DFW Connector Project

TexITE Greater Dallas Section

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October 11, 2019


DFW Connector Project
2009 - Present

➢ ORIGINAL SCOPE

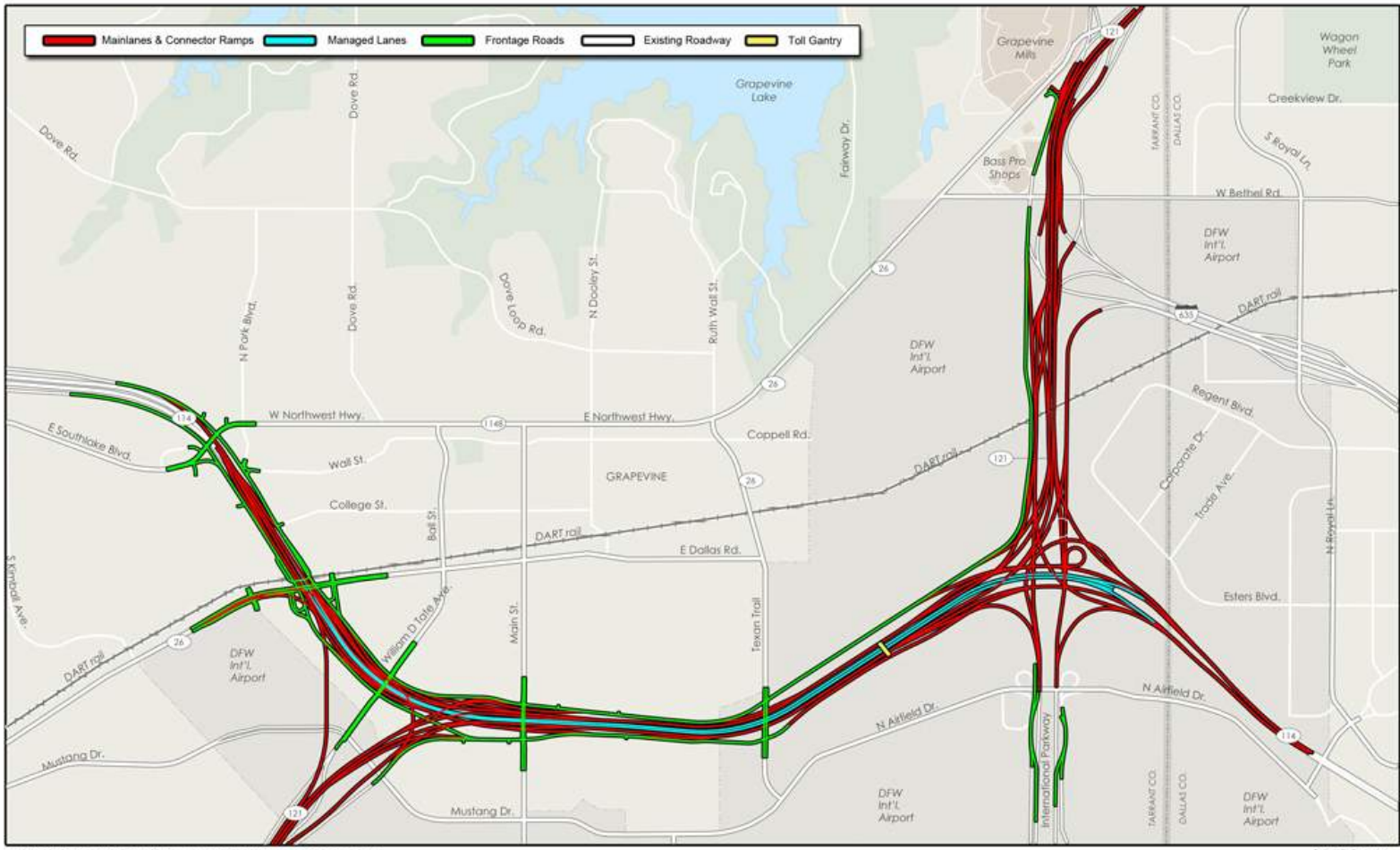
First Design-Build Project in N. Texas

$1.02 Billion Total Project Cost

8.4 Mile Design And Reconstruction Of Existing Facilities And Addition Of Managed Lanes

Improved Mobility Between SH 121 And SH 114

Main Project Completed In March 2014



NOTE: Project area is not drawn to scale in order to emphasize details.

TxDOT Graphic

➢ ORIGINAL SCOPE

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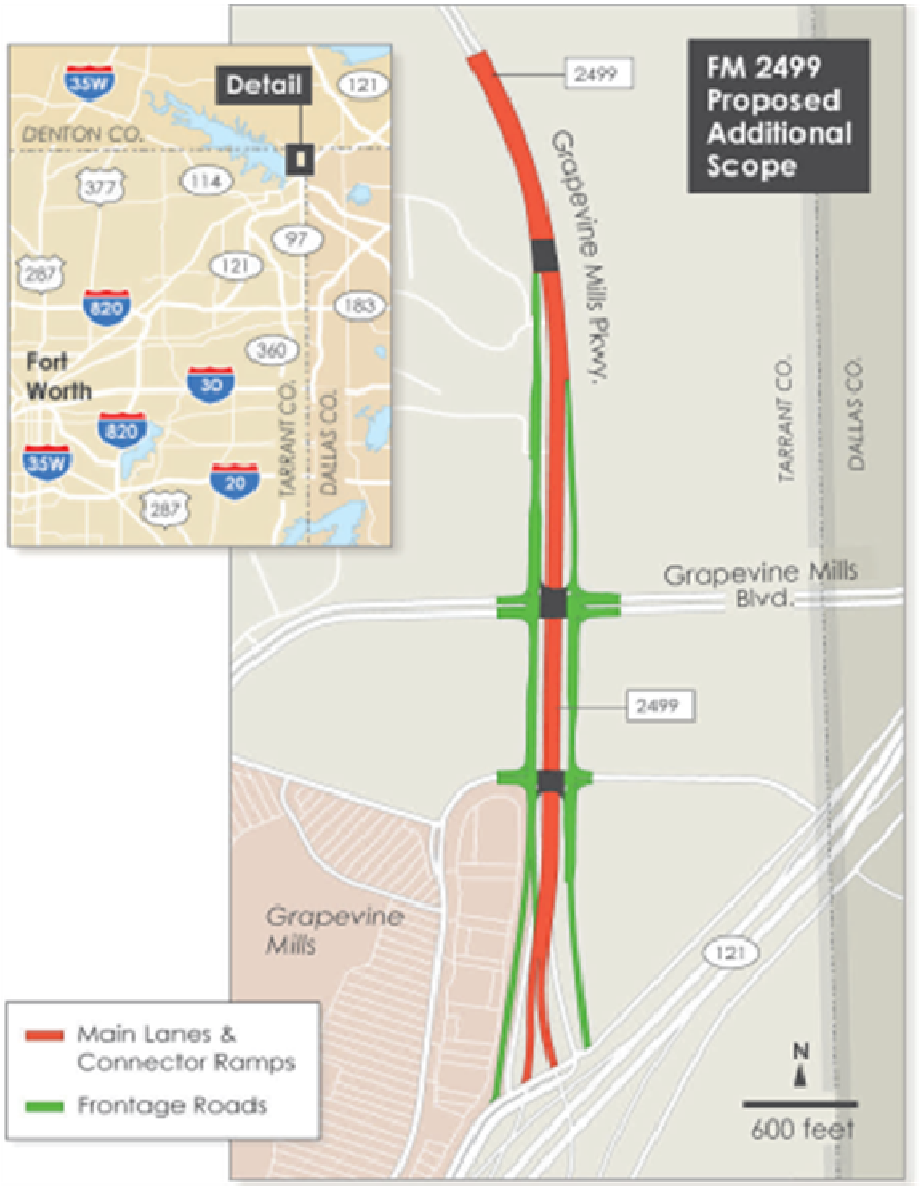
- FM 2499

$90 Million Total Project Cost

Depressed FM 2499 Main Lanes To Bypass Two Intersections

New Frontage Roads At Existing Grade To Connect Cross Streets

Construction Completed In July 2016



➢ FM 2499

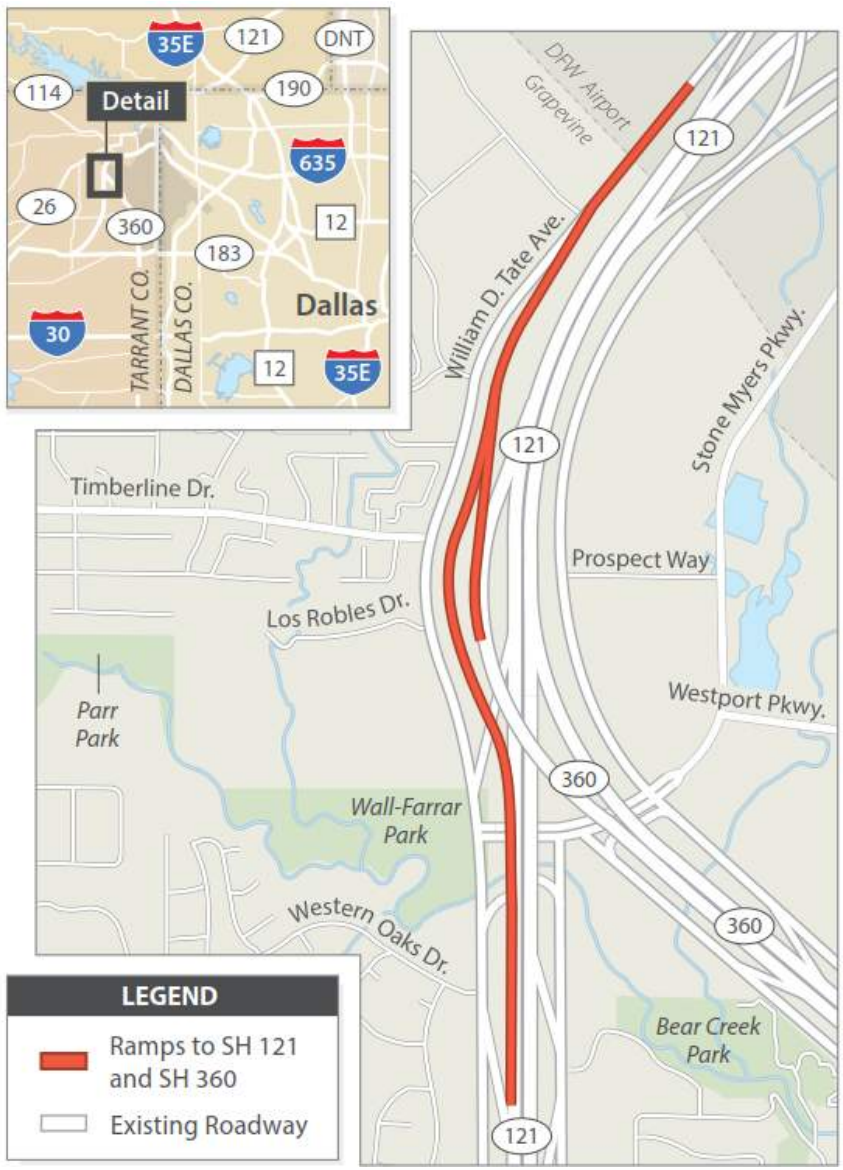
➢ SH 121/360 RAMPS

$17 Million Project Cost

Ramp Connecting William D Tate Directly To SH 121 And SH 360

Allows Traffic To Bypass Stone Myers

Construction Completed In November 2015



➢ SH 121/360 INTERCHANGE

$61 Million Project Cost

Minimizes Weaving And Congestion On Both SH 121 And SH 360

Added New CD From SH 121/360 To WB 114

Reconfigured EB SH 114 And SB SH 121 Ramps To SH 360

Construction Completed In June 2018

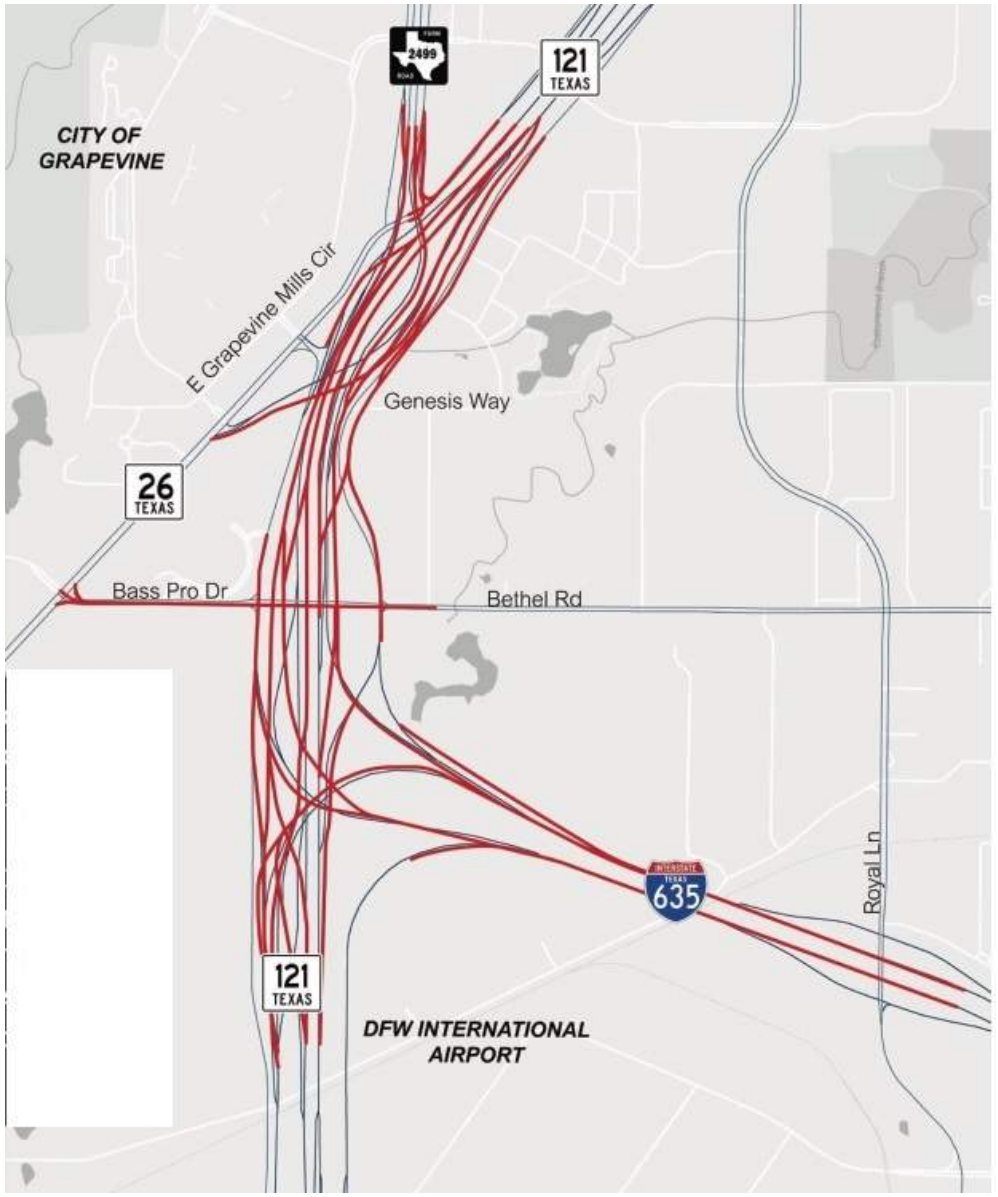
➢ SH 121/360 INTERCHANGE

- **IH 635/SH 121 INTERCHANGE (Connect 4)**

$370 Million Project Cost

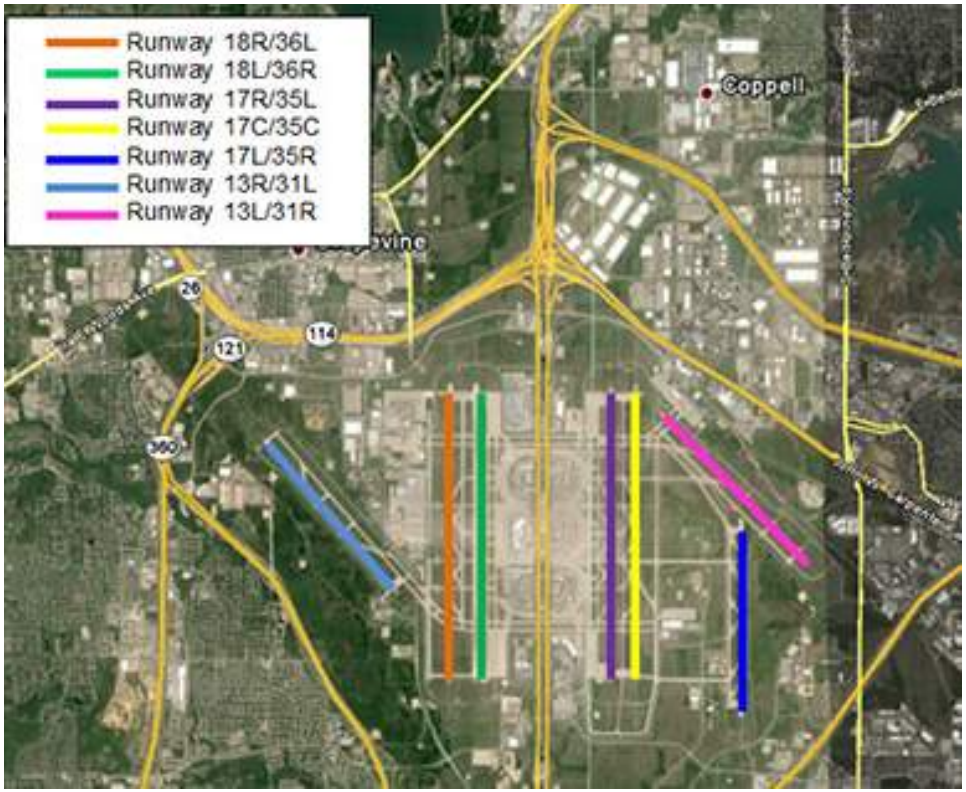
3 Mile Reconstruction And Widening Of SH 121 From IH 635 Interchange To FM 2499

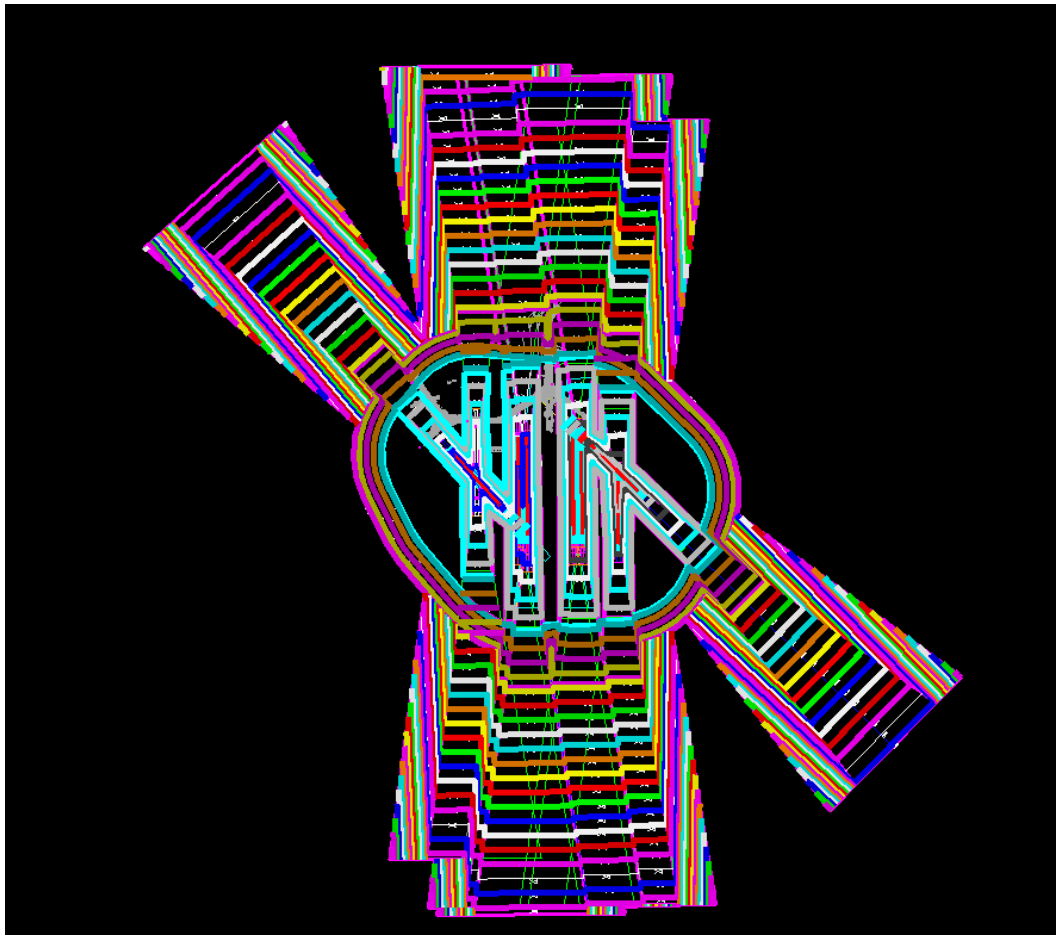
Estimated Substantial Completion In 2022



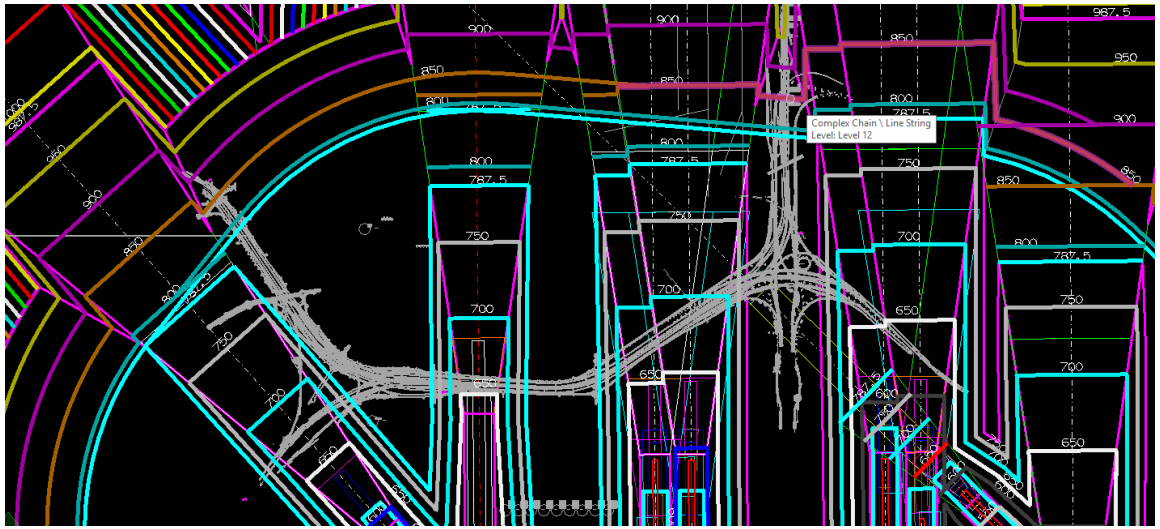
➢ IH 635/SH 121 INTERCHANGE (Connect 4)

➢ DFW AIRPORT FLIGHT PATH



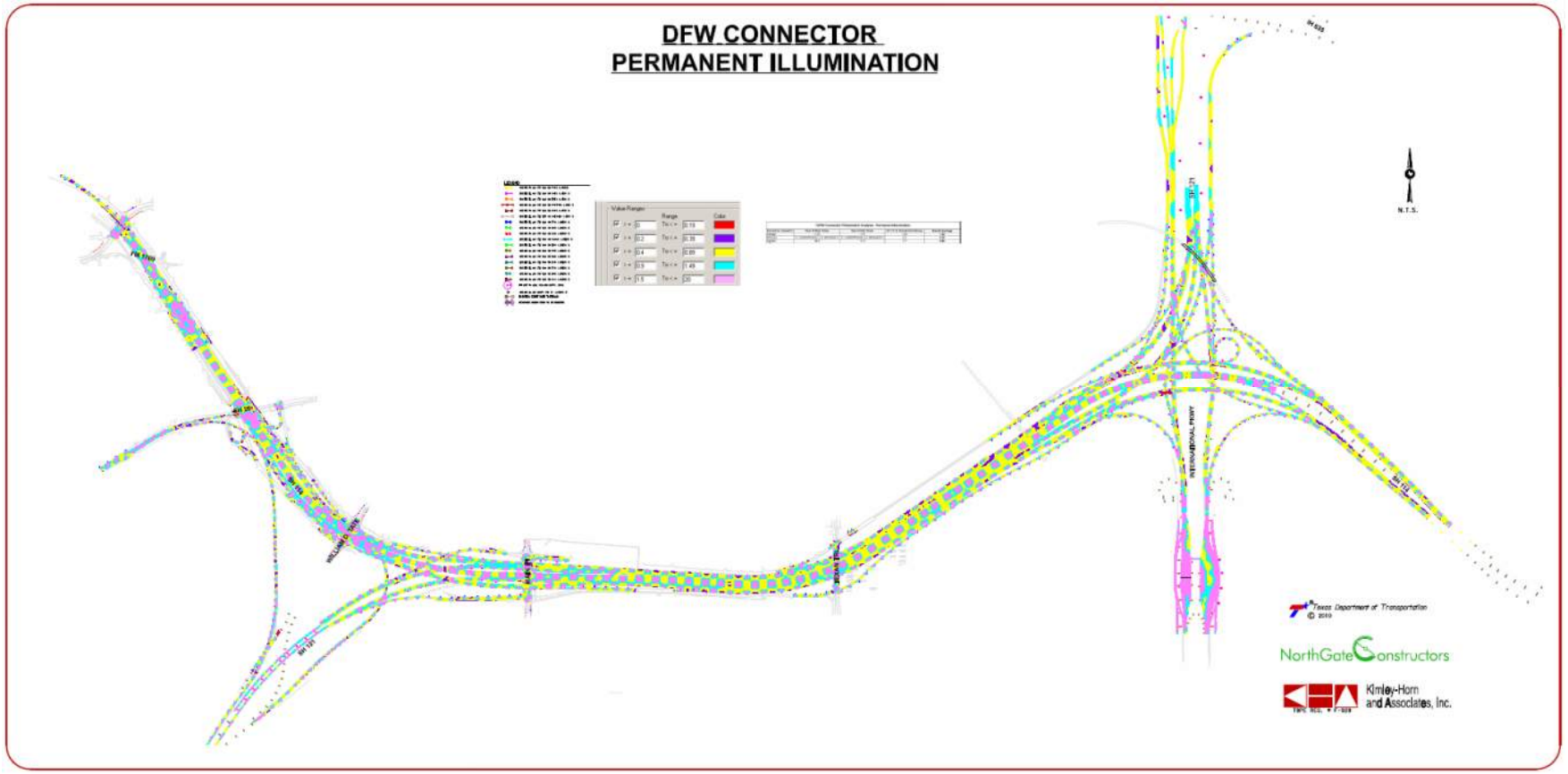


➢ DFW AIRPORT FLIGHT PATH

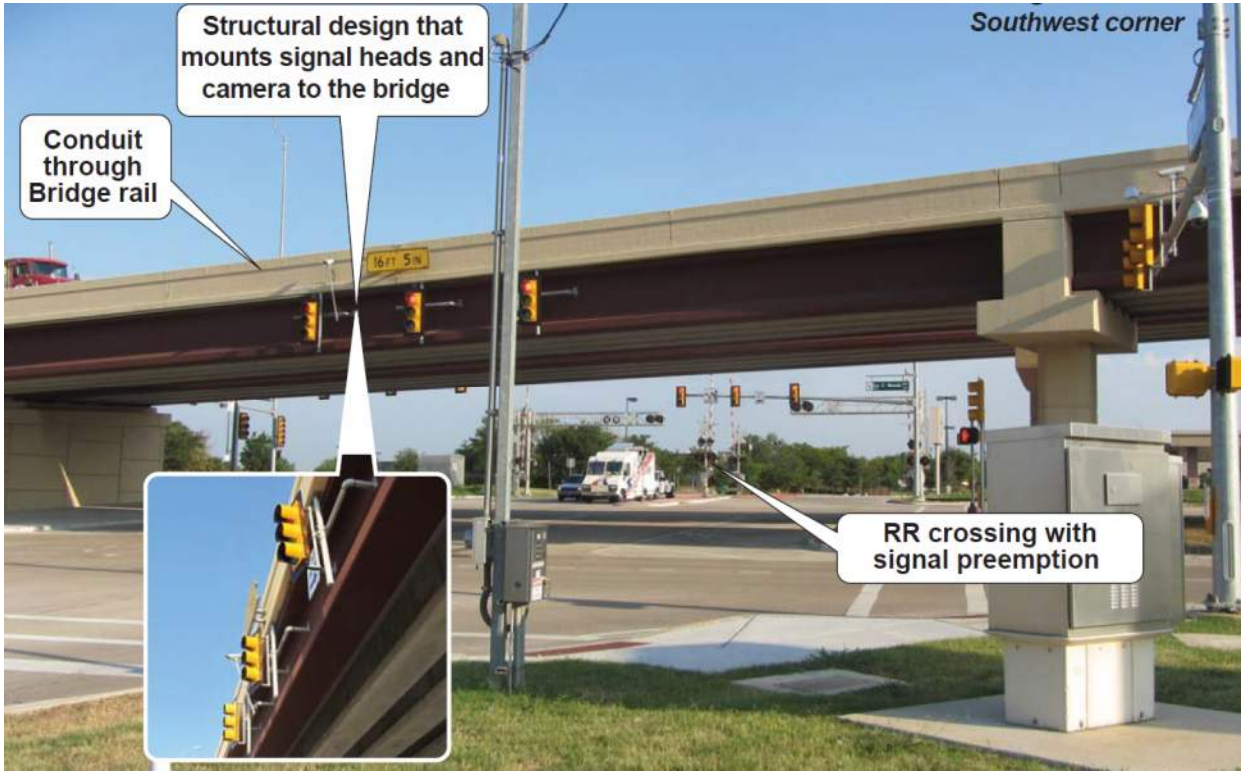


➢ ILLUMINATION

Photometric Analysis to Meet Luminance Requirements

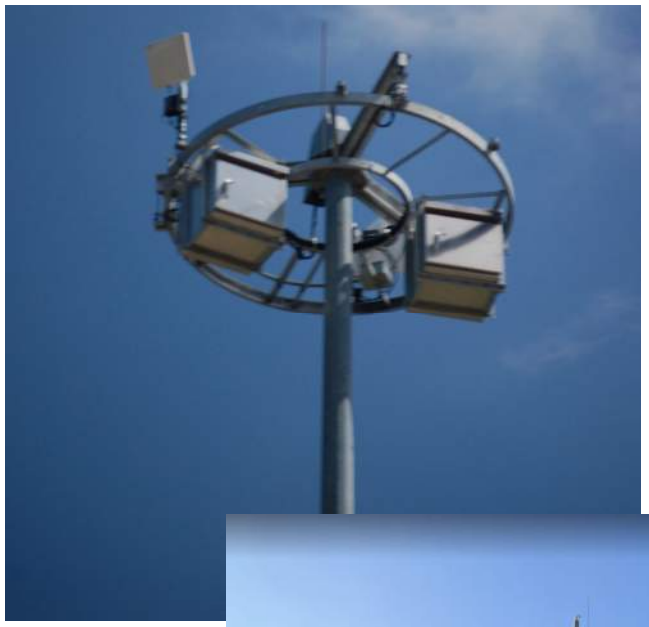


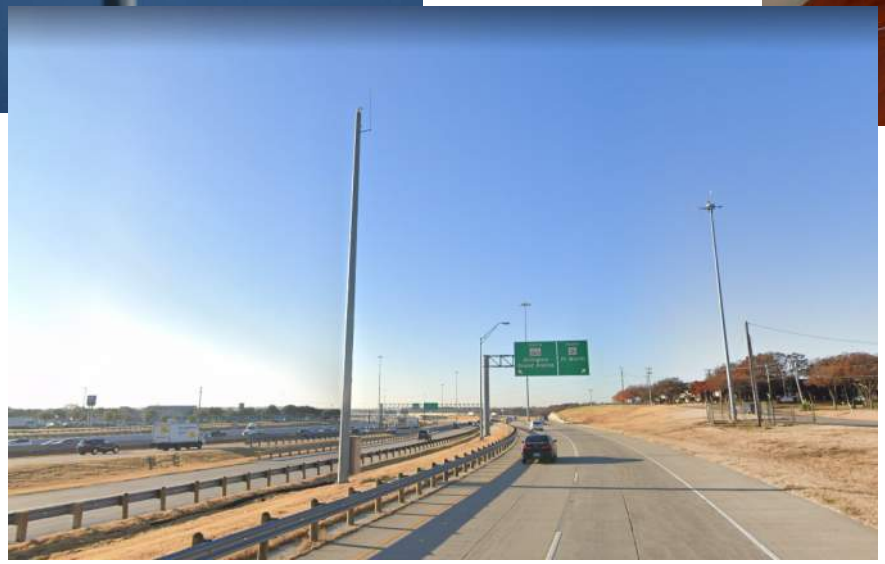
➢ PERMANENT TRAFFIC SIGNALS



➢ TEMPORARY TRAFFIC SIGNALS

➢ ITS / MANAGEMENT



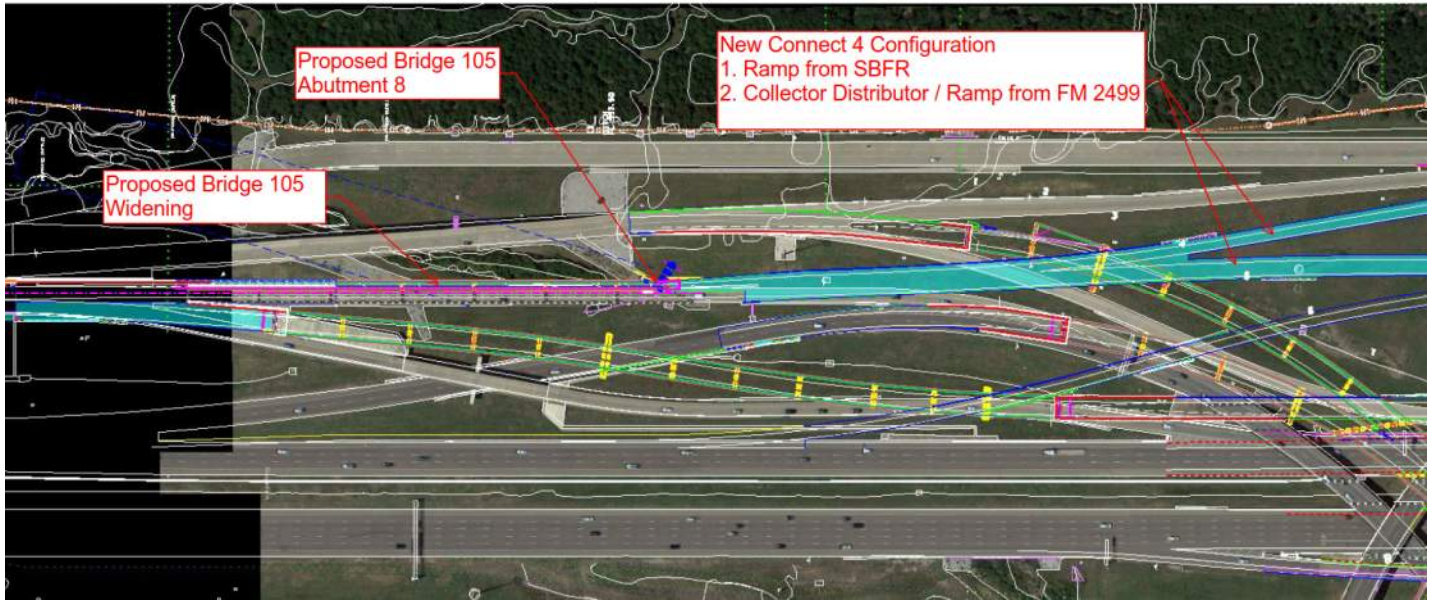


➢ BRIDGE 105 WIDENING

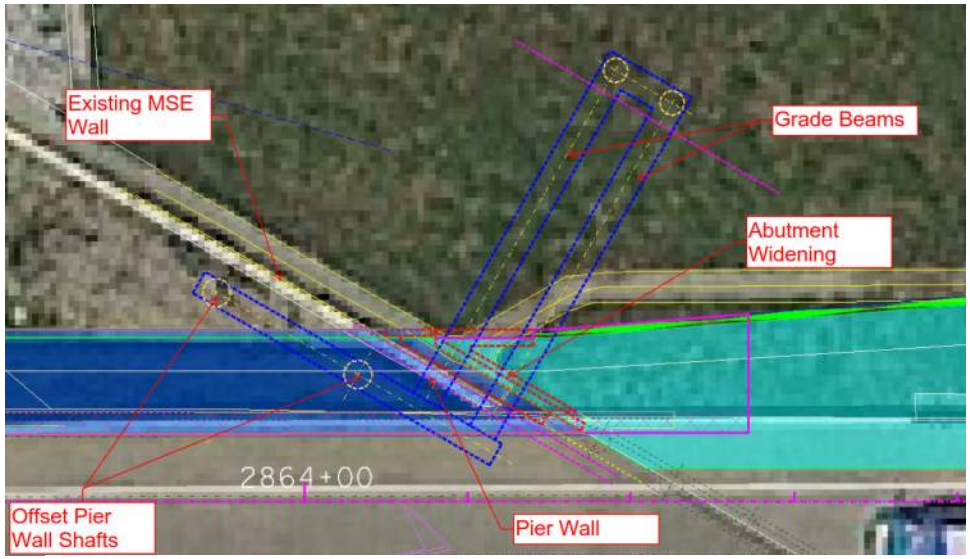
Existing WB 635 To SB International Pkwy

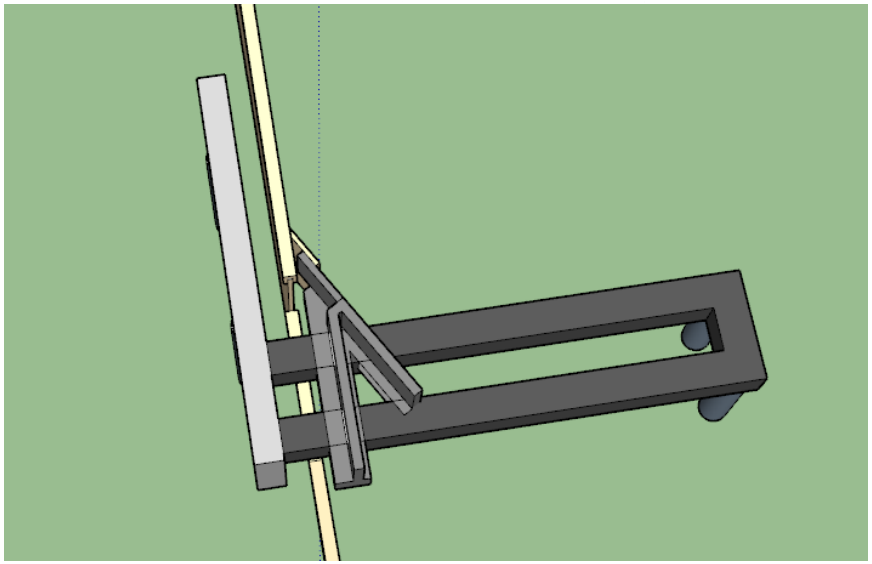
Proposed CD From FM 2499 And SBFR To International Pkwy

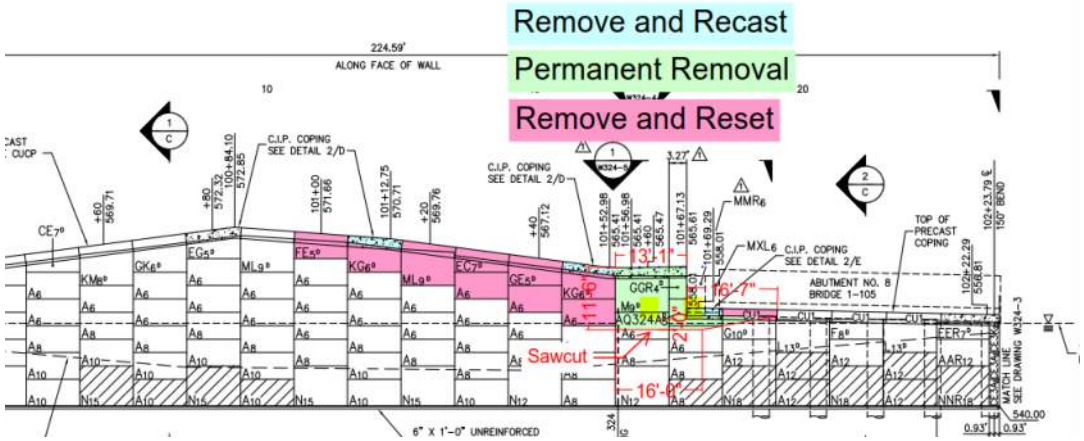
Existing Bridge Widened To Carry 2 Lanes

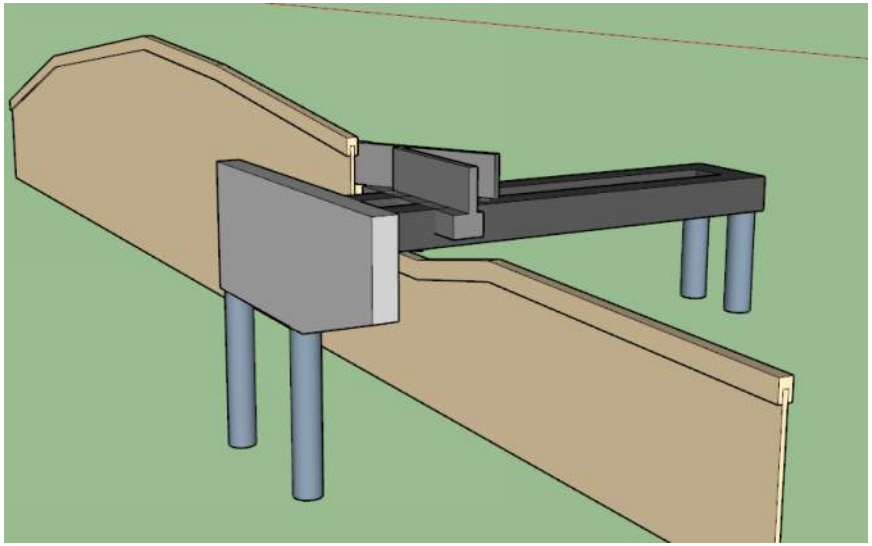


➢ BRIDGE 105 WIDENING



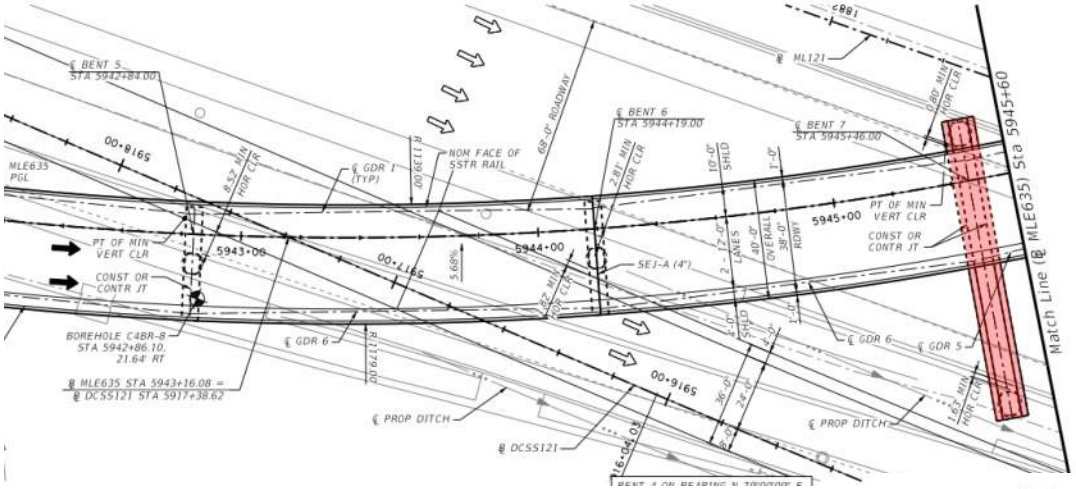






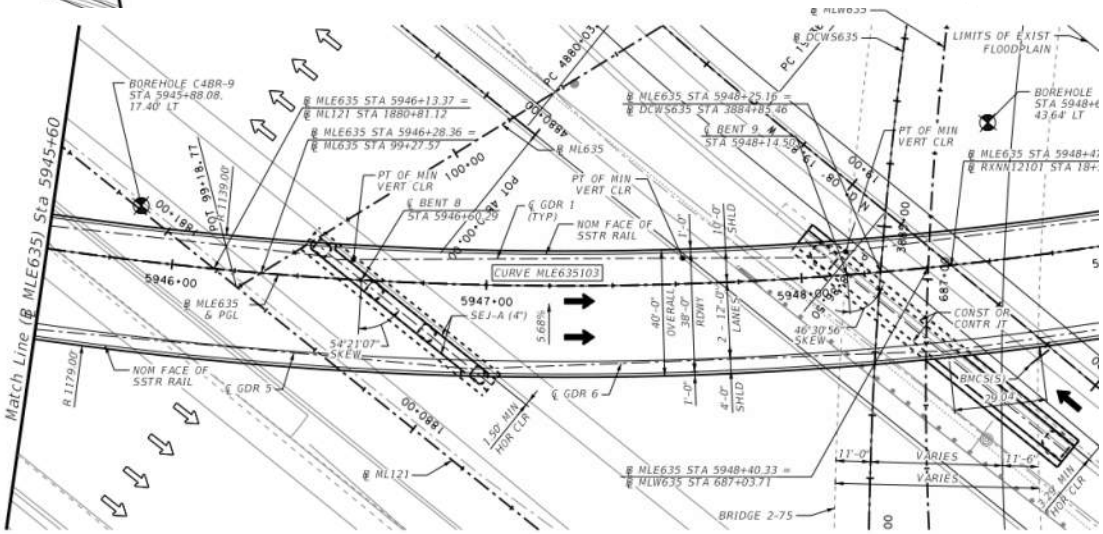
➢ BRIDGE 105 WIDENING

➢ BRIDGE 78 – ELIMINATE STRADDLE BENT



At 60% Design

PT Straddle Bent Over Existing SB SH 121



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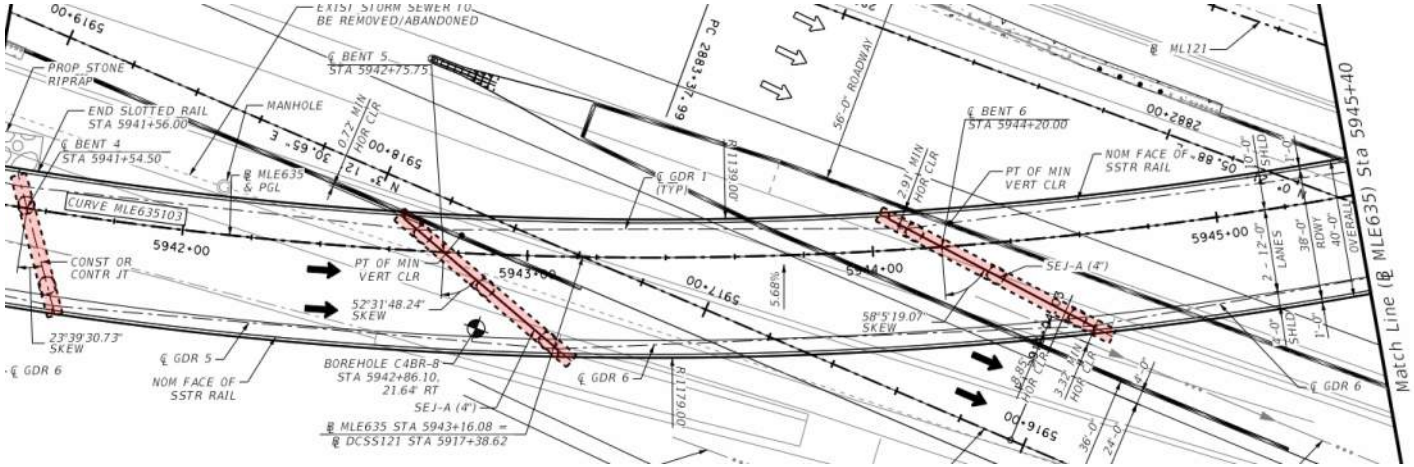
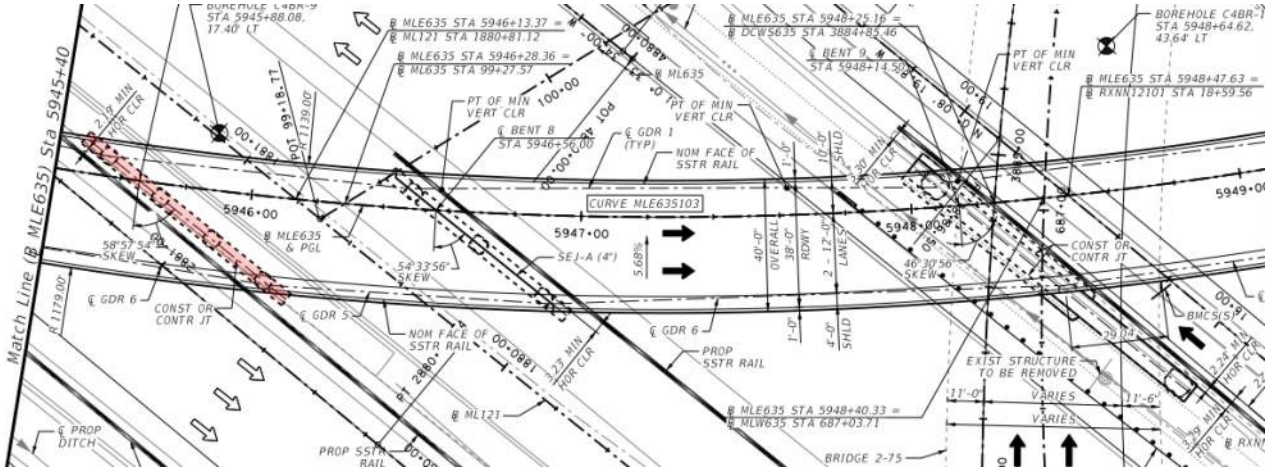


Better Solution For NGC

PT Straddle Bent More Costly And More Difficult To Construct

Avoid Construction Of Bent Over Traffic

Nonconventional Bent Skews



➢ MAINTENANCE OF TRAFFIC

Most Critical Design Component – Schedule

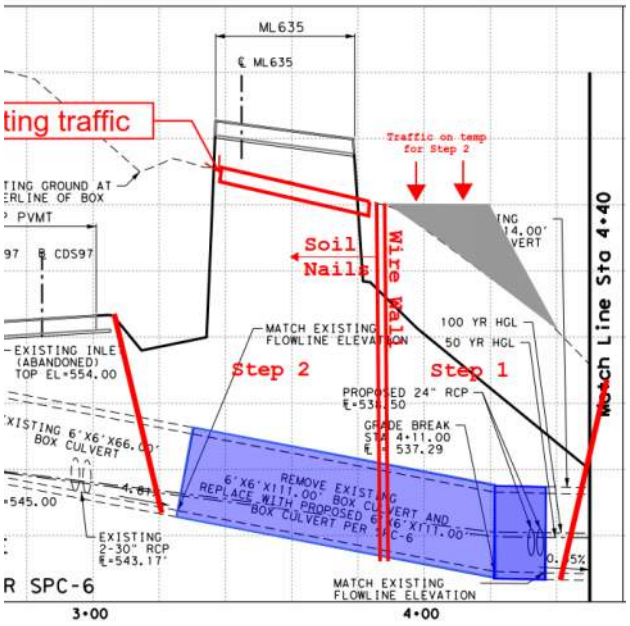
Most Dynamic Part Of Post Design

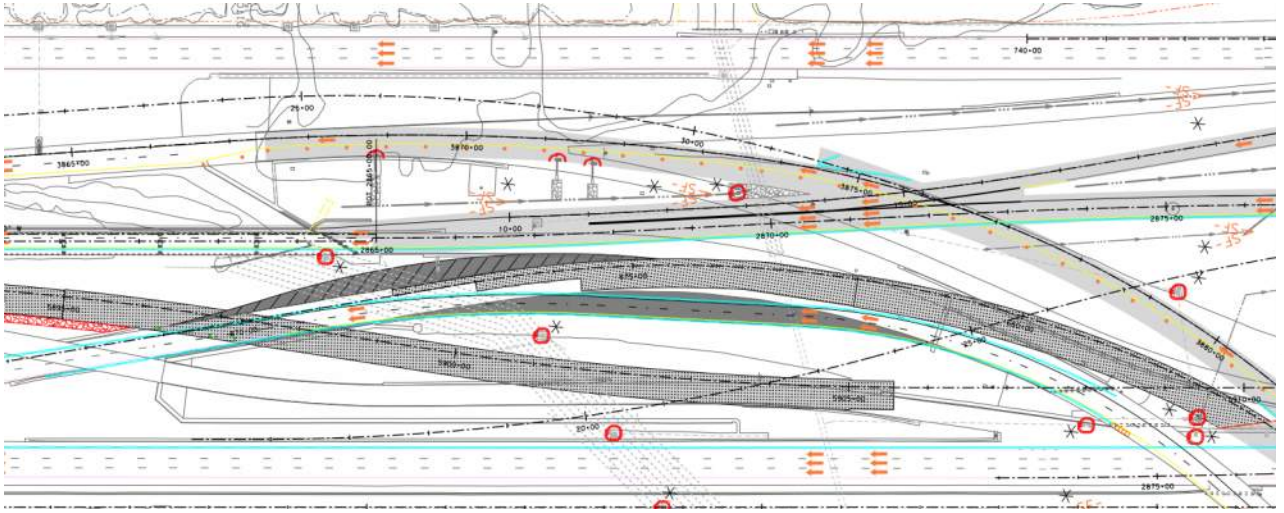
MOT Design Logs

Field Design Change (FDC)

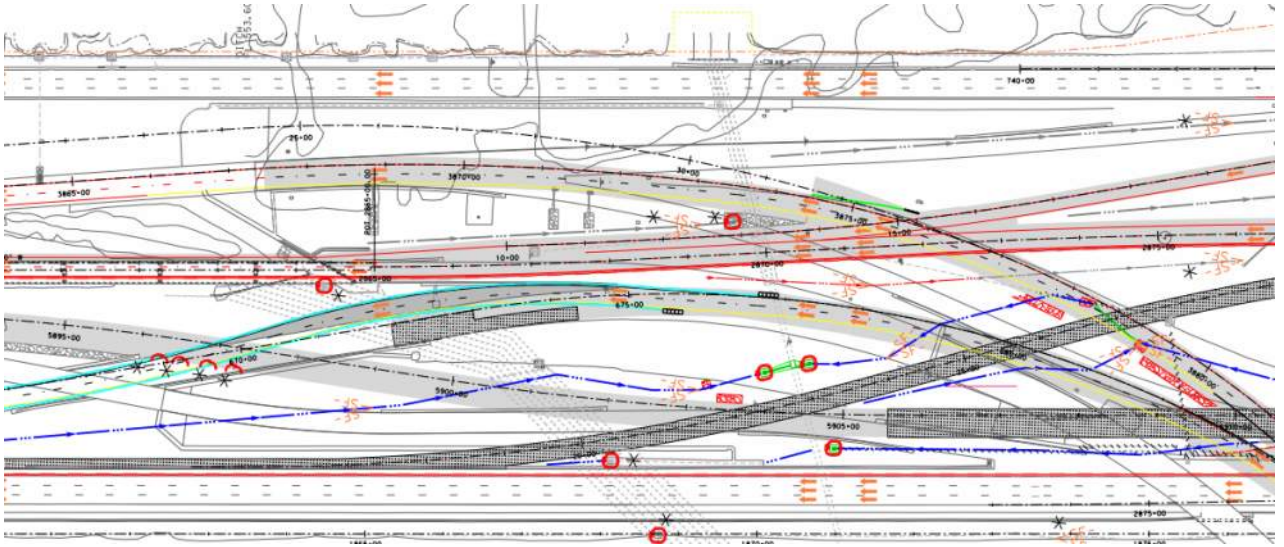
➢ WB 635 DETOUR

PHASE 4

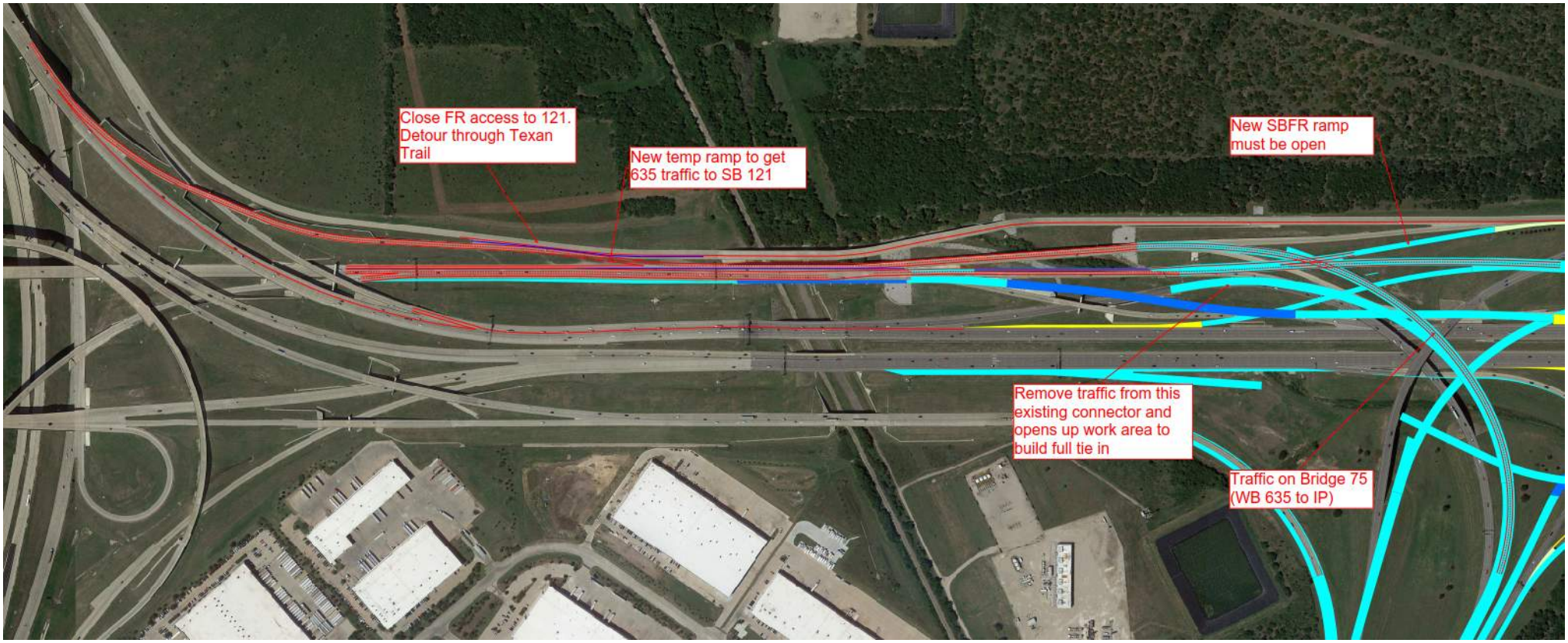




PHASE 5



➢ WB 635 DETOUR



➢ CONSTRUCTION SERVICES

Primary Point Of Contact Between Design And Contractor

Resource To Support Contractor – Resolve Field Issues Promptly, Site Visits

Track And Monitor Post Design Activities (RFIs, NCRs, FDCs, NDCs, Shop Drawings)

Review Lane Closure Requests

Review CMA Issues/Repairs

Compile Record Drawings

Keep NGC Happy Throughout Project Construction

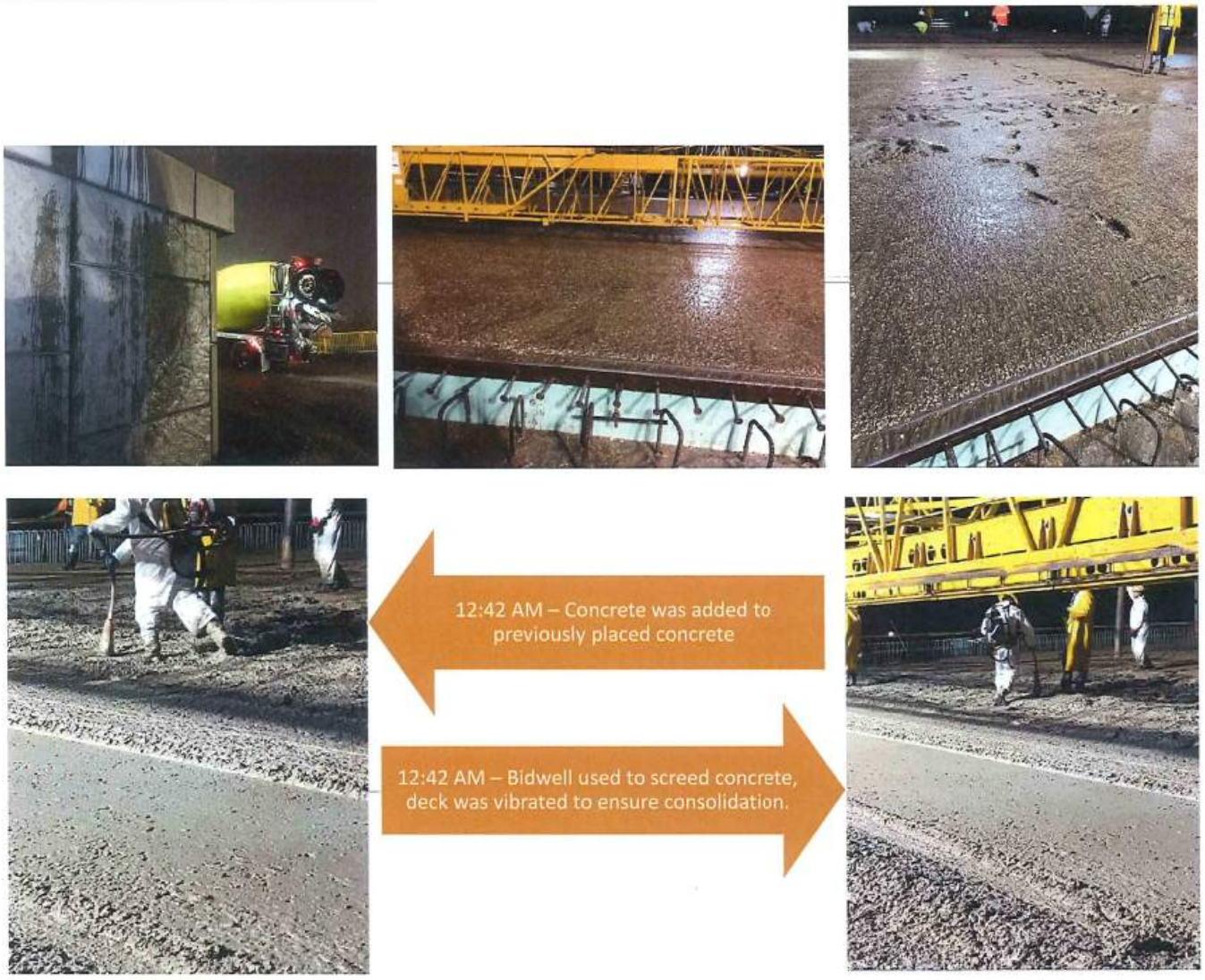
➢ NCR FOR DECK POUR

Bass Pro Bridge

NGC Was Not Able To Protect Freshly Poured Concrete From Storm Event (Rain and Hail)

After Storm Passed, Continued With Deck Pour

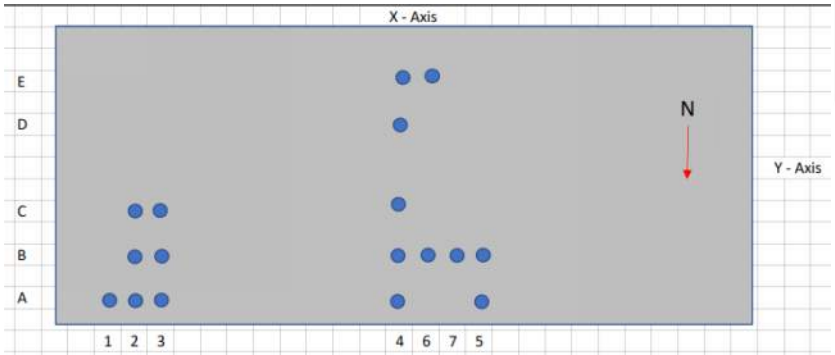
Concern Of Over Hydrated Concrete, Which Could Lead To Insufficient Strength And Quality



➢ NCR FOR DECK POUR - SOLUTION

Cored Deck To Test For Compressive Strength And Water/Cement Ratio

Performed Life Cycle Analysis (Life 365)



Sample	X - Axis	Y - Axis	Sample Date	Time	Notes
1A	5'-0"	1'-5"	4/15/2019	9:30AM	Sample Discarded
2A	8'-0"	1'-6"	----	----	
2B	8'-0"	9'-9"	4/16/2019	8:43AM	Set for Petrograph
2C	8'-0"	18'-0"	----	----	
3A	11'-0"	1'-4"	----	----	
3B	11'-0"	9'-9"	4/18/2019	7:08AM	Strength Broke at 4,520 psi
3C	11'-0"	18'-0"	----	----	
4A	76'-0"	1'-6"	----	----	
4B	76'-0"	8'-11"	----	----	
4C	76'-0"	26'-2"	----	----	
4D	76'-0"	35'-0"	4/15/2019	9:36AM	Sample Discarded
4E	76'-0"	42'-8"	4/16/2019	8:38AM	Set for Petrograph
5A	86'-0"	1'-6"	----	----	
5B	86'-0"	9'-1"	4/16/2019	8:30AM	Set for Petrograph
6B	78'-1"	8'-11"	----	----	
6E	79'-1"	42'-8"	4/18/2019	7:16AM	Strength Broke at 4,820 psi
7B	82'-11"	8'-11"	4/18/2019	7:24AM	Strength Broke at 4,770 psi

Life-365 v2.2 - Concrete Mixes and Service Lives

Project: NCR 1138

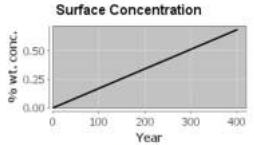
Description: Life Cycle Analysis for Br 83, Span 5 using weighted average cover & thickness

Analyst: Dion R Allicock

Date: 05/23/2019

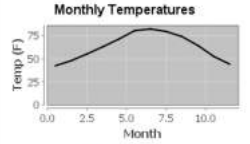
slabs and walls (1-D)

Outer dim: 8.55in; clear cover: 2.52in



Max surface: 0.680 % wt. conc.

Years to buildup: 400



Loc: Texas: DALLAS-FORT WORTH

Type: Urban highway bridges

Concrete Mixes

Alt name	User?	w/cm	SCMs	Inhib.	Barrier	Reinf.
Alternative 2		0.45	Class F Fly Ash (20%);			Epoxy Coated

"n/a" indicates that, since the user is specifying the diffusion properties of this mix, this value is not specified.

Diffusion Properties and Service Lives

Alt name	D28	m	Ct	Init.	Prop.	Service life
Alternative 2	1.62E-8 in*in/sec	0.36	0.05 % wt. conc.	101.5 yrs	20 yrs	**121.5 yrs**

"->" indicates that the user has directly specified this value; "+" indicates the service life exceeds the study period.

➢ NCR FOR PAVEMENT SUBGRADE

WB 635, 36” LTS Section Was Built 2.5” Too high

Structural Number Assessment

Reviewed Pavement Report

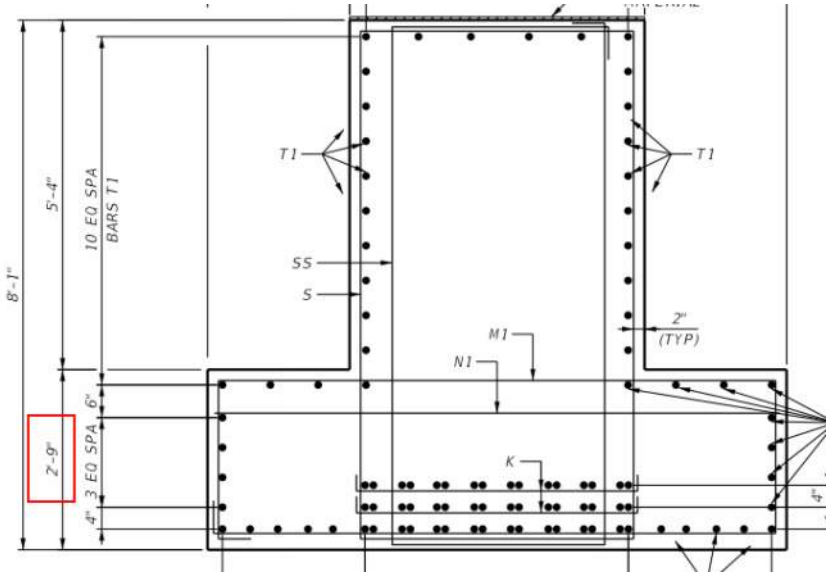
Structural Number (SN) Assessment

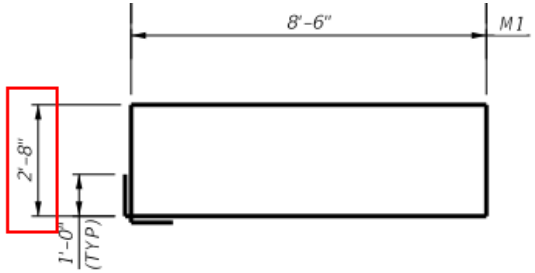
	SC	Original Design	SN	Alternative 1 2" LTS Reduction	SN	Alternative 2 3" LTS Reduction	SN
CRCP	0.5	13	6.5	13	6.5	13	6.5
Type B - BB	0.44	2.5	1.1	3	1.32	3.5	1.54
LTS	0.08	36	2.88	34	2.72	32.5	2.6
Total Thickness		51.5		50		49	
SN			10.48		10.54		10.64

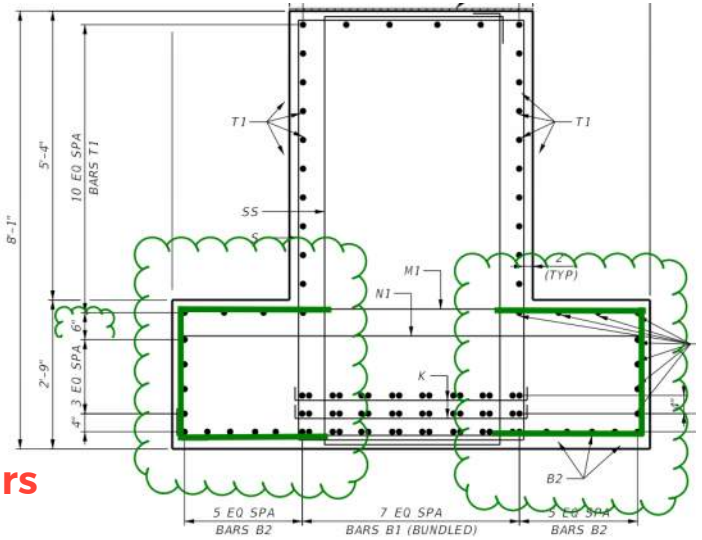
Alternative 1 SN (10.54) > 10.48
Alternative 2 SN (10.68) > 10.48

Weighted PI of Soil Column w/o LSSG	Weighted Average PI of Subgrade [1] PI_{USG}	Thickness of Untreated Subgrade, D_{USG} (in)	Required Effective PI	Req'd Thickness of LSSG (in)	Proposed Thickness of LSSG[3] (in)
59	70	33.6	24.5	46.9	47.0
33	40	59.3	24.5	21.2	21.5
39	47	50.0	24.5	30.5	30.5
46	55	42.8	24.5	37.7	38.0
38	45	52.3	24.5	28.2	28.5
36	43	54.7	24.5	25.8	26.0
				Avg.	32

➢ RFI FOR BRIDGE BENT REINFORCEMENT

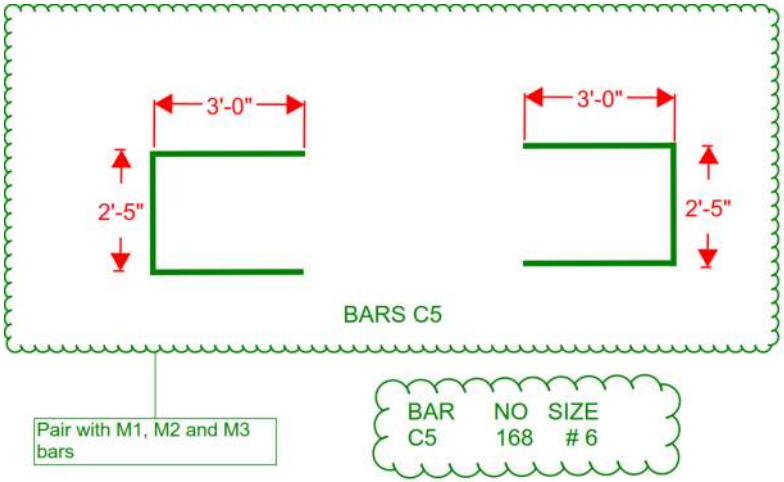






Cut Existing M Bars

Add New C Bars



Thank you!

Questions?

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