Airport Way Rehabilitation

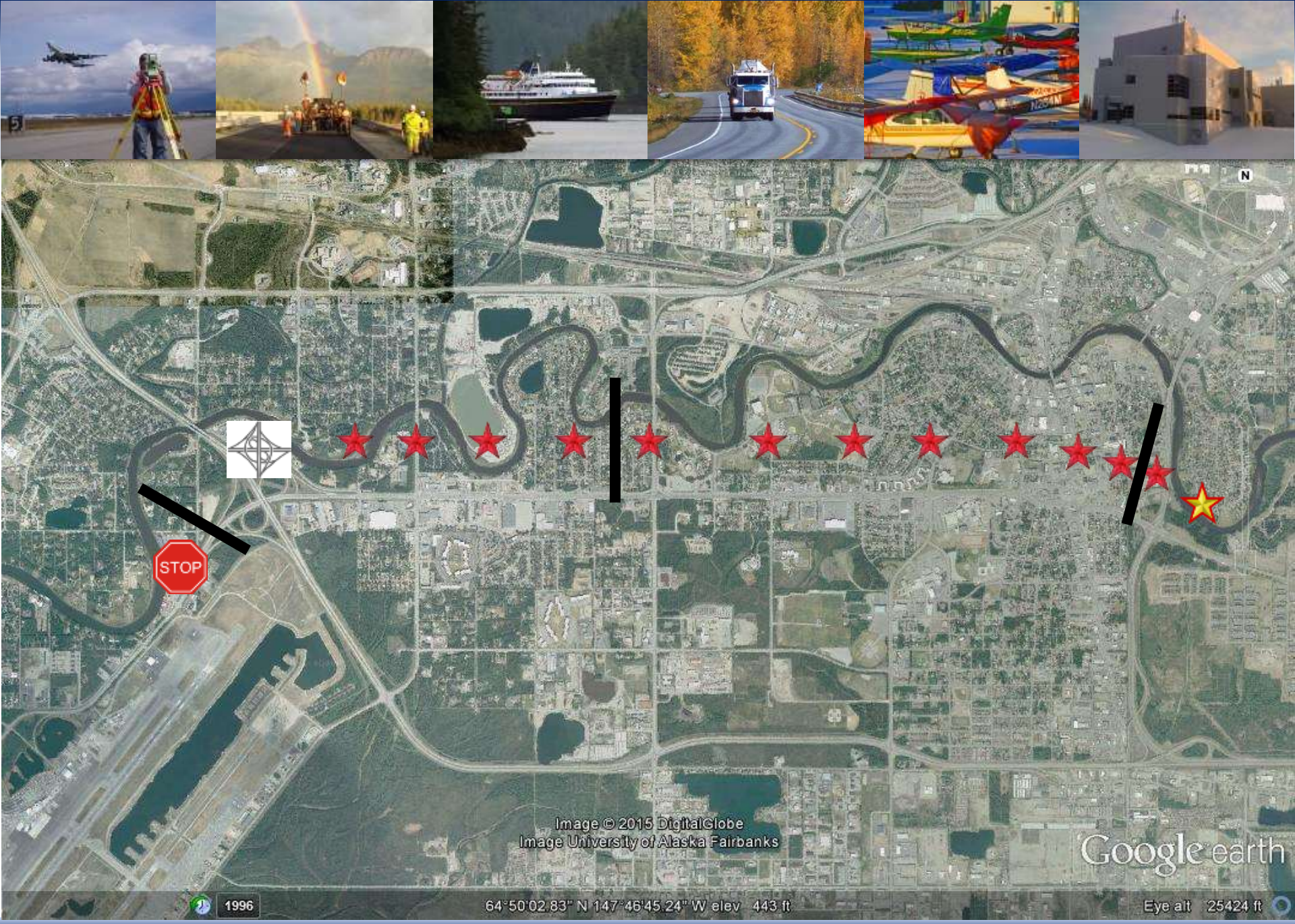
Andrew Schultz, AKDOT&PF

Overview

- Corridor Overview
- Airport Way Stage 1
- Airport Way Stage 2

Corridor Overview

- 2 Phase
- Urban
  - Average Annual Daily Traffic
    - Between Noble and Cushman – 20495 (2013)
    - Frontage between Cowles and Gilliam – 310 (2013)
  - 4 lane with curbed median
  - Intersections
    - 12 signalized
    - 1 stop controlled
    - 1 interchange
    - 1 military base entrance
  - Edge of pavement treatments
    - Curb and gutter and paved ditch


STOP
Image © 2015 DigitalGlobe
Image University of Alaska Fairbanks
Google earth
1996
64°50'02.83" N 147°46'45.24" W elev 443 ft
Eye alt 25424 ft

Airport Way

Peger Rd.

Airport Way

Drainage

Project Data

- Bid: 10/8/2013
- Award: 10/29/2013
- NTP: 11/4/2013
- Contract Amount: $5,388,088
- Contractor: Exclusive Paving Inc.
- Subcontractors: Arctic Surveys, Becker Trucking, Emulsion Products, Hot Wire Electric, Jolt, KJ Enterprises, MAPPA, Northwest Barriers, Pacific Asphalt, PFK Enterprises, Rady Concrete

Project Data

- Length of project – 2.2 miles
- Lane miles – 21
- Days of paving – 22
- Precipitation – 9.36 inches

Project Features

- Stage 1
  - Remove 1.5 inch of HMA, place 1.5 inches
    - Type III gradation
    - PG 52-28 binder
    - Paving width varies
      - 68 foot paving width plus auxiliary lanes and ditch
  - Signalization work impacted due to condition, code issues, ROW, and future project.
  - Cabinet and detection upgrades were successful

Airport Wa
08/13/2014

Notable Specifications

- Concerns
  - Public Convenience
  - Degradation of milled pavement
  - Concurrent projects on East-West corridors
  - Morning rush hour
  - Inoperable signals
- Lead to restrictive specifications for construction phasing
  - Allowed 2 segments to have a milled surface
  - Duration of 5 days for a milled surface
  - Paving completion date of mid July
  - Traffic restrictions only allowed between 7 pm and 7 am
  - Signals only allowed to be inoperable during single night shift

Airport Way Stage 1

- Milling
  - BIG SKI
    - Curb line not a good reference

05/29/2014

Milling

- Cutting bits
  - Diamond
  - Increased up time
  - Better surface

06/16/2014

- Potholes
  - Intersections
  - Thin areas
  - Blowouts
  - Repairs

Noble St.
07/02/2014

07/02/2014

Stage 1 HMA Pavement

- Paving
  - 14,877 Tons HMA
  - 750 Tons PG 52-28
  - 29 Acceptance Tests
  - Topcon P-32 with Smoothrac SAS
  - CAT 1055E
    - Pickup Machine

Marshall Criteria Alaska Test Method T-417	50 Blow Compaction Effort		Sieve Size	Proposed JMF Gradation	Broad Band Range
	NAS		19 mm - ¾"	100	100
Stability	1200 lbs		12.5 mm- ½"	100	100
Flow	8 – 16		9.5 mm - 3/8"	89	80-90
Voids Total Mix	3 – 5		4.75 mm - # 4	51	44-81
Voids Filled	65 – 78		2.36 mm - # 8	36	26-70
VMA	13 Min		1.18 mm - # 16	26	16-59
Compacting Temp	257 F		0.6 mm - # 30	22	9-49
Mixing Temp	277 F		0.3 mm - # 50	16	6-36
% Anti-Strip Agent	0.25 %		0.15 mm - # 100	9	4-22
Dust/AC Ratio	0.6 – 1.4		0.075 mm -# 200	5.3	3-7

% Ac @ Max Unit Wt.	5.5		Bulk Specific Gravity Properties (2014)	
% AC @ Max Stability	5.5			
% AC @ 3.5 % Voids	5.1		Intermediate Aggregate	2.709
Average % Asphalt	**5.4**		Plant Mix Fines	2.653
			Recycled Asphalt Pavement	2.510
Design % Asphalt Content	**5.1**	+/- 0.4 %		
Stabilty @ Design AC	2715	1200 Min	Binder Sp. Gravity	1.009
Unit Wt @ Design AC	150.0		M.T.D. @ 5.1	2.493
% Voids @ Design AC	**3.5**	3 - 5	Effective SG Agg	2.684
% VFA @ Design AC	73.5	65-78	Combined Bulk SG Aggregate	2.634
VMA @ Design AC	13.4	13 Min		
Flow @ Design AC	11	8-14		
Dust/Asphalt Ratio	1.2	0.6 – 1.4		

Stage 1 HMA Pavement

- Heated end gate
  - Joint matching
- Traffic Control requirements
  - Determined paving sequence
  - Paving efficiency reduced
- Pickup machine
  - Difficult to control dumps
  - Surface segregation
  - MTV use may have helped

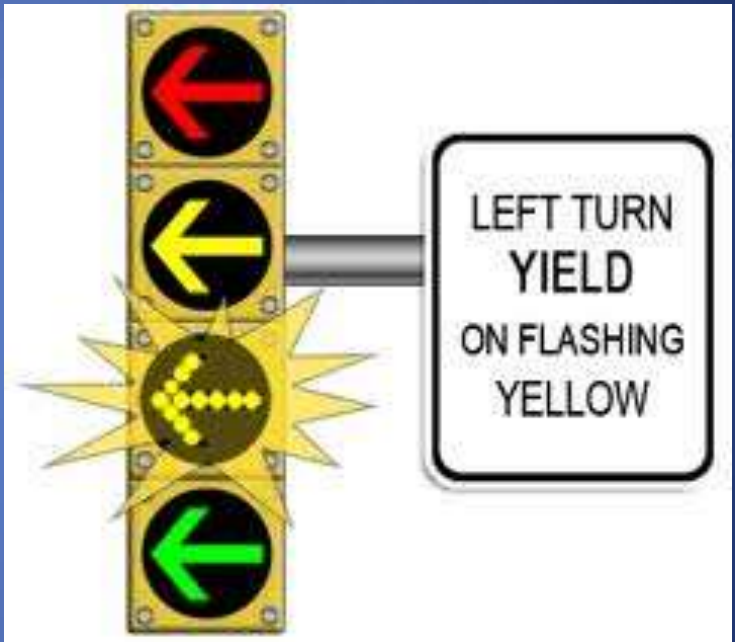
06/12/2014 01:11

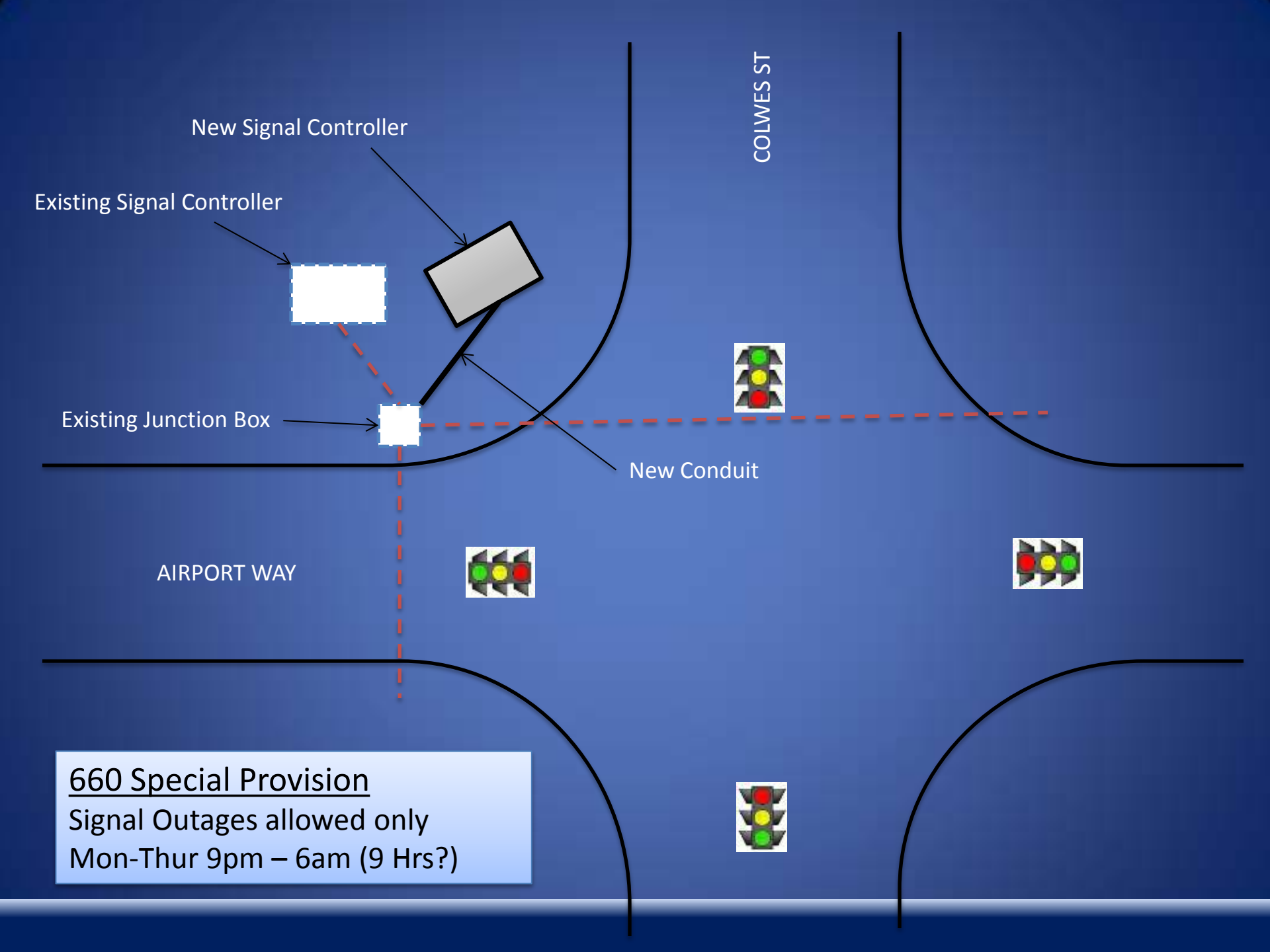
Quality Level Analysis

- CPF
  - Lot 1 – 1.05
  - Lot 2 – 1.05
  - Lot 3 – 1.05
- DPF
  - Lot 1 – 1.04
  - Lot 2 – 1.04
  - Lot 3 – 1.04

Electrical Work

- New Signal Heads
  - Overfilled Junction Boxes
  - Overfilled Conduits
  - Inadequate Grounding
  - Labeling
  - Daisy Chaining
  - Mast Arm Loading
  - ROW @ Cushman
  - NR Signal Project on Back Burner




New Signal Controller
Existing Signal Controller
COLWES ST
Existing Junction Box
New Conduit
AIRPORT WAY
660 Special Provision
Signal Outages allowed only
Mon-Thur 9pm – 6am (9 Hrs?)

SUPER STORE
CASE

USDOT-16

Traffic Control

- Develop a rational numbering system for TCP’s

	DESCRIPTION	TCP NO.	Pgs	Date	Comments
	WB Rt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	1	3	3/5/2014	
	WB Lt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	2	3	3/5/2014	
	EB Rt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	3	3	3/5/2014	
	EB Lt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	4	3	3/5/2014	
	NB Rt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	5	3	3/5/2014	
	NB Lt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	6	3	3/5/2014	
643-4	SB Lt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	7	2	3/5/2014	
	SB Rt Ln Closure @ Peger. Elec, Wiring, Signing, & Signal Work	8	3	3/5/2014	
	WB Rt Ln Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	1	3	3/5/2014	
	WB Lt Ln Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	2	3	3/5/2014	
	EB Rt Ln Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	3	3	3/5/2014	
	EB Lt Ln Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	4	3	3/5/2014	
	NB & SB Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	5	2	3/5/2014	
	NB & SB Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	6	2	3/5/2014	
	NB & SB Closure @ Wilbur. Elec, Wiring, Signing, & Signal Work	7	2	3/5/2014	

06/28/2014 23:33

Airport Way Stage 2

Project Data

- Bid Date: May 5, 2015
- Award Date: May 19, 2015
- Contract Amount: $8,240,476
- Contractor: HC Contractors, Inc.
- Subcontractors: Diamond Fence Co., Emulsion Products, F.W. Scott Enterprises, How Wire Electric, Jolt Construction & Traffic Maint., KJ Enterprises, Pacific Asphalt, PFK Enterprises, Rady Concrete, Voorhees, Arctic Surveyss

Project Features

- Stage 2
  - Milling performed by subcontractor Ground Up Road Construction
  - Remove 1.5 inch of HMA, place 2 inches
    - Type II gradation
    - PG 52-40 binder
  - Signalization upgrade work
  - Interconnect
  - Pedestrian Improvements

Notable Specifications

- Concerns were less than Stage 1
  - Public Convenience
  - Degradation of milled pavement
  - Concurrent projects on East-West corridors
  - Morning rush hour
  - Signals not in operation
  - Utility trench condition during daytime
- Lead to restrictive specifications for construction phasing
  - Allowed 2 segments to have a milled surface for 5 days.
  - Paving completion date of mid August
  - Traffic restrictions between 7 pm and 7 am
  - Method 2 for pavement smoothness
  - Single night shift allowance for signal outage
  - Utility trenches had to be paved before end of shift

Milling

RX-700
07/22/2015

SEARS
07/10/2015

Airport Way Stage 2

- Paving
  - IR 4410 and Cat 1055 D
  - Echelon paving when possible
    - Joint density
  - Traffic Control requirements
    - Determined paving sequence
  - Material Transfer Device
    - Easier to control dumps
    - Surface segregation minimized

Paving

- 18,088 Tons HMA
- 972 Tons PG 52-40 Binder
- 37 Acceptance Tests

- Length of Project – 2.3 miles
- Lane Miles 22
- Days of paving – 19
- Precipitation – 3.28 inches

Stage 2 Mix Design

- Stability – 1850
- Flow – 12.5
- Voids – 4%
- VFA – 73
- VMA 14.9
- Dust/Asphalt – 1.0
- PG 52-40 Binder

- ¾” – 100
- ½” – 82
- 3/8” - 67
- #4 – 42
- #8 – 29
- #16 – 21
- #30 – 15
- #50 – 11
- #100 – 7
- #200 – 4.8

Quality Level Analysis

- CPF
  - Lot 1 – 1.03
  - Lot 2 – 1.02
  - Lot 3 – 1.03
- DPF
  - Lot 1 – 1.01
  - Lot 2 – 1.02
  - Lot 3 – 1.04

Smoothness

- Before
  - IRI – 148
- After
  - IRI – 90

Electrical Work

- Upgrade from video detection to radar

Camera problems

- Low Sun Angle
- Snow in Driving Lanes
- Ice Fog
- Snow/Frost Accumulation

Radar

- Solved all problems in 1 year winter study

Thank you

- Travis Donovan – AKDOT&PF
- Ben Miller – Exclusive Paving, Inc.