

# **SPONSOR'S ENGINEER'S REPORT**



**Salinas Municipal Airport (SNS)**

## **Runway 13-31 & Runway 8-26 Rehabilitation**

For

**City of Salinas**

**March 2018**

**Kimley»»Horn**

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## 1.0 GENERAL

### 1.1 PROJECT

The Project entitled **Runway 13-31 & Runway 8-26 Rehabilitation** is a pavement rehabilitation project for Runway 8-26 (and associated safety area pavement), Runway 13-31 (and associated safety area pavement) and portions of Taxiway J, Taxiway G, Taxiway D, and Taxiway P. Reference **Appendix A** for limits of the project. Runway 8-26 and Runway 13-31 will be rehabilitated via crack seal and slurry coat. Taxiways J, G, D, and P will be rehabilitated via crack seal and slurry coat or 2.5" overlay; dependent on the construction alternatives awarded. The project also includes re-striping the runway and portions of the taxiway pavements. The project contains the following major items of Work:

#### **BASE BID**

**Runway 13-31 Rehabilitation:** Removal of existing striping on Runway 13-31, portions of Taxiway F, Taxiway D, Taxiway C, and Taxiway B. Crack seal, slurry seal, and remarking of pavements within the limits of work.

#### **ADDITIVE ALTERNATIVE NO. 1**

**Full Depth Trench Repair of Runway 8-26:** Full depth removal of existing pavement that is settling above an existing utility crossing. Removal of abandoned utility, re-compaction of existing subgrade and re-installation of existing pavement section.

#### **ADDITIVE ALTERNATIVE NO. 2**

**Mill and Fill of Portion of Taxiway D (east of Runway 13-31):** A portion of the Work from the Base Bid, Taxiway D east of Runway 13-31, is replaced with a 3" mill and 3" replacement of pavement and the associated pavement remarking.

#### **ADDITIVE ALTERNATIVE NO. 3**

**Runway 8-26 Rehabilitation:** Removal of existing striping on Runway 8-26, portions of Taxiway J, Taxiway D, Taxiway G, Taxiway P, and Taxiway B. Crack seal, slurry seal, and remarking of pavements within the limits of work.

#### **ADDITIVE ALTERNATIVE NO. 4**

**Mill and Overlay of Portions of: Taxiway J, Taxiway G, and Taxiway P; Mill and Fill of Portion Taxiway D (south of Runway 8-26):** Portions of the Work from Additive Alternative No. 3: Taxiway J, Taxiway G, and Taxiway P is replaced with a .5" mill and 2.5" overlay of pavement along with the associated remarking. A portion of the Work from

Additive Alternative No. 3, Taxiway D south of Runway 8-26, is replaced with a 3" mill and 3" replacement of pavement and the associated pavement remarking.

## **1.2 SERVICES**

Kimley-Horn and Associates, Inc. (KHA) was retained to provide design services for the Project as part of an existing on-call contract. The IFB Plans, Specifications and Estimate (PS&E) were delivered to the City of Salinas on 3/1/2018.

## 2.0 DESCRIPTION OF PROJECT

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### 2.1 DESCRIPTION OF PROJECT

This is a rehabilitation project involving the crack seal and slurry seal of Runway 8-26 and Runway 13-31 and the associated connector taxiways within the RSA at Salinas Municipal Airport (SNS) in Salinas, CA.

Runway 13-31 is a 4,825' x 125' runway with an instrument approach on Runway 31 as well as a two box PAPI. Runway 8-26 is a 6,004' x 150' runway with two box VASIs on both the Runway 8 and Runway 26 ends.

The scope of construction is limited to:

- Removal of existing markings
- Crack seal and slurry seal of runway and associated RSA pavements
- Re-marking the affected pavements
- Additive Alternatives 1, 2, and 4: mill and overlay of select Taxiways in lieu of slurry treatment.

If awarded, the taxiway profiles of the completed project will generally match the existing profiles. The taxiway transverse grades of the completed project will generally match the existing transverse grades. Improvements to the grades of the existing profiles and transverse grades will be if feasible; since this is a rehabilitation project, the grades generally follow the existing grades. See proposed typical section included in **Appendix B**.

### 2.2 PAVEMENT SECTION ANALYSIS

An Airport Pavement Management System (APMS) analysis was performed by KHA for SNS in 2017. Based on the results of the report, the City of Salinas has proactively programmed pavement rehabilitation to improve or maintain the existing Pavement Condition Index (PCI) for certain pavements on the airfield.

The average PCI for Runway 13-31 and Runway 8-26 are 90 and 78 respectively. **Photograph No. 1** represents a picture of typical distresses found on both runways; Longitudinal and Transverse (L&T) cracking and pavement weathering. The APMS recommends a crack seal and slurry seal to retard the deterioration of the PCI. If no work is performed on the runways, the APMS predicts that by 2022, the PCIs of the runways will fall into the range of requiring a mill and overlay or partial areas of full depth reconstruction.





**Photograph No. 1: Typical distresses found on the runway pavements**

The PCIs of Taxiways J, G, D, and P ranged from 56-70. These pavements exhibited distresses such as L&T cracking, block cracking, and raveling. While these pavements will benefit from crack seal and slurry seal to extend their useful life, these sections were singled out for mill and overlay or mill and fill as part of Additive Alternative No.2 and No. 4. The APMS recommended these sections be rehabilitated with a 3" mill and fill.

Since a geotechnical investigation was not performed, record data and previous investigations were used to determine a typical pavement section for the taxiway rehabilitation. Based on the record data, it was determined that 4-inches of existing pavement on 7.5" of aggregate base was a sufficient representation of the existing pavement section. Since the presence of treated subgrade varied across the previous geotechnical reports, a conservative CBR value of 5 was used for the subgrade.





**Photograph No. 2: Typical Taxiway J, G, D, and P distresses**

Based on the recommendations of the APMS, FAARFIELD was used to calculate a desired overlay. Using fleet mix data and historical data from boring logs and as-builts, a representative pavement cross section and fleet mix were input into FAARFIELD.

As an alternative to a 3" mill and fill, it was determined that a .5" mill and 2.5" overlay would be an acceptable alternative. To comply with the 1.5-inch drop-off from pavement to unpaved surfaces, P-208 aggregate base will be used as shoulder backing. The shoulder grading will comply with the gradient standards of Chapter 4 of AC 150/5300-13A.

The pavement section overlay described is based on the design requirements of AC 150-5320-6F Chapter 4 Pavement Rehabilitation.

See FAARFIELD calculations contained in **Appendix C**.

## **2.3 CONSTRUCTION PHASING**

The Contractor shall be required to carry out operations in a manner that will cause minimal interference with air traffic, and shall be required to cooperate with the Federal Aviation Administration (FAA), the County, end users, and other Contractors working in the area. All work shall be completed in accordance with the phasing plans and the Federal Aviation Administration Advisory Circular 150/5370-2G.



Contractor access to the work area is provided via Taxiway B for work associated with Runway 8-16 and via the airport perimeter road for work associated with Runway 13-31. Access will be provided from 2 different locations between all the phases of the project. See **Appendix E** for Phasing Plan.

Wherever applicable, the limits of construction around open operating surfaces is set 10 ft back from the runway safety area and taxiway object free area to allow for maintenance of the barricades placed close to the runway without encroaching into the RSA and TOFA.

The project will be constructed in three (3) phases.

- Phase 1A consists of the rehabilitation of Runway 13-31, and associated safety area pavements, south of Taxiway B and north of Runway 8-26 RSA (Base Bid). This allows Taxiway B and Runway 8-26 to remain operational during this phase. Should Additive Alternative No. 2 be awarded, the substitution of a pavement overlay of Taxiway D will also be completed concurrently with the pavement rehabilitation.
- Phase 1B consists of the rehabilitation of Runway 13-31 within the RSA of Runway 8-26 and within the pavement limits of Taxiway B (Base Bid). Work in this phase will be performed at night and require the airport to close.
- Phase 2 consists of the rehabilitation of Runway 8-26, and associated safety area pavements, outside of the Runway 13-31 RSA (Additive Alternative No. 3). This allows Taxiway B and Runway 8-26 to remain operational during this phase. Should Additive Alternative No. 1 be awarded, the full depth pavement trench repair of Runway 8-26, will also be completed concurrently with the pavement rehabilitation. Should Additive Alternative No. 4 be awarded, the substitution of a pavement overlay of Taxiways J, D, G, and P will also be completed concurrently with the pavement rehabilitation.

## 2.4 CONSTRUCTION SEQUENCE

It is anticipated that the construction will be accomplished with intermittent closures of Runway 13-31, Runway 8-26, associated taxiway pavements, and other limitations as set by the City. Planning has included the following assumptions:

Work days shall be calendar days.

The estimated construction duration is assumed to be 75 calendar days out as follows:

Schedule	Duration
Phase 1A: Rehabilitate Runway 13-31 outside Runway 8-26 RSA and Taxiway B TOFA	33 Calendar Days
Phase 1B: Rehabilitate Runway 13-31 within Runway 8-26 RSA and Taxiway B TOFA	7 Calendar Days
Phase 2: Rehabilitate Runway 8-26	35 Calendar Days

Table No. 1: Phasing Durations

### 3.0 FAA STANDARDS

#### 3.1 MODIFICATIONS TO FAA STANDARDS

There are no modifications for this project. This is a rehabilitation project and generally follows the existing grades of the pavements.

#### 3.2 FAA DESIGN STANDARDS AND SPECIFICATIONS

Salinas Municipal Airport is predominantly a general aviation airfield. It has two runways: Runway 13-31 (B-II-2400) and Runway 8-26 (B-II-VIS). Taxiway classifications are based on Airplane Design Group (ADG) and Taxiway Design Group (TDG). Based on Aircraft Tail height and Wingspan, the Taxiways are TDG2.

Chapter 4, Section 418, Surface gradient and Line of Sight (LOS) was referenced when designing the overlay portions of the Taxiways for Additive Alternatives No. 2 and No. 4. Since this is a rehabilitation project, the general profile and transverse gradients of the taxiways were followed. Minor improvements to both longitudinal and transverse gradients were implemented as the design allowed.

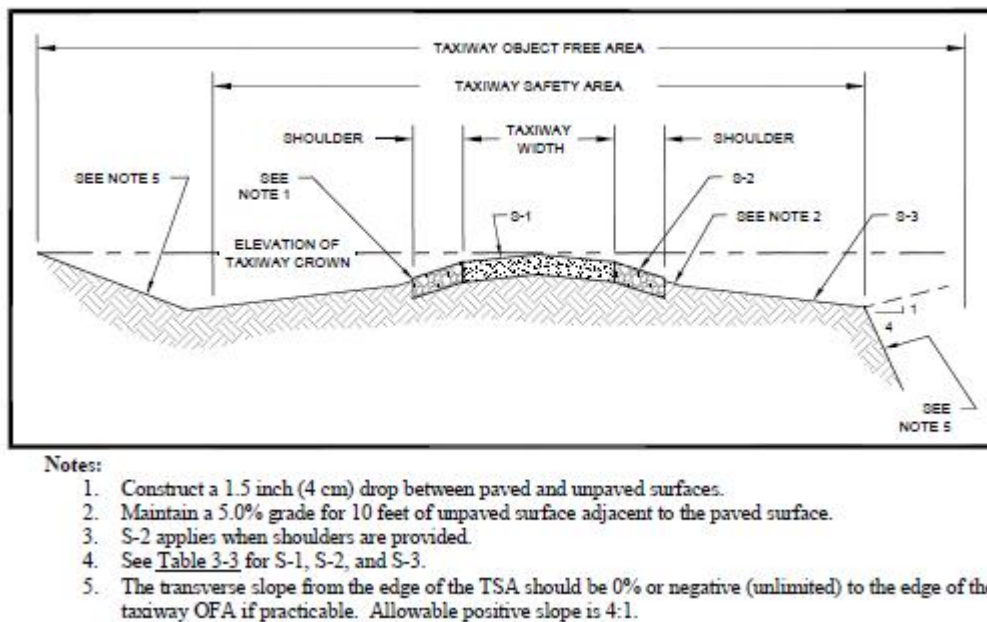


Figure No. 1: Taxiway Transverse Gradients

Below is a list of other Advisory Circular's that were used in the design of this project.

#### FAA AC's: Latest Editions

AC 150/5300-13      Airport Design

AC 150/5320-6      Airport Pavement Design and Evaluation

AC 150/5370-10	Standards for Specifying Construction of Airports
AC 150/5340-1	Standards for Airport Markings
AC 150/5370-2	Operational Safety on Airports During Construction

## **4.0 PAVEMENT MARKINGS**

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### **4.1 PAVEMENT MARKINGS**

The scope of this project is to restore the existing pavement markings within the project limits. This includes restriping the existing markings on Runway 13-31, Runway 8-26, and associated Taxiways. This will include re-striping the existing pavement markings to include:

- Taxiway Edge Stripes
- Runway Hold Position Markings
- Taxiway Centerline Stripe
- Enhanced Taxiway Centerline Markings
- Runway Centerline Stripe
- Runway Edge Stripe
- Runway Threshold/Displaced Threshold Markings
- Runway Aiming Points
- Runway Touchdown Zone Markings
- Runway Designation Markings

Runway striping will be restored to match existing striping.

Taxiway striping will be removed and restored up to the limits of work.

Runway Hold Position Markings are planned to include black background paint. Enhanced centerline striping is proposed for all hold positions affected by this project.

All temporary and final paint markings proposed for this project will meet the requirements of FAA Advisory Circular 150/5340-1L "Standards for Airport Markings." All final paint markings will consist of paint applied at the rates identified in Specification Item P-620 "Runway and Taxiway Painting." The initial coat of paint will be applied as necessary at the completion of each project phase where the pavement will be opened to traffic. The second coat of paint will be applied after all construction work has been completed a minimum of 30 calendar days after final paving. Markings requiring glass beads will have beads applied in both coats of paint due to the need to re-open the areas to aircraft operations prior to the second coat of paint being applied.

### **4.2 TEMPORARY PAINT MARKINGS**

In order to facilitate the opening of pavements before the 30-day cure period elapses to apply permanent markings, Runway 13-31, Runway 8-26, and associated Taxiways will have



temporary striping installed. Temporary striping will be limited to essential markings and be applied at 50% of the typical application rate and without the use of glass beads in accordance with AC 150/5370-10G.

Temporary markings include:

- Taxiway Centerline Stripe
- Taxiway Hold Position Markings
- Runway Centerline Stripe
- Runway Threshold/Displaced Threshold Markings
- Runway Aiming Points
- Runway Touchdown Zone Markings
- Runway Designation Markings

Runway and Taxiway edge striping will be applied after the 30-day cure period has elapsed.

## ***5.0 ELECTRICAL FACILITIES***

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### ***5.1 AIRFIELD LIGHTING***

There are currently no modifications to the existing airfield electrical systems.

## 6.0 OPINION OF PROBABLE COST

### 6.1 OPINION OF PROBABLE COST

The Engineer's Opinion of Probable Construction Cost (OPCC) for the project is as follows:

<b>Construction</b>	
Base Bid (Runway 13-31 Rehabilitation)	\$ 1,070,000.00
Additive Alternative 1 (Rwy 8-26 Full Depth Trench Repair)	\$ 183,000.00
Additive Alternative 2 (Twy D Rehabilitation)	\$ 61,000.00
Additive Alternative 3 (Runway 8-26 Rehabilitation)	\$ 1,144,000.00
Additive Alternative 4 (Twy J, Twy D, Twy G, Twy P Rehabilitation)	\$ 247,000.00
<b>Total Construction Cost</b>	<b>\$ 2,705,000.00</b>

A detailed engineer's opinion of probable construction cost for this project is contained in **Appendix D**. This estimate is based on historical construction unit prices for similar work efforts and is based in 2018 dollars.

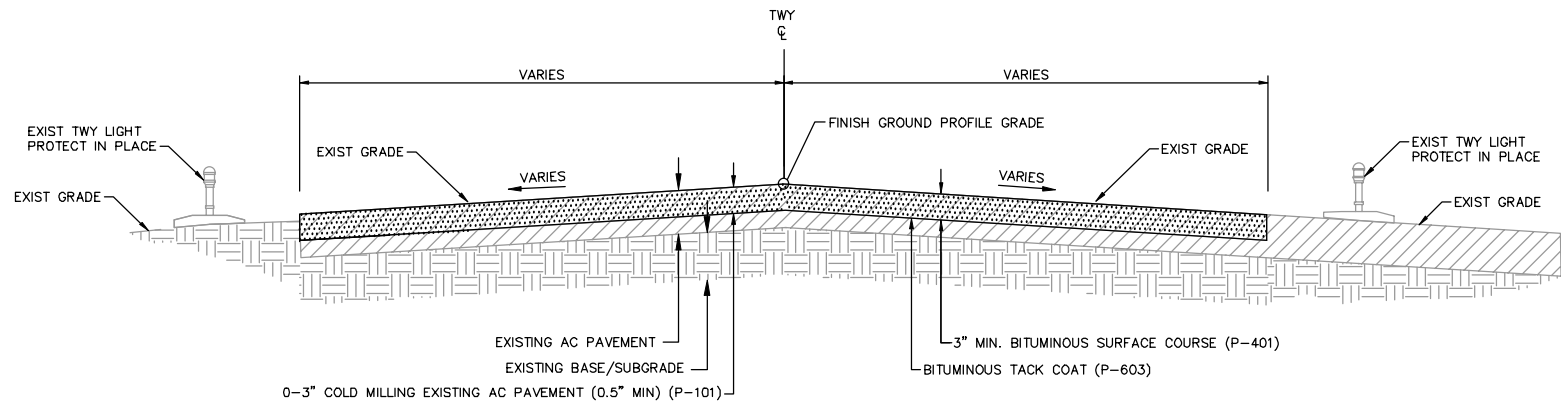
# ***APPENDIX***



## ***Appendix A Project Layout***

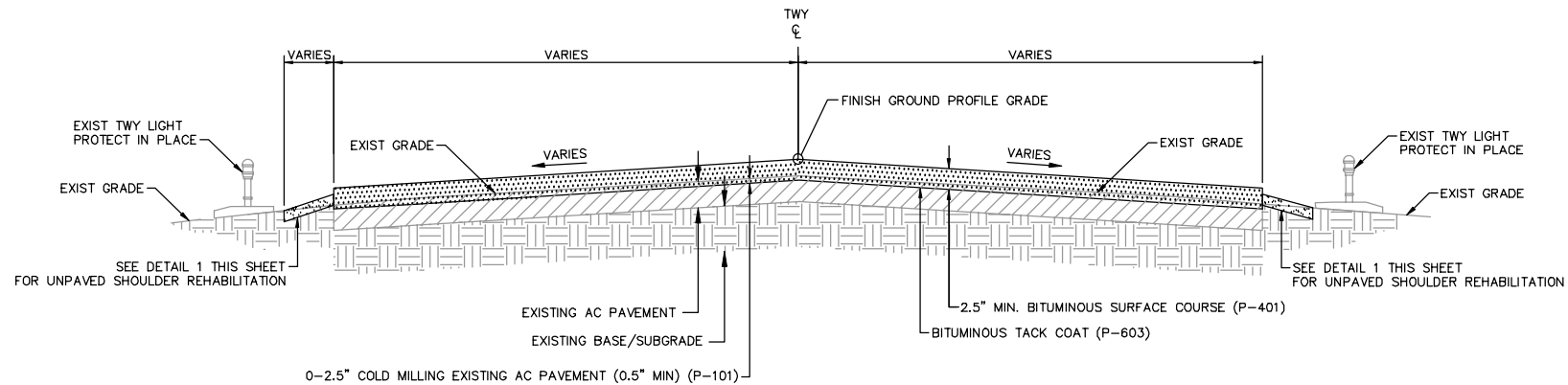


## ***Appendix B Typical Section***



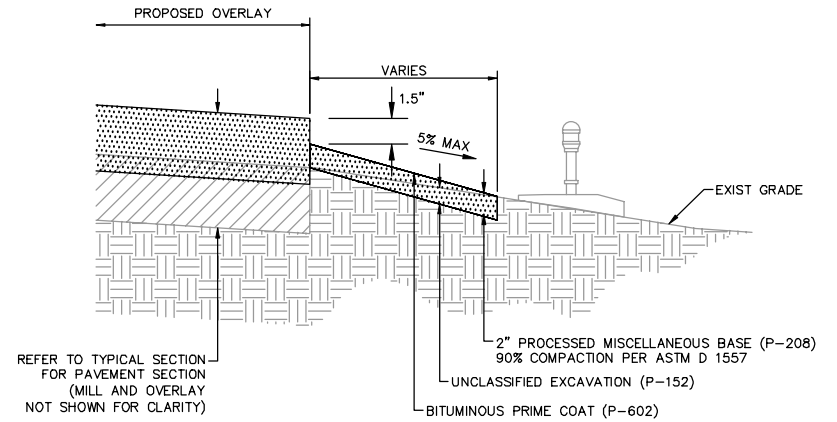
### TYPICAL SECTION MILL AND FILL

ADDITIVE ALTERNATIVE NO. 2 AND 4:  
TAXIWAY D



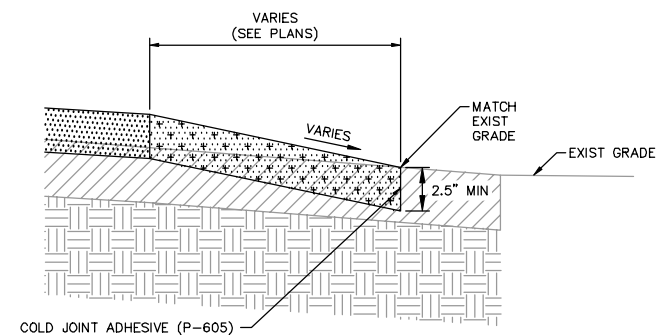
### TYPICAL SECTION MILL AND OVERLAY

ADDITIVE ALTERNATIVE NO. 4:  
TAXIWAY J, TAXIWAY G, TAXIWAY P



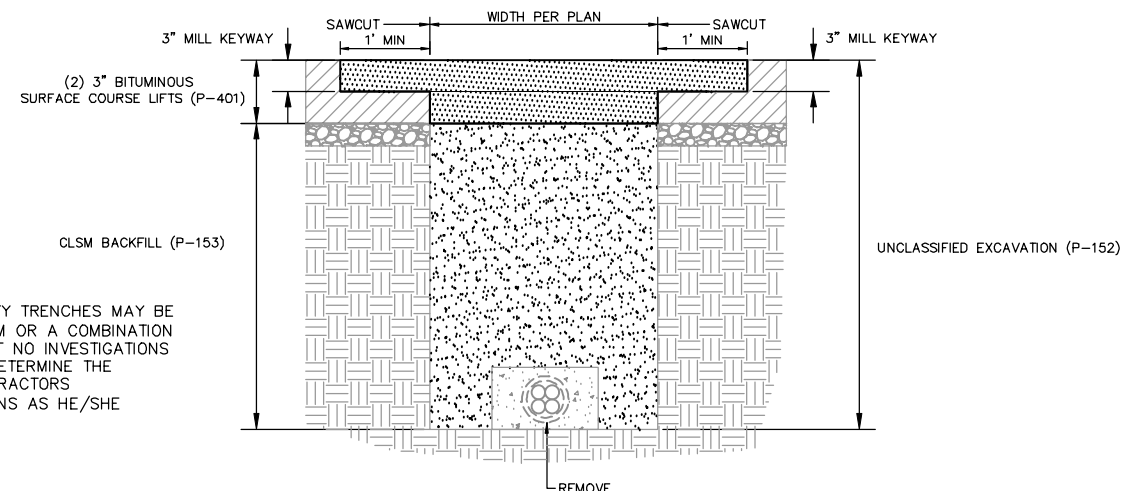
### DETAIL 1 UNPAVED SHOULDER REHABILITATION

N.T.S.



### DETAIL 2 TAPER MILL AT TIE-IN

N.T.S.



### SECTION 3 FULL DEPTH TRENCH REPAIR

ADDITIVE ALTERNATIVE NO. 1:  
RUNWAY 8-26

#### NOTES:

1. THE CONTRACTOR IS ADVISED THAT EXISTING UTILITY TRENCHES MAY BE BACKFILLED WITH CONCRETE, SLURRY AND/OR CLSM OR A COMBINATION OF THE ABOVE. THE CONTRACTOR IS ADVISED THAT NO INVESTIGATIONS WERE CARRIED OUT ON THE EXISTING UTILITY TO DETERMINE THE EXISTING PIPE BACKFILL MATERIAL. IT IS THE CONTRACTORS RESPONSIBILITY TO FURTHER INVESTIGATE CONDITIONS AS HE/SHE DETERMINES NECESSARY.

#### GENERAL NOTES:

1. CONSTRUCTION NOTES ARE TYPICAL FOR BOTH SIDES OF TYPICAL SECTIONS UNLESS NOTED OTHERWISE.
2. REFER TO ELECTRICAL PLANS FOR MODIFICATIONS TO EXISTING EDGE LIGHTS.

2018 File No. 13-31-8-26 Additive Alternative No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

NO.	DATE	REVISION	BY	APPD.

Date 3/1/2018  
 Designed SN  
 Drawn SN  
 Checked RJH

**Kimley-Horn**  
 © 2018 KIMLEY-HORN AND ASSOCIATES, INC.  
 100 W. San Fernando St #250  
 San Jose, California 95113  
 (691) 800-4130



SALINAS  
 MUNICIPAL AIRPORT  
 SALINAS, CALIFORNIA



Approved for Construction By:  
 James E. Sandoval, P.E.,  
 Public Works Assistant Director/City Engineer

Reviewed By:  
 Donald Reynolds, Acting Public Works Director  
 Frank A. Aguayo, P.E., Senior Civil Engineer  
 Brett J. Godown, Airport Manager

SALINAS MUNICIPAL AIRPORT  
 ADDITIVE ALTERNATIVE  
 RUNWAY 13-31 & RUNWAY 8-26 REHABILITATION  
 TYPICAL SECTIONS

PROJECT NO. 094590010  
 FILE NO. 945900101X  
 SHEET NO. T-08  
 TOTAL SHEETS 35





## ***Appendix C Pavement Design Calculations***

# FAARFIELD

## FAARFIELD v 1.42 - Airport Pavement Design

Section AConFlex01 in Job SNS\_overlay.

Working directory is C:\Users\bob.hamilton\Documents\FAARFIELD\

The structure is AC Overlay on Flexible. Asphalt CDF was not computed.

Design Life = 20 years.

A design for this section was completed on 02/11/18 at 12:01:47.

### Pavement Structure Information by Layer, Top First

No.	Type	Thickness in	Modulus psi	Poisson's Ratio	Strength R,psi
1	P-401/ P-403 HMA Overlay	2.45	200,000	0.35	0
2	P-401/ P-403 HMA Surface	3.50	200,000	0.35	0
3	P-209 Cr Ag	7.50	25,679	0.35	0
4	Subgrade	0.00	7,500	0.35	0

Total thickness to the top of the subgrade = 13.45 in

### Airplane Information

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Single Wheel 2	1,500	218	0.00
2	Single Wheel 2	2,250	2,951	0.00
3	Single Wheel 5	3,000	1,619	0.00
4	Single Wheel 5	4,250	390	0.00
5	Single Wheel 5	5,250	1,619	0.00
6	Single Wheel 10	6,500	1,280	0.00
7	Single Wheel 10	7,000	128	0.00
8	Single Wheel 10	8,500	550	0.00
9	Single Wheel 10	10,500	3,533	0.00
10	S-15	16,000	5,037	0.00
11	S-15	17,500	83	0.00
12	S-20	20,000	1,216	0.00
13	D-15	10,250	4,564	0.00
14	D-15	12,500	3,072	0.00
15	D-20	20,000	1,415	0.00
16	D-20	25,000	134	0.00
17	D-30	30,000	346	0.00
18	D-35	37,500	384	0.00
19	D-40	42,500	96	0.00
20	Single Wheel 10	11,250	237	0.00
21	Single Wheel 10	12,500	38	0.00

## Additional Airplane Information

### Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Single Wheel 2	0.00	0.00	3.75
2	Single Wheel 2	0.00	0.00	3.75
3	Single Wheel 5	0.00	0.00	3.42
4	Single Wheel 5	0.00	0.00	3.42
5	Single Wheel 5	0.00	0.00	3.42
6	Single Wheel 10	0.00	0.00	3.02
7	Single Wheel 10	0.00	0.00	3.02
8	Single Wheel 10	0.00	0.00	3.02
9	Single Wheel 10	0.00	0.00	3.02
10	S-15	0.00	0.00	3.29
11	S-15	0.00	0.00	3.29
12	S-20	0.00	0.00	3.37
13	D-15	0.00	0.00	2.55
14	D-15	0.00	0.00	2.55
15	D-20	0.00	0.00	2.45
16	D-20	0.00	0.00	2.45
17	D-30	0.00	0.00	2.24
18	D-35	0.50	0.50	2.21
19	D-40	0.50	0.50	2.18
20	Single Wheel 10	0.00	0.00	3.02
21	Single Wheel 10	0.00	0.00	3.02

User is responsible for checking frost protection requirements.

**SNS\_overlay AConFlex01** Des. Life = 20

Layer Material	Thickness (in)	Modulus or R (psi)
→ P-401/ P-403 HMA Overlay	2.45	200,000
P-401/ P-403 HMA Surface	3.50	200,000
P-209 Cr Ag	7.50	25,679
Subgrade	CBR = 5.0	7,500

Total thickness to the top of the subgrade, t = 13.45 in

## ***Appendix D Opinion of Probable Construction Cost***



SALINAS MUNICIPAL AIRPORT		3/1/2018
OPINION OF PROBABLE CONSTRUCTION COSTS		
REHABILITATE RUNWAY 13-31 & RUNWAY 8-26		
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.		
Construction		
BASE BID (RUNWAY 13-31 REHABILITATION)		\$ 1,070,000.00
ADDITIVE ALTERNATIVE 2 (TWY D REHABILITATION)		\$ 61,000.00
SUBTOTAL RUNWAY 13-31		\$ 1,131,000.00
ADDITIVE ALTERNATIVE 1 (RWY 8-26 FULL DEPTH TRENCH REPAIR)		\$ 183,000.00
ADDITIVE ALTERNATIVE 3 (RUNWAY 8-26 REHABILITATION)		\$ 1,144,000.00
ADDITIVE ALTERNATIVE 4 (TWY J, TWY D, TWY G, TWY P REHABILITATION)		\$ 247,000.00
SUBTOTAL RUNWAY 8-26		\$ 1,574,000.00
Total Construction Cost		\$ 2,705,000.00
Construction Administration Rwy 13-31	10%	\$ 113,100.00
Construction Administration Rwy 8-26	10%	\$ 157,400.00
TOTAL RWY 13-31 (BASE BID plus ADD ADLT 1 and ADD ALT 2)		\$ 1,244,100.00
Federal Requested Share	90%	\$ 1,119,690.00
Caltrans Requested Share	5%	\$ 55,984.50
Local Share		\$ 68,425.50
TOTAL RWY 8-26 (ADD ALTS 3 and 4)		\$ 1,731,400.00
Federal Requested Share	90%	\$ 1,558,260.00
Caltrans Requested Share	5%	\$ 77,913.00
Local Share		\$ 95,227.00

**SALINAS MUNICIPAL AIRPORT**  
**OPINION OF PROBABLE CONSTRUCTION COSTS**  
**REHABILITATE RUNWAY 13-31 & RUNWAY 8-26**

3/1/2018

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**General Notes**

1. -inches AC over -inches ABC
2. 1 cy of P-403 bituminous concrete pavement = 2.07 tons (115 lb. / inch / sq yd.)
3. P-603, Bituminous Tack Coat application rate = 0.15 gal / sy.

**BASE BID (RUNWAY 13-31 REHABILITATION)**

Item No.	SPEC No.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COSTS - TOTAL
1	GP-105-2.1	MOBILIZATION\DEMObILIZATION (5% MAX OF BASE BID)	LS	1	\$ 49,980.00	\$ 49,980.00
2	P-101-5.2	PAINT REMOVAL	SF	101,700	\$ 2.00	\$ 203,400.00
3	P-110-3.1	CONTRACTOR QUALITY CONTROL (2% MAX OF BASE BID)	LS	1	\$ 19,990.00	\$ 19,990.00
4	P-110-3.2	CONSTRUCTION SURVEY AND STAKING	LS	1	\$ 15,000.00	\$ 15,000.00
5	P-148-4.1	AIRFIELD CONSTRUCTION AREA CONTROL	LS	1	\$ 20,000.00	\$ 20,000.00
6	P-148-4.2	SWEEPERS AND FOD CONTROL	LS	1	\$ 20,000.00	\$ 20,000.00
7	P-156-5.1	PREPARE AND IMPLEMENT THE BEST MANAGENEMT PLAN AND MEASURES	LS	1	\$ 10,000.00	\$ 10,000.00
8	P-411-5.1	HOT POURED CRACK SEALING	LF	49,200	\$ 2.00	\$ 98,400.00
9	P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (WITH AGGREGATE & CFME FRICTION TESTING)	SY	102,000	\$ 3.00	\$ 306,000.00
10	P-620-5.1	RUNWAY AND TAXIWAY PAINTING	SF	101,700	\$ 2.50	\$ 254,250.00
11	P-620-5.2	TEMPORARY MARKING	SF	57,922	\$ 1.25	\$ 72,402.50

**Basis for Cost Projection:**

- ☐ No Design Completed  
☐ Preliminary Design  
☒ Final Design

**PROJECTED SUBTOTAL \$ 1,069,423**

**Total \$ 1,070,000**

**SALINAS MUNICIPAL AIRPORT**  
**OPINION OF PROBABLE CONSTRUCTION COSTS**  
**REHABILITATE RUNWAY 13-31 & RUNWAY 8-26**

3/1/2018

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**General Notes**

1. -inches AC over -inches ABC
2. 1 cy of P-403 bituminous concrete pavement = 2.07 tons (115 lb. / inch / sq yd.)
3. P-603, Bituminous Tack Coat application rate = 0.15 gal / sy.

**ADDITIVE ALTERNATIVE 1 (RWY 8-26 FULL DEPTH TRENCH REPAIR)**

Item No.	SPEC No.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COSTS - TOTAL
12	GP-105-2.1	MOBILIZATION/DEMObILIZATION (5% MAX OF ADD ALT NO. 1)	LS	1	\$ 5,570.00	\$ 5,570.00
13	P-101-5.2	PAINT REMOVAL	SF	(710)	\$ 2.00	\$ (1,420.00)
14	P-110-3.1	CONTRACTOR'S QUALITY CONTROL (2% MAX OF ADD ALT NO. 1)	LS	1	\$ 2,230.00	\$ 2,230.00
15	P-120-4.1	SAW CUT	LF	500	\$ 25.00	\$ 12,500.00
16	P-152-4.1	UNCLASSIFIED EXCAVATION	CY	560	\$ 30.00	\$ 16,800.00
17	P-153-6.1	CONTROLLED LOW-STRENGTH MATERIAL	CY	560	\$ 90.00	\$ 50,400.00
18	P-401-8.1a	BITUMINOUS SURFACE COURSE	TON	480	\$ 160.00	\$ 76,800.00
19	P-603-5.1	BITUMINOUS TACK COAT	GAL	130	\$ 8.00	\$ 1,040.00
20	P-605-5.1	ASPHALT COLD JOINT ADHESIVE	LF	405	\$ 20.00	\$ 8,100.00
21	FIXED PRICE	UTILITY INVESTIGATION	AL	1	\$ 10,000.00	\$ 10,000.00

**Basis for Cost Projection:**

- ☐ No Design Completed  
☐ Preliminary Design  
☒ Final Design

PROJECTED SUBTOTAL \$ **182,020**

Total \$ **183,000**

**SALINAS MUNICIPAL AIRPORT  
OPINION OF PROBABLE CONSTRUCTION COSTS  
REHABILITATE RUNWAY 13-31 & RUNWAY 8-26**

3/1/2018

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**General Notes**

1. -inches AC over -inches ABC
2. 1 cy of P-403 bituminous concrete pavement = 2.07 tons (115 lb. / inch / sq yd.)
3. P-603, Bituminous Tack Coat application rate = 0.15 gal / sy.

**ADDITIVE ALTERNATIVE 2 (TWY D REHABILITATION)**

Item No.	SPEC No.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COSTS - TOTAL
22	GP-105-2.1	MOBILIZATION\DEMOBILIZATION (5% MAX OF ADD ALT NO. 2)	LS	1	\$ 2,430.00	\$ 2,430.00
23	P-101-5.2	PAINT REMOVAL	SF	(700)	\$ 2.00	\$ (1,400.00)
24	P-101-5.3	COLD MILLING, 0-3 INCHES	SY	1,460	\$ 5.00	\$ 7,300.00
25	P-110-3.1	CONTRACTOR'S QUALITY CONTROL (2% MAX OF ADD ALT NO. 2)	LS	1	\$ 980.00	\$ 980.00
26	P-120-4.1	SAW CUT	LF	425	\$ 20.00	\$ 8,500.00
27	P-401-8.1a	BITUMINOUS SURFACE COURSE	TON	230	\$ 160.00	\$ 36,800.00
28	P-603-5.1	BITUMINOUS TACK COAT	GAL	220	\$ 8.00	\$ 1,760.00
29	P-605-5.1	ASPHALT COLD JOINT ADHESIVE	LF	425	\$ 20.00	\$ 8,500.00
30	P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (WITH AGGREGATE & CFME FRICTION TESTING)	SY	(1,460)	\$ 3.00	\$ (4,380.00)

**Basis for Cost Projection:**

- ☐ No Design Completed  
☐ Preliminary Design  
☒ Final Design

PROJECTED SUBTOTAL \$ **60,490**

Total \$ **61,000**

**SALINAS MUNICIPAL AIRPORT**  
**OPINION OF PROBABLE CONSTRUCTION COSTS**  
**REHABILITATE RUNWAY 13-31 & RUNWAY 8-26**

3/1/2018

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**General Notes**

1. -inches AC over -inches ABC
2. 1 cy of P-403 bituminous concrete pavement = 2.07 tons (115 lb. / inch / sq yd.)
3. P-603, Bituminous Tack Coat application rate = 0.15 gal / sy.

**ADDITIVE ALTERNATIVE 3 (RUNWAY 8-26 REHABILITATION)**

Item No.	SPEC No.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COSTS - TOTAL
31	GP-105-2.1	MOBILIZATION/DEMObILIZATION (5% MAX OF ADD ALT NO. 3)	LS	1	\$ 53,440.00	\$ 53,440.00
32	P-101-5.2	PAINT REMOVAL	SF	121,100	\$ 2.00	\$ 242,200.00
33	P-110-3.1	CONTRACTOR QUALITY CONTROL (2% MAX OF ADD ALT NO. 3)	LS	1	\$ 21,380.00	\$ 21,380.00
34	P-110-3.2	CONSTRUCTION SURVEY AND STAKING	LS	1	\$ 15,000.00	\$ 15,000.00
35	P-148-4.1	AIRFIELD CONSTRUCTION AREA CONTROL	LS	1	\$ 20,000.00	\$ 20,000.00
36	P-148-4.2	SWEEPERS AND FOD CONTROL	LS	1	\$ 20,000.00	\$ 20,000.00
37	P-156-5.1	PREPARE AND IMPLEMENT THE BEST MANAGENEMT PLAN AND MEASURES	LS	1	\$ 10,000.00	\$ 10,000.00
38	P-411-5.1	HOT POURED CRACK SEALING	LF	57,500	\$ 1.50	\$ 86,250.00
39	P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (WITH AGGREGATE & CFME FRICTION TESTING)	SY	116,400	\$ 3.00	\$ 349,200.00
40	P-620-5.1	RUNWAY AND TAXIWAY PAINTING	SF	107,100	\$ 2.50	\$ 267,750.00
41	P-620-5.2	TEMPORARY MARKING	SF	58,300	\$ 1.00	\$ 58,300.00

**Basis for Cost Projection:**

- ☐ No Design Completed  
☐ Preliminary Design  
☒ Final Design

PROJECTED SUBTOTAL \$ 1,143,520

Total \$ 1,144,000

**SALINAS MUNICIPAL AIRPORT**  
**OPINION OF PROBABLE CONSTRUCTION COSTS**  
**REHABILITATE RUNWAY 13-31 & RUNWAY 8-26**

3/1/2018

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

**General Notes**

1. -inches AC over -inches ABC
2. 1 cy of P-403 bituminous concrete pavement = 2.07 tons (115 lb. / inch / sq yd.)
3. P-603, Bituminous Tack Coat application rate = 0.15 gal / sy.

**ADDITIVE ALTERNATIVE 4 (TWY J, TWY D, TWY G, TWY P REHABILITATION)**

Item No.	SPEC No.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COSTS - TOTAL
42	GP-105-2.1	MOBILIZATION/DEMObILIZATION (5% MAX OF ADD ALT NO. 4)	LS	1	\$ 9,940.00	\$ 9,940.00
43	P-101-5.2	PAINT REMOVAL	SF	(4,111)	\$ 2.00	\$ (8,221.00)
44	P-101-5.3	COLD MILLING, 0-3 INCHES	SY	6,150	\$ 5.00	\$ 30,750.00
45	P-110-3.1	CONTRACTOR'S QUALITY CONTROL (2% MAX OF ADD ALT NO. 4)	LS	1	\$ 3,980.00	\$ 3,980.00
46	P-120-4.1	SAW CUT	LF	1,350	\$ 20.00	\$ 27,000.00
47	P-208-5.1	PROCESSED MISCELLANEOUS BASE	SY	725	\$ 10.00	\$ 7,250.00
48	P-401-8.1a	BITUMINOUS SURFACE COURSE	TON	990	\$ 160.00	\$ 158,400.00
49	P-602-5.1	BITUMINOUS PRIME COAT	GAL	915	\$ 5.00	\$ 4,575.00
50	P-603-5.1	BITUMINOUS TACK COAT	GAL	930	\$ 5.00	\$ 4,650.00
51	P-605-5.1	ASPHALT COLD JOINT ADHESIVE	LF	1,350	\$ 20.00	\$ 27,000.00
52	P-608-8.1	EMULSIFIED ASPHALT SEAL COAT (WITH AGGREGATE & CFME FRICTION TESTING)	SY	(6,150)	\$ 3.00	\$ (18,450.00)

**Basis for Cost Projection:**

- ☐ No Design Completed  
☐ Preliminary Design  
☒ Final Design

PROJECTED SUBTOTAL \$ **246,874**

Total \$ **247,000**



## ***Appendix E Phasing Plan***

PHASING NOTES

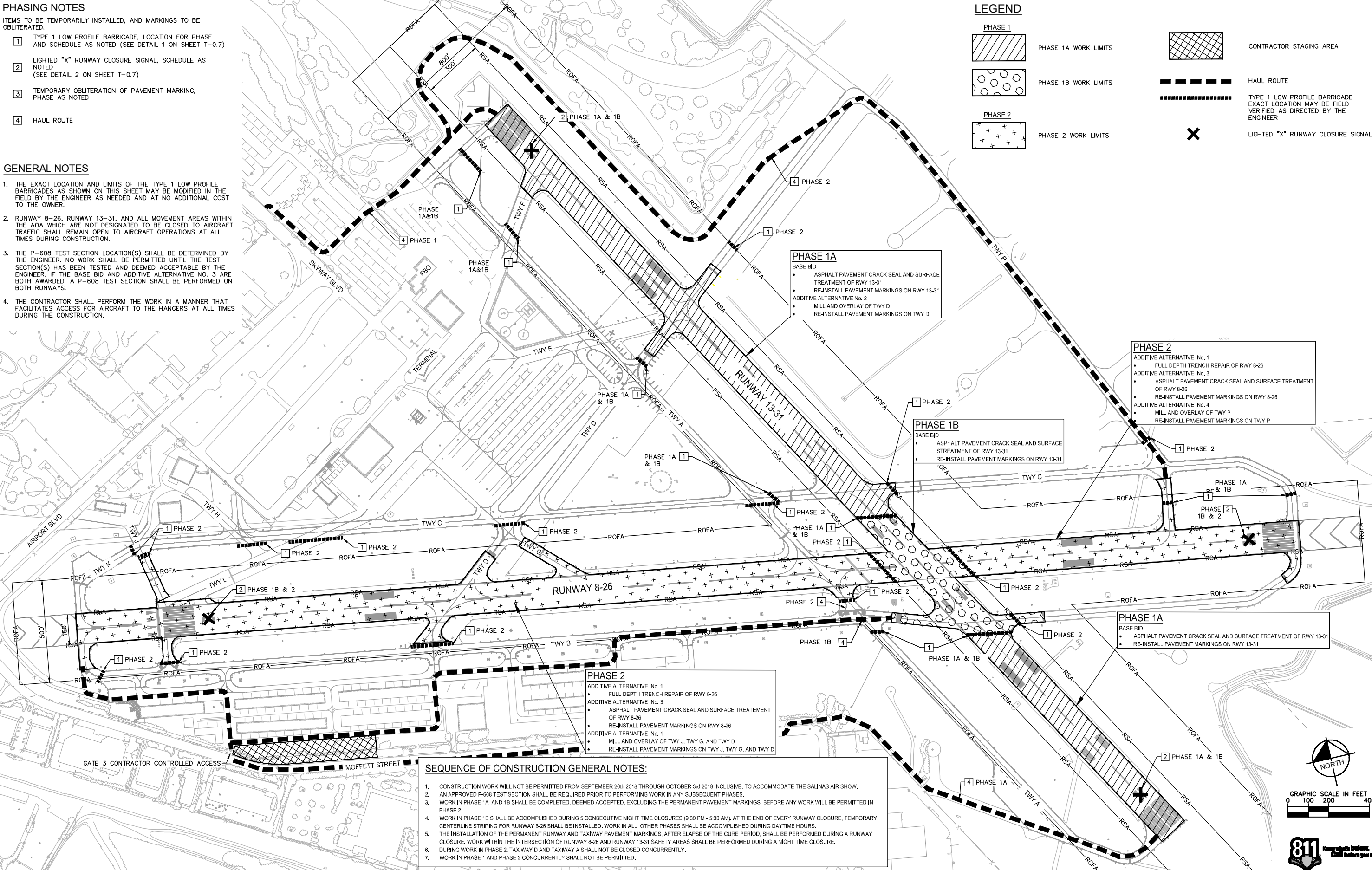
- ITEMS TO BE TEMPORARILY INSTALLED, AND MARKINGS TO BE OBLITERATED.
- TYPE 1 LOW PROFILE BARRICADE, LOCATION FOR PHASE AND SCHEDULE AS NOTED (SEE DETAIL 1 ON SHEET T-0.7)
  - LIGHTED "X" RUNWAY CLOSURE SIGNAL, SCHEDULE AS NOTED (SEE DETAIL 2 ON SHEET T-0.7)
  - TEMPORARY OBLITERATION OF PAVEMENT MARKING, PHASE AS NOTED
  - HAUL ROUTE

GENERAL NOTES

- THE EXACT LOCATION AND LIMITS OF THE TYPE 1 LOW PROFILE BARRICADES AS SHOWN ON THIS SHEET MAY BE MODIFIED IN THE FIELD BY THE ENGINEER AS NEEDED AND AT NO ADDITIONAL COST TO THE OWNER.
- RUNWAY 8-26, RUNWAY 13-31, AND ALL MOVEMENT AREAS WITHIN THE AOA WHICH ARE NOT DESIGNATED TO BE CLOSED TO AIRCRAFT TRAFFIC SHALL REMAIN OPEN TO AIRCRAFT OPERATIONS AT ALL TIMES DURING CONSTRUCTION.
- THE P-608 TEST SECTION LOCATION(S) SHALL BE DETERMINED BY THE ENGINEER. NO WORK SHALL BE PERMITTED UNTIL THE TEST SECTION(S) HAS BEEN TESTED AND DEEMED ACCEPTABLE BY THE ENGINEER. IF THE BASE BID AND ADDITIVE ALTERNATIVE NO. 3 ARE BOTH AWARDED, A P-608 TEST SECTION SHALL BE PERFORMED ON BOTH RUNWAYS.
- THE CONTRACTOR SHALL PERFORM THE WORK IN A MANNER THAT FACILITATES ACCESS FOR AIRCRAFT TO THE HANGARS AT ALL TIMES DURING THE CONSTRUCTION.

LEGEND

- PHASE 1
- PHASE 1A WORK LIMITS
- PHASE 1B WORK LIMITS
- PHASE 2
- PHASE 2 WORK LIMITS
- CONTRACTOR STAGING AREA
- HAUL ROUTE
- TYPE 1 LOW PROFILE BARRICADE EXACT LOCATION MAY BE FIELD VERIFIED AS DIRECTED BY THE ENGINEER
- LIGHTED "X" RUNWAY CLOSURE SIGNAL



SEQUENCE OF CONSTRUCTION GENERAL NOTES:

- CONSTRUCTION WORK WILL NOT BE PERMITTED FROM SEPTEMBER 26th 2018 THROUGH OCTOBER 3rd 2018 INCLUSIVE, TO ACCOMMODATE THE SALINAS AIR SHOW.
- AN APPROVED P-608 TEST SECTION SHALL BE REQUIRED PRIOR TO PERFORMING WORK IN ANY SUBSEQUENT PHASES.
- WORK IN PHASE 1A AND 1B SHALL BE COMPLETED, DEEMED ACCEPTED, EXCLUDING THE PERMANENT PAVEMENT MARKINGS, BEFORE ANY WORK WILL BE PERMITTED IN PHASE 2.
- WORK IN PHASE 1B SHALL BE ACCOMPLISHED DURING 5 CONSECUTIVE NIGHT TIME CLOSURES (9:30 PM - 5:30 AM), AT THE END OF EVERY RUNWAY CLOSURE, TEMPORARY CENTERLINE STRIPING FOR RUNWAY 8-26 SHALL BE INSTALLED, WORK IN ALL OTHER PHASES SHALL BE ACCOMPLISHED DURING DAYTIME HOURS.
- THE INSTALLATION OF THE PERMANENT RUNWAY AND TAXIWAY PAVEMENT MARKINGS, AFTER ELAPSE OF THE CURE PERIOD, SHALL BE PERFORMED DURING A RUNWAY CLOSURE. WORK WITHIN THE INTERSECTION OF RUNWAY 8-26 AND RUNWAY 13-31 SAFETY AREAS SHALL BE PERFORMED DURING A NIGHT TIME CLOSURE.
- DURING WORK IN PHASE 2, TAXIWAY D AND TAXIWAY A SHALL NOT BE CLOSED CONCURRENTLY.
- WORK IN PHASE 1 AND PHASE 2 CONCURRENTLY SHALL NOT BE PERMITTED.

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NO.	DATE	REVISION	BY	APPD.

Date 3/1/2018  
Designed SN  
Drawn SN  
Checked RJH

**KimleyHorn**  
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(691) 800-4130



SALINAS  
MUNICIPAL AIRPORT  
SALINAS, CALIFORNIA



Approved for Construction By:  
James E. Sandoval, P.E.,  
Public Works Assistant Director/City Engineer  
Date

Reviewed By:  
Donald Reynolds, Acting Public Works Director Date  
Frank A. Aguayo, P.E., Senior Civil Engineer Date  
Brett J. Godown, Airport Manager Date

SALINAS MUNICIPAL AIRPORT  
RUNWAY 13-31 & RUNWAY 8-26 REHABILITATION  
CONSTRUCTION PHASING PLAN

PROJECT NO. 094590010  
FILE NO. 94590010PH  
SHEET NO. T-0.6  
TOTAL SHEETS 35

