# STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS

# ADDENDUM NO. 3 FOR CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII STATE PROJECT NO. AO1043-33 AIP PROJECT NO. 3-15-0005-XXX APRIL 1, 2024

This Addendum shall make the following amendments to the Solicitation.

# A. PART 0.B - BIDDING DOCUMENTS TO BE SUBMITTED WITH BID

1. Delete **PROPOSAL SCHEDULE**, pages **P-8** through **P-13**, dated 3/6/24 and replace with attached **PROPOSAL SCHEDULE** pages **P-8** through **P-13** dated r4/1/24.

# **B. PART II – TECHNICAL PROVISIONS**

- 1. Delete **SECTION 01533 BARRICADES**, dated r12/04/01 in its entirety and replace with **SECTION 01533 BARRICADES**, dated r4/1/24.
- 2. Delete **SECTION 02222 SELECTIVE DEMOLITION**, dated November 2023 in its entirety and replace with **SECTION 02222 SELECTIVE DEMOLITION**, dated r4/1/24.
- Delete SECTION 02513 ASPHALTIC CONCRETE PAVEMENT, dated November 2023 in its entirety and replace with SECTION 02513 – ASPHALTIC CONCRETE PAVEMENT, dated r4/1/24.
- 4. Delete SECTION 03300 STRUCTURAL CONCRETE, dated November 2023 in its entirety and replace with SECTION 03300 – STRUCTURAL CONCRETE, dated r4/1/24
- 5. Delete SECTION 03320 HYBRID POLYMER CONCRETE (HPC), dated r3/6/24 in its entirety and replace with SECTION 03320 HYBRID POLYMER CONCRETE (HPC), dated r4/1/24.

- 6. Delete **SECTION 03730 CONCRETE REPAIRS**, dated November 2023 in its entirety and replace with **SECTION 03730 CONCRETE REPAIRS**, dated r4/1/24.
- 7. Delete SECTION 07680 EPOXY SURFACE TREATMENT, dated r3/6/24 in its entirety and replace with SECTION 07680 EPOXY SURFACE TREATMENT, dated r4/1/24.
- 8. Delete **SECTION 07916 EXPANSION JOINT**, dated r3/6/24 in its entirety and replace with **SECTION 07916 EXPANSION JOINT**, dated r4/1/24.
- 9. Delete **SECTION 09911 EXTERIOR PAINTING**, dated November 2023 in its entirety and replace with **SECTION 009911 EXTERIOR PAINTING**, dated r4/1/24.

# C. PLANS

- 1. Delete Sheet **S-0001 STRUCTURAL NOTES**, dated 03/01/24 and replace with the attached Sheet **S-0001 STRUCTURAL NOTES**, dated r03/22/24.
- 2. Delete Sheet S-1009 EWA CONNECTING LINK 2ND LEVEL PLAN, dated 03/01/24 and replace with the attached Sheet S-1009 EWA CONNECTING LINK 2ND LEVEL PLAN, dated r03/22/24.
- 3. Delete Sheet S-1018 DH CONNECTING LINK 2ND LEVEL PLAN, dated 03/01/24 and replace with the attached Sheet S-1018 DH CONNECTING LINK 2ND LEVEL PLAN, dated r03/22/24.
- 4. Delete Sheet S-3004 CONNECTING LINK REPAIR SEQUENCE, dated 01/19/2024 and replace with the attached Sheet S-3004 CONNECTING LINK REPAIR SEQUENCE, dated r03/22/24.
- Delete Sheet S-3005 CONNECTING LINK REPAIR SEQUENCE CONT., dated 03/01/2024 and replace with the attached Sheet S-3005 -CONNECTING LINK REPAIR SEQUENCE CONT., dated r03/22/24.
- 6. Delete Sheet S-4031 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet S-4031 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN A, dated r03/22/24.
- Delete Sheet S-4032 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet S-4032 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN B, dated r03/22/24.

- 8. Delete Sheet S-4033 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet S-4033 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN C, dated r03/22/24.
- 9. Delete Sheet S-4034 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet S-4034 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN D, dated r03/22/24.
- 10. Delete Sheet S-4036 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet S-4036 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN F, dated r03/22/24.
- 11. Delete Sheet S-4037 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet S-4037 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN G, dated r03/22/24.
- 12. Delete Sheet S-4039 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet S-4039 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN I, dated r03/22/24.
- 13. Delete Sheet S-4040 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN J, dated 01/19/2024 and replace with the attached Sheet S-4040 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN J, dated r03/22/24.
- 14. Delete Sheet S-4042 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN L, dated 01/19/2024 and replace with the attached Sheet S-4042 EWA -CONCOURSE 2ND LEVEL PARTIAL PLAN L, dated r03/22/24.
- 15. Delete Sheet S-4044 EWA CONCOURSE 2ND LEVEL PARTIAL PLAN N, dated 01/19/2024 and replace with the attached Sheet S-4044 - EWA CONCOURSE 2ND LEVEL PARTIAL PLAN N, dated r03/22/24.
- 16. Delete Sheet S-4105 EWA CONNECTING LINK PARTIAL REPAIR PLAN B, dated 03/01/24 and replace with the attached Sheet S-4105 - EWA CONNECTING LINK PARTIAL REPAIR PLAN B, dated r03/22/24.
- 17. Delete Sheet S-4107 EWA CONNECTING LINK PARTIAL REPAIR PLAN D, dated 03/01/24 and replace with the attached Sheet S-4107 EWA CONNECTING LINK PARTIAL REPAIR PLAN D, dated r03/22/24.
- Delete Sheet S-4132 DH CONCOURSE 2ND LEVEL PARTIAL PLAN A, dated 03/01/24 and replace with the attached Sheet S-4132 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN A, dated r03/22/24.

- Delete Sheet S-4133 DH CONCOURSE 2ND LEVEL PARTIAL PLAN B, dated 03/01/24 and replace with the attached Sheet S-4133 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN B, dated r03/22/24.
- 20. Delete Sheet S-4134 DH CONCOURSE 2ND LEVEL PARTIAL PLAN C, dated 03/01/24 and replace with the attached Sheet S-4134 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN C, dated r03/22/24.
- 21. Delete Sheet S-4136 DH CONCOURSE 2ND LEVEL PARTIAL PLAN E, dated 03/01/24 and replace with the attached Sheet S-4136 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN E, dated r03/22/24.
- Delete Sheet S-4137 DH CONCOURSE 2ND LEVEL PARTIAL PLAN F, dated 03/01/24 and replace with the attached Sheet S-4137 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN F, dated r03/22/24.
- 23. Delete Sheet S-4139 DH CONCOURSE 2ND LEVEL PARTIAL PLAN H, dated 03/01/24 and replace with the attached Sheet S-4139 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN H, dated r03/22/24.
- 24. Delete Sheet S-4140 DH CONCOURSE 2ND LEVEL PARTIAL PLAN I, dated 03/01/24 and replace with the attached Sheet S-4140 - DH CONCOURSE 2ND LEVEL PARTIAL PLAN I, dated r03/22/24.
- 25. Delete Sheet S-4193 DH CONNECTING LINK PARTIAL REPAIR PLAN C, dated 03/01/24 and replace with the attached Sheet S-4193 - DH CONNECTING LINK PARTIAL REPAIR PLAN C, dated r03/22/24.
- 26. Delete Sheet S-4194 DH CONNECTING LINK PARTIAL REPAIR PLAN D, dated 03/01/24 and replace with the attached Sheet S-4194 DH CONNECTING LINK PARTIAL REPAIR PLAN D, dated r03/22/24.
- 27. Delete Sheet S-4197 DH CONNECTING LINK PARTIAL REPAIR PLAN G, dated 03/01/24 and replace with the attached Sheet S-4197 - DH CONNECTING LINK PARTIAL REPAIR PLAN G, dated r03/22/24.
- 28. Delete Sheet S-4198 DH CONNECTING LINK PARTIAL REPAIR PLAN H, dated 03/01/24 and replace with the attached Sheet S-4198 - DH CONNECTING LINK PARTIAL REPAIR PLAN H, dated r03/22/24.
- 29. Delete Sheet S-4199 DH CONNECTING LINK PARTIAL REPAIR PLAN I, dated 03/01/24 and replace with the attached Sheet S-4199 - DH CONNECTING LINK PARTIAL REPAIR PLAN I, dated r03/22/24.

- 30. Delete Sheet S-4200 DH CONNECTING LINK PARTIAL REPAIR PLAN J, dated 03/01/24 and replace with the attached Sheet S-4200 - DH CONNECTING LINK PARTIAL REPAIR PLAN J, dated r03/22/24.
- 31. Delete Sheet S-5001 SUPPLEMENTAL SPALL REPAIR DETAILS, dated 01/19/2024 and replace with the attached Sheet S-5001 -SUPPLEMENTAL SPALL REPAIR DETAILS, dated r03/22/24.
- 32. Delete Sheet S-5006 DH CONCOURSE 2ND LEVEL PLANTER MODIFICATIONS, dated 03/01/24 and replace with the attached Sheet S-5006 - DH CONCOURSE 2ND LEVEL PLANTER MODIFICATIONS, dated r03/22/24.
- 33. Delete Sheet S-5007 CONNECTING LINK MODIFICATIONS, dated 03/01/24 and replace with the attached Sheet S-5007 CONNECTING LINK MODIFICATIONS, dated r03/22/24.
- 34. Delete Sheet S-5008 CONNECTING LINK DRAIN MODIFICATION, dated 03/01/24 and replace with the attached Sheet S-5008 CONNECTING LINK DRAIN MODIFICATION, dated r03/22/24.
- 35. Delete Sheet S-5009 CONNECTING LINK DRAIN MODIFICATION CONT., dated 03/01/24 and replace with the attached Sheet S-5009 - CONNECTING LINK DRAIN MODIFICATION CONT., dated r03/22/24.
- Delete Sheet S-5010 TYPICAL EXPANSION JOINT WATERPROOFING DETAILS, dated 01/19/2024 and replace with the attached Sheet S-5010 -TYPICAL EXPANSION JOINT WATERPROOFING DETAILS, dated r03/22/24.
- Delete Sheet S-5011 CONNECTING LINK EXPANSION JOINT DETAILS, dated 01/19/2024 and replace with the attached Sheet S-5011 -CONNECTING LINK EXPANSION JOINT DETAILS, dated r03/22/24.
- Delete Sheet S-5012 CONCOURSE EXPANSION JOINT DETAILS, dated 01/19/2024 and replace with the attached Sheet S-5012 - CONCOURSE EXPANSION JOINT DETAILS, dated r03/22/24.
- 39. Delete Sheet S-5013 DEPARTURES ROADWAY REPAIR DETAILS, dated 01/19/2024 and replace with the attached Sheet S-5013 DEPARTURES ROADWAY REPAIR DETAILS, dated r03/22/24.

- 40. Delete Sheet M-0001 MECHANICAL LEGEND, NOTES AND SCHEDULES, dated 01/19/2024 and replace with the attached Sheet M-0001 - MECHANICAL LEGEND, NOTES AND SCHEDULES, dated r03/22/24.
- 41. Delete Sheet **M-0003 MECHANICAL DETAILS**, dated 01/19/2024 and replace with the attached Sheet **M-0003 MECHANICAL DETAILS**, dated r03/22/24.
- 42. Delete Sheet M-4001 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4001 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 43. Delete Sheet M-4002 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4002 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 44. Delete Sheet M-4003 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4003 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 45. Delete Sheet M-4004 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4004 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 46. Delete Sheet M-4005 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4005 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 47. Delete Sheet M-4006 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4006 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 48. Delete Sheet M-4007 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4007 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.

- 49. Delete Sheet M-4008 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4008 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 50. Delete Sheet M-4009 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4009 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated r03/22/24.
- 51. Delete Sheet M-4010 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated 01/19/2024 and replace with the attached Sheet M-4010 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated r03/22/24.
- 52. Delete Sheet M-4011 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated 01/19/2024 and replace with the attached Sheet M-4011 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated r03/22/24.
- 53. Delete Sheet M-4012 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated 01/19/2024 and replace with the attached Sheet M-4012 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated r03/22/24.
- 54. Delete Sheet M-4013 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated 01/19/2024 and replace with the attached Sheet M-4013 - 1ST FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated r03/22/24.
- 55. Delete Sheet M-4014 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4014 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 56. Delete Sheet M-4015 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4015 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 57. Delete Sheet M-4016 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4016 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.

- 58. Delete Sheet M-4031 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4031 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 59. Delete Sheet M-4033 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4033 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 60. Delete Sheet M-4034 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4034 - 1ST FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 61. Delete Sheet M-4035 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4035 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 62. Delete Sheet M-4036 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4036 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 63. Delete Sheet M-4037 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4037 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 64. Delete Sheet M-4038 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4038 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 65. Delete Sheet M-4039 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4039 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 66. Delete Sheet M-4040 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4040 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.

- 67. Delete Sheet M-4041 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4041 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.
- Delete Sheet M-4042 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4042 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 69. Delete Sheet M-4043 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4043 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated r03/22/24.
- 70. Delete Sheet M-4044 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated 01/19/2024 and replace with the attached Sheet M-4044 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated r03/22/24.
- 71. Delete Sheet M-4045 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated 01/19/2024 and replace with the attached Sheet M-4045 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated r03/22/24.
- 72. Delete Sheet M-4046 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated 01/19/2024 and replace with the attached Sheet M-4046 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated r03/22/24.
- 73. Delete Sheet M-4047 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated 01/19/2024 and replace with the attached Sheet M-4047 - 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated r03/22/24.
- 74. Delete Sheet M-4048 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4048 - 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 75. Delete Sheet M-4049 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4049 - 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.

- 76. Delete Sheet M-4050 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4050 - 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 77. Delete Sheet M-4065 2ND FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4065 - 2ND FLOOR EWA CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 78. Delete Sheet M-4069 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4069 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 79. Delete Sheet M-4070 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4070 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 80. Delete Sheet M-4071 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4071 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 81. Delete Sheet M-4072 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4072 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 82. Delete Sheet M-4073 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4073 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 83. Delete Sheet M-4074 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4074 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 84. Delete Sheet M-4075 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4075 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.

- 85. Delete Sheet M-4076 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4076 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 86. Delete Sheet M-4077 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4077 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN I, dated r03/22/24.
- 87. Delete Sheet M-4078 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated 01/19/2024 and replace with the attached Sheet M-4078 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J, dated r03/22/24.
- 88. Delete Sheet M-4079 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated 01/19/2024 and replace with the attached Sheet M-4079 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN K, dated r03/22/24.
- 89. Delete Sheet M-4080 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated 01/19/2024 and replace with the attached Sheet M-4080 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN L, dated r03/22/24.
- 90. Delete Sheet M-4081 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated 01/19/2024 and replace with the attached Sheet M-4081 - 3RD FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN M, dated r03/22/24.
- 91. Delete Sheet M-4082 3RD FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4082 - 3RD FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 92. Delete Sheet M-4103 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4103 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 93. Delete Sheet M-4104 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4104 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.

- 94. Delete Sheet M-4105 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4105 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 95. Delete Sheet M-4106 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4106 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 96. Delete Sheet M-4107 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4107 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 97. Delete Sheet M-4108 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4108 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 98. Delete Sheet M-4109 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4109 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.
- 99. Delete Sheet M-4110 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4110 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 100. Delete Sheet M-4111 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4111 - 1ST FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I, dated r03/22/24.
- 101. Delete Sheet M-4112 1ST FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4112 - 1ST FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 102. Delete Sheet M-4114 1ST FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4114 - 1ST FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.

- 103. Delete Sheet M-4121 1ST FLOOR DH MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4121 - 1ST FLOOR DH MECHANICAL PARTIAL PLAN E, dated r03/22/24.
- 104. Delete Sheet M-4125 1ST FLOOR DH MECHANICAL PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4125 - 1ST FLOOR DH MECHANICAL PARTIAL PLAN I, dated r03/22/24.
- 105. Delete Sheet M-4126 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4126 - 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 106. Delete Sheet M-4127 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4127 - 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated r03/22/24.
- 107. Delete Sheet M-4128 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4128 - 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 108. Delete Sheet M-4129 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4129 - 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 109. Delete Sheet M-4130 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4130 - 1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated r03/22/24.
- 110. Delete Sheet M-4131 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4131 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.
- 111. Delete Sheet M-4132 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4132 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.

- 112. Delete Sheet M-4133 -2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4133 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 113. Delete Sheet M-4134 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4134 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 114. Delete Sheet M-4135 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4135 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 115. Delete Sheet M-4136 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4136 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 116. Delete Sheet M-4137 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4137 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.
- 117. Delete Sheet M-4138 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4138 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 118. Delete Sheet M-4139 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I & CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4139 - 2ND FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I & CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 119. Delete Sheet M-4140 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4140 - 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.

- 120. Delete Sheet M-4141 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4141 - 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 121. Delete Sheet M-4142 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4142 - 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 122. Delete Sheet M-4143 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4143 - 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 123. Delete Sheet M-4144 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4144 - 2ND FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 124. Delete Sheet M-4145 2ND FLOOR DH MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4145 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 125. Delete Sheet M-4146 2ND FLOOR DH MECHANICAL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4146 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN B, dated r03/22/24.
- 126. Delete Sheet M-4147 2ND FLOOR DH MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4147 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 127. Delete Sheet M-4148 2ND FLOOR DH MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4148 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 128. Delete Sheet M-4149 2ND FLOOR DH MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4149 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN E, dated r03/22/24.
- 129. Delete Sheet M-4150 2ND FLOOR DH MECHANICAL PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4150 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN F, dated r03/22/24.

- 130. Delete Sheet M-4151 2ND FLOOR DH MECHANICAL PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4151 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN G, dated r03/22/24.
- 131. Delete Sheet M-4152 2ND FLOOR DH MECHANICAL PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4152 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN H, dated r03/22/24.
- 132. Delete Sheet M-4153 2ND FLOOR DH MECHANICAL PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4153 - 2ND FLOOR DH MECHANICAL PARTIAL PLAN I, dated r03/22/24.
- 133. Delete Sheet M-4154 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4154 - 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 134. Delete Sheet M-4155 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4155 - 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated r03/22/24.
- 135. Delete Sheet M-4156 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4156 - 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 136. Delete Sheet M-4157 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4157 - 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 137. Delete Sheet M-4158 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4158 - 2ND FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated r03/22/24.
- 138. Delete Sheet M-4159 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4159 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.

- 139. Delete Sheet M-4160 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4160 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 140. Delete Sheet M-4161 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4161 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 141. Delete Sheet M-4162 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4162 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 142. Delete Sheet M-4163 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4163 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 143. Delete Sheet M-4164 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4164 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN F, dated r03/22/24.
- 144. Delete Sheet M-4165 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4165 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN G, dated r03/22/24.
- 145. Delete Sheet M-4166 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4166 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN H, dated r03/22/24.
- 146. Delete Sheet M-4167 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4167 - 3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN I, dated r03/22/24.
- 147. Delete Sheet M-4168 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4168 - 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN A, dated r03/22/24.

- 148. Delete Sheet M-4169 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4169 - 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN B, dated r03/22/24.
- 149. Delete Sheet M-4170 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4170 - 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C, dated r03/22/24.
- 150. Delete Sheet M-4171 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4171 - 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN D, dated r03/22/24.
- 151. Delete Sheet M-4172 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4172 - 3RD FLOOR DH CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN E, dated r03/22/24.
- 152. Delete Sheet M-4173 3RD FLOOR DH MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4173 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 153. Delete Sheet M-4174 3RD FLOOR DH MECHANICAL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4174 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN B, dated r03/22/24.
- 154. Delete Sheet M-4175 3RD FLOOR DH MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4175 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 155. Delete Sheet M-4176 3RD FLOOR DH MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4176 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 156. Delete Sheet M-4177 3RD FLOOR DH MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4177 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN E, dated r03/22/24.
- 157. Delete Sheet M-4178 3RD FLOOR DH MECHANICAL PARTIAL PLAN F, dated 01/19/2024 and replace with the attached Sheet M-4178 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN F, dated r03/22/24.

- 158. Delete Sheet M-4179 3RD FLOOR DH MECHANICAL PARTIAL PLAN G, dated 01/19/2024 and replace with the attached Sheet M-4179 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN G, dated r03/22/24.
- 159. Delete Sheet M-4180 3RD FLOOR DH MECHANICAL PARTIAL PLAN H, dated 01/19/2024 and replace with the attached Sheet M-4180 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN H, dated r03/22/24.
- 160. Delete Sheet M-4181 3RD FLOOR DH MECHANICAL PARTIAL PLAN I, dated 01/19/2024 and replace with the attached Sheet M-4181 - 3RD FLOOR DH MECHANICAL PARTIAL PLAN I, dated r03/22/24.
- 161. Delete Sheet M-4182 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated 01/19/2024 and replace with the attached Sheet M-4182 - 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN A, dated r03/22/24.
- 162. Delete Sheet M-4183 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated 01/19/2024 and replace with the attached Sheet M-4183 - 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B, dated r03/22/24.
- 163. Delete Sheet M-4184 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated 01/19/2024 and replace with the attached Sheet M-4184 - 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN C, dated r03/22/24.
- 164. Delete Sheet M-4185 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated 01/19/2024 and replace with the attached Sheet M-4185 - 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN D, dated r03/22/24.
- 165. Delete Sheet M-4186 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated 01/19/2024 and replace with the attached Sheet M-4186 - 3RD FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN E, dated r03/22/24.

Please acknowledge receipt of this Addendum No. 3 by recording the date of its receipt in the space provided on Page P-4 of the Proposal.

Nath C

NATHAN KANESHIGE Engineering Program Manager

# CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII STATE PROJECT NO. AO1043-33 AIP PROJECT NO. 3-15-0005-XXX

#### Unit Approx. Item Description Unit Total Price Quantity No. **General Requirements** T Construction Site Runoff 01561.1 L.S. L.S. L.S. \$ Control Program Mobilization (Not to exceed 6% of the Total Amount for 01700 Comparison of Bids L.S. L.S. L.S. (excluding this item and all Allowances)) II Site Work 02222.1 Selective Demolition L.S. L.S. L.S. 02577 L.S. L.S. L.S. \$ **Pavement Marking** Ewa Concourse Turnaround, 02513.1 280 S.F. \$ \$ Asphalt Pavement Diamond Head Concourse 02513.2 800 Turnaround, Asphalt S.F. \$ \$ Pavement III. Concrete Ewa Connecting Link 03300.1 L.S. L.S. L.S. \$ Planter Modifications Ewa Connecting Link Drain L.S. 03300.2 L.S. L.S. \$ Relocation Diamond Head Connecting 03300.3 L.S. L.S. L.S. \$ Link Planter Modifications Diamond Head Connecting L.S. L.S. 03300.4 L.S. \$ Link Drain Relocation Diamond Head Concourse 03300.5 Second Level Planter L.S. L.S. L.S. \$ Modifications Ewa Connecting Link 03320.1 L.S. L.S. L.S. \$

## **PROPOSAL SCHEDULE**

Roadway Regrading



Item No.	Description	Approx. Quantity	Unit	Unit Price	Total
03320.2	Diamond Head Connecting Link Roadway Regrading	L.S.	L.S.	L.S.	\$
03730.1	Terminal 2 Departures Roadway Concrete Super Structure Overhead Spall and Delamination Repairs	1,207	S.F.	\$	\$
03730.2	Terminal 2 Departures Roadway Concrete Super Structure Overhead Crack Repairs	L.S.	L.S.	L.S.	\$
03730.3	Terminal 2 Departures Roadway Concrete Deck Repairs	589	S.F.	\$	\$
03730.4	Ewa Concourse 1 <sup>st</sup> Level Soffit and Façade Spall, Delamination, and Finish Repairs	197	S.F.	\$	\$
03730.5	Ewa Concourse 1 <sup>st</sup> Level Soffit and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.6	Ewa Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Spall, Delamination, and Finish Repairs	7,680	S.F.	\$	\$
03730.7	Ewa Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.8	Ewa Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs	619	S.F.	\$	\$
03730.9	Ewa Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.10	Ewa Connecting Link Overhead Spall and Delamination Repairs	494	S.F.	\$	\$
03730.11	Ewa Connecting Link Overhead Crack Repairs	L.S.	L.S.	L.S.	\$
03730.12	Ewa Connecting Link Ground Spall and Delamination Repairs	836	S.F.	\$	\$
03730.13	Ewa Connecting Link Full Concrete Deck Repairs	1,734	S.F.	\$	\$
03730.14	Ewa Connecting Link Ground Crack Repairs	L.S.	L.S.	L.S.	\$



Item No.	Description	Approx. Quantity	Unit	Unit Price	Total
03730.15	Diamond Head Concourse 1 <sup>st</sup> Level Soffit and Façade Spall, Delamination, and Finish Repairs	776	S.F.	\$	\$
03730.16	Diamond Head Concourse 1 <sup>st</sup> Level Soffit and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.17	Diamond Head Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Spall, Delamination, and Finish Repairs	3,780	S.F.	\$	\$
03730.18	Diamond Head Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.19	Diamond Head Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs	451	S.F.	\$	\$
03730.20	Diamond Head Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Crack Repairs	L.S.	L.S.	L.S.	\$
03730.21	Diamond Head Connecting Link Overhead Spall and Delamination Repairs	2,248	S.F.	\$	\$
03730.22	Diamond Head Connecting Link Overhead Crack Repairs	L.S.	L.S.	L.S.	\$
03730.23	Diamond Head Connecting Link Ground Spall and Delamination Repairs	437	S.F.	\$	\$
03730.24	Diamond Head Connecting Link Full Concrete Deck Repairs	2,644	S.F.	\$	\$
03730.25	Diamond Head Connecting Link Ground Crack Repairs	L.S.	L.S.	L.S.	\$
IV. Masonry					
04200.1	Ewa Connecting Link CMU Wall Replacement	L.S.	L.S.	L.S.	\$
04200.2	Diamond Head Concourse 3 <sup>rd</sup> Level Turn Around CMU Wall Repair	L.S.	L.S.	L.S.	\$
04200.3	Diamond Head Connecting	t L.S.	L.S.	L.S.	\$

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Item No.	Description	Approx. Quantity	Unit	Unit Price	Total
V.	Metals				
05120.1	Ewa Concourse 2 <sup>nd</sup> Level Turn Around Guardrail	L.S.	L.S.	L.S.	\$
05120.2	Ewa Connecting Link Guardrail	L.S.	L.S.	L.S.	\$
05120.3	Diamond Head Connecting Link Guardrails	L.S.	L.S.	L.S.	\$
VII.	Thermal and Moisture Protection				
07916.1	Terminal 2 Departures Roadway Expansion Joint Spot Repairs	L.S.	L.S.	L.S.	\$
07916.2	Ewa Concourse 2 <sup>nd</sup> Level Sidewalk Expansion Joint	L.S.	L.S.	L.S.	\$
07916.3	Ewa Connecting Link Expansion Joints	L.S.	L.S.	L.S.	\$
07916.4	Terminal 2 3 <sup>rd</sup> Level Roadway Expansion Joint Spot Repairs	L.S.	L.S.	L.S.	\$
07916.5	Diamond Head Concourse 2 <sup>nd</sup> Level Sidewalk Expansion Joint	L.S.	L.S.	L.S.	\$
07916.6	Diamond Head Connecting Link Expansion Joints	L.S.	L.S.	L.S.	\$
V.	Mechanical				
15400.1	Plumbing	L.S.	L.S.	L.S.	\$
VI.	Electrical				
16050.1	Ewa Concourse 2 <sup>nd</sup> and 3 <sup>rd</sup> Level Receptacle Replacement	L.S.	L.S.	L.S.	\$
16050.2	Ewa Concourse Connecting Link Receptacle Demolition	L.S.	L.S.	L.S.	\$
16050.3	Ewa Concourse 3 <sup>rd</sup> Floor Traffic Signal Demolition	L.S.	L.S.	L.S.	\$
16050.4	Diamond Head Concourse 2 <sup>nd</sup> and 3 <sup>rd</sup> Level Miscellaneous Receptacle and Lighting Replacement and/or Demolition	L.S.	L.S.	L.S.	\$
16050.5	Diamond Head Concourse Connecting Link Receptacle Demolition	L.S.	L.S.	L.S.	\$

Item No.	Description	Approx. Quantity	Unit	Unit Price	Total	
16500.1	Ewa Concourse 2 <sup>nd</sup> and 3 <sup>rd</sup> Level Lighting Replacement and/or Demolition	L.S.	L.S.	L.S.	\$	
16500.2	Ewa Concourse Connecting Link Lighting	L.S.	L.S.	L.S.	\$ <u> </u>	
16500.3	Diamond Head Concourse 2 <sup>nd</sup> Floor Lighting	L.S.	L.S.	L.S.	\$	
16500.4	Diamond Head Concourse Connecting Link Lighting	L.S.	L.S.	L.S.	\$	
16500.5	Diamond Head Concourse 3 <sup>rd</sup> Floor Lighting	L.S.	L.S.	L.S.	\$	
VII. A	llowances					
01562.1	Management of Contaminated Medias	Allowance	Allowance	e Allowance	\$	50,000
01565.1	Security Measures	Allowance	Allowance	e Allowance	\$	400,000
02222.2	Unforeseen Conditions	Allowance	Allowance	e Allowance	\$	100,000
02513.3	Surface Pavement Restoration for Underground Utility Access	Allowance	Allowance	e Allowance	\$	50,000
03730.26	Additional Unforeseen Concrete Spall and Crack Repairs	Allowance	Allowance	e Allowance	\$	1,000,000
04200.4	Additional Unforeseen CMU Repairs	Allowance	Allowance	e Allowance	\$	50,000
09900	Additional Painting Beyond Repair Areas	Allowance	Allowance	e Allowance	\$	50,000
13282.1	RCRA Hazardous Waste Disposal	Allowance	Allowance	e Allowance	\$	50,000
15400.2	Unforeseen Plumbing Scope of Work	Allowance	Allowance	e Allowance	\$	100,000
15400.3	Irrigation System Modifications	Allowance	Allowance	e Allowance	\$	100,000
16500.6	Unforeseen Electrical Reroutes and Tie-Ins	Allowance	Allowance	e Allowance	\$	550,000

#### TOTAL AMOUNT FOR COMPARISON OF BIDS

\$

The bid prices herein shall include all labor, materials, equipment, and incidentals necessary to construct all items in place, including installation and testing of equipment, complete and ready for operation, all in accordance with the plans and specifications.

Notes:

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1. Bid shall include all Federal, State, County and other applicable taxes.

- 2. The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.
- 3. Bidders must complete all unit prices and amounts. Failure to do so shall be grounds for rejection of bid.
- 4. If a discrepancy occurs between the unit price and the total, the unit price shall govern.
- 5. The State reserves the right to reject any or all Bids and to waive any defects in said Bids in the best interest of the State.
- 6. Submission of a Bid is a warranty that the bidder has made an examination of the project site and is fully aware of all conditions to be encountered in performing the work and the requirements of the plans and specifications.
- The bidder's attention is directed to Section 2.11 BID SECURITY and Section 2.24 REQUIREMENTS OF CONTRACT BONDS of the "General Provisions", as amended by the Special Provisions.
- 8. Bidders shall be paid for actual work performed as directed by the Engineer for allowance items. Bidder will not be paid overhead and profit for unused allowance funds.
- 9. If the TOTAL AMOUNT FOR COMPARISON OF BIDS exceeds the funds available for the project, then the State reserves the right to negotiate with the lowest, responsive, responsible bidder as permitted under Section 103D-302, Hawaii Revised Statutes (HRS), to further reduce the scope of work and award a contract thereafter.
- 10. <u>Federal forms located on Proposal pages P-15 through P-25 shall be submitted by the close</u> <u>of business, 4:30 p.m. Hawaii Standard Time (HST), five (5) days after bid opening. Failure</u> <u>to submit these forms shall result in rejection of bid. Forms shall be emailed to the State</u> <u>Project Manager at valerie.sh.sasuga@hawaii.gov.</u>
- 11. Bidders shall submit and <u>upload the complete proposal to HIePRO</u> prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Original (wet ink, hard copy) proposal documents are not required to be submitted. Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO. Any additional support documents explicitly designated as <u>confidential and/or proprietary</u> shall be uploaded as a <u>separate file</u> to HIePRO. Do not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection.

# FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIEPRO SHALL BE GROUNDS FOR REJECTION OF THE BID.

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified.

#### SECTION 01533 - BARRICADES

#### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 BARRICADES

- A. The contractor shall take precaution to protect people and property from injury and damage. He shall erect barricades to delineate his work areas and provide the appropriate signing, hazard lights, and temporary paint striping per the safety plan as approved by the Engineer, to aid public and airport pedestrian and vehicular traffic around his work areas. Barricades shall be traffic cones, delineators, blinker barricades, caution tape, sawhorses, plywood barricades or other barriers as approved by the Engineer to effectively provide proper protection.
- B. The contractor shall be responsible for his own security and protection of his property, including mobilization yard barricades.
- C. Barricades, in general, shall be neat and in good condition, as required for protection. In areas frequented by the general public, the barricades shall be visually presentable and plywood partitions shall be painted. Where dust is a problem, the Contractor shall erect floor to ceiling dust proof partitions
- D. The Contractor shall coordinate and sequence this work with the Engineer to permit the continuing operation of the existing Airport facility. Barricades shall be removed upon the completion and acceptance of work and the premises left clean and operational.
- E. The Contractor shall be responsible for securing access into and out of the barricaded areas.

#### 1.03 SUBMITTALS

- A. Submit in accordance with Section 01300 SUBMITTALS.
- B. Submit Traffic Control Plan meeting requirements listed in Construction Drawings Sheet C-1009

#### PART 2 – PRODUCTS (Not Used)

#### PART 3 - EXECUTION (Not Used)

#### PART 4 – MEASUREMENT & PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the prices bid for the various items of work in this project.

#### END OF SECTION

#### **DIVISION 2 – SITE WORK**

#### SECTION 02222 - SELECTIVE DEMOLITION

#### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.

#### 1.02 SUMMARY

- A. Section Includes: Selective removal and subsequent disposal of pavements, and other items indicated to be removed. Extent of demolition work is indicated on Contract Drawings, and in Contract documents.
- B. Related Sections: Refer to the following sections for related work:
  - 1. Section 01533 BARRICADES
  - 2. Section 01560 ENVIRONMENTAL CONTROLS
  - 3. Section 03730 CONCRETE REPAIRS

#### 1.03 <u>REFERENCES</u>

Code of Federal Regulations (CFR)

- 29 CFR Part 1910 Occupational Safety and Health Standards
- 29 CFR Part 1926 Safety and Health Regulations for Construction

#### 1.04 <u>SUBMITTALS</u>

- A. Provide in accordance with Section 01300 SUBMITTALS.
  - 1. Plan for Dust Control during demolition operations.
  - 2. Plan for temporary weather protection.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Survey existing conditions prior to beginning on-site demolition operations.
- B. Verify that utilities have been disconnected and capped.

- C. If unanticipated mechanical, electrical or structural elements that conflict with intended function or design are encountered, investigate and measure nature and extent of conflict.
  - 1. Promptly notify DOT-A.

#### 3.02 UTILITY SERVICES

Maintain existing utilities indicated to remain in service and protect against damage during demolition operations.

#### 3.03 PREPARATION

- A. Conduct demolition operations and remove debris in manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
- B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities designated to remain.
  - 1. Provide protective measures as required to provide free and safe passage to and from occupied portions of buildings including handicap access.
  - 2. Provide temporary barricades and other forms of protection as required for safety and security.
  - 3. Provide barriers and appropriate signs meeting requirements of 29 CFR 1910 for size and color where necessary to restrict pedestrians from wandering into construction areas.
  - 4. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure no water leakage or damage occurs to structure or interior areas of existing building.
  - 5. Protect existing work that is to remain in place and are exposed during demolition operations.
  - 6. Cover and protect equipment and fixtures that are to remain from soiling or damage.
- C. Provide and maintain shoring, bracing or structural support to preserve stability and prevent movement, settlement, or collapse of structures and their components.

#### 3.04 DEMOLITION

- A. General: Perform demolition work in accordance with 29 CFR 1926, with particular attention to requirements set forth in Subpart T, "Demolition".
  - 1. Perform work in safe and systematic manner.

- 2. Use such methods as required to complete work indicated on Contract Drawings.
- B. Demolish and remove existing construction only to extent required, and as indicated in Contract documents.
- C. Wear proper personal protective equipment at all times.
- D. Remove debris from roof or other above-grade location through enclosed chute or bundle, and lower by hand or with hoisting device.
- E. <u>Concrete Demolition</u>: Contractor may use a handheld pneumatic hammer not larger than 30 lbs for spall repair. For full-depth spall repair at connecting link roadways, a medium-duty pneumatics hammer may be utilized. Chipping hammers heavier than a nominal 15-lb class shall not be used for final removal at the boundary of full-depth repairs.

#### 3.05 <u>REPAIRS</u>

- A. Repair demolition performed in excess of what is required.
- B. Return structures and surfaces not part of demolition, to conditions existing prior to commencement of demolition work.
- C. Promptly repair adjacent construction or surfaces soiled or damaged by demolition work at no cost.

#### 3.06 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of debris, rubbish, and other materials resulting from building site demolition operations.
- B. If Contractor encounters material during removal that is suspected to be potential hazard, other than those identified in the environmental assessment provided to the Contractor as part of the Specifications, he should stop work immediately and notify the DOT-A.
- C. DOT-A shall determine salvageable items, if not indicated in Contract documents.

#### 3.07 <u>CLEANING</u>

Remove tools, equipment and demolished materials from site upon completion of demolition work.

#### PART 4 - MEASUREMENT AND PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

A. All work specified in this section shall be paid for at the contract lump sum price for Selective Demolition. The contract price paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.

Should an unforeseen condition arise, payment shall be made by an allowance as directed by the DOT-A.

Unit

Lump Sum Allowance

B. For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the proposal schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other markups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.

Item No.	<u>Item</u>
02222.1	Selective Demolition
02222.2	Unforeseen Conditions

END OF SECTION

#### SECTION 02513 - ASPHALTIC CONCRETE PAVEMENT

#### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.

#### 1.02 DESCRIPTION OF WORK

Provide all asphaltic concrete pavement as indicated on the drawings and as specified herein.

#### 1.03 GENERAL REQUIREMENTS

The "Hawaii Standard Specifications for Road and Bridge Construction, 2005" of the State Department of Transportation, Highways Division shall govern the work.

#### 1.04 <u>SUBMITTALS</u>

- A. Submit in accordance with Section 01300 SUBMITTALS.
- B. Submit the affidavits from the manufacturers or suppliers of all materials proposed to be furnished and installed under this section, certify that such material delivered to the project conforms to the requirements of these specifications and provide the Material Product Data and Material Safety Data for the materials proposed for use for the DOT-A's approval.

#### PART 2 - PRODUCTS

#### 2.01 MATERIALS

Materials for asphaltic concrete pavement shall be in accordance with Section 304 – Aggregate Base Course, Section 305 – Aggregate Subbase Course and Section 401 – Hot Mix Asphalt Pavement of the "Hawaii Standard Specifications for Road and Bridge Construction, 2005" of the State Department of Transportation, Highways Division.

#### PART 3 – EXECUTION

#### 3.01 INSTALLATION

- A. The Contractor shall stake out the areas to be paved, using grade stakes on which the final finish elevations, base course and subgrade elevations are clearly marked. All such stakes and elevations shall be approved by the DOT-A before any work is done.
- B. Installation shall be in accordance with the applicable sections noted hereinabove and details shown on the plans.

- 1. Application of the prime coat specified above over newly constructed base course will not be required where the longitudinal grade of the pavement is less than 8% or where the asphaltic concrete pavement thickness is greater than 4 inches. Where a prime coat is provided, the contractor shall control runoff and protect adjacent work, property, utilities, waterways, etc. against damage. Damaged work, etc. shall be repaired and restored to their original condition at no additional cost to the State.
- 2. Pavement shall be sloped to prevent ponding.
- C. Existing weed growth shall be treated with weed killer prior to paving. Weed killer shall be applied per the manufacturer's directions.
- D. The Contractor shall notify the DOT-A 24 hours in advance before application of weed killer.

#### 3.02 FILL COMPACTION TESTING

- A. All subgrade and pavement sections shall be tested by an independent testing agency retained by the Contractor and all test results submitted to the DOT-A for approval.
- B. All cost of testing shall be borne by the Contractor. Testing shall be made throughout the area for each 6-inch compacted layer. All test results may be approved before the Contractor can proceed with placing of base course or select borrow subbase course. Testing shall be in accordance with ASTM D1557.

#### 3.03 FINAL INSPECTION

At the time of final inspection of the work performed under the Contract, the work covered by this section shall be complete in every respect and operating as designed. All surplus materials of every character, resulting from the work of this section, shall have been removed. Any defects discovered in the work, subsequent to this inspection, shall be corrected prior to final acceptance. Coordinate inspection of work within the project area with the DOT-A.

#### PART 4 – MEASUREMENT & PAYMENT

#### 4.01 METHOD OF MEASUREMENT

Work under this Section shall be measured as indicated and will be paid for at the Contract basis indicated in the proposal schedule. The Contract Price paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work

#### 4.02 BASIS OF PAYMENT

- A. Asphalt repair work involving removal and replacement of existing asphalt where the intent of repairs is to restore the roadway back to its original configuration throughout the project site as defined in the Construction Drawings, shall be measured and paid for, at the contract unit price bid. The contractor unit price paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.
- B. For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other mark-ups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.
- C. Additional Unforeseen Asphalt pavement repairs shall be paid for by allowance funds. This includes areas where pavement removal is required for access to other work such as underground utility work, or other pavement locations not shown on the drawings that are approved by DOT-A for repair.

<u>Item No.</u> 02513.1	<u>Item</u> Ewa Concourse Turnaround, Asphalt Pavement	<u>Unit</u> Square Feet
02513.2	Diamond Head Concourse Turnaround, Asphalt Pavement	Square Feet
02513.3	Surface Pavement Restoration for Underground Utility Access	Allowance

END OF SECTION

#### **DIVISION 03 – CONCRETE**

#### SECTION 03300 - STRUCTURAL CONCRETE

#### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 <u>SUMMARY</u>

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
  - 1. Planter Modifications at the Ewa Connecting Link, Diamond Head Connecting Link, and Diamond Head Concourse Second Level.
  - 2. Drain beam supports at the Ewa and Diamond Head connecting links.
  - 3. Roadway Pavement repairs along expansion joints at the Overseas Terminal Departures Roadway, and Terminal 2 Third Level Roadway.
- B. Related Sections:
  - 1. Section 02222 SELECTIVE DEMOLITION
  - 2. Section 03320 HYBRID POLYMER CONCRETE (HPC)
  - 3. Section 05120 STRUCTURAL STEEL
  - 4. Section 05519 POST-INSTALLED CONCRETE ANCHORS
  - 5. Section 07916 EXPANSION JOINT
  - 6. Section 09911 EXTERIOR PAINTING

#### 1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

#### 1.04 <u>SUBMITTALS</u>

- A. Submit in accordance with Section 01300 SUBMITTALS.
- B. Product Data: For each type of product indicated.

CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS DANIEL K. INOUYE INTERNATIONAL AIRPORT STATE PROJECT NO.: A01043-33 AIP PROJECT NO. 3-15-0005-XXX

- C. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
  - 1. Location of construction joints is subject to approval of the DOT-A.
- E. Qualification Data: For Installer.
- F. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Form materials and form-release agents.
  - 4. Fiber Reinforced Polymer reinforcement bars and accessories.
  - 5. Fibrous reinforcement.
  - 6. Curing compounds.
  - 7. Bonding agents.
  - 8. Adhesives
- G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
  - 1. Aggregates
  - 2. Cement

### 1.05 QUALITY CONTROL

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician -Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
  - 1. Bagged concrete shall not be used for scope of work covered within this section. All structural concrete shall be ready-mix concrete produced in a batch plant, and delivered to the site.
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

### 1.06 DELIVERY, STORAGE, AND HANDLING

Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

### PART 2 – PRODUCTS

### 2.01 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  - 1. Plywood, metal, or other approved panel materials.
  - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. High-density overlay, Class 1 or better.
    - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.

- c. Structural 1, B-B or better; mill oiled and edge sealed.
- d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- C. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- E. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
  - 1. Furnish units that will leave no material closer than 1 inch to the plane of exposed concrete surface.
  - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

## 2.02 STEEL REINFORCEMENT

Reinforcing Bars: ASTM A 615, Grade 60, deformed.

### 2.03 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
  - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

# 2.04 STRUCTURAL CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I/II
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source
  - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

- 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94 and Potable.

# 2.05 CONCRETE CURING REQUIREMENTS

- A. Full Depth Roadway Concrete Repair at Connecting Links
  - 1. Concrete used in full depth repairs shall cure to 3,000 psi minimum within 3 hours to be able to receive vehicular traffic loads by the end of the work shift.
- B. Post-Installed Drain Support Beam
  - 1. Beams cast below connecting link roadway to support new drain locations must reach 3,000 psi before opening to traffic.
- C. Roadway Deck, Around New Drain Inlet
  - 1. Concrete cast around drain inlet shall cure to 3,000 psi minimum within 3 hours to be able to receive vehicular traffic loads by the end of the work shift.
- D. All other concrete shall be cast and cured to a minimum 28-day compressive strength as noted in the Structural notes of the Construction Drawings.

# 2.06 <u>ADMIXTURES</u>

- A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494, Type A.
  - 2. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

# 2.07 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlappolyethylene sheet.
- D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

## 2.08 RELATED MATERIALS

- A. <u>Expansion-and Isolation-Joint-Filler Strips</u>: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self- expanding cork.
- B. <u>Semirigid Joint Filler</u>: Two-component, semirigid, 100 percent solids, per ASTM D 2240
- C. Non-Swelling Waterstop Around Connecting Link Drain Inlet:
  - 1. <u>Primer</u>: Primer adhesive shall be produced by the same manufacturer of non-swelling waterstop and approved by manufacturer to use in conjunction with waterstop.
  - 2. <u>Waterstop</u>: 3/4-inch by 1-inch sized non-swelling mastic strip applied waterstop designed for non-moving joins and penetrations.

## 2.09 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

### 2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
  - When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

# 2.11 LEVELING CONCRETE

- A. Leveling concrete shall meet the following:
  - 1. The leveling concrete shall be a blend of selected Portland Cements, specially graded aggregates, admixtures for controlling setting time, and water reducers for workability and an organic accelerator.
  - 2. The materials shall be non-combustible before and after cure.
  - 3. The materials shall be supplied as a factory-blended unit.
  - 4. The Portland Cement mortar shall be placeable from <sup>1</sup>/<sub>4</sub>" to 1" in depth per lift for horizontal applications.

## PART 3 – EXECUTION

## 3.01 <u>FORMWORK</u>

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 1. Install keyways, reglets, recesses, and the like, for easy removal.
  - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to

forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

#### 3.02 EMBEDDED ITEMS

Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

### 3.03 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
  - 1. Leave formwork for beam soffits and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by DOT-A.

#### 3.04 REINFORCEMENT BARS

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

### 3.05 <u>JOINTS</u>

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by DOT-A.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
  - 3. Locate horizontal joints in floor slabs.
  - 4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  - 5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

- 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

## 3.06 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by DOT-A.
- C. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and opentextured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

# 3.07 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

#### 3.08 FINISHING SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
  - 1. Apply float finish to surfaces to receive broom finish.
- D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
  - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with DOT-A before application.

#### 3.09 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

### 3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with for ACI 301 for hot-weather protection during curing.
- B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

- D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
    - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
  - 3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

### 3.11 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

# 3.12 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by DOT-A at no additional cost to the state. Remove and replace concrete that cannot be repaired and patched to DOT-A's approval at no additional cost to the state.

- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one-part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by DOT-A.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
  - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  - 2. After concrete has cured at least 14 days, correct high areas by grinding.
  - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

- 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
- 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to DOT-A's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to DOT-A's approval.

# 3.13 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Contractor will engage a qualified testing agency to perform field and prepare test reports.
- B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency shall be as follows:
    - a. Samples for strength of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yards of concrete, nor less than once for each 5,000 square feet of surface area for slabs.
    - b. If the total volume of concrete is such that the frequency of testing would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

- 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
- 3. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
- 4. Compression Test Specimens: ASTM C 31.
  - a. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
- 5. Compressive-Strength Tests: ASTM C 39; test one set of two laboratorycured specimens at 7 days and one set of two specimens at 28 days.
  - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
  - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 6. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- 7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- 8. Test results shall be reported in writing to DOT-A, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- 9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by DOT-A but will not be used as sole basis for approval or rejection of concrete.
- 10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by DOT-A. Testing and inspecting agency may conduct tests to

determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by DOT-A.

- 11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- C. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

## PART 4 – MEASUREMENT AND PAYMENT

## 4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Structural Concrete work involving modification of the planters at the Ewa and Diamond Head Connecting Links and the Diamond Head Concourse Second Level, shall be paid for at the contract Lump Sum prices for the <u>Ewa Connecting Link Planter Modifications</u>, <u>Diamond Head Connecting Link Planter Modifications</u>, and <u>Diamond Head Concourse Second Level Planter Modifications</u>. The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.

<u>Item No.</u> 03300.1	Item Ewa Connecting Link Planter Modifications	<u>Unit</u> Lump Sum
03300.2	Ewa Connecting Link Drain Relocation	Lump Sum
03300.3	Diamond Head Connecting Link Planter Modifications	Lump Sum
03300.4	Diamond Head Connecting Link Drain Relocation	Lump Sum
03300.5	Diamond Head Concourse Second Level Planter Modifications	Lump Sum

B. All other structural concrete work specified in this section shall be considered incidental to and included in the bid prices for the various items of work in the project.

# END OF SECTION

## SECTION 03320 - HYBRID POLYMER CONCRETE (HPC)

### PART 1 – GENERALS

### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 <u>SUMMARY</u>

- A. Section includes polymer concrete overlay system to be installed at the Ewa and Diamond Head Connecting Links to provide a protective coating and grading to new drain locations.
- B. Provide a polymer concrete system containing engineered resins designed for bridge deck overlays, patching, resurfacing applications and grade corrections.
  - 1. Work includes substrate preparation.
- C. Related Sections: The following items are not included in this Section and are specified under the designated Sections:
  - 1. Section 03300 STRUCTURAL CONCRETE
  - 2. Section 03730 CONCRETE REPAIRS
  - 3. Section 07680 EPOXY SURFACE TREATMENT
  - 4. Section 07916 EXPANSION JOINT

### 1.03 DESCRIPTION OF WORK

- A. The work shall include the furnishing of all labor, materials, equipment and any other related miscellaneous items necessary to completely construct all Hybrid Polymer Concrete as shown on the plans and as specified herein. HPC shall be used for overlay and joint repair work.
- B. HPC shall be 100% solids, thermosetting hybrid polymer concrete and composed of the following three components: two-component reactive hybrid polymer resin binder and blend of specified aggregates.
- 1.04 <u>SUBMITTALS</u>
  - A. Submittals: Comply with project requirements for submittals as specified in Section 01300 SUBMITTALS.
  - B. Prior to the start of this work, provide the following submittals in one complete set for acceptance. Indicate clearly the name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be

performed until written acceptance has been received. Submit all items listed to DOT-A for approval 30 days prior to installation.

- 1. Detailed step by step Work Plan procedures for all aspects of the work including:
  - a. Determining surface profiles and compressive strengths.
  - b. Cleaning and roughening substrata.
  - c. Placement (handling, mixing, consolidating, finishing, curing, and texturing) of HPC.
  - d. Testing for delaminations.
  - e. The method and materials used to contain, collect, and dispose of the concrete debris generated by the scarifying process, including provisions for protecting adjacent traffic from flying debris.
- 2. The HPC mix design and the estimated curing time based on anticipated temperatures.
- 3. Certificates of compliance and test reports for all materials used in the HPC mix.
- 4. Manufacturer's written instructions for the installation of the overlay system and the storage of all overlay materials.
- 5. The name of the manufacturer of the HPC materials including the name and phone number of the Manufacturer's Technical Representative.
  - a. HPC shall be produced by the same manufacturer as the epoxy surface treatment as noted in Section 07680 EPOXY SURFACE TREATMENT, to ensure material compatibility and warranty coverage.
- 6. Information on the HPC including shelf life, working times, and placement rates.
- 7. Detailed information on all equipment and materials that will be used for all aspects of the work including but not limited to determining surface profiles and compressive strengths, quality control (QC) plan, placing (handling, mixing, consolidating, finishing, curing, and texturing) of HPC, and testing for delaminations.
  - a. The QC Plan shall designate a QC Manager, who shall be present at the jobsite and have full authority to request any action necessary for the operation of the QC Plan providing it complied with the contract documents and acceptance of DOT-A.

- b. The QC Manager shall be certified in all test methods used and be responsible for the required field quality control in sampling and testing in conformance with the accepted quality control plan, test methods and contract documents. All sampling shall be performed in the presence of DOT-A. DOT-A is not responsible or shall be regarded as part of the contractor's QC team. It is the responsibility of the contractor and the QC Manager to ensure that the test procedure being used is compliant with the test method standard. Inspections are performed for the exclusive benefit of the State. The inspection of or the failure to inspect the work shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made. DOT-A has the right to reject the test if DOT-A feels that it is non-compliant, e.g., the technician who performed the test is not certified or the material testing laboratory is not accredited to perform the required tests. Maintain and have available upon request, the current test standard methods documentation being used, referenced documents, complete records of sampling, testing, corrective actions, and quality control inspection results.
- 8. Detailed plans and procedures including complying to noise variances, and controlling of work to appropriately minimize dust and air borne debris from cleaning and roughening the substrata, mixing and placing concrete, and cleaning operations, and to prevent water runoffs.
- 9. Planned actions to maintain adherence to limitations and requirements of the following variables with regards to HPC work:
  - a. Equipment and traffic control near or on work areas during placement and curing operations.
  - b. Inclement weather.
  - c. Moisture and temperature requirements for the materials being used.
- 10. Test reports of compressive strengths, tensile strengths, bond strengths, and maturity readings during the progress of the work. Reports shall be submitted once every 2 weeks.

### 1.05 QUALITY CONTROL

A. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

- B. Installer Qualifications: A firm or individual experienced in installing work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary manufacturer.

### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered in their original unopened containers in new undamaged condition, bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name, and quantity. Each shipment of resin binder shall be accompanied by a Safety Data Sheet (SDS).
- B. The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean, covered, cool and dry.
- C. Stored materials shall be inspected prior to their use and shall meet the requirements of this Specification at the time of use. Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejection shall be immediately replaced at no additional expense to the State.
- D. Sufficient material to perform the entire HPC application shall be in storage at the site prior to any field application, so that there shall be no delay in procuring the material for each day's application.
- E. The contractor shall arrange to have the material supplier furnish technical service related to application of material and health and safety training for personnel who are to handle the HPC.

### 1.07 PRE-INSTALLATION CONFERENCE

Prior to scheduled commencement of the installation and associated work, conduct a meeting at the project site with the installer, DOT-A, manufacturer's representative and any other persons directly involved with the performance of the Work. The Installer shall record conference discussions and to include decisions and agreements reached (or disagreements), and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.

### 1.08 PROJECT CONDITIONS

- A. Weather: Proceed with work only when existing and forecasted weather conditions permit. HPC application should not proceed when precipitation is imminent. Ambient temperatures shall be above 36°F (2°C) when applying HPC.
- B. All surfaces to receive the overlay shall be free from visible water, and dew. Application of the HPC shall be conducted in well-ventilated areas.

- C. Minimum age of concrete must be 21-28 days depending on curing and drying conditions.
- D. Contractor shall ensure adequate protection during installation of the HPC system.

#### 1.09 <u>WARRANTY</u>

A. Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of one year starting at the date of Substantial Completion.

### PART 2 – PRODUCTS

#### 2.01 MATERIALS

A. Two-component Resin Binder. The resin binder shall be solvent-free, moistureinsensitive, two-component Reactive thermoset polymer binder conforming to the following requirements in Table 1:

Quality Characteristic	Test Method	Requirement		
Viscosity (RV2 @ 20 RPM)	ASTM C881 / AASHTO M 235	1000 — 1500 cP		
Flash Point	ASTM D3278	>250° F		
VOC Content	ASTM D2369*	<10 g/L		
Gel Time	C881 / AASHTO M 235	10 minutes minimum		
Tensile Strength (7 days)	ASTM D638, Type I Specimen	1500 — 2500 psi		
Tensile Elongation	ASTM D638	50% minimum at 7 days		
Adhesion to Concrete	ASTM C1583 (ACI 503R)	250 psi or 100% substrate failure at 24 hrs		
Water Absorption (24 hrs.)	ASTM D570	0.5% maximum		
Type D Hardness	ASTM D2240	60 - 80		
Thermal Compatibility	ASTM C884	PASS		
Chloride Ion Permeability	AASHTO T277	<10.0 Coulombs		
Open to traffic	Manufacturer's recommendation	3 hours maximum		
*Method E, 55-60 mil thickness				
Other Requirements: -No volatile chemical odors -No explosive catalysts or ing -Material must be MADE IN T	redients allowed HE USA			

- B. Aggregates. The aggregate for the HPC shall conform to this section and conform to the following;
  - 1. Gradation, see Table 2.

No. 200

Percent Sieve Size passing 1/2" 100 3/8" 98-100 No. 4 77-100 No. 8 60-82 No. 16 34-56 No. 30 5-25 No. 50 0-15 No.100 0-7

0-3

Table 2 – Gradations

- 2. The aggregate absorption shall not exceed 1.5% as determined by ASTM C566 or as otherwise approved by DOT-A.
- 3. The HPC aggregate temperature must be between 45 degrees F and 100 degrees F at the time of mixing.
- 4. Aggregate shall match the adjacent existing aggregate color as best as possible.

### PART 3 - EXECUTION

### 3.01 <u>GENERAL</u>

- A. The HPC manufacturer shall have a representative on the job site for the startup of the project and at least the first two days of the HPC overlay installation. The HPC representative must report any work or materials that may result in non-compliant work to DOT-A, who may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer's representative and DOT-A are satisfied that appropriate remedial action has been taken by the Contractor. No work shall proceed and materials will not be accepted if manufacturer's technical representative is not on site for the startup of the project.
- B. During surface preparation and application, precaution shall be taken to assure that traffic is protected from rebound, dust and construction activities. Dust in the air at night may, due to headlights and floodlights become an opaque vision barrier to motorists. The Contractor must not allow this to happen. Appropriate shielding shall be provided as required and as directed by DOT-A at no additional cost. The Contractor shall provide suitable protection as needed to protect all

exposed areas not to receive HPC such as parapets, drains, etc. All damage and defacement resulting from the application shall be cleaned and, or repaired to DOT-A's satisfaction at no additional cost to the State.

## 3.02 EQUIPMENT

- A. Use a continuous automated volumetric mixer. Mechanically operated mixers or hand mixing may only be used as a backup during repairs, or for applications less than a cubic yard. Follow manufacturer's recommendations. Contractor must submit all mechanical and hand application methods for approval by DOT-A prior to starting any work.
- B. When mixing and applying manually, mix only the amount of material that can be used within its pot life. Proportion each liquid component carefully into a clean pail or drum. Mix thoroughly for 3 minutes with a Jiffy mixer on low speed (400-600rpm). To prepare a repair mortar, slowly add 200-250 lbs. of the engineered aggregate to every 4-gal of mixed polymer. Mix only until all aggregate is wetted out. Manufacturer's representative shall be present during hand mixing operations.

## 3.03 PRE-OPERATIONAL CONFERENCE

Schedule a meeting with the Contractor, and supplier's representatives involved in construction operation of the HPC and DOT-A, at a mutually agreed time, to discuss and verify the methods of accomplishing all phases of the HPC operations, contingency planning, and standards of workmanship for the completed items of work. Include the Contractor's superintendents, foremen, subcontractors, and supplier's technical representatives, and all key personnel involved with the HPC work as attendees of the pre-operation conference. Do not begin placement of HPC before DOT-A accepts the pre-operational conference as completed.

### 3.04 SURFACE PREPARATION

- A. Use the procedures of ICRI (International Concrete Repair Institute) Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcement Steel Corrosion", ICRI Guideline 03732 "Selecting and Specifying Concrete Surface, Surface Preparation for Seaters, Coatings and Polymer Overlays" sections of ACI 546.14 "Guide for Concrete Repair". The Contractor shall be responsible for any falsework requirements, debris, noise and pollution control on and below the repair area.
- B. The concrete surface shall be prepared by removing all material which may act as bond breaker between the existing surface and the HPC.
- C. The textured or scarified pavement preparation method shall remove all dirt, oil and other foreign materials, as well as any unsound concrete or laitance from the surface and edges against which new HPC is to be placed. The concrete surface may require retexturing where penetration of foreign material is evident. No contamination of the retextured or scarified concrete surface shall be permitted.

- D. The surface preparation shall meet the following requirements:
  - 1. New Pavement. Concrete pavement below HPC shall be cured to HPC manufacturer's recommended time or moisture content. On new concrete, the surface shall be given a very rough texture while still plastic by use of a wire comb or other approved texturing device which will produce a bondable surface acceptable to the DOT-A.
  - 2. Existing Pavement or Deck. On existing concrete, the surface shall be prepared by shot blasting or approved equal. Electric tools having an impact energy of 15 pounds or less may be used for areas where the Contractor is unable to shot blast upon approval of DOT-A. Produce a concrete substrate surface with a minimum roughness of approximately 1 inch amplitude or an ICRI concrete surface profile (CSP) of 7. The preparation method shall not produce a polished or slick surface.
  - 3. Existing concrete containing previously placed repair materials. On existing concrete with previously placed unsound or magnesium phosphate repair products, these materials shall be removed prior to placing the HPC. Contractor shall follow Section 03730 CONCRETE REPAIRS. The exposed concrete surface shall meet the requirements contained in Paragraph 3.04D.2 of this specification.
  - 4. Existing Concrete with Penetrating Sealer and aggregate topping. Remove all loose sand/aggregate. Clean surface to be free of any dust, dirt, oil, and debris prior to placing any HPC.
  - 5. Existing angle iron for expansion joints shall be cleaned and roughened per manufacturer's recommendations to ensure proper bond.

# 3.05 TRAFFIC AND EQUIPMENT CONTROL ON CONNECTING LINK

- A. Construction vehicles shall not exceed a 5-mph speed limit within 200 feet of the placement area in both directions during HPC placement and curing.
- B. Equipment, vehicles, and personnel, etc. shaft not contaminate the prepared deck surface.
- C. Equipment shall not be located on spans undergoing deck HPC unless approved by DOT-A.
- D. The Contractor shall not permit compressors or other equipment that produce vibrations on the span undergoing deck HPC work. Equipment shall not be located on spans undergoing deck HPC unless approved by DOT-A.
- E. Vehicular traffic shall not exceed a 35-mph speed limit on the bridge span during HPC placement and curing.

F. The connecting link roadway shall not be used as a storage area for equipment or for stockpiling materials. Loads exceeding 125 psf or 4,000 lb concentrated load shall not be used on the connecting link.

## 3.06 PLACEMENT OF HPC

- A. After surface preparation concrete surfaces shall be structurally sound, clean, free of dirt, powdered concrete, loose mortar particles, paint, film, protective coatings, efflorescence, laitance, and other matter detrimental to proper adhesion of the new HPC. Contractor shall ensure proper cleanliness. Work surfaces must be free of ridges, fins or sharp projections. All reinforcing bars in the repair area shall be made free of all scale and loose rust by using either powered rotary wire bristle brush or abrasive blasting. Needle gunning may be used as preliminary step for removal of loose rust. Do not overly vibrate the reinforcing bars.
- B. Expansion joints, drains and grates shall be adequately isolated prior to placing the HPC as approved. HPC shall not affect the design and function of the expansion joints, drains, and grates. Do not place HPC within 6 feet of another area where the deck surface is being prepared.
- C. The HPC discharged from the mixer shall be uniform in composition and consistency. Mixing capability shall be such that initial and final finishing operations can proceed at a steady pace.
- D. The hybrid polymer resin binder in the HPC shall be 12-15 percent by weight of the dry aggregate. The contractor shall determine the exact percentage as approved by DOT-A.
- E. The HPC overlay shall be placed at a minimum thickness of 3/4 inch.
- F. Any falsework and formwork required shall be considered incidental to this work.

# 3.07 HOT WEATHER CONCRETING

Do not place concrete where ambient temperature is above 90 degrees F unless design mix and placement method conform to ACI 305 R-91 Hot Weather Concreting. When ambient temperature is above 90 degrees F, cool reinforcing steel, forms, and other surfaces to below 90 degrees F with approved methods by DOT-A before placing of concrete.

### 3.08 FINISHING HPC

- A. Finishing equipment shall be capable of consolidating the HPC and striking off the HPC to the final grade, thickness and cross-sections as shown in the contract documents.
- B. For repairs or placements of less than 2 cubic yards or areas inaccessible to selfpropelled finishing equipment, finish while the HPC is plastic and workable using a roller screed, air screed, or approved equal. Contractor has the option of using other methods of finishing HPC as long as the selected method leaves a uniform,

level finish, free of slick or puddled resin areas. DOT-A must approve methods prior to constructing trial overlay. Finish the concrete to meet the requirements of the Paragraph 3.11 – Surface Testing.

C. Finish HPC with tinned surface texture to match existing adjacent surface.

### 3.09 <u>CURING</u>

Traffic and construction equipment shall not be permitted on the HPC for at least 3 hours and until the HPC surface is tack free. Refer to HPC technical data sheet curing schedule for estimated cure times.

## 3.10 CONSTRUCTION JOINTS

Use construction joints only with the acceptance of DOT-A and in accordance with the Contract documents.

## 3.11 SURFACE TESTING

- A. The finished HPC shall conform to the following requirements when tested by the Contractor in the presence of DOT-A within 14 days following the placement of concrete:
  - 1. Surface Flatness. The surface of the HPC shall not vary more than 1/8 inch under a 10-foot straightedge placed parallel to the traffic lanes.
  - 2. Surface Condition. The surface of the HPC shall be sound and free from delaminations and cracks greater than 0.01 inch in width.

# 3.12 TESTING HPC

- A. Compressive strength shall be in accordance with ASTM C 579 Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing's, and Polymer Concretes. The compressive strength shall be a minimum of 1500 psi at 24 hours and 3500 psi at 7 days.
- B. A minimum of three Pull-off tests at locations selected by DOT-A shall be performed for each LOT. Testing may be conducted on a separate concrete substrate representing the field conditions upon approval of DOT-A. Testing will be performed in accordance with ASTM C1583 and the manufacturer's recommendations. A passing test is the failure of the concrete substrate or bond strength above 250 psi at 24 hours. A passing substrate failure is when more than 50% of the substrate covers the specimen being tested. Fill core holes with HPC approved by DOT-A.

# 3.13 QUALITY CONTROL (QC)

A. HPC Sampling and Testing. Perform QC concrete sampling and testing in accordance with the QC plan and following requirements:

- 1. QC tests shall include temperature and preparing compressive strength cubes for testing at later dates. Perform HPC tests on the initial delivery for each mix each day. Ensure that QC technicians are certified, and the materials testing laboratory are accredited in the test method being used. Ensure all technicians that are performing the sampling and performing the testing are certified in the test placement operation at each placement site and the testing is done in an accredited material testing laboratory. A LOT shall be one day's production per mixing and placement method, once every maximum of 10 cubic yards of HPC. Cast a set of cubes representing the LOT from the sample of HPC.
- 2. Maintain a logbook with records of relevant details of all tests. Provide a copy of new entries at the end of each work day. Make available for inspection by DOT-A during the normal working hours of construction. At the end of the project, deliver the original logbook to DOT-A. The original logbook will become property of DOT-A.

# 3.14 ACCEPTANCE AND CORRECTIVE ACTION

- A. The completed HPC overlay surface must be uniform in texture and appearance. HPC shall meet the compressive strength and bond strength requirements. Contractor shall repair or replace all HPC that does not meet the approval of DOT-A at no additional cost to the State. Repair methods shall be submitted to DOT-A for approval.
- B. Correct all defects in material and work, as directed, at no additional cost to DOT-A, according to the following:
  - 1. Remove and replace HPC overlay that DOT-A determines has any raveling, delamination, streaking, or bond test failure.
  - 2. Replace with acceptable HPC overlay at the contractor's expense. Ensure the minimum replacement is the full lane width and the length of the defect plus five lane feet on the up-station and down-station side of the edge of the defect area and as accepted by DOT-A. Replaced areas will be retested and evaluated for acceptance or further corrective action.
  - 3. Any roadway features disturbed by the work or the installer's operations shall be restored with the same materials and design as directed by DOT-A at no additional cost to the agency.

### 3.15 VERIFICATION AND INDEPENDENT ASSURANCE

DOT-A may perform Verification sampling and testing for its own use for internal assurance and acceptance testing. Furnish sufficient quantity of each mix for verification and independent assurance sampling and testing as required by DOT-A. When DOT-A performs verification, the Contractor may perform the same tests on the HPC at the same time.

## PART 4 – MEASUREMENT AND PAYMENT

### 4.01 BASIS OF MEASUREMENT AND PAYMENT

Hybrid Polymer Concrete work involving removal of the existing epoxy overlay, surface preparation, and regrading of the Ewa and Diamond Head Connecting Links with Hybrid Polymer Concrete, shall be paid for at the contract Lump Sum prices for the <u>Ewa Connecting Link Roadway Regrading</u>, and <u>Diamond Head Connecting Link</u> <u>Roadway Regrading</u>. The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.

<u>Item No.</u> 03320.1	<u>Item</u> Ewa Connecting Link Roadway Regrading	<u>Unit</u> Lump Sum
03320.2	Diamond Head Connecting Link Roadway Regrading	Lump Sum

END OF SECTION

### SECTION 03730 - CONCRETE REPAIRS

### PART 1 – GENERAL

## 1.01 RELATED DOCUMENTS

The General Provision for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 <u>SUMMARY</u>

- A. Section includes concrete repairs such as spall repairs, delamination repairs, crack repairs, and other restoration for the concrete elements of the Terminal 2 Departures Roadway structure, Ewa Concourse structure, Ewa Connecting Link structure, Terminal 2 Third Level Roadway, Diamond Head Concourse structure, and Diamond Head Connecting Link structure.
- B. Two types of repair mortars are specified in this section as follows:
  - 1. <u>Typical Repair Mortar</u>: Repair Mortar to be used at locations not directly in contact with vehicular traffic loads, or areas where traffic loads will not be applied over repair area until fully cured to 28-days.
  - 2. <u>Vehicular Load Repair Mortar</u>: Repair Mortar to be used at locations that will receive traffic loads, or vibrations from traffic loads at the end of each work shift. These areas include but may not be limited to:
    - a. Ewa Connecting Link roadway deck spall repairs
    - b. Diamond Head Connecting Link roadway deck spall repairs
    - c. Terminal 2 Departures Roadway ceiling spall repairs (Overhead work above Terminal 2 Arrivals Roadway).
    - d. Terminal 2 Departures Roadway deck spall repairs.
- C. Related Sections:
  - 1. Section 03320 HYBRID POLYMER CONCRETE (HPC)
  - 2. Section 03700 EMBEDDED GALVANIC ANODES
  - 3. Section 07916 EXPANSION JOINT
  - 4. Section 09911 EXTERIOR PAINTING

### 1.03 DESCRIPTION OF WORK

This section is for locating and confirming the size of defective areas in the concrete structure and repairing of all concrete spalls, delaminations, honeycombing, cracks

and other defective concrete within the existing concrete structure. This section applies to locations as designated on the plans as well as all other locations encountered by the Contractor and DOT-A.

### 1.04 <u>DEFINITIONS</u>

- A. <u>Bracing</u>: Temporary supplemental members used to avoid local or global instability during construction, evaluation, or repair that are intended to be removed after completion.
- B. <u>Delamination</u>: A planar separation in a material that is roughly parallel to the surface of material.
- C. <u>Rehabilitation</u>: Repairing or modifying an existing structure to a desired useful condition
- D. <u>Repair</u>: The reconstruction or renewal of concrete parts of an existing structure for its maintenance or to correct deterioration, damage, or faulty construction of members or systems of a structure.
- E. <u>Shoring</u>: Props or posts of timber or other material in compression used for the temporary support of excavations, formwork, or unsafe structures; the process of erecting shores
- F. <u>Termination Joint</u>: The interface where a placement of repair material meets existing concrete, the edge of an expansion joint, or other existing surfaces.
- G. <u>Unsound Concrete</u>: Concrete that is fractured, delaminated, spalled, deteriorated, defective, contaminated or otherwise damaged.

#### 1.05 <u>REFERENCES</u>

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic design designation only.
- B. American Concrete Institute (ACI)
  - 1. <u>ACI 117</u>: (2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
  - 2. <u>ACI 503.7</u>: (2007) Specification for Crack Repair by Epoxy Injection
  - 3. <u>RAP-2</u>: Crack Repair by Gravity Feed with Resin
  - 4. <u>ACI PRC-222-19</u>: (2019) Guide to Protection of Metals in Concrete Against Corrosion
- C. American Society for Testing and Materials International (ASTM)

- 1. <u>ASTM C928</u>: (2020a) Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs
- 2. <u>ASTM D4580</u>: (2012) Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding
- 3. <u>ASTM G3</u>: (2019) Standard Practice for Conventions Applicable to Electrochemical Measurements in Corrosion Testing
- 4. <u>ASTM C33</u>: (2023) Standard Specification for Concrete Aggregates
- 5. <u>ASTM C94</u>: (2023) Standard Specification for Ready-Mixed Concrete
- 6. <u>ASTM C881</u>: (2020) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
- 7. <u>ASTM B418-95a</u>: (2017) Standard Specification for Cast and Wrought Galvanic Zinc Anodes
- 8. <u>ASTM A82-97a</u>: (2017) Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
- D. International Concrete Repair Institute (ICRI)
  - 1. <u>IRCI 310.2R</u>: (2013) Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

### 1.06 <u>SUBMITTALS</u>

- A. Submit in accordance with Section 01300 SUBMITTALS
- B. Preconstruction Submittal
  - 1. Submit for record, a qualification statement by the Contractor listing their completed concrete repair projects, including size, location, owner, engineer/architect and contact numbers. Contractor Qualifications shall comply with Section 1.06.B
  - 2. Schedule indicating proposed methods and sequence of operations for the concrete repair work.
- C. Product Data
  - 1. Product data of all materials used for concrete repair under this section. Product data shall also include test data, certificates, and manufacturer's instructions for the following items:
    - a. Concrete patching materials- identifying the location where each type of material is to be used.

- b. Crack repair materials
- D. <u>Material Safety Data Sheets</u>: Furnish the manufacturer's Material Safety Data Sheets for each of the materials present at any time on the job site.
- E. <u>Documentation of Repairs</u>: Include records of each repaired concrete area including spalls and cracks. Documentation shall include the following:
  - 1. The date of concrete repair mortar placement or date of epoxy gravity feeding or injection.
  - 2. The location of the center of each repair rectangle, or crack location is indicated by the distance from the two nearest column lines.
  - 3. Dimension of the spall repair rectangle or length of crack repair.

## 1.07 QUALITY CONTROL

- A. General Requirements
  - 1. To protect personnel from overexposure to toxic materials, conform to the applicable manufacturer's Safety Data sheets or local regulations.
  - 2. Inspection and testing of work must be in accordance with established procedures, manufacturer's instructions, specific instructions from DOT-A if given, or recommended practices as referenced herein and the Contract Documents.
- B. <u>Contractor Qualifications:</u> An experienced installer who has completed at least five (5) years experience in concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. <u>Tolerances</u>: Construction tolerances for repairs must conform to ACI 117. Where existing condition do not allow tolerances to conform to ACI 117, use the details and materials for such conditions as indicated in the Contract Documents. For conditions not shown or that are different than indicated in the Contract Documents, notify DOT-A before proceeding with the work at those locations.
- D. <u>Observation of Work:</u> DOT-A will observe the Work of the Contractor at various phases during the repair process. The observations will include a visual observation of the repair patches, and sounding the patched areas with a hammer to check for soundness. The Contractor shall provide access for DOT-A for their observations. The access will include the work platform used by the Contractor to perform the work. The platform shall be operated by the Contractor's personnel, if applicable, and shall be in accordance with OSHA safety requirements. The Contractor shall provide access to DOT-A on five (5) days for each location during the construction process for random observations. Locations include each floor (1<sup>st</sup> floor overhead, 2<sup>nd</sup> and 3<sup>rd</sup>) of the Ewa and Diamond Head Concourse (6 locations), Ewa and Diamond Head Connecting

Links (2 Locations), Terminal 2 Departures Roadway Soffit and Deck (2 Locations), total ten (10) locations thus fifty (50) days. The days will not be sequential and will be scheduled according to the Contractors production schedule. DOT-A will schedule with the Contractor in advance to arrange for the observations. A punch list will be compiled as a result of the observation. Upon receipt of the punch list, the Contractor shall make the necessary repairs, and provide one (1) additional day of access for DOT-A for final observation.

- E. <u>Rejection of Installed Work:</u> DOT-A shall have the right to reject all work which is not in compliance with the requirements of the drawings and specifications.
  - 1. Replacement of rejected work may require that the materials in place in the rejected areas be entirely removed to the solid concrete deck. Use methods that shall produce acceptable work. Additional surface preparation may be required. The Contractor shall research and define these procedures and complete the additional surface preparation and reapplication of the repair material at no extra cost to the State.

### 1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in original tightly sealed containers or unopened packages, clearly labeled and containing manufacture's name, labels, date of manufacture, product identification, manufacturer's instructions for mixing, and warning for handling and toxicity.
- B. All repair materials shall be stored in a manner to prevent deterioration for the intrusion of foreign matter. Any material which has deteriorated or that has been damaged shall not be used for concrete repair and shall be promptly removed from the site. The storage of materials and equipment shall be limited to areas designated by the DOT-A, and shall be secured under lock and key at all times.

### PART 2 – PRODUCTS

#### 2.01 <u>MATERIALS</u>

- A. All concrete repair materials used in any single repair operation shall be provided by the same manufacturer unless compatibility between brands can be proven with actual test or performance data.
- B. <u>Epoxy Bonding Adhesive:</u> Provide epoxy bonding adhesive if recommended by the manufacturer. Bonding adhesive must be provided by the same manufacture as patching material.
- C. <u>Typical Repair Mortar Patching Material</u>:
  - 1. Polymer-modified Portland cement mortar: Two component polymer modified containing a penetrating corrosion inhibitor in its formulation. Portland cement, trowel grade mortar which has high abrasion resistance, suitable for horizontal, vertical, and overhead surfaces, of a class and grade

to suit requirements. Refer to the manufacturer's specifications for preparation and application guidance.

- 2. Patching material and bonding adhesive shall be supplied by the same manufacturer and shall be fully compatible with each other.
- 3. Component A shall be a liquid polymer emulsion of an acrylic copolymer base and additives. Component A shall contain an organic, penetrating corrosion inhibitor which has been independently proven to reduce corrosion in concrete via ASTM G3 (half-cell potential tests). The corrosion inhibitor shall not be calcium nitrite, and shall have a minimum of 5 years of independent field testing to document performance on actual construction projects.
- 4. Component B shall be a blend of selected portland cements, specially graded aggregates, admixtures for controlling setting time, water reducers for workability, and an organic accelerator. The materials shall be non-combustible, both before and after cure. The materials shall be supplied in a factory-proportioned unit. The polymer-modified, portland cement mortar must be placeable from 1/2-in. to 1-in. in depth per lift for horizontal applications.
- 5. To prepare a polymer-modified portland cement concrete: aggregate shall conform to ASTM C33. The factory proportioned unit shall be extended with 42-lb. max. of a 3/8 in. (No.8 distribution per ASTM C33, Table II) clean, well-graded, saturated surface dry aggregate, having low absorption and high density.
- D. Vehicular Load Repair Mortar Patching Material:
  - 1. One component, packaged, dry, rapid-hardening cementitious material for concrete repairs meeting requirements of ASTM C 928.
  - 2. The repair concrete shall be a blend of selected Portland cements, specially graded aggregates, admixtures for controlling setting time, and water reducers for workability and an organic accelerator.
  - 3. The materials shall be non-combustible, both before and after cure.
  - 4. The material shall be supplied as a factory-blended unit.
  - 5. Aggregate shall conform to manufacturer's recommendation. Aggregate must be approved for use by the Engineer.
- E. <u>Water:</u> ASTM C94 and potable
- F. <u>Curing Compound:</u> For curing of Patching Material, cover with wet burlap or approved equal. Leave wet burlap on until opening to traffic.

- G. <u>Crack Repair Epoxy:</u> Low viscosity, high strength, resin adhesive that conforms to ASTM C881 specifications. Resin must be applicable for gravity feed installation method for horizontal cracks and pressure injection installation method for vertical and overhead cracks.
- H. <u>Sacrificial Galvanic Anodes</u>: Shall meet requirements of Section 03700 EMBEDDED GALVANIC ANODES.
- I. <u>Other Materials:</u> All other materials, not specifically described but required for the successful completion and installation of the work shall be as selected by DOT-A.

### 2.02 PERFORMANCE CRITERIA

- A. Properties of <u>Typical Repair Mortar</u> Mixed-polymer modified, portland cement mortar:
  - 1. Compressive Strength (ASTM C-109)
    - a. 1 day 3,000 psi
    - b. 7 days 4,000 psi
    - c. 28 days 6,000 psi
  - 2. Bond Strength @ 28 days (ASTM C-882 Modified) 2,000 psi
- B. Properties of <u>Vehicular Load Repair Mortar</u> Cementitious, very rapid hardening repair mortar
  - 1. Compressive Strength (ASTM C-109)
    - a. 2 hours 4,000 psi
    - b. 1 day 5,700 psi
    - c. 7 days 7,500 psi
    - d. 28 days 8,500 psi
  - 2. Bond Strength @ 28 days (ASTM C-882 Modified) 2,700 psi
  - 3. Can be open to vehicular traffic within 3 hours.

# PART 3 – EXECUTION

# 3.01 JOB CONDITIONS

A. Adhere to the manufacturer's printed instructions regarding weather and climate condition restrictions on the use of all materials supplied in this section.

- B. Do not apply the materials if it is raining or if rain is imminent. Take proper precautions to protect newly placed and completed repairs from weather conditions such as strong wind or rain.
- C. Do not man scaffolds or lift equipment in wind or rain conditions that makes working dangerous.
- D. <u>Protection</u>: Precautions shall be taken to avoid damage to any surface near the work area due to slippage.
- E. <u>Barricades</u>: Erect temporary barricades and railings, to prevent people from entering the project area. Coordinate with DOT-A on final location and placement.

## 3.02 PROTECTION OF WORK

- A. Do not allow construction loads to exceed the loads that a structural member or structure is safely capable of supporting without damage. Provide supplemental support if construction loads are expected to exceed safe load capacity.
- B. Use all means necessary to protect the materials of this section before and during installation and to protect this work and the work of all other trades. In the event of damage during installation, immediately make repairs and replacements necessary to the approval of the DOT-A at no additional cost to the State.
- C. Protect repair materials from environmental damage by weather events during the length of the curing period.

### 3.03 REPAIR QUANTITY VERIFICATION

- A. Locate the area of unsound concrete or delamination based on the construction drawings. Verify the dimensions shown in the drawing, using hammer-sounding or chain-drag sound methods in accordance with ASTM D4580. Denote and mark perimeter boundaries and notify DOT-A to approve the unsound concrete layout boundaries.
- B. If the size of the item differs during repair from the approved dimensions due to unforeseen conditions, notify DOT-A prior to commencing concrete repair work for approval.
- C. If additional spalls/ delaminations, or cracks that are not shown on the construction drawings are found mark the repair perimeter with spray paint or chalk and, notify DOT-A prior to commencing concrete repair work for approval.

### 3.04 EQUIPMENT FOR CONCRETE SPALL PREPARATION

A. Means and methods used for concrete removal and surface preparation must be selected and used such as to minimize damage to the structure and to the concrete substrate that remains.

- B. <u>Equipment for Concrete Removal</u>: Removal equipment and techniques must be suitable to produce concrete surface profiles and a level of cleanliness in designated areas as required by this specification and the contract Documents.
  - 1. <u>Cutting Equipment</u>: Cutting, lifting, and transporting equipment must be adequate to cut, support, and transport concrete sections without incurring any damage to the existing structure.
  - 2. <u>Concrete Breakers</u>: Provide sharp tips on breaker equipment to minimize microcracking damage in partial depth removal.
- C. Materials for Formwork and Embedded Items
  - 1. Install and remove formwork without damaging or staining the existing structure or repairing material.
  - 2. Forms used for polymer concrete/mortars must be tight enough to hold the material that is used without leaking. All surfaces where bond is not desired, but which are exposed to the monomer or resin, must be treated with a form release agent.

## 3.05 CONCRETE REPAIR SURFACE PREPARATION

- A. Immediately prior to placing the repair mortar or concrete, the Contractor shall thoroughly clean the existing concrete surfaces and formed repair areas, and apply a low resistivity bonding agent or cement slurry as recommended by the repair mortar manufacturer.
- B. Exposed reinforcing and structural steel shall be cleaned to remove all loose and built-up rust, asphalt residue, and all other contaminants detrimental to achieving an adequate bond. It may be necessary to use hand tools to remove the scale from the reinforcing steel or anchor bolts.
- C. The surface shall be free of spalls, laitance and all traces of foreign material. If necessary, detergent cleaning shall precede blast cleaning to ensure the removal of contaminants that are detrimental to achieving an adequate bond. Ultra-high hydro-demolition of 10,000 psi or more is an acceptable method of total surface preparation.
- D. Any additional surface preparation shall be in accordance with the manufacturer's recommendations for the patching material which is used. All unchipped surfaces that will receive new material shall be mechanically roughened to the greater of a 1/8 inch amplitude or manufacturer's recommendation.

### 3.06 CONCRETE SPALL REPAIR INSTALLATION

A. All work shall be performed in such a way as to eliminate any dust, vapors, or odors from entering into the interior spaces. No dust or debris shall come in contact with vehicles parked nearby the construction area. The contractor shall

clean the vehicle of such dust and debris if it occurs. Every precaution necessary to achieve this shall be implemented.

- B. No "feathering" of patching material shall be allowed. All patching will include saw cutting around the entire perimeter of the repair.
- C. Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner. All patching material shall be sanded smooth after the repair is complete and material curing is complete. The finish surface shall be flush with the surrounding concrete surface, and shall not be visually evident after application of the coating. Failure to accomplish this shall require the Contractor to remove the coating, and further sand the surface until flush at no cost to the State.
- D. The Contractor shall supply and place additional reinforcing steel as directed by the Engineer when the existing reinforcing steel has a section loss of 25% or greater. The reinforcing steel shall be of the same type and size as the existing and spliced with a minimum lap length of 30 bar diameters. Exposed reinforcing steel shall be sandblasted clean and maintained to a near-white condition. The Contractor shall roughen all areas of the existing sound concrete substrate to a 6 mm amplitude using methods acceptable to the DOT-A.
- E. If required by the manufacturer, the reinforcing steel shall receive two (2) coats of corrosion-inhibiting bonding agent at 20 mils each, a total of 40 mils DFT. The concrete surface shall receive one (1) coat at 20 mins DFT. The contractor shall follow the manufacturer's specifications for the recommended time between the application of the bonding agent and patching mortar.
- F. Where existing components are removed, the contractor shall repair, patch, and finish all flooring, wall, and ceiling surfaces to match the existing condition.
- G. <u>Compatibility</u>: Before patching, verify compatibility with and suitability of substances, including compatibility with in-place finishes or primers.
- H. Immediately before placing the repair material or installing formwork, make the repair area available for inspection by the DOT-A. Obtain acceptance by the Engineer of surface preparation before proceeding with Work. If the Work is rejected, perform additional operations to the satisfaction of DOT-A.
- I. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
- J. Repair areas using Vehicular Load Repair Mortar shall be opened to traffic at minimum 3 hours after placement.

### 3.07 IN-PLACE TEST OF REPAIRS

A. Utilizing a 2-pound hammer, test all completed concrete spall repairs to locate hollow or ringing-sounding areas. A hollow sound generally will indicate that
either the repair material has not completely filled the space from which the damaged concrete was removed or that it has not adequately bonded to the concrete substrate. Submit a revised method of installation to prevent the non-compliant work from happening again.

B. The Contractor shall remove the repair mortar from hollow or ringing sounding areas, prepare the surfaces of the exposed reinforcing bars and the sound concrete substrate, if necessary, form and then place, cure, and finish the new repair mortar at no additional cost to the State. Upon completion, the repairs will be retested by DOT-A.

#### 3.08 CRACK REPAIR BY GRAVITY FLOW

- A. Locate and identify the crack, and sound surface, and mark the extent for approval if it is different from what is shown in the drawing.
- B. Remove dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, efflorescence, and other bond-inhibiting materials from the surface.
- C. If the crack surface is packed solid with dirt/or debris, remove the debris by routing the crack surface with a crack chaser or grinder, and follow up with compressed air to remove fines. Prior to application, blow the crack out with oil-free compressed air.
- D. Allow the repair area to dry for at least 24 hours before applying the resin.
- E. Prepare the surface per the manufacturer's recommendations and repair cracks using the gravity feed method.
- F. Resin for gravity feed shall be epoxy or high molecular weight methacrylates (HMWM) with maximum viscosities of 200 cps. Should moisture be present within cracks epoxy should be used as the resin.
- G. Remove excessive resin and match the texture and appearance of the surrounding concrete.

#### 3.09 CRACK REPAIR BY PRESSURE INJECTION

- A. Locate and identify the crack, and sound surface, and mark the extent for approval if it is different from what is shown in the drawing. Do not mark over the crack.
- B. Remove dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, efflorescence, and other bond-inhibiting materials from the surface.
- C. If crack surface is packed solid with dirt/or debris, remove the debris by routing the crack surface with crack chaser or grinder, follow up with compressed air to remove fines. Prior to application, blow crack out with oil-free compressed air.

- D. Allow the repair area to dry for at least 24 hours before applying epoxy.
- E. Where the concrete surface adjacent to the crack are deteriorated, "v" groove the crack until sound concrete is reached.
- F. Prepare surface per manufacturer's recommendations and repair cracks using the injection method.
- G. Epoxy shall conform to ASTM C881 specifications.
- H. Remove excessive epoxy and match the texture and appearance of the surrounding concrete.

# 3.10 <u>CLEANING</u>

- A. <u>Surfaces Not Involved in the Repairs</u>: Adjacent surfaces damaged by staining left by concrete work, or other concrete materials shall be completely restored to the original new conditions with respect to color and texture to the acceptance by DOT-A.
- B. Remove debris and rubbish from the site daily. Prevent debris and rubbish from entering the waterway. Debris and rubbish shall not be allowed to accumulate on the site. Debris shall be removed and transported in a manner that will prevent spillage into the open channel, onto the adjacent ground and streets.
- C. Upon completion of the work, remove all materials, tools, forming materials, catchments, work platforms, refuse, and debris generated by the work specified in this section.
- D. Cracks Repaired by Gravity Flow
  - 1. The uncured epoxy resin adhesive can be cleaned from tools with an approved solvent. The cured epoxy resin adhesive can only be removed mechanically.
  - 2. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.
- E. Cracks Repaired by Pressure Injection
  - 1. After the epoxy resin adhesive for grouting has cured, the epoxy resin adhesive for sealing cracks and porting devices shall be removed as required by DOT-A. Clean the substrate in a manner to produce a finish appearance acceptable to DOT-A.
  - 2. The uncured epoxy resin adhesive can be cleaned from tools with an approved solvent. The cured epoxy resin adhesive can only be removed mechanically.

3. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

# PART 4 – MEASUREMENT AND PAYMENT

### 4.01 METHOD OF MEASUREMENT

- A. No measurement shall be made for the items in this section identified as Lump Sum.
- B. Other work under this Section shall be measured as indicated and will be paid for at the Contract basis indicated in the proposal schedule. The Contract Price paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.

#### 4.02 BASIS OF PAYMENT

- Concrete repair work involving cracks and other restoration repairs where the A. intent of repairs is to restore concrete back to its original configuration throughout the project site as defined in the Construction Drawings, shall be paid for at the contract Lump Sum prices for the Terminal 2 Departures Roadway Concrete Super Structure Overhead Spall and Delamination Repairs, Terminal 2 Departures Roadway Concrete Super Structure Overhead Crack Repairs, Terminal 2 Departures Roadway Concrete Deck Repairs, Ewa Concourse 1<sup>st</sup> Level Soffit and Facade Spall, Delamination, and Finish Repairs, Ewa Concourse 1<sup>st</sup> Level Soffit and Façade Crack Repairs, Ewa Concourse 2<sup>nd</sup> Level Ground, Soffit, and Façade Spall, Delamination, and Finish Repairs, Ewa Concourse 2nd Level Ground, Soffit, and Façade Crack Repairs, Ewa Concourse 3<sup>rd</sup> Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs, Ewa Concourse 3<sup>rd</sup> Level Ground, Soffit and Façade Crack Repairs, Ewa Connecting Link Overhead Spall and Delamination Repairs, Ewa Connecting Link Overhead Crack Repairs, Ewa Connecting Link Ground Spall and Delamination Repairs, Ewa Connecting Link Full Concrete Deck Repairs, Ewa Connecting Link Ground Crack Repairs, Diamond Head Concourse 1st Level Soffit and Façade Spall, Delamination, and Finish Repairs, Diamond Head Concourse 1<sup>st</sup> Level Soffit and Façade Crack Repairs, Diamond Head Concourse 2<sup>nd</sup> Level Ground, Soffit, and Facade Spall, Delamination, and Finish Repairs, Diamond Head Concourse 2<sup>nd</sup> Level Ground, Soffit, and Façade Crack Repairs, Diamond Head Concourse 3rd Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs, Diamond Head Concourse 3<sup>rd</sup> Level Ground, Soffit and Facade Crack Repairs, Diamond Head Connecting Link Overhead Spall and Delamination Repairs, Diamond Head Connecting Link Overhead Crack Repairs, Diamond Head Connecting Link Ground Spall and Delamination Repairs, Diamond Head Connecting Link Full Concrete Deck Repairs, and Diamond Head Connecting Link Ground Crack Repairs. The contract prices paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.
- B. Concrete repair work involving spall, delamination, expansion joint nosing and other restorations repairs as defined in the Construction Drawings shall be

measured and paid for, at the contract unit price bid. The contractor unit price paid shall be full compensation for all labor, tools, equipment, and all other incidentals necessary to complete the work.

- C. For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other mark-ups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.
- D. Additional Unforeseen Concrete Spall and Crack Repairs shall be paid for by allowance funds. This includes spalls/cracks found on site that either exceed original scope quantities, or other spalls/cracks not shown on the drawings that are approved by DOT-A for repair.

<u>ltem No.</u> 03730.1	<u>Item</u> Terminal 2 Departures Roadway Concrete Super Structure Overhead Spall and Delamination Repairs	<u>Unit</u> Square Feet
03730.2	Terminal 2 Departures Roadway Concrete Super Structure Overhead Crack Repairs	Lump Sum
03730.3	Terminal 2 Departures Roadway Concrete Deck Repairs	Square Feet
03730.4	Ewa Concourse 1 <sup>st</sup> Level Soffit and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.5	Ewa Concourse 1 <sup>st</sup> Level Soffit and Façade Crack Repairs	Lump Sum
03730.6	Ewa Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.7	Ewa Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Crack Repairs	Lump Sum
03730.8	Ewa Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.9	Ewa Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Crack Repairs	Lump Sum.
03730.10	Ewa Connecting Link overhead Spall and Delamination Repairs	Square Feet

03730.11	Ewa Connecting Link Overhead Crack Repairs	Lump Sum
03730.12	Ewa Connecting Link Ground Spall and Delamination Repairs	Square Feet
03730.13	Ewa Connecting Link Full Concrete Deck Repairs	Square Feet
03730.14	Ewa Connecting Link Ground Crack Repairs	Lump Sum
03730.15	Diamond Head Concourse 1 <sup>st</sup> Level Soffit and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.16	Diamond Head Concourse 1 <sup>st</sup> Level Soffit and Façade Crack Repairs	Lump Sum
03730.17	Diamond Head Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.18	Diamond Head Concourse 2 <sup>nd</sup> Level Ground, Soffit, and Façade Crack Repairs	Lump Sum
03730.19	Diamond Head Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Spall, Delamination, and Finish Repairs	Square Feet
03730.20	Diamond Head Concourse 3 <sup>rd</sup> Level Ground, Soffit and Façade Crack Repairs	Lump Sum
03730.21	Diamond Head Connecting Link Overhead Spall and Delamination Repairs	Square Feet
03730.22	Diamond Head Connecting Link Overhead Crack Repairs	Lump Sum
03730.23	Diamond Head Connecting Link Ground Spall and Delamination Repairs	Square Feet
03730.24	Diamond Head Connecting Link Full Concrete Deck Repairs	Square Feet
03730.25	Diamond Head Connecting Link Ground Crack Repairs	Lump Sum

03730.26 Additional Unforeseen Concrete Spall and Crack Allowance Repairs

END OF SECTION

## SECTION 07680 - EPOXY SURFACE TREATMENT

#### PART 1 – GENERAL

# 1.01 RELATED DOCUMENTS

The General Provisions of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 SUMMARY

- A. Section includes work for applying surface treatment by spreading resin binder and aggregate on hybrid polymer concrete surfaces. The Ewa and Diamond Head connecting link roadways shall receive Epoxy Surface Treatment after new hybrid polymer concrete has been placed to match existing Ewa and Diamond Head Concourse 2nd Level roadway finish.
- B. Related Sections
  - 1. Section 03300 STRUCTURAL CONCRETE for new concrete shown on plans for connecting link modifications.
  - 2. Section 03320 HYBRID POLYMER CONCRETE (HPC) for new roadway surfacing receiving epoxy surface treatment.
  - 3. Section 03730 CONCRETE REPAIR for defective concrete repairs at the connecting link roadways.

#### 1.03 <u>SUBMITTALS</u>

- A. Epoxy Surface Treatment Submittal Requirements: Prior to the start of this work, provide six copies of the following submittals in one complete set for acceptance. Indicate clearly the name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be performed until written acceptance has been received.
  - 1. The name and contact information of the resin binder and aggregate manufacturer's technical representative and other key personnel.
    - a. Resin binder shall be CE330 Epoxy Binder as produced by FasTrac Construction Products to ensure final product uniformity with existing epoxy surface treatment at the Ewa and Diamond Head Concourse roadways completed in Phase 1, under Airport project AO1043-32 Ewa and DH Concourse Roadway Improvements.
  - 2. A list of projects with owner' contact information on which a minimum of 10,000 square yards of surfacing treatment has been installed within the past five years.

- a. List the following for each project submitted:
  - 1) Project Name
  - 2) Locations (state, routes, and Identifiers)
  - 3) Scope of work
  - 4) Products used
  - 5) Approximate date of the system was completed, accepted, and opened to traffic
- b. If the minimum installation requirement is not met, manufacturer's representative must be present at all times during installation to ensure proper workmanship. In lieu of list of projects, submit the following information of the manufacturer's representative who will be on site during installation:
  - 1) First and last name
  - 2) Company
  - 3) Email address
  - 4) Phone number.
- B. Quality Control (QC) Plan: Submit a QC Plan in accordance with Paragraph 1.04A.
- C. Work Plan: Submit a Work Plan in accordance with Paragraph 1.04B.

#### 1.04 QUALITY CONTROL

- A. Submit a QC Plan to DOT-A for acceptance a minimum of 30 days prior to the installation and the Just-In-Time-Training (JITT). Resubmittal of the document will require another 30 days for each resubmittal. Discuss the QC Plan requirements at the JITT, pre-construction, pre-installation, and progress meetings. The JITT shall not be held unless the QC Plan is accepted 30 days before it is held. Work shall not start on the surface treatment including the test strip until the JITT has been completed, QC Plan, and the Work Plan have both been accepted. The QC Plan shall contain at a minimum the following information:
  - 1. Names and contact information for key personnel, project superintendent, and lead technician responsible for field quality control sampling and testing.
  - 2. Location of resin binder production plants and batch production records.

- 3. Location of aggregate production plants and batch production records.
- 4. Proposed method of installation at each location identified to receive surfacing.
- 5. Resin binder and aggregate manufacturer's material information including:
  - a. Recommended placement instructions
  - b. Mixing Instructions
  - c. Recommended installation temperatures
  - d. Anticipated gel and cure times at various expected ambient temperatures for all sites.
  - e. Methods of safe storage and handling
  - f. Applicable installation and material limitations
  - g. Disposable methods for excess missed resin binder and associated components
  - h. Production plant location contact information for the quality control/quality assurance (OC/OQ) personnel where additional information can be requested concerning record keeping methods, inspection methods, equipment calibration records, and accreditation certificates.
- 6. The QC Plan shall designate a QC Manager, who shall be present at the jobsite and have a full authority to request any action necessary for the operation of the QC Plan providing it complies with the contract documents and acceptance of DOT-A.
  - The QC Manager shall be certified in all test methods used and be a. responsible for the required field quality control in sampling and testing in conformance with the accepted quality control plan, test methods, and contract documents. All sampling shall be performed in the presence of and with no direction by DOT-A. DOT-A is not responsible or shall be regarded as part of the contractor's QC team. It is the responsibility of the contractor and the QC Manager to ensure that the test procedure being used is compliant with the test method standard. Inspections are performed for the exclusive benefit of the state. The inspection of or the failure to inspect the work shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made. DOT-A has the right to reject the test if it feels that it is non-compliant, e.g., the technician that performed the test if not certified or the material testing laboratory accredited to the tests

performed. DOT-A is under no obligation to correct or direct noncompliant procedures if observed. Maintain and have available upon request, the current test standard methods documentation being used, referenced documents, complete records of sampling, testing, corrective actions, and quality control inspection results.

- b. A technical representative from the resin binder manufacturer shall be present at the JITT, Test Application, e.g., deck repair, surface preparation, installation and acceptance of the surface treatment, and at the construction site for the first two days of the surface treatment.
- B. Work Plan: Submit a Work Plan for both the epoxy surface treatment to DOT-A for approval 14 days prior to the installation. Discuss the Work Plan requirements at the pre-construction, pre-installation, and progress meetings. The Work Plan shall contain at a minimum the following information:
  - 1. Method of surface preparation and required surface condition for adequate bonding.
  - 2. Method of crack repair/defective concrete repair of existing concrete deck.
  - 3. Construction during inclement weather, Plan for the occurrence of rain, moisture and temperature requirements for the materials being used.
  - 4. Mixing ratio and application rates for resin binder and aggregate.
  - 5. Application Method
  - 6. Curing time and requirements for opening to traffic.
  - 7. Corrective actions that will be taken for unsatisfactory installation practices.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Storage and Handling. All materials shall be delivered in their original containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name, and quantity. Each shipment of resin binder shall be accompanied by a Safety Data Sheet (SDS).
- B. The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean and dry.
- C. Stored materials shall be inspected prior to their use, and shall meet the requirements of this Specification at the time of use.
- D. Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejection shall be immediately replaced at no additional expense to the State.

- E. Sufficient material to perform the entire penetrating sealer application shall be in storage at the site prior to any field application, so that there shall be no delay in procuring the material for each day's application.
- F. The contractor shall arrange to have the material supplier furnish technical service related to application of material and health and safety training for personnel who are to handle the penetrating sealer.

### 1.06 <u>WARRANTY</u>

A. Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of one year starting at the date of Substantial Completion.

# PART 2 – PRODUCTS

# 2.01 EPOXY SURFACE TREATMENT RESIN BINDER SYSTEM

- A. Provide a resin binder system meeting the requirements of Table 1 below, recommended by the manufacturer as suitable for use on the intended pavement surface. A sample of the resin binder system for reach lot/batch shall be supplied upon request.
  - 1. Note: All materials shall be virgin; free of secondary components, volatile solvents, and external/conventional flexibilizers. Component batches shall be interchangeable.

Property	Requirement	Test Method	
Viscosity	10-30 Poise	ASTM D2556 <sup>*1</sup>	
Cure Rate (Set to Touch)	3 hours max	ASTM D1640 <sup>*2</sup>	
Shore D Durometer Hardness	60-80	ASTM D2240	
Compressive Modulus	130,000 psi maximum	ASTM D695	
Ultimate Tensile Strength		ASTM D638 <sup>*3</sup>	
Elongation at Break Point	40%-70%	ASTM D638 <sup>*3</sup>	
Adhesive Strength (Bond to Concrete at 24 hrs)	250 psi min. or 100% concrete substrate failure	ASTM C1583 <sup>*4</sup>	
Thermal Compatibility	PASS	ASTM C88	
Water Absorption	1% max	ASTM D570	
*ASTM Material Properties Test Method Table Notes:			

# Table 1. Two Component Resin Requirements

- 1. Mix test sample for 2 minutes. Test at a temperature of  $73 \pm 1^{\circ}$ F.
- 2. Prepare specimens of 50-55 wet mil thickness.
- 3. Prepare Type I specimens.
- 4. Follow manufacturer's recommendation for curing before testing.
- 2. A test report, dated within 90 days of contract award, consisting of a certification by an AASHTO recourse/CCRL accredited independent testing laboratory showing compliance with the requirements of this specification and material properties. Include the accredited laboratory's test results with the certification.
- 3. Product data sheets and specifications from the manufacturer showing instructions, application recommendations and methods, product properties.

WORKING TIME				
Surface Temperature (°F)	Maximum Working Time* (minutes)			
50	45			
60	35			
70	20			
80	11			
90	9			
100	7			
110	6			
120	4			
*Include mix time, resin binder and aggregate placement.				

# Table 2. Epoxy Working Time

Note: Consult manufacturer for surface temperatures exceeding 120°F

# 2.02 EPOXY SURFACE TREATMENT AGGREGATE

Furnish aggregate meeting the requirements listed in the tables below unless otherwise specified by DOT-A. Deliver the aggregate to the construction site in bags or super sacks labeled clearly for identification. Provide aggregate that is virgin, clean, dry, and free from foreign matter. A sample of the aggregate lot/batch shall be supplied upon request.

Test Data Description	Test Procedure	Testing Lab. Requirements
Gradation	ASTM C136	See Table 4
Moisture	ASTM C566	NCAT 0.0%

#### Table 3. Aggregate Requirements

Micro-Deval	AASHTO T327	ODOT 2.6%
Absorption	ASTM C127	NCAT 1.0%

#### Table 4. Aggegate Gradation

Sieve size	Percentage passing	
No. 4	100	
No. 8	30-75	
No. 16	0-5	

#### PART 3 - EXECUTION

#### 3.01 EPOXY SURFACE PROTECTION PREPARATION

Surface Preparation for on new concrete shall be abrasive blast, sweep and blow the surface clean. Abrasive blast shall create a surface profile to CSP-3.

#### 3.02 EPOXY SURFACE PROTECTION TEST APPLICATION

- A. The test application shall be a part of the production location before starting production work. Resin binder manufacturer's representative shall be present during the test application. The test application shall meet the following requirements:
  - 1. Install a minimum of 200 square yards.
  - 2. Shall be constructed using the same method and equipment as the production work.
  - 3. Shall construct an additional test application for each method proposed for the production work.
  - 4. Shall replicate field conditions, including ambient and surface temperatures, time period, anticipated for production work.
  - 5. Shall demonstrate surface preparation method as outlined in the QC Plan
  - 6. Shall demonstrate that the data management system is capable of documenting ambient and surface temperatures, quantities of resin binder and aggregate, coverage rates, and reporting application rates in real time.
  - 7. Determine the initial set time for the resin binder.

#### 3.03 EPOXY SURFACE PROTECTION SURFACE APPLICATION

A. Epoxy surface protection shall be applied after all Hybrid Polymer Concrete (HPC) has been placed cured for the full width of the roadway along full road path of each individual connecting link, to provide a uniform finish. If HPC is placed in separate phases at one connecting link, epoxy surface protection may not be applied till all HPC phases are placed and cured for that connecting link. HPC and Epoxy surface treatment installation shall be included in contractor's phasing plan, subject to DOT-A's approval.

- B. The following information is required in a real time reporting method:
  - 1. The volume of mixed resin binder per square yard being applied.
  - 2. The mixed resin binder mil thickness on average throughout the application width per square yard.
  - 3. The volume of aggregate applied throughout the application width per square yard.
  - 4. The ambient and pavement surface temperature during the application period.
- C. Apply the blended resin binder on the pavement surface plane in a uniform application with a minimum thickness of 60 mils. Verify thickness using a Wet-Mil fil thickness gauge every 75-100 lineal feet of application. Ensure the surfacing aggregate is applied uniformly at a rate of 14-17 pounds per square yard within the working time per Table 2.

# 3.04 EPOXY SURFACE PROTECTION APPLICATION METHOD

- A. Expansion Joints, drains and grates shall be adequately isolated to prevent any surface treatment from entering drainage and joint systems. The surface treatment discharged from the mixer shall be uniform in composition and consistency. Mixing capability shall be such that initial and final finishing operations can proceed at a steady pace.
- B. Continuous application must be applied utilizing an epoxy pump system specially designed for epoxies. The epoxy pump is mounted on the rear of a truck which also houses two 250 Gallon totes of material. The totes to be used will be between 65°- 85°F. The pump is equipped with a detailed digital read out displaying the gallons per minute and total volume of both part A and B. It also gives the total volume of material pumped. This allows for easy verification of the correct amount of material applied to the surface and at the correct ratio of 1:1. The mixed epoxy will be dispensed onto the concourse deck surface, this will be followed by a ground laborer(s) using a saw-toothed/notched squeegee to spread the sealer meeting the manufacturer specified wet mil thickness.
- C. Adjacent to the sealer application will be a truck with a bulk sand pot with the topping sand. Special care will be given as to not direct the hose directly to the surface disrupting or causing the epoxy material to disperse. The application equipment shall install the surfacing at a minimum application rate of 20 linear feet per minute. Perform a final sweep of loose aggregates and debris from the areas adjacent to the applied surface treatment within end of work shift. Ensure all expansion joints are free of loose aggregate, epoxy, and other debris.

D. For small, odd shaped areas inaccessible to the continuous applicator truck, mixed epoxy is dispensed from the truck by hand through a mixing wand onto the area to be treated, Contractor shall use a notched squeegee to evenly spread the epoxy according to the manufacturer's recommendations. Broadcast aggregate by hand onto the wet epoxy until rejection and epoxy surface is completely covered with aggregate. Spike shoes will need to be worn by any person who may come in contact with wet placed sealer without aggregate.

#### 3.05 EPOXY SURFACE PROTECTION CURING

Traffic and construction equipment shall not be permitted on the completed surface treatment overlay for 2 hours or until the surface treatment is tack free, whichever is later.

# 3.06 ACCEPTANCE AND CORRECTIVE ACTION

- A. Completed overlay surface must be uniform in thickness, texture and appearance.
- B. At the discretion of DOT-A, Tensile Bond testing shall be performed for each placement per day. Testing may be conducted on a separate concrete substrate representing the field conditions upon approval of DOT-A. Testing will be performed in accordance with ASTM C 1583 and the manufacturer's recommendations. A passing test is the failure of the concrete substrate or bond strength above 250 psi at 24 hours. Fill cored holes with approved material specified in Section 03730 –Concrete Repairs.
- C. Correct all defects in material and work, as directed, at no additional cost to the State, according to the following:
  - 1. Remove and replace surfacing treatment that DOT-A determines has any raveling, delamination, streaking, or bond test failure.
  - 2. Replace with acceptable surface treatment at the installer's expense. Replaced areas will be retested and evaluated for acceptance or further corrective action.
  - 3. Any roadway features disturbed by the work or the installer's operations shall be restored with the same materials and design as directed by DOT-A at no additional cost to the State.

#### PART 4 – MEASUREMENT AND PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured not paid for separately, but shall be considered incidental to and included in the prices bid for the various items of work in this project.

# END OF SECTION

# **DIVISION 07 – THERMAL AND MOISTURE PROTECTION**

# SECTION 07916 - EXPANSION JOINT

# <u> PART 1 – GENERAL</u>

# 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 <u>SUMMARY</u>

- A. Section includes expansion joint waterproofing systems.
- B. Related Sections:
  - 1. Section 03300 STRUCTURAL CONCRETE
  - 2. Section 03320 HYBRID POLYMER CONCRETE (HPC)
  - 3. Section 03730 CONCRETE REPAIRS

#### 1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
  - 1. Convene at Project site 2 weeks prior to beginning work of this Section.
  - 2. Attendance: Contractor, Construction Manager, joint seal installer, joint seal manufacturer representative, and related trades.
  - 3. Review and discuss:
    - a. Joint seal manufacturer's requirements, project conditions, substrate requirements allowable structural movement at joints, and protection of completed work.
    - b. Transitions in plane and direction, and requirement for continuity of seal through watertight transitions from wall expansion joint to other interfacing expansion joint systems at adjacent construction.

#### 1.04 <u>SUBMITTALS</u>

- A. Submit in accordance with Section 01300 SUBMITTALS.
- B. Action Submittals:
  - 1. Shop Drawings:
    - a. Indicate joint locations, dimensions, and adjacent construction.

- b. Provide details for transitions in plane and direction for continuity of seal through watertight transitions from wall expansion joint to other interfacing expansion joint systems at adjacent construction.
- 2. Product Data: Material description and application instructions.
- 3. Samples:
  - a. Minimum 6 inch long samples of each joint seal.
- C. Informational Submittals:
  - 1. Manufacturer's certification that:
    - Products are capable of withstanding temperature of 150 degrees F (65 degrees C) for 3 hours while compressed to minimum of movement capability dimension without evidence of bleeding of impregnation medium from material.
    - b. Same material after heat stability test and after cooling to room temperature will self-expand to maximum of movement capability dimension within 24 hours at 68 degrees F (20 degrees C).

# 1.05 QUALITY CONTROL

- A. Manufacturer Qualifications:
  - 1. Minimum 10 years documented experience in production of specified materials.
  - 2. Certified to ISO 9001 and 14001.
- B. Installer Qualifications: Minimum 2 years documented experience in work of this Section.

# 1.06 DELIVERY, STORAGE AND HANDLING

A. In accordance with manufacturer's instructions.

#### 1.07 <u>WARRANTY</u>

- A. Main Expansion Joint Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of the following starting at the date of Substantial Completion. System warranty shall be for the following duration in accordance with specified system.
  - 1. Warranty Length: 5 years

#### PART 2 - PRODUCTS

### 2.01 <u>MATERIALS</u>

- A. Manufacturer: Expansion joint manufacturer shall be the same as existing primary expansion joint material installed in DOT-A project "AO1043-32 Ewa and DH Concourse Roadway Improvements" to ensure compatibility and warranty when connecting into existing waterproofing. The manufacturer of the primary expansion joint is as follows:
  - 1. Sika Emseal, 800-526-8365, www.emseal.com
- B. Roadway Expansion Joint Seal, Main Waterproofing:
  - 1. System: Extruded sealing gland with punched flanges embedded in highstrength, flexible, impact-absorbing elastomeric concrete nosing.
  - 2. Gland:
    - a. Description: Extruded thermoplastic vulcanizate gland with punched flanges and heat welded transitions.
    - b. Shore A hardness: Minimum 65, tested to ASTM D 2240.
    - c. Tensile strength: Minimum 1,000 PSI, tested to ASTM D 412.
    - d. Ultimate elongation, Minimum 400 percent, tested to ASTM D 412.
  - 3. Nosing:
    - a. Description: High strength, flexible, impact-absorbing elastomeric concrete material composed of two-part polyurethane resin reinforced with silica free aggregate.
    - b. Aggregate: Sand and fiberglass
    - c. Aggregate to Resin Ratio: 2 parts aggregate max to 1 part resin
    - d. Tensile strength: 490 PSI, tested to ASTM D638.
    - e. Compressive strength: Minimum 4,000 PSI, tested to ASTM D695.
    - f. Adhesion to primed concrete: Minimum 400 PSI, tested to ASTM D2734.
    - g. Impact resistance: No cracking at 19 inches, tested to ASTM D5628.
    - h. Shore A hardness: 54.0, tested to ASTM D2240.
  - 4. Color: Black.

- C. Roadway Expansion Joint Seal, Non Fire-Retardant Secondary Waterproofing:
  - 1. System: Precompressed, silicone coated and acrylic impregnated-foam hybrid installed into field-applied epoxy adhesive, with silicone sealant band on joint faces.
  - 2. Form: Procompressed to less than nominal material size for installation into designed joint size equal to material nominal size.
  - 3. Movement capability: Plus or minus 50 percent, total 100 percent; pass ASTM E1399.
  - 4. Adhesive: Epoxy type, furnished by joint seal manufacturer.
  - 5. Silicone: Field applied sealant band at face of seal so substrate interface, furnished by joint seal manufacturer; same material and color as factory coating.
    - a. Abrasion resistance: Maximum 1 percent wight loss, tested to ASTM D4060.
    - b. Fuel resistance: Pass ASTM C719 and ASTM C1135
- D. Roadway Expansion Joint Seal, Fire-Retardant Secondary Waterproofing
  - 1. System: Traffic grade upper silicone sealing surface, and factory coated on underside with intumescent fireproofing material, adhered to fire-retardant impregnated foam backing installed into field-applied epoxy adhesive.
  - 2. Form: Precompressed to less than nominal material size for installation into designed joint size equal to material nominal size.
  - 3. Fire protection rating: 3 hours, tested to UL 2079.
  - 4. Movement capability: Plus or minus 25 percent; total 50 percent.
  - 5. Color: To be selected and approved by DOT-A.
  - 6. Adhesive: Epoxy type, furnished by joint seal manufacturer.
  - 7. Silicone: Field applied sealant band at face of seal to substrate interface, furnished by joint seal manufacturer; same material and color as factory coating.
    - a. Abrasion resistance: Maximum 1 percent weight loss, tested to ASTM D4060.
    - b. Fuel resistance: Pass ASTM C719 and ASTM C1135.

8. Intumescent Sealant: Field applied to face of joints, furnished by joint seal manufacturer.

#### PART 3 – EXECUTION

#### 3.01 PREPARATION

A. Clean joints thoroughly; remove loose and foreign matter that could impair adhesion or performance.

#### 3.02 INSTALLATION

- A. Install joint seal in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Remove joint seal from precompressed packaging, immediately insert into joint, and allow to expand.
- C. Use temporary retainers if required to maintain joint seals in position until expansion is complete.
- D. Secondary Waterproofing:
  - 1. To be installed after topping slab nosing is demolished, but before topping slab nosing is repaired.
- E. Main Waterproofing:
  - 1. To be installed after topping slab nosing is cured to waterproofing manufacturer's recommendations.

#### PART 4 – MEASUREMENT AND PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

Expansion joint installation involving concrete edge restoration, nosing material installation, sealing gland installations, and all other items shown in the contract drawings incidental to creating a water tight seal at expansion joints where indicated on plans shall be paid for at the contract Lump Sum prices for the <u>Terminal 2</u> <u>Departures Roadway Expansion Joint Spot Repairs</u>, <u>Ewa Concourse 2<sup>nd</sup> Level</u> <u>Sidewalk Expansion Joint</u>, <u>Ewa Connecting Link Expansion Joints</u>, <u>Terminal 2 3<sup>rd</sup> Level Roadway Expansion Joint Spot Repairs</u>, <u>Diamond Head Concourse 2<sup>nd</sup> Level</u> <u>Sidewalk Expansion Joint</u>, and <u>Diamond Head Connecting Link Expansion Joints</u>. The contract prices shall be full compensation for all labor, tools, equipment, and other incidentals necessary to complete work.

Item No.	<u>ltem</u>	<u>Unit</u>
07916.1	Terminal 2 Departures Roadway Expansion	Lump Sum
	Joint Spot Repairs	

07916.2	Ewa Concourse 2nd Level Sidewalk Expansion Joint	Lump Sum
07916.3	Ewa Connecting Link Expansion Joints	Lump Sum
07916.4	Terminal 2 3rd Level Roadway Expansion Joint Spot Repairs	Lump Sum
07916.5	Diamond Head Concourse 2nd Level Sidewalk Expansion Joint	Lump Sum
07916.6	Diamond Head Connecting Link Expansion Joints	Lump Sum

END OF SECTION

# **DIVISION 09 – FINISHES**

# SECTION 09911 - EXTERIOR PAINTING

### PART 1 – GENERAL

### 1.01 RELATED DOCUMENTS

The General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this Section.

#### 1.02 <u>SUMMARY</u>

- A. Section includes surface preparation and the application of paint systems on
  - 1. Concrete
  - 2. Drain Pipes
  - 3. Steel
- B. Related Sections
  - 1. Section 03300 STRUCTURAL CONCRETE
  - 2. Section 03730 CONCRETE REPAIRS
  - 3. Section 05120 STRUCTURAL STEEL

#### 1.03 <u>REFERENCES</u>

- A. American Society for Testing and Materials (ASTM) D16 Standard Terminology for Paint, Related Coatings, Materials, and Applications.
- B. Steel Structures Painting Council (SSPC) SP6 Commercial Blast Cleaning Procedures.
- C. Steel Structures Painting Council (SSPC) SP10 Near White Blast Cleaning Procedure.

#### 1.04 <u>DEFINITIONS</u>

- A. General: Standard coating terms in accordance with ASTM D523.
  - 1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
  - 2. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

- 3. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- 4. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- 5. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- 6. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.
- B. Environments: The following terms distinguish between different corrosive exposures:
  - 1. Severe Environments: Highly corrosive industrial atmospheres. Sustained exposure to high humidity and condensation and with frequent cleaning using strong chemicals. Environments with heavy concentrations of strong chemical fumes and frequent splashing and spilling of harsh chemical products are severe environments.
  - 2. Moderate Environments: Corrosive industrial atmospheres with intermittent exposure to high humidity and condensation, occasional mold and mildew development, and regular cleaning with strong chemicals. Environments with exposure to heavy concentrations of chemical fumes and occasional splashing and spilling of chemical products are moderate environments.
  - 3. Mild Environment: Industrial atmospheres with normal exposure to moderate humidity and condensation, occasional mold and mildew development, and infrequent cleaning with strong chemicals. Environments with low levels of mild chemical fumes and occasional splashing and spilling of chemical products are mild environments. Normal outdoor weathering is also considered a mild environment.

#### 1.05 <u>SUBMITTALS</u>

- A. Submit in accordance with Section 01300 SUBMITTALS.
- B. Product Data: For each type of product. Include preparation requirements and application instructions.
- C. Samples for Initial Selection: For each type of topcoat product.
- D. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Step coats on Samples to show each coat required for system.
  - 3. Label each coat of each Sample.

- 4. Label each Sample for location and application area.
- E. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 3. VOC content.

#### 1.06 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.
- C. Paint exposed surfaces. If an item or a surface is not specifically mentioned, paint the item, or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, DOT-A will select from standard colors and finishes available.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.
- B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

#### 1.08 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 90 deg F.

- C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.
- D. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent or to damp or wet surfaces.

### PART 2 – PRODUCTS

#### 2.01 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Liquid applied epoxy coating, high build, corrosion and chemical resistant, light color finish, minimum 98% solids, for use in potable water applications with NSF 61 certification.
- C. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- D. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- E. Colors:
  - 1. Pipe substrate: As selected by DOT-A from manufacturer's full range.
  - 2. Concrete substrate: Color to match existing paint as best as possible, subject to DOT-A's approval.
  - 3. Steel Railings: Tan or beige, subject to DOT-A's approval.
  - 4. Other Steels: Tan or beige, subject to DOT-A's approval.

#### 2.02 STEEL PAINT

- A. Siloxane Finish over Epoxy Primer:
  - 1. Substrate: Zinc coated (galvanized) metal surfaces.
  - 2. Pretreatment:

- a. Solvent clean surface to SSPC-SP 1 followed by power tool cleaning to SSPC-SP 3 or hand tool cleaning to SSPC-SP 2.
- 3. Primer:
  - a. PPG Paints. Amerlock Sealer Penetrating Epoxy Primer/Sealer, AK-0A Series. Applied Dry Film Thickness: 1.0 to 1.5 mils dry film thickness, one coat
- 4. Intermediate Coat:
  - a. PPG Paints. Amerlock 2 VOC Fast Dry, High Solids Epoxy Coating, Semi-Gloss, AK2V-3 Series. Applied Dry Film Thickness: 5 to 7 mils dry film thickness, one coat.
- 5. Topcoat: Gloss Level 3 and 4:
  - a. PPG Paints. PSX 805 Polysiloxane, Satin, PX8053 Series. Applied Dry Film Thickness: 4 to 6 mils fry film thickness, one coat.
- 6. System Dry Film Thickness: 10-14.5 mils.

# 2.03 SUBSTITUTION REQUESTS

- A. Application or approved equals shall be requested in writing as noted in the Notice to Bidders. Application for steel paint finish approved equals shall include verification of the following information:
  - 1. The paint manufacturer shall provide documented performance data from field installations showing that the submitted paint system has maintained its corrosive protection and adhesion to the substrate a minimum of 10 years in service in coastal or marine environments with minor to no color disfiguration.
  - 2. The paint system shall have been used in a minimum of ten projects of similar size and application.
  - 3. Installation requirements, equipment, and procedures including required installer qualifications recommended by the paint manufacturer.
  - 4. Manufacturer's full color range for the submitted paint system.

# PART 3 – EXECUTION

#### 3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

- 1. Do not begin installation until substrates have been properly prepared.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Concrete: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

#### 3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
- E. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- F. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- G. Nonferrous-Metal Substrates: Clean nonferrous and galvanized surfaces according to manufacturer's written instructions for the type of service, metal substrate, and application required.
- H. Plastic Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

- I. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written instructions.
  - 1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
  - 2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
  - 3. Use only the type of thinners approved by manufacturer and only within recommended limits.
  - 4. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat but provide sufficient differences in shade of undercoats to distinguish each separate coat.

# 3.03 <u>APPLICATION</u>

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Do not apply coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
  - 3. Coating surface treatments, and finishes are indicated in the coating system descriptions.
  - 4. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
  - 7. Provide finish coats compatible with primers used.
  - 8. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, grilles, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be

applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed to view:
    - a. Uninsulated metal piping.
    - b. Uninsulated plastic piping.
    - c. Metal conduit.
    - d. Plastic conduit.
- F. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
  - 1. The number of coats and film thickness required is the same regardless of application method.
  - 2. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

#### 3.04 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: DOT-A may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
  - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

#### 3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by DOT-A, and leave in an undamaged condition.
- D. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

#### PART 4 - MEASUREMENT & PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Work under this Section, except for additional painting beyond repair areas, shall be considered incidental to the lump sum price bid for the item of which it is a part in the Bid Schedule.
- B. For ALLOWANCE items in the Proposal Schedule, the allowance is an estimate and the amount shall not exceed the maximum amount shown in the Proposal Schedule. Payment shall be the actual cost as invoiced by the Contractor and approved by the DOTA Engineer. The Contractor shall be allowed to include overhead, profit, insurance and/or other mark-ups, as stipulated in Section 9.5 of the 2016 General Provisions for Construction Projects, Air and Water Transportation Facilities Divisions.

<u>Item No.</u>	ltem	<u>Unit</u>
09911	Additional Painting Beyond Repair Areas	Allowance

END OF SECTION

#### GENERAL

- WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE BUILDING CODE AS STATED BELOW. HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS THE MORE STRINGENT SHALL APPLY.
- 1. CITY AND COUNTY OF HONOLULU: AMENDED IBC, 2018
- THE CONTRACTOR SHALL COMPARE ALL THE CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE DOT-A ALL INCONSISTENCIES AND OMISSIONS.
- C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING WORK. REPORT IN WRITING TO THE DOT-A ALL INCONSISTENCIES AND OMISSIONS
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
- E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS
- CONSTRUCTION LOADING SHALL NOT EXCEED DESIGN LIVE LOAD UNLESS SPECIAL SHORING IS PROVIDED. ALLOWABLE LOADS SHALL BE REDUCED IN AREAS WHERE THE STRUCTURE HAS NOT ATTAINED FULL DESIGN STRENGTH
- G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES DURING THE CONSTRUCTION PERIOD.
- DETAILS NOTED AS TYPICAL ON THE STRUCTURAL DRAWINGS SHALL H. APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED
- CONTRACTOR MAY USE STEEL PLATES TO COVER OPEN HOLES AND/OR PROTECT IN PLACE UNFINISHED WORK PRIOR TO OPENING TO TRAFFIC. PROVIDED THAT ALL SAFETY ISSUES ARE ADDRESSED. THE USE OF STEEL PLATES SHALL BE INCLUDED IN THE CONTRACTOR'S PHASING PLANS, FOR REVIEW AND APPROVAL BY THE DOT-A

#### DEMOLITION, REMOVAL AND RELOCATION WORK:

- A. THE CONSTRUCTION DRAWINGS INDICATE THE GENERAL EXTENT OF REQUIRED DEMOLITION AND REMOVAL WORK.
- B. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS (PRIOR TO BID) TO DETERMINE THE EXTENT OF ALL REQUIRED DEMOLITION WORK. THE REMOVAL OR DEMOLITION OF MATERIALS ACCESSORIES FIXTURES FTC. SHALL BE COMPLETE AND INCLUDE ALL RELATED ITEMS TO THE EXTENT THAT FUTURE CONSTRUCTION CAN BE PERFORMED AND COMPLETED WITHOUT ADDITIONAL COST TO THE STATE
- C. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO INSURE AGAINST DAMAGE TO EXISTING ITEMS AND FEATURES REMAINING IN PLACE
- D. THE CONTRACTOR SHALL REMOVE EXISTING ITEMS AS DEEMED NECESSARY SO THAT FUTURE WORK CAN BE PERFORMED AND ALSO, SO THAT ANY EXISTING ITEM IS NOT DAMAGED WHEN FUTURE WORK IS PERFORMED. THE CONTRACTOR SHALL ALSO INSTALL ANY OR ALL OF THE ITEMS. PATCH AND RESTORE SURROUNDING SURFACES AS REQUIRED AS PART OF THE WORK ACCEPTABLE TO DOT-A.
- E. LOCATION OF UTILITIES AND PIPES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF THE EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THEM. ANY PORTION OF THE EXISTING UTILITIES THAT MUST BE REMOVED OR OTHERWISE DISTURBED TO ACCOMPLISH THIS WORK CALLED FOR ON THE PLANS SHALL BE RECONSTRUCTED, REPLACED OR RESTORED TO THE ORIGINAL CONDITION AT THE CONTRACTOR'S OWN EXPENSE

#### DESIGN CRITERIA:

- A. CONSTRUCTION LIVE LOAD LIMITS
- 1. EWA AND DH 2ND LEVEL ROADWAYS INCLUDING TURN AROUND AREAS: 5.400 LBS. AXLE
- 2. EWA CONCOURSE 3RD LEVEL: 19,000 G.V.W. Δ
- EWA AND DIAMOND HEAD CONNECTING LINK: 125 PSF. OR 4,000 LBS CONCENTRATED LOAD.
- TERMINAL 2 3RD | EVEL ROADWAY: 125 PSE\_OR 4 000 LBS CONCENTRATED LOAD.

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DEPARTURES ROADWAY: VEHICLE HL-93

#### SPECIAL INSPECTIONS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT Α. SPECIAL INSPECTION OF PORTIONS OF THE WORK AS REQUIRED BY THE BUILDING CODE IS MADE AT THE APPROPRIATE TIME. THE CONTRACTOR SHALL SUBMIT STATEMENT OF RESPONSIBILITY TO DOT-A PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL GIVE TIMELY NOTICE OF WHEN AND WHERE INSPECTIONS ARE TO BE MADE AND PROVIDE ACCESS FOR THE INSPECTOR. FREQUENCY OF INSPECTION IS DEFINED IN THE IBC, SECTION 1705 TABLES. THE CONTRACTOR SHALL CORRECT DEFECTIVE WORK AT NO ADDITIONAL COST TO THE STATE AND PAY FOR RE-INSPECTION AS REQUIRED.

Β. SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS DONE IN CONFORMANCE WITH APPROVED CONSTRUCTION DOCUMENTS. THE INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO DOT-A

- THE FOLLOWING TYPE OF WORK LISTED IN THE IBC, SECTION 1705 C. AS AMENDED BY THE CITY AND COUNTY OF HONOLULU, REQUIRES SPECIAL INSPECTION
  - CONCRETE CONSTRUCTION
  - PLACEMENT OF REINFORCING STEEL
  - PLACEMENT OF CONCRETE INSPECTION FOR MAINTENANCE OF SPECIFIED CURING
  - TEMPERATURE AND TECHNIQUES. POST INSTALLED CONCRETE BOLTS

  - 2. MASONRY CONSTRUCTION PLACEMENT OF REINFORCING STEEL
  - MORTAR AND MORTAR JOINTS
  - PLACEMENT OF GROUT ······

CONCRETE

- CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN A. CONCRETE INSTITUTE ACI 318.
- CONCRETE SHALL BE REGULAR WEIGHT HARD ROCK CONCRETE AND SHALL HAVE A 4000 PSI MINIMUM 28 DAY COMPRESSIVE STRENGTH
- CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN С THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN
- D. WATER USED IN MIXING CONCRETE SHALL BE CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OILS ACIDS ALKALIS SALTS ORGANIC MATERIALS OR OTHER SUBSTANCES THAT ARE DELETERIOUS TO CONCRETE OR STEEL REINFORCEMENT
- E. FREQUENCY OF CONDUCTING STRENGTH TESTS SHALL BE AS FOLLOWS
  - SAMPLES FOR STRENGTH OF FACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 150 CUBIC YARDS OF CONCRETE, NOR LESS THAN ONCE FOR EACH 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS.
  - 2 IF THE TOTAL VOLUME OF CONCRETE IS SUCH THAT THE FREQUENCY OF TESTING WOULD PROVIDE LESS THAN FIVE STRENGTH TESTS FOR A GIVEN CLASS OF CONCRETE, TESTS SHALL BE MADE FROM AT LEAST FIVE RANDOMLY SELECTED BATCHES OR FROM EACH BATCH IF FEWER THAN FIVE BATCHES ARE USED
- ALL INSERTS ANCHOR BOLTS PLATES AND OTHER ITEMS TO BE F CAST IN THE CONCRETE SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A153 UNLESS OTHERWISE NOTED.
- REINFORCING BARS, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
- H. THE CONTRACTOR SHALL LOCATE CONSTRUCTION JOINTS SO AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE AND TO MINIMIZE SHRINKAGE STRESSES. SUBMIT LOCATION OF CONSTRUCTION JOINTS TO DOT-A FOR APPROVAL, UNLESS OTHERWISE NOTED
- NON-SHRINK GROUT SHALL BE A PREMIXED NON-METALLIC 1 FORMULA, CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 1 DAY AND 5,000 PSI IN 28 DAYS.
- CONSTRUCTION JOINTS IN FLOOR SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF SPANS OF SLABS, BEAMS AND GIRDERS, JOINTS J. IN GIRDERS SHALL BE OFFSET A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF AN INTERSECTING BEAM
- LEAVE FORMWORK FOR BEAM SOFFITS, JOISTS, SLABS, AND OTHER STRUCTURAL ELEMENTS THAT SUPPORT WEIGHT OF CONCRETE IN PLACE UNTIL CONCRETE HAS ACHIEVED ITS 28 DAY DESIGN COMPRESSIVE STRENGTH

REINFORCING STEEL:

- A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
- MINIMUM UNLESS OTHERWISE NOTED.
- SURFACE OF A MASONRY UNIT SHALL BE NOT LESS THAN 1/2 INCH, UNLESS OTHERWISE NOTED.
- D. REINFORCING STEEL SHALL BE SPLICED WHERE INDICATED ON PLANS. PROVIDE LAP SPLICE LENGTH PER TYPICAL DETAILS AND SCHEDULE, UNLESS OTHERWISE NOTED.
- E. MECHANICAL SPLICE CONNECTORS SHALL DEVELOP IN TENSION 125 PERCENT OF THE SPECIFIED MINIMUM YIELD STRENGTH OF REINFORCING BARS.
- F. STANDARD HOOKS ON REINFORCING BARS USED SHALL COMPLY WITH ACI 318, SECTION 25.3.1.
- G. MINIMUM REINFORCEMENT BEND DIAMETERS SHALL COMPLY WITH ACI 318, SECTION 25.3.2.

#### CONCRETE REPAIR

- A. PUBLIC HEALTH AND CONVENIENCE:
  - THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF THE PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY
- CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT SITE AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH DOTA MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE JOB IN A NEAT AND SAFE CONDITION. ALL WORK SHALL BE PERFORMED WITHIN THE LIMITS OF WORK AREAS AND SHALL BE COORDINATED WITH THE STATE PROJECT MANAGER, DELIVERY OF MATERIALS SHALL BE COORDINATED TO MINIMIZE DISRUPTION OF EXISTING OPERATION. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL OF NOISE, DEBRIS AND AIRBORNE DUST, AND TO PREVENT DISRUPTION OF EXISTING OPERATIONS. CONTRACTOR TO PROVIDE BARRIERS TO PREVENT PUBLIC ENTRY, AND TO PROTECT THE WORK AND EXISTING FACILITIES FROM CONSTRUCTION OPERATIONS REMOVE WHEN NO LONGER REQUIRED, OR AT THE COMPLETION OF WORK

B. SURFACE PREPARATION NOTES FOR SPALL REPAIRS:

- DETERIORATED CONCRETE SHALL BE REMOVED DOWN TO SOUND SUBSTRATE, OR TO THE SPECIFIED DEPTH AS NOTED IN THE SPALL REPAIR DETAILS. SAWCUT ALL EDGES MINIMUM OF 3/4" DEEP, NO FEATHERING OF PATCHING MATERIAL IS ALLOWED. AVOID CUTTING ANY REINFORCING STEEL WHEN SAWCUTTING. THE EXPOSED CONCRETE SHALL BE ROUGHENED TO A 1/8" AMPLITUDE AND SHALL BE CLEANED AND FREE OF LAITANCE, DUST AND OTHER BOND INHIBITING MATERIALS
- ALL REINFORCING STEEL DAMAGED DUE TO THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE AND TO THE SATISFACTION OF DOT-A
- ALL LOOSE, SOFT, HONEY-COMBED, DISINTEGRATED CONCRETE, PLUS 3/4 INCH MINIMUM DEPTH OF CONCRETE BEYOND THE BACK FACE OF THE REBAR WITHIN THE SPALL AREA SHALL BE REMOVED.
- 4. AFTER COMPLETION OF THE REMOVAL OPERATION, DOT-A WILL RESOUND THE AREAS TO ENSURE THAT ONLY SOUND CONCRETE REMAINS.
- CLEANING SHALL PRECEDE APPLICATION OF THE PATCHING MATERIAL BY NOT MORE THAN 24 HOURS. THE CONTRACTOR MAY POUR BACK AS SOON AS THE SURFACE PREPARATION IS APPROVED ·····
- C. BONDING AGENT AND REINFORCING ANTI-CORROSION COATING:
  - REINFORCING ANTI-CORROSION COATING SHALL BE EPOXY-MODIFIED, CEMENTITIOUS MATERIAL THAT SERVES AS AN ANTI-CORROSION COATING FOR REINFORCING.
- 2. THE REINFORCING STEEL SHALL RECEIVE TWO (2) COATS AT THE THICKNESS RECOMMENDED BY THE MANUFACTURER.
- USE BONDING AGENT IF RECOMMENDED BY THE MANUFACTURER. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR RECOMMENDED TIME BETWEEN APPLICATION OF BONDING AGENT AND PATCHING MORTAR.

- D. REPAIR MORTAR:
- SURFACES
- OTHER
- E MULTIPLE LIETS
- AS APPROVED BY DOT-A.
- REPAIR WORK
- TEXTURE AND ARCHITECTURAL DESIGN

#### STRUCTURAL STEEL

- OTHERWISE NOTED
- - OTHERWISE NOTED
- SOCIETY
  - WELDING PROCEDURES TO BE USED.
- UNLESS OTHERWISE NOTED.
- .1

- B. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE 2"
- C CLEAR DISTANCE BETWEEN THE SURFACE OF A BAR AND ANY

REPAIR MORTAR SHALL BE POLYMER-MODIFIED CEMENT MORTAR, HAVE A HIGH ABRASION RESISTANCE AND SHALL BE SUITABLE FOR HORIZONTAL, VERTICAL AND OVERHEAD

2. THE MINIMUM BOND STRENGTH PROVIDED BY THE PATCHING MORTAR SHALL BE 2,200 PSI AFTER 28 DAYS (ASTM C882).

3. REFER TO MANUFACTURER'S SPECIFICATIONS FOR PREPARATION AND APPLICATION GUIDANCE.

4. REPAIR MORTAR AND BONDING AGENT/REINFORCEMENT PROTECTIONS SHALL BE SUPPLIED BY THE SAME MANUFACTURER AND SHALL BE FULLY COMPATIBLE WITH EACH

FOLLOW THE MANUFACTURER'S LIMITATIONS FOR MAXIMUM THICKNESS FOR APPLICATION OF PATCHING MORTAR. IF THE REQUIRED THICKNESS OF A REPAIR IS GREATER THAN THE SINGLE APPLICATION LIMIT, MULTIPLE LIFTS ARE REQUIRED. LARGE, UNCONFINED OR OVERHEAD REPAIRS MAY ALSO REQUIRE MULTIPLE LIFTS. IF SUCCESSIVE LIFTS ARE TO BE APPLIED, ROUGHEN THE SURFACE OF THE PREVIOUS LIFT AND APPLY SUBSEQUENT LIFTS WITHIN THE TIME PERIOD, BOTH AS RECOMMENDED BY THE MANUFACTURER.

LOCATIONS AND QUANTITIES OF CONCRETE DEFICIENCIES ARE SHOWN TO PROVIDE A ROUGH ESTIMATE OF THE EXTENT AND TYPE OF REPAIR THAT EXISTS. THE CONTRACTOR SHALL DO A VISUAL INSPECTION AND SOUNDING OF ALL CONCRETE. SURFACES AND NOTIFY DOT-A OF ANY ADDITIONAL DEFICIENCIES, SUCH AS CRACKS AND SPALLS, NOT SHOWN. SUCH DEFICIENCIES SHALL BE REPAIRED

G. THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION OR BETTER ALL IMPROVEMENTS DAMAGED AS A RESULT OF THE

H ALL REPAIR WORK SHALL MATCH ADJACENT SURFACES IN COLOR

A. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION, FOURTEENTH EDITION.

B. STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 UNLESS

C. PLATES AND BARS SHALL CONFORM TO ASTM A36.

D STEEL PIPES SHALL CONFORM TO ASTM A53 TYPE F OR S GRADE B

BOLTS SHALL CONFORM TO ASTM A307, GRADE A UNLESS

WELDS AND WELDING PROCEDURES SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1 OF THE AMERICAN WELDING

G. WELDING SHALL BE PERFORMED BY WELDERS PREQUALIFIED FOR

H. WELDING ELECTRODES SHALL BE E70XX

STEEL SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A123 AND ALL BE PAINTED IN THE SHOP

ALL ANCHOR BOLTS, AND OTHER ITEMS TO BE CAST IN CONCRETE SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A153



STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS



This work was prepared by me or under my se

			· .
DSGN.	DRWN.	CHKD.	APPD.
MG	MG	SP	-
KEY PLAN / NOTES:			



# CONSTRUCTION DOCUMENTS

JANUARY 19, 2024 DATE

**PROJECT TITLE :** 

CONCRETE SPALL REPAIRS **AT TERMINAL 2 ROADWAYS** 

AT DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII

PROJECT NO .:

AO1043-33

SHEET TITLE:

STRUCTURAL NOTES

DATE 01/19/2024 DWG NO

S-0001

SHEET 200F 634 SHEETS




























U		2	1
3/	16" =	1'-0"	























3/16" =

TRUE NORTH SCALE: 3/16" = 1'-0"





































<b>MECHANICAL L</b>	EGEND
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SYMBOLS	ABBR.	DESCRIPTION
		EXISTING TO REMAIN
		NEW MECHANICAL WORK
	(E)	EXISTING
	(N)	NEW
		EXISTING TO BE REMOVED
	S OR W	SOIL OR WASTE
SD	SD	STORM DRAIN
	CO	CLEAN-OUT, WCO-WALL, FCO-FLOOR, COTG-GRADE
	DS	DOWNSPOUT
	AFF	ABOVE FINISHED FLOOR

PLUMBING FIXTURE SCHEDULE					
SYMBOL	FIXTURE	TYPE	PIPE SIZE SD	DETAIL	REMARKS*
(RD) 1	ROADWAY DRAIN	14"X14"	3"	1 M-0002	DESIGN BASED ON JAY R. SMITH MANUFACTURING MODEL NO. 2488C. FURNISH WITH DUCTILE IRON GRATE AND FLASHING COLLAR.
(RD) 2	ROADWAY DRAIN	14"X14"	4"	1 M-0002	DESIGN BASED ON JAY R. SMITH MANUFACTURING MODEL NO. 2488C. FURNISH WITH DUCTILE IRON GRATE AND FLASHING COLLAR.
(RD) 3	ROADWAY DRAIN	11"X9"	4"	3 M-0003	DESIGN BASED ON NEENAH FOUNDRY MODEL NO. R-4015-B1. FURNISH WITH GRAY IRON GRATE WITH 1-1/2" SLOT WIDTH OPENING.

\* LISTED DESIGN "BASED ON" EQUIPMENT MANUFACTURERS/MODELS ARE NOT INTENDED TO LIMIT CHOICES OF MANUFACTURERS/MODELS (I.E. SUBJECT TO APPROVAL VIA SUBMITTALS/SUBSTITUTION REQUESTS, OTHER MANUFACTURERS/MODELS THAT MEET BIDDING REQUIREMENTS ARE ACCEPTABLE).

## GENERAL NOTES:

1. THE ENTIRE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE STATE OF HAWAII'S CODES, THE CITY AND COUNTY OF HONOLULU'S CODES, AND ALL AGENCIES HAVING JURISDICTION.

STATE OF HAWAII'S CODES	CITY AND COUNTY OF HONOLULU'S CODES
BUILDING CODE (IBC 2018)	BUILDING CODE (IBC 2018)
PLUMBING CODE (UPC 2018)	PLUMBING CODE (UPC 2018)
ENERGY CODE (IECC 2018)	ENERGY CODE (IECC 2018)
FIRE CODE (NFPA 1 2018)	FIRE CODE (NFPA 1 2018)
ELECTRICAL CODE (NFPA 70 2020)	ELECTRICAL CODE (NFPA 70 2017)

- PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS, PARTITIONS, FLOORS, FLOOR/CEILING 2. ASSEMBLIES, ROOF/CEILING ASSEMBLIES, OR SHAFT ENCLOSURES SHALL BE FIRE-STOPPED/SEALED TO MAINTAIN FIRE-RATING REQUIREMENTS IN ACCORDANCE WITH SECTION 714 - PENETRATIONS OF 2018 IBC.
- 3. DRAWINGS INDICATE THE GENERAL ARRANGEMENT AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL FIELD CONDITIONS PERMIT. REASONABLE MODIFICATIONS TO SUIT JOB CONDITIONS SHALL NOT CONSTITUTE A BASIS FOR ADDITIONAL COMPENSATION.
- PROMPTLY NOTIFY AND COORDINATE WITH DOT-A FOR ANY DISCREPANCIES OR MAJOR DEVIATIONS FROM THE PLANS DUE TO UNFORESEEN OR VARYING FIELD CONDITIONS WHICH PREVENT THE TERMS OF THE CONTRACT FROM BEING FULLED. COORDINATE THE WORK AMONGST THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THE INSTALLATION OF WORK WITHIN THE AVAILABLE SPACE.
- 5. OBTAIN AND PAY FOR ALL APPLICABLE PERMITS, FEES, CERTIFICATES AND INSPECTIONS.
- DIMENSIONS SHOWN ON DESIGN DRAWINGS ARE BASED ON A COMBINATION OF FIELD MEASUREMENTS AND ORIGINAL/REVISION PRINT REFERENCE DRAWINGS. FIELD VERIFY ALL 6. CONDITIONS AND DIMENSIONS RELATED TO THE PROJECT BEFORE ORDERING MATERIALS OR COMMENCING WITH THE REQUIRED WORK.
- 7. FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT INCLUDING CUTTING AND PATCHING AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM. ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS AND CONFORM TO CODE.
- 8. PATCH ALL SURFACES EXPOSED FROM CUTTING AND/OR REMOVAL WORK. PATCHING SHALL MATCH THE FINISH AND QUALITY OF ADJACENT SURFACES TO THE SATISFACTION OF DOT-A AT NO ADDITIONAL COST TO THE STATE.
- "REPLACE" MEANS REMOVE EXISTING WORK AND PROVIDE NEW WORK AS DETAILED OR NOTED ON 9. THE DRAWINGS.
- 10. ALL WORK INDICATED SHALL BE NEW WORK UNLESS OTHERWISE INDICATED "EXISTING".
- 11. ALL ITEMS AND MATERIALS TO BE REMOVED SHALL BE DONE IN SUCH A MANNER AS TO PREVENT DAMAGE TO ITEMS AND MATERIALS TO REMAIN. ALL SUCH DAMAGES SHALL BE REPAIRED TO THE SATISFACTION OF DOT-A AT NO ADDITIONAL COST TO THE STATE.
- 12. ALL WASTE MATERIALS SHALL BE PROMPTLY REMOVED AND DISPOSED OF OUTSIDE THE LIMITS OF THE STATE'S PROPERTY.
- 13. PROVIDE TEMPORARY ACCESSIBLE ROUTES AROUND CONSTRUCTION IN ACCORDANCE WITH ADAAG 402.
- 14. ALL OVERHEAD WORK SHALL BE A MINIMUM OF 80-INCHES ABOVE FINISHED FLOOR IN ACCORDANCE WITH ADAAG 307.4.
- 15. PAINT ALL EXPOSED MECHANICAL WORK TO MATCH EXISTING.
- 16. TESTING, HANDLING, REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS INCLUDING ASBESTOS CONTAINING MATERIAL, LEAD CONTAINING PAINT AND LEAD BASED PAINT SHALL BE IN ACCORDANCE WITH FEDERAL AND LOCAL LAWS AND REGULATIONS.
- 17. PROTECT EXISTING PIPE BARRIERS SERVING 1ST FLOOR STORM DRAIN DOWNSPOUTS IN PLACE. DAMAGE TO EXISTING PIPE BARRIERS CAUSED BY CONTRACTOR'S NEGLIGENCE SHALL BE REPLACED TO THE SATISFACTION OF DOT-A AT THE CONTRACTOR'S EXPENSE

DEPAF	STATE C TMENT OF AIRP	of Hawaii Transpor <sup>-</sup> Orts	TATION		
	LICENSED PROFESSIONAL ENGINEER No. 10226-M YIMAII, U.S.M				
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CONSTRUCTION DOCUMENTS JANUARY 19, 2024					
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CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS					
AT DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII					
PROJECT NO .:					
AO1043-33					
SHEET TITLE:					
MECHANICAL LEGEND, NOTES AND SCHEDULES					
DATE :	2024	DWG.	NO.		
SHEET :		M-0	001		



	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS	
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· (E) PLANTER FLOOR	Jam John   04/30/2024   Licensed Expiration Date   This work was prepared by me or under my supervision.   DSGN. DRWN.   CHKD. APPD.	
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	DATE : DWG. NO. 01/19/2024 SHEET : 306 OF 634 SHEETS	






















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M;PROJ219-000/219-076 DOTA EWA DH ROADWAY/DRAWINGS/~PHASE 2/M4001 M4034 1ST FLOOR EWA MECHANICAL PARTIAL PLAN











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M:/PROJ/219-000/219-076 DOTA EWA DH ROADWAY/DRAWINGS/~PHASE 2/M4035 M4068 2ND FLOOR EWA MECAHNICAL PARTIAL PLAN.D/



	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS				
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	SHEET TITLE: 2ND FLOOR EWA MECHANICAL DEMOLITION PARTIAL PLAN J				
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4050	



4' SCALE: 3/16" = 1'-0"



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	PROJECT TITLE : CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS
	AT DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII PROJECT NO.: AO1043-33
	SHEET TITLE: 2ND FLOOR EWA CONNECTING LINK MECHANICAL DEMOLITION PARTIAL PLAN C
2'         0         4'         8'         12'         16'           SCALE: 3/16" = 1'-0"	DATE : DWG. NO. 01/19/2024 SHEET : MU-4050 356 OF 634 SHEETS







4'


















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2' 0 4' 8' 12' 16' SCALE: 3/16" = 1'-0"











M://PROJI219-000/219-076 D0TA EWA DH ROADWAY/DRAWINGS/-/PHASE 2/M4103\_M4103\_M4109\_15T FLOOR DH MECHANICAL PARTIAL PLAN



M:/PROJ219-000/219-076 DOTA EWA DH ROADWAY/DRAWINGS/-PHASE 2/M4103\_/M4130\_15T FLOOR DH MECHANICAL PARTIAL PLAN.



















4'





M-DRO-0219-0000219-076 DOTA EWA DH ROADWAYDRAWINGSS-PHASE 20044103 104141 IOOR DH MECHANICAL PARTIAL PLAN





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	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS								
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	PROJECT TITLE :								
	CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS								
	AT DANIEL K. INOUYE INTERNATIONAL AIRPORT HONOLULU, OAHU, HAWAII								
	PROJECT NO .:								
	AO1043-33								
	SHEET TITLE:								
	1ST FLOOR DH CONNECTING LINK MECHANICAL PARTIAL PLAN B								
16'	DATE : 01/19 SHEET : 434 OF 63	<b>9/2024</b> 34 SHEET	s	DWG. M-4	<sup>NO.</sup>				

8'

12'





4'

8'




















CUT AND CAP (E) 1-1/2" COPPER PIPE, SEE DETAIL





9 REMOVE (E) 3" DS DOWN TO 1ST FLOOR CUT (E) 3" SD FOR (N) CONN.	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS				
CUT AND CAP (E) 1-1/2" COPPER PIPE, SEE DETAIL REMOVE (E) PVC IRRIGATION PIPE AND APPURTENANCES		* UCENSE PROFESSIONAL No. 10226-M No. 10226-M			
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SHEET :

4'

SCALE: 3/16" = 1'-0"

12'

16'

01/19/2024

445 OF 634 SHEETS

DWG. NO.

M-4138











2' 0 4' 12' 8'



(PROJ219-000)219-076 D0TA EWA DH ROADWAY/DRAWINGS)~PHASE 2/M4131 M4158 2ND FLOOR DH MECHANICAL PARTIAL



M:/PROJ/219-000/219-076 D0TA EWA DH ROADWAY/DRAWINGS/~PHASE 2/M4131\_M4158\_2ND FLOOR DH MECHANICAL PARTIAL PLAN.





















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2' 0 4' 8' 12' SCALE: 3/16" = 1'-0"	16'	DATE : 01/1 SHEET 459 OF 6	<b>19/2024</b> :: 634 SHEET	DWG. NO. M-4152











2' 0 4' 12' 8' SCALE: 3/16" = 1'-0"



4//PROJ/219-000/219-076 DOTA EWA DH ROADWAY/DRAWINGS/~PHASE 2///4131 ///4158 2ND FLOOR DH MECHANICAL PARTIAL PLA







3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A SCALE: 3/16" = 1' - 0"

1M-4159

: 1/M-4160		STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS				
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		PRO	JECT	TITLE :		
		CONC AT TE	RETE \$ RMINA	SPALL REPAIRS L 2 ROADWAYS		
		DANIEL I	K. INOUYE I HONOLULU	AT NTERNATIONAL AIRPORT J, OAHU, HAWAII		
		PRO	JECT	NO.:		
			A01	043-33		
		SHE	ET TI	TLE:		
		3RD FLOOR DH MECHANICAL DEMOLITION PARTIAL PLAN A				
2' 0 4' 8' SCALE: 3/16" = 1'-0"	12' 16'	DATE : 01/19 SHEET : 466 OF 63	4 SHEETS	DWG. NO. M-4159		





























4'








1 3RD FLOOR DH MECHANICAL PARTIAL PLAN A SCALE: 3/16" = 1' - 0"

E 1/M-4174			STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS				
			This wo DSGN. JS/KT	K PR No	A STATE OF		
			KEY PLAN / NOTES:				
			NO.	03/22/24 DATE	ADDENDUM NO. 3 REVISIONS TRUCTION UMENTS		
			JANUARY 19, 2024 DATE PROJECT TITLE :				
			CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS				
			PROJECT NO.:				
			SHEET TITLE: 3RD FLOOR DH MECHANICAL PARTIAL PLAN A				
2' 0 4' SCALE: 3/16" = 1'-0"	8'	12' 16'	DATE : 01/ SHEET 480 OF	19/2024 : 634 SHEET	DWG. NO. M-4173		

M:PROJ/219-000/219-000/219-076 DDTA EWA DH ROADWAY/DRAWINGS/-PHASE 2/M4159\_M4186\_3RD FLOOR DH MECHANICAL PARTIAL PLAN



	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS							
	KEY	PLAN	/ NOT	ES:				
	3 03 NO. [	3/22/24 ADI DATE	DENDUM NO	. 3 DNS				
	CONSTRUCTION DOCUMENTS JANUARY 19, 2024 DATE PROJECT TITLE : CONCRETE SPALL REPAIRS AT TERMINAL 2 ROADWAYS							
	PROJECT NO.:							
	AU1043-33 SHEFT TITLE							
	3RD FLOOR DH MECHANICAL PARTIAL PLAN B							
8' 12' 16' 	DATE : 01/19/ SHEET : 481 OF 634	<b>/2024</b> 4 SHEETS	DWG.	. NO. 174				

SEE 1/M-4173

2' 0 4' SCALE: 3/16" = 1'-0"





















SCALE: 3/16" = 1'-0"









11/PROJ/219-000/219-076 D0TA EWA DH ROADWAY/DRAWINGS/~PHASE 2/M4159 M4186 3RD FLOOR DH MECHANICAL PARTIAL PLAN

