMBI LN	END	177' W/MIDDLE RINCON RD	22,656	8
3	BAMBI LN	177' W/MIDDLE RINCON RD	MIDDLE RINCON RD	3,186	-
4	BENJAMINS COURT	BENJAMINS RD	END	10,556	-
5	BENJAMINS RD	365' N/SPEERS	MONTECITO AVE	9,490	18
6	BENJAMINS RD	SPEERS RD	30' S/CANYON	18,680	35
7	BREEDEN ST	END	PROSPECT AVE	40,691	-
8	BRUSH CREEK LN	BRUSH CREEK RD	END	11,960	-
9	BUCKTHORN COURT	END	INDIAN CREEK DR	13,936	26
10	CALLOWAY DR	STREAMSIDE DR WEST	STREAMSIDE DR EAST	14,482	-
11	CANDACE AV	RANDALL LN	DEAD END	3,800	-
12	CANYON DR	BENJAMINS RD	ST MARY DR	43,200	80
13	CANYON DR	ST MARY DR	DRAKE DR	39,360	73
14	FLAT ROCK CIR	WAYVERN DR	WAYVERN DR	30,784	285
15	FOLIA COURT	END	BUCKTHORNE COURT	9,585	18
16	GOLD LAKE DR	OAK LAKE AVE	END	4,256	-
17	HAMPTON COURT	MARIT DR	END	12,677	23
18	HANSBERY WAY	END	PROSPECT AVE	16,000	-
19	INDIAN CREEK DR	300' S/HWY 12	END	12,480	23
20	JACK LONDON DR	300' N/HWY 12	END	99,364	184
21	KINTYRE WAY	FLAT ROCK CIR	FLAT ROCK CIR	8,320	-
22	MARIT DR	CALISTOGA RD	BEECH	37,584	70
23	OAK LAKE AVE	GOLD LAKE DR	AUSTIN CREEK BRIDGE	18,000	-
24	PIEDRA LN	DEL ROSA AVE	JULIET DR	8,246	15
25	PROSPECT AVE	END	REDWING DR (PVT ST)	39,200	44
26	PROSPECT AVE	END	WINDING CREEK AVE	31,200	-
27	RANDALL LN	END CUL-DE-SAC	88N / CANDACE AV	16,874	-
28	RANDALL LN	88N / CANDACE AV	MISSION BOULEVARD	18,784	104
29	SCHIAPPINO ST	PROSPECT AVE	WINDING CREEK	16,212	-
30	SHERBROOK DR	MISSION BOULEVARD	PROSPECT AVE	6,300	7
31	SORRENTO WAY	ACACIA LN	CULEBRA WAY	15,120	-
32	SPEERS RD	MIDDLE RINCON RD	BENJAMINS RD	7,840	15
33	STARBUCK AVE	150 E/BREEDEN ST	VALE ST	21,450	-
34	STREAMSIDE DR	SOUTH END	300' S/HIGHWAY 12	16,000	-
35	SUNRISE AVE	DEL ROSA AVE	280'S/JULIET DR	23,160	-
36	SUNRISE AVE	280'S/JULIET DR	OSAGE AVE	8,600	-
37	SUNSHINE AVE	CITY LIMIT (W END)	MIDDLE RINCON RD	32,056	12
38	TESERO LN	DEAD END	SORRENTO WAY	4,014	-
39	VALE ST	DEAD END	100S/WINDING CREEK AV	7,986	3
40	VALE ST	100S/WINDING CREEK AV	WINDING CREEK AVE	3,200	1
41	WAYVERN DR	FLAT ROCK CIR	STREAMSIDE DR	15,072	-
42	WINDING CREEK AVE	END	209' W/VALE	22,392	-
43	YULUPA CIR	SANTA ROSA CREEK BRIDGE	SANTA ROSA CREEK BRIDGE	94,950	70
			Subtotal:	**902,495**	**1,184**

SLURRY LIST

NW Quadrant Area

REF #	Street	From	To	Area (SF)	*Pavement Grind (SY)
44	AZTEC ST	END	END	22,120	-
45	CHEROKEE AVE	NAVAJO	60' S/END	25,952	-
46	COMANCHE ST	MOHAWK ST	END	51,000	-
48	ETHAN DR	KIPLAND DR	TEASDALE LN	32,400	60
50	HALYARD DR	MANDARIN	KIPLAND DR	10,656	20
51	HALYARD DR	KIPLAND DR	TEASDALE LN	35,328	26
52	KIPLAND DR	PINER CREEK DR	HALYARD DR	35,520	66
54	MERIDIAN CIR	WEST COLLEGE AVE	MERIDIAN CIR	106,000	196
55	NAVAJO ST	COMANCHE ST	END	40,440	-
56	TEASDALE LN	KIPLAND DR	HALYARD RD	32,400	60
			Subtotal:	**391,816**	**428**

SW Quadrant Area

REF #	Street	From	To	Area (SF)	*Pavement Grind (SY)
57	BOYD ST	BARHAM AVE	EARLE ST	28,500	-
58	CHESTNUT ST	SEBASTOPOL RD	END	6,848	-
60	DANIEL CT	CAMPBELL DR	END	8,830	33
61	GOODMAN AVE	250'N/END	SEBASTOPOL RD	24,030	9
63	HICKORY CIR	BOYD ST	BOYD ST	10,634	-
65	LOMBARDI CT	SEBASTOPOL RD	END	27,264	10
67	OLIVE ST	160'N/END	PEACH ST	3,234	-
68	OLIVE ST	EARLE ST	SEBASTOPOL RD	40,290	15
69	PEACH CT	END	CORBY AVE	13,800	-
70	PEACH ST	CORBY AVE	POPLAR ST	10,005	-
72	POPLAR ST	160'N/END	N/INTERSECTION PEACH	8,580	-
			Subtotal:	**182,015**	**67**

SE Quadrant Area

REF #	Street	From	To	Area (SF)	*Pavement Grind (SY)
76	ANNADEL HEIGHTS DR	SANTA JUANITA CT	CARISSA AVE	17,748	-
77	CARISSA AVE	SUMMERFIELD RD	30 FT E ANNADEL HEIGHTS DR	63,720	-
79	GLENCANNON ST	HEATHERGLEN CIR	FERNGLEN DR	19,008	-
80	HOEN AVE	SUMMERFIELD RD	ELIGGIE CT	64,548	24
81	KIERAN CT	NEWANGA DR	CUL-DE-SAC	27,480	102
82	LUCY CT	END	HOEN AV	22,200	-
84	NEWANGA CT	END	NEWANGA AVE	13,404	-
85	SUMMERHAYS PL	END CUL-DE-SAC	SUMMERFIELD RD	18,360	7
			Subtotal:	**246,468**	**132**

Note: Santa Rosa is commonly referred to by quadrants for ease of reference and mapping purposes. The order shown on this list does not necessarily reflect the slurry sequence and/or operational priority from one quadrant to the other.

* Pavement Grind consists of 0.25' uniform depth.

City of Santa Rosa
Information Technology - GIS

Northeast
Slurry Seal

46R

C02071

0.6 0 0.30 0.60 Miles

1: 19,000

6/29/2016

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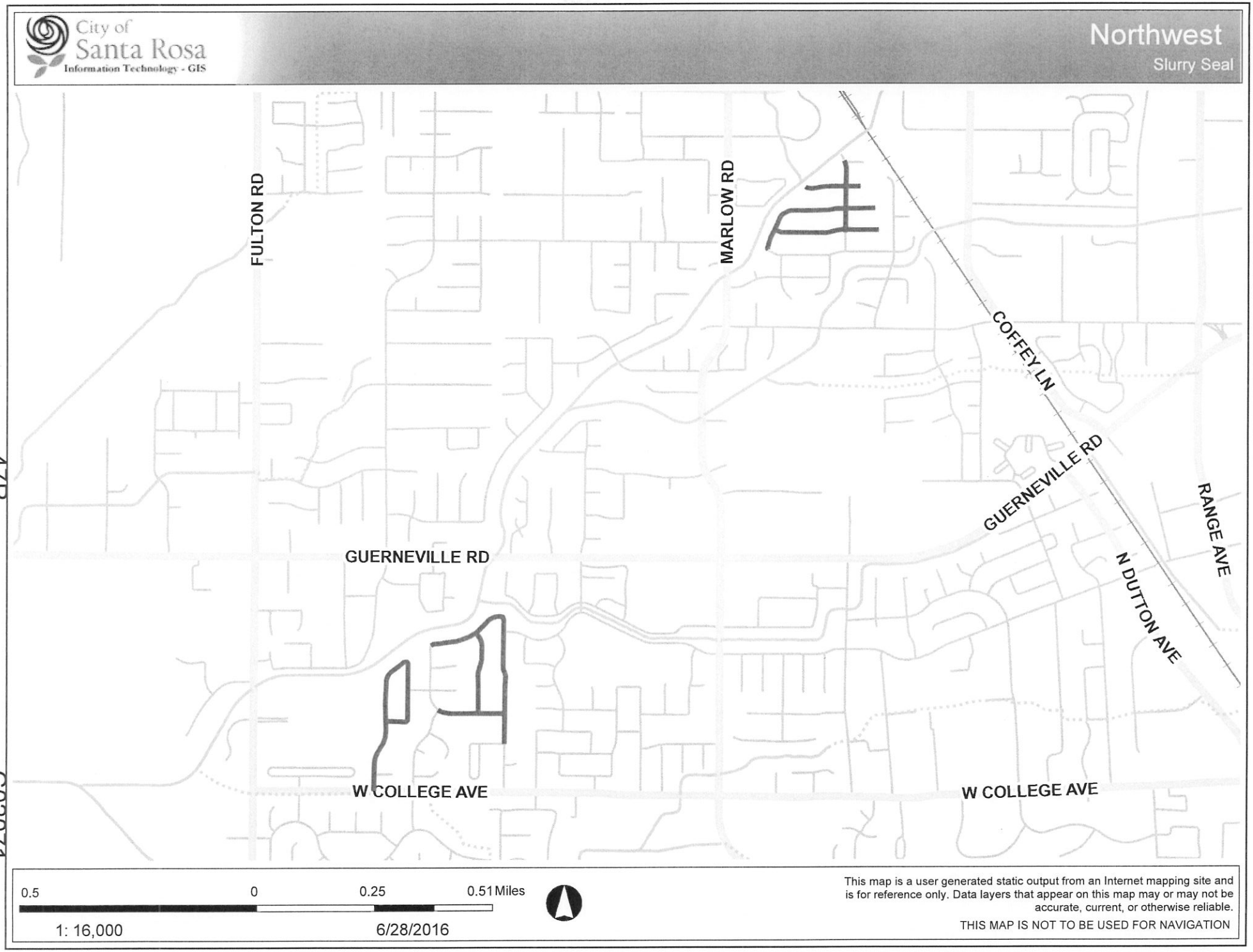
THIS MAP IS NOT TO BE USED FOR NAVIGATION


City of
Santa Rosa
Information Technology - GIS
Northwest
Slurry Seal
FULTON RD
MARLOW RD
COFFEY LN
GUERNEVILLE RD
GUERNEVILLE RD
RANGE AVE
N DUTTON AVE
W COLLEGE AVE
W COLLEGE AVE
47R
C02071
0.5
0
0.25
0.51 Miles
1: 16,000
6/28/2016
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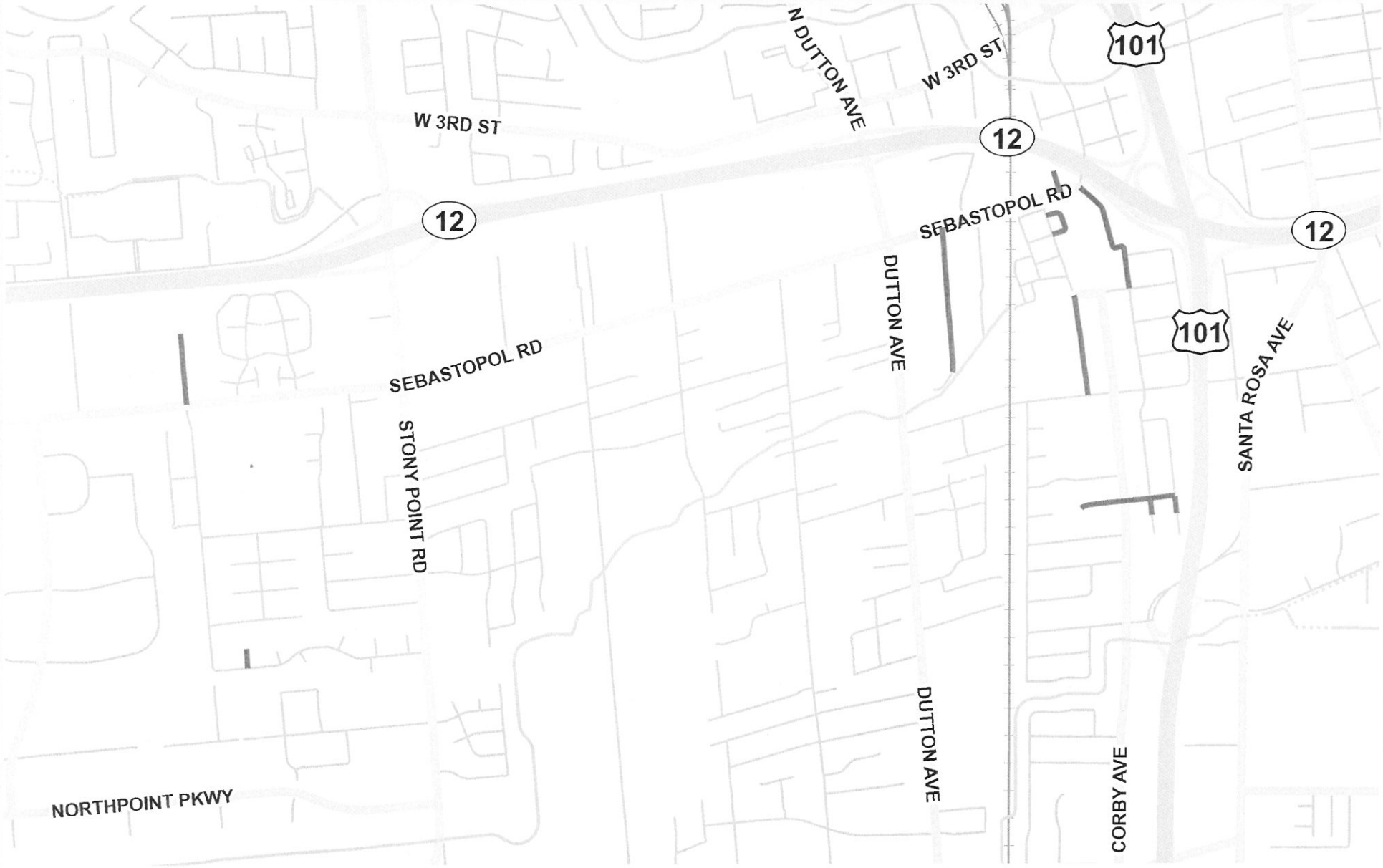
City of Santa Rosa
Information Technology - GIS

Southwest
Slurry Seal



48R

C02071

0.5 0 0.24 0.47 Miles

1: 15,000

6/29/2016

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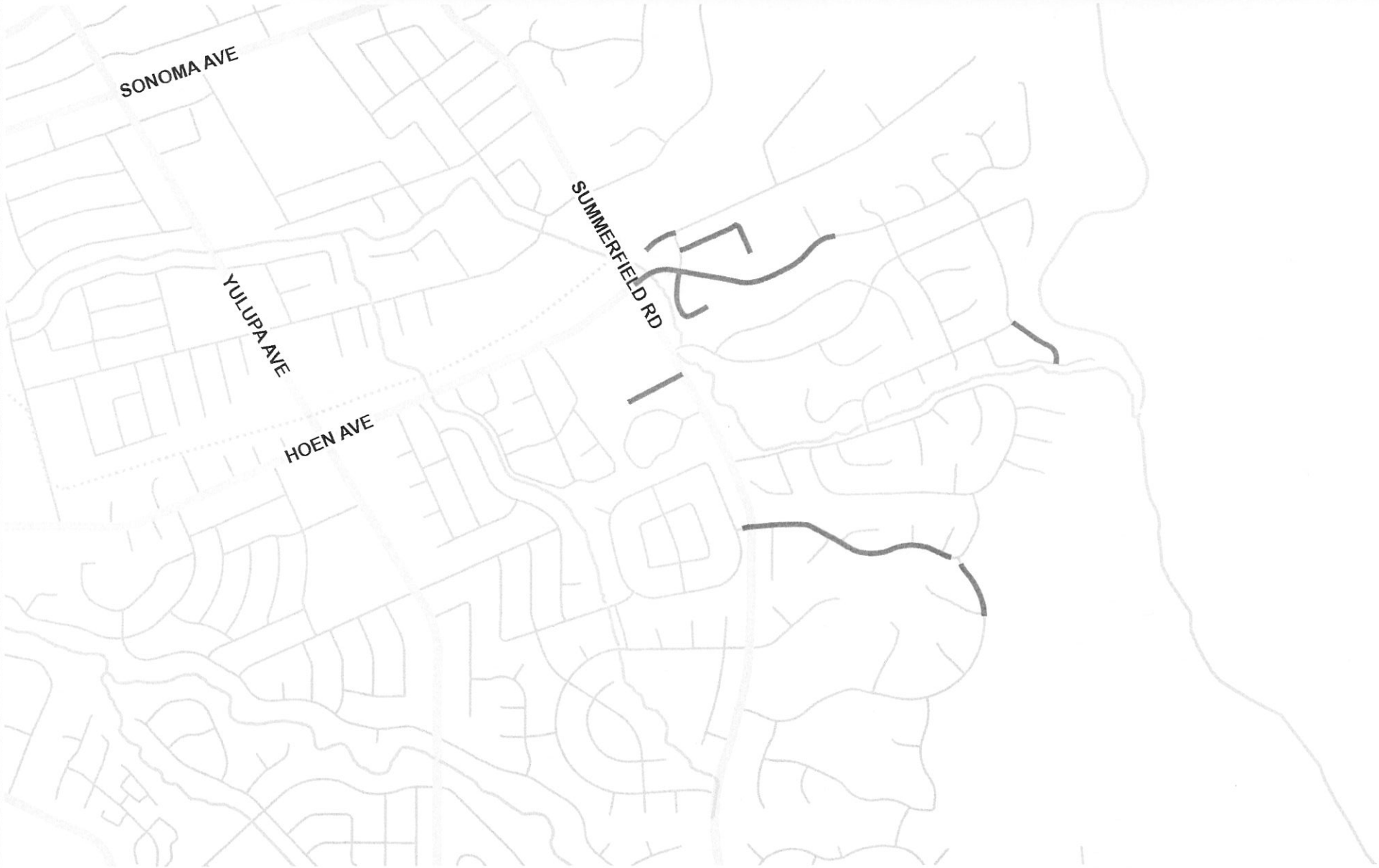
City of Santa Rosa
Information Technology - GIS

Southeast
Slurry Seal



49R

C02071

0.4 0 0.21 0.41 Miles

1: 13,000

6/29/2016

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CITY OF SANTA ROSA UNIT PRICE SCHEDULE
C02071 - NEIGHBORHOOD STREETS INITIATIVE SLURRY SEAL 2016

No.	Item	Quantity	Units	Unit Price	Total Price
1	INCENTIVE TO COMPLETE WITHIN WORKING DAYS (I)	1	LS	**$25,000.00**	**$25,000.00**
2	DAILY COMPLETION INCENTIVE (I)	7	EA	**$500.00**	**$500.00**
3	TRAFFIC CONTROL	1	LS	$_____	$_____
4	WATER POLLUTION CONTROL	1	LS	$_____	$_____
5	REMOVE EXISTING TRAFFIC STRIPES AND PAVEMENT MARKINGS	1	LS	$_____	$_____
6	REMOVE EXISTING PAVEMENT MARKERS	1	LS	$_____	$_____
7	SLURRY SEAL	1,750,000	SF	$_____	$_____
8	CRACK SEAL	15,000	LF	$_____	$_____
9	PAVEMENT GRIND (.25')	1,811	SY	$_____	$_____
10	HMA SURFACE	315	TN	$_____	$_____
11	4-INCH THERMOPLASTIC	2,000	LF	$_____	$_____
12	8-INCH THERMOPLASTIC	200	LF	$_____	$_____
13	12-INCH THERMOPLASTIC	1,500	LF	$_____	$_____
14	THERMOPLASTIC TURN ARROW	15	EA	$_____	$_____
15	PAVEMENT MARKING	1,000	SF	$_____	$_____
16	PAVEMENT MARKERS RETRO-REFLECTIVE	100	EA	$_____	$_____
17	PAVEMENT MARKERS NON-REFLECTIVE	500	EA	$_____	$_____
18	TREE PRUNING AND TRIMMING	1	LS	$_____	$_____
	GRAND TOTAL BID				$_____

SECTION 39
HOT MIX ASPHALT

39-1.01 General:

39-1.01A Summary:

Section 39 includes technical specifications for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

A minimum of two weeks prior to the placement of any HMA, you shall notify the Engineer of which asphalt plant will be used to supply the mix. For any job, HMA shall be supplied from a single plant.

At your option, and at no additional expense to the City, a Cal-trans approved Warm Mix Asphalt (WMA) technology may be added to the HMA. However, the asphalt concrete shall be manufactured at HMA temperatures (300F +/- 25F) at a dosage rate approved by the Engineer. All other HMA project specifications shall be adhered to.

Use Section 39-3: Method Construction Process of these specifications for HMA production and construction.

HMA in areas of pavement grind shall be placed in a manner that does not cause deformation to the ground surface or the adjacent pavement. You shall place asphalt concrete to existing finished grade the same day that an area is ground. Traffic shall not be allowed on ground out roadway surface prior to placement of asphalt.

39-1.01C Description:

The HMA shall be placed with a paving machine.

At the end of each working day, the exact location of all underground facility covers overlaid with HMA shall be clearly marked on the grade.

You shall furnish an excavation and paving plan which shall include the following:

1. Asphalt plant supplying mix including aggregate source
2. Disposal site for spoils
3. Type of trucks and equipment to be used
4. Haul routes through adjacent residential streets

The HMA shall be allowed to cool to 160° F at mid depth before the roadway is opened to traffic each day.

At the end of each working day you shall place retro-reflectorized signs and delineators, as required for night time use in accordance with the Standard Specifications and Section 12 of these Special Provisions to warn the public of the existing conditions.

At the end of each work day during paving operations the location of all lowered valves, manholes, monuments and any other facility overlaid with HMA shall be raised to grade or be marked in white paint.

39-1.02 Materials:

39-1.02B Tack Coat:

Tack coat shall be applied to all existing asphalt concrete surfaces to receive an HMA plug. Tack coat shall also be applied to all vertical mating surfaces and conforms to existing pavement, curbs, gutters, and construction joints, and allowed to break immediately in advance of placing HMA. The tack coat shall be reapplied 1) where it becomes contaminated, 2) where it is significantly tracked (removed) from the surface, and/or 3) as otherwise directed by the Engineer.

39-1.02C Asphalt Binder:

Asphalt binder in HMA must comply with the specifications for asphalts.

Asphalt binder to be mixed with aggregate for HMA surface, leveling and base shall be PG64-16 grade paving asphalt.

The amount of asphalt binder to be mixed with the aggregate shall be specified by the Engineer at the time of paving. Different asphalt binder content may be specified for each lift and each location.

Liquid anti-stripping agent (LAS) shall be added to the asphalt binder at a rate of 0.5 to 1.0% by weight of asphalt binder. The LAS shall be AD-here LOF 65-00 or equivalent, and shall be stored, measured, and blended with the asphalt binder in accordance with the anti-stripping agent manufacture's recommended practice. The LAS can be added at the asphalt plant or at the refinery. When added at the asphalt plant, the equipment shall indicate and record the amount of LAS added. If added at the refinery, the shipping ticket from the refinery shall certify the type and amount of LAS added.

39-1.02E Aggregate:

The aggregate grading of the various types of HMA shall conform to one of the following as directed by the Engineer:

Surface or Leveling Course.....3/4-inch HMA Type A, or ½-inch Coarse HMA Type A, or ½-inch Medium HMA Type A

Base Course.....¾-inch HMA Type A

Aggregate must be clean and free from deleterious substances. Aggregates should be of high abrasion resistance and durability. Excessively soft and friable aggregates are not allowed.

The specified aggregate gradation must be determined before the addition of asphalt binder and includes supplemental fine aggregate.

Choose sieve size TV within each TV limit presented in the aggregate gradation tables.

The proposed aggregate gradation must be within the TV limits for the specified sieve sizes shown in the following tables:

Aggregate Gradation
(Percentage Passing)
HMA Types A

3/4-inch HMA Type A

Sieve sizes	TV limits	Allowable tolerance
1"	100	--
3/4"	95–100	TV ± 5
3/8"	65–80	TV ± 5
No. 4	49–54	TV ± 5
No. 8	36–40	TV ± 5
No. 30	18–21	TV ±5
No. 200	2.0–8.0	--

1/2-inch Coarse HMA Type A

Sieve sizes	TV limits	Allowable tolerance
3/4"	100	—
1/2"	94–100	--
3/8"	70–90	--
No. 4	55–61	TV ± 5
No. 8	40–45	TV ± 5
No. 30	20–25	TV ± 5
No. 200	2.0–8.0	--

1/2-inch Medium HMA Type A

Sieve sizes	TV limits	Allowable tolerance
3/4"	100	--
1/2"	95-100	--
3/8"	80-95	--
No. 4	59-66	TV ± 5
No. 8	43-49	TV ± 5
No. 30	22-27	TV ± 5
No. 200	2.0–8.0	--

Before the addition of asphalt binder and lime treatment, aggregate must have the values for the quality characteristics shown in the following table:

Quality characteristic	Test method	HMA Type A
Percent of crushed particles Coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing no. 4 sieve and retained on no. 8 sieve.) One fractured face	California Test 205	 90 75 70
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	California Test 211	 10 45
Sand Equivalent (min.)[a]	California Test 217	50[b]
Fine aggregate angularity (% min.)	California Test 234	45
Flat and elongated particles (% max. by weight @ 5:1)	California Test 235	10

[a] Reported value must be the average of 3 tests from a single sample.
[b] Minimum Sand Equivalent of 45 for asphalt concrete base.

39-1.02F Reclaimed Asphalt Pavement:

Reclaimed Asphalt Pavement (RAP) may be used at your option. If RAP is used, you shall provide the proposed mix design and the quality control for all HMA that includes RAP, in accordance with the following requirements:

1. Provide City with a mix design per California Test 384 for the proposed RAP HMA.
2. Perform bitumen ratio tests on at least six split samples of your RAP to establish correlation between respective binder ignition ovens.
3. RAP shall be processed from reclaimed HMA pavement only.
4. RAP pile(s) shall be separate from the stacker pile, not intermingled with other materials, and stored on smooth surfaces free from debris and organic material.
5. The project RAP pile shall be processed and mixed, identified, and of adequate quantity for the proposed project. "Live" piles shall not be permitted.
6. Sample the RAP pile and determine the bitumen ratio (using same binder ignition oven used in #2 above) and provide the test results to the City at least one week prior to producing RAP HMA.
7. A minimum of three samples shall be tested for bitumen ratio for RAP pile of 1500 tons, or portion thereof.
8. RAP pile shall be mixed such that individual bitumen ratio test results of RAP pile so not vary more than +/- 0.5%.
9. During RAP HMA production, RAP shall be sampled off of the belt (into the batch plant), per method established by the City, and samples provided to the City.

10. Bitumen ratio of RAP sampled off of the belt shall be 4.0% minimum, as determined by City binder ignition oven. City shall select binder content for RAP HMA mix per Specifications.
11. RAP content shall be no more than 20% by dry aggregate mass in the HMA. If proposing a change in the RAP content, you shall notify the Engineer. If the content changes more than 5%, you shall submit a new mix design.
12. Moisture content of RAP pile shall be 4.0% maximum, and shall be tested the day prior to the day of paving and tested/monitored during each day of HMA production.
13. RAP pile(s) shall be protected from exposure to moisture.
14. RAP HMA shall comply with all the specifications for HMA.
15. If batch mixing is used, RAP shall be kept separate from the virgin aggregate until both ingredients enter the weigh hopper or pug mill. After introduction to the pug mill and before asphalt binder is added, the mixing time for the virgin aggregate and RAP shall not be less than five seconds. After asphalt binder is added, the mixing time shall not be less than 30 seconds.
16. If continuous mixing is used, the RAP shall be protected from direct contact with the burner flame with a device such as a shield, separator, or second drum.

If any of the above criteria are not satisfied, or if the RAP HMA test result determined by the City are inconsistent, then acceptance of RAP HMA will revoked.

39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS:

39-1.08 Production:

39-1.08A General: During production, with approval of the Engineer, you may adjust hot or cold feed proportion controls for virgin aggregate and RAP. HMA shall be placed in lifts as shown in these special provisions.

39-1.11 Transporting, Spreading, and Compacting

Construction vehicles/equipment shall not be allowed on the newly placed HMA until the day after it is placed. Super dumps or other trucks with liftable trailing load bearing axles shall not be allowed on the newly placed HMA. All trucks or other construction equipment to be driven on the newly HMA shall not exceed the surface load bearing capacity and shall not produce rutting or pumping at any time.

Prior to loading HMA, the bed of the haul vehicle shall be clean and free from all soil, sand, gravel and other deleterious substances.

When spraying release or other parting agents in the bed of the haul vehicle, the minimum amount necessary to moisten the surface shall be used. In no instance will the parting agent be allowed to accumulate in the bed of the vehicle.

All haul vehicles shall be equipped with tarps which are in working order. Tarps shall be used on haul vehicles unless prior approval is obtained from the Laboratory.

The HMA shall be deposited from the haul vehicle into the hopper of the paving machine.

The practice of depositing the HMA on the roadbed in a windrow and subsequently using a pick-up machine to deposit the material in the hopper of the asphalt paver shall not be allowed.

39-1.12 Smoothness:

39-1.12A General: Determine HMA smoothness with a straightedge.

The completed surfacing shall be thoroughly compacted, smooth and free from ruts, humps, depressions or irregularities. Any ridges, indentations or other objectionable marks left in the surface of the asphalt concrete by blading or other equipment shall be eliminated by rolling or other means. The use of any equipment that leaves ridges, indentations or other objectionable marks in the HMA shall be discontinued.

39-3 Method Construction Process:

39-3.01 General: Section 39-3 includes specifications for HMA produced and constructed under the Method construction process.

39-3.02 Acceptance Criteria:

39-3.02A Testing: The Laboratory acceptance testing requirement for Sand Equivalent shall be 50 (minimum) for asphalt concrete surface and 45 (minimum) for asphalt concrete base. HMA shall meet the following requirements.

Micro-Deval (ASTM D6928-10)[1]	Tensile Strength Ratio, TSR (ASTM D7870)[2]
≤16.0%	Not Required
16.1-18.0%	70 (minimum)
18.1-21.0%	80 (minimum)

[1] HMA with a Micro-Deval loss greater than 21.0% shall be removed and replaced at your expense. In addition, no single source of HMA aggregate shall have a Micro-Deval loss greater than 21.0%.

[2] TSR testing shall be performed on recompacted asphalt concrete (per ASTM D7870), obtained from field cores, and tested within 30 days of HMA placement. Specimens tested shall include 1 unconditioned sample, and 2 conditioned samples as follows:

a) 20.0 hour Adhesion cycle @ 60°C
b) 3500 cycles @ 40 psi and 60°C

A single TSR test shall not represent more than 750 tons of HMA.

HMA not meeting the above requirements shall be removed and replaced at your expense.

The Los Angeles Rattler acceptance testing requirement shall be 10% maximum (loss at 100 rev.).

The micro-deval abrasion loss of the aggregates should conform to asphalt concrete industry standards.

Asphalt concrete shall have a minimum tensile strength ratio (TSR) of 70, and a minimum dry tensile strength of 100 pounds per square inch, based on California Test Method 371.

At any time during the first 12 months from the time of placement of the HMA, the surface shall be visually inspected by the Laboratory. If signs of stripping of binder from aggregate or loss of aggregate is apparent, the Laboratory will core the asphalt concrete surface. The core samples will be tested for TSR. Asphalt concrete with a TSR less than 70 shall be remediated as required by the Engineer.

39-3.03 Spreading and Compacting Equipment: Compaction rollers shall be either 2-axle steel-tired rollers, pneumatic-tired rollers, or approved double-drum vibratory rollers. Steel-tired static compaction rollers shall weigh not less than 12 tons.

Double-drum vibratory rollers shall be operated at a maximum speed of 135-feet per minute (approximately 1.5 mph). Double drum-vibratory rollers shall have a minimum frequency of 2400 Vibrations per Minute (VPM) and the amplitude shall be field-adjustable.

All pneumatic-tired rollers shall be equipped with an approved windskirt unless otherwise permitted by the Engineer. Pneumatic-tired rollers used for compaction of HMA base shall be so equipped that the air pressure in all tired may be regulated uniformly by the operator while the roller is in motion.

39-3.04 Transporting, Spreading, and Compacting: No asphalt concrete shall be placed within thirty (30) minutes of sunset, as established by weather bureau, except as otherwise authorized by the Engineer.

HMA surface and base shall not be placed during rainy weather or on a wet surface. HMA shall not be placed when the atmospheric temperature is below fifty (50) degrees Fahrenheit or conditions indicate it will drop below fifty (50) degrees Fahrenheit before the material can be satisfactorily compacted. HMA base shall not be placed when the atmospheric temperature is below forty (40) degrees Fahrenheit or conditions indicate it will drop below forty (40) degrees Fahrenheit before the material can be satisfactorily compacted.

The compacted thickness of HMA layers shall be as directed by the Engineer

The temperature of the HMA shall be specified by the Engineer. Unless lower temperatures are specified by the Engineer, all mixtures shall be spread, and the first coverage of initial or breakdown compaction shall be performed, when the temperature of the mixture is not less than 250°F at mid-depth, and all breakdown compaction shall be completed before the temperature of the mixture drops below 200°F at mid-depth. Additional rolling equipment shall be required or the rate of spread shall be reduced to permit compliance with this requirement.

A. HMA surface course and leveling courses.

1. Equipment Required

   If production in any one hour exceeds the limits set forth below, the Contractor shall cease his paving operation until additional rolling equipment has arrived on the project.

   a. 125 tons per hour or more.

You will be required to furnish a minimum of two approved double-drum vibratory rollers and one minimum 3-ton double-drum vibratory finish roller for each asphalt paver with a separate operator for each roller.

A pneumatic roller may be substituted for one of the vibratory rollers if approved by the Engineer.

b. 50-125 tons per hour.

The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller and one 3-ton double-drum vibratory roller for each asphalt paver with a separate operator for each roller when the compacted thickness is not less than 0.17'.

c. 50 tons per hour or less, at any location.

The required minimum rolling equipment specified above may be reduced to one approved double-drum vibratory roller, weighing not more than 12 tons for each paving machine.

2. Compaction Requirements.

Compaction rolling shall consist of a minimum of four complete vibratory coverages with an approved double-drum vibratory roller.

Finish rolling shall consist of one or more coverages with a minimum 3-ton double-drum vibratory roller immediately following completion of compaction rolling.

B. HMA base.

1. Equipment required

You shall be required to furnish one approved double-drum vibratory roller and a minimum of one pneumatic-tired roller with a separate operator for each roller.

An approved double-drum vibratory roller may be substituted for the pneumatic-tired roller specified above.

2. Compaction requirements.

Compaction rolling shall consist of the following: a minimum of two complete vibratory coverages with an approved double-drum vibratory roller and two complete coverage with a pneumatic-tired roller. The order of rolling shall be specified by the Engineer.

Final rolling shall consist of one coverage with the vibrating units turned off.

Approval of vibratory roller. The Engineer may approve initial use of a double-drum vibratory roller not previously approved on the basis of tests by other agencies or other information provided by the Contractor.

Approval for subsequent use of the roller shall be based on cores taken from test section designated by the Engineer and compacted with different numbers of coverages.

Test sections shall be compacted under the following conditions:

1. HMA temperature at mid-depth shall be between 270 and 280 degrees Fahrenheit at the beginning of rolling. Rolling shall not continue after the mix temperature has dropped to 200 degrees Fahrenheit. The compacted thickness shall be between 2" and 3.5".
2. You or manufacturer's representative shall specify the operating conditions of frequency and amplitude.

The basis for approval shall be the attainment of 93% relative compaction and satisfactory surface condition following final rolling. The number of coverages required shall be the minimum number required to obtain 93% relative compaction. Relative density shall be the ratio of in-place density (ASTM Test Method D2950) to test maximum density (California Test 309, Method of Test for Determining Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt) determined during production paving.

The mat may be cored during paving of the test sections, and the test maximum density will be the average density of specimens compacted in accordance with California Test 304. The in-place density for each test section shall be the average of three core densities determined per California Test 308. Relative density will be the ratio of in-place density to test maximum density.

39-5 Measurement: HMA Surface will be measured by weight. The quantity to be paid for shall be the combined weight of the mixture.

All weights shall be supported by State Certificates of Weights and Measures furnished by you.

39-6 Payment: **HMA Surface** shall be paid for at the contract price per **ton**.

39-9.01A Pavement Grind: Existing asphalt concrete paving and possible underlying material shall be ground out as directed by the engineer. The exact areas, width, and limits will be designated in the field. Grinding widths shall vary from a minimum of 6.5'. Depths may vary but shall be a nominal 0.25'

Prior to beginning Pavement Grind, you shall contact the Underground Service Alert at 1-800-227-2600 and provide USA with all necessary data relative to proposed excavation.

You shall notify the City of Santa Rosa Traffic Engineering Division 72 hours prior to pavement grinding as existing traffic signal loop detectors may be damaged and require replacement due to grinding operations. Attention is directed to Section 8-1.10, "Obstructions", of these Special Provisions. Existing Detector hand holes shall be protected or removed as shown on the plans. Detector hand holes damaged by you shall be replaced at your expense.

All excess excavated material shall be your property. Prior to disposal of any excess material from the work site, you shall submit to the Engineer written authorization for the disposal and entry permission signed by the owners of the disposal site. You shall comply with all disposal

regulations, such as City, County and/or State permits and licenses, as may be required. Attention is directed to Section 124, "Material Recycling" of these Special Provisions.

Removal of ground material shall be concurrent within 50 feet of the grinding operations. You shall not remove more area than can be easily repaved that same day. All loose material shall be removed from the excavations. Subgrade can be trimmed with light tracked equipment, which in the Engineer's opinion does not cause subgrade to pump or become unstable. You will not be required to compact subgrade. Attention is directed to Section 39-1.01, "Asphalt Concrete" of these Special Provisions.

The excavation shall be filled with HMA in the manner and in the number of lifts as designated in section 39-1.01, "Asphalt Concrete" of these Special Provisions, and as directed by the engineer to return the excavation to grade after the material is compacted.

Payment: **Pavement Grind (.25')** shall be paid for at the contract price per **square yard** as measured in the field. Payment shall include full compensation for furnishing all labor, materials, tools and equipment, removing existing roadway section, compaction and no additional allowance will be made therefore. The quantities of HMA will be paid for as per Section 39-6 Payment: "HMA Surface".

SECTION 124
MATERIAL RECYCLING

124-1.01 Description: You shall dispose of all portland cement concrete and asphalt concrete, generated from removal or demolition activities on the project, at a recycler for these materials. You shall provide receipts verifying delivery and approximate quantity (in tons) of the material delivered to a material recycler.

All other excess materials from the project shall become your property and shall be disposed of you, at your expense.

124-1.02 Payment: Full compensation for material recycling as specified herein shall be considered as included in the contract prices paid for various items of work, and no additional compensation will be allowed therefor.