Final Presentation
I-475 Reconstruction North Segment

City of Flint, Michigan

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Civil Express

Focus Points

- Project Overview
- Sub-Disciplines
  - Transportation Lead
  - Structural Lead
  - Water Resources Lead
  - Environmental Lead
  - Construction Lead
- Sustainability Considerations
- Questions

Project Overview

Project Location

Fig. 1 Overview Project Site in Flint.

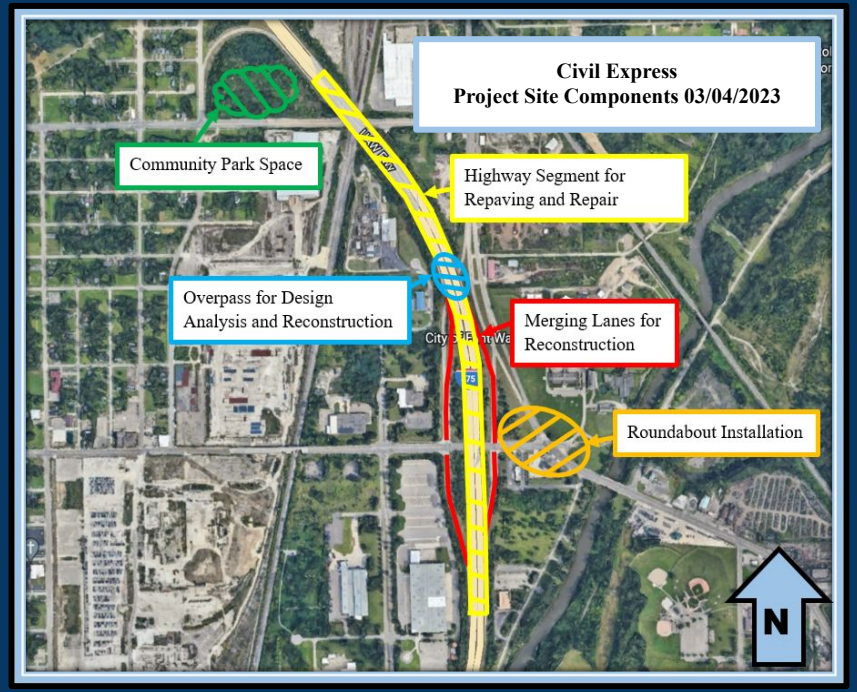


Fig. 2 General Project Components Location.

Project Major Components

- Five Major Components within Phases
  - Reconstruction and Repaving of I-475 Segment
  - Roundabout Installation
  - Overpass Redesign and Reconstruction
  - Community Park Space
  - Merging Lanes on I-475

Justification

Sub Discipline Leads

Transportation Lead

Scope of Work

- Data Analysis
  - Level of Service
  - Crash Statistics
- Design Components
  - Parking Lot
  - Highway
  - Roundabout

- Flexible Pavement Design
  - Design Components
- Sight Lighting Needs
- Appropriate Signage

Preliminary Data Collection

Table 1 Current LOS Values.

Roadway	Direction	Ramp or Segment	Lanes on Roadway	AM		PM	
				Density (pc/mi/ln	LOS	Density (pc/mi/ln)	LOS
I-475	SB	Highway Segment	3	9.2	A	11.4	B
I-475	NB	Highway Segment	3	9.3	A	11.8	B
I-475	NB	Ramp on from Stewart Ave.	3	8.7	A	9.4	A
I-475	NB	Ramp off to Stewart Ave.	5	12.4	B	12.7	B
I-475	SB	Ramp on from Stewart Ave.	3	14.3	B	14.2	B
I-475	SB	Ramp off to Stewart Ave.	5	16.8	B	12.2	B
Pierson Road	EB	Segment Between Horton Ave. and Dort Hwy.	2	8.7	A	9.1	A
Pierson Road	WB	Segment Between Horton Ave. and Dort Hwy.	2	7.2	A	8.8	A
Horton Avenue	NB	Segment N of Pierson Rd.	4	8.9	A	12.3	B
Dort Highway	NB	Segment N of Stewart Ave.	2	20.6	C	24.3	C
Dort Highway	SB	Segment N of Stewart Ave.	2	26.8	D	21.4	C
Dort Highway	SB	Segment Merging off to Stewart Ave.	1	9.2	A	10.6	A

Preliminary Data Collection

Table 2 Future LOS Values.

Roadway	Direction	Ramp or Segment	Lanes on Roadway	AM		PM	
				Density (pc/mi/ln	LOS	Density (pc/mi/ln)	LOS
I-475	SB	Highway Segment	2	12.2	B	15.2	B
I-475	NB	Highway Segment	2	12.5	B	15.7	B
I-475	NB	Ramp on from Stewart Ave.	3	8.7	A	9.4	A
I-475	NB	Ramp off to Stewart Ave.	5	12.4	B	12.7	B
I-475	SB	Ramp on from Stewart Ave.	3	14.3	B	14.2	B
I-475	SB	Ramp off to Stewart Ave.	5	16.8	B	12.2	B
Pierson Road	EB	Segment Between Horton Ave. and Dort Hwy.	2	10.7	A	11.1	B
Pierson Road	WB	Segment Between Horton Ave. and Dort Hwy.	2	9.2	A	10.8	A
Horton Avenue	NB	Segment N of Pierson Rd.	4	10.9	A	14.3	B
Dort Highway	NB	Segment N of Stewart Ave.	2	20.6	C	24.3	C
Dort Highway	SB	Segment N of Stewart Ave.	2	26.8	D	21.4	C
Dort Highway	SB	Segment Merging off to Stewart Ave.	1	9.2	A	10.6	A

Crash Statistics of Intersection

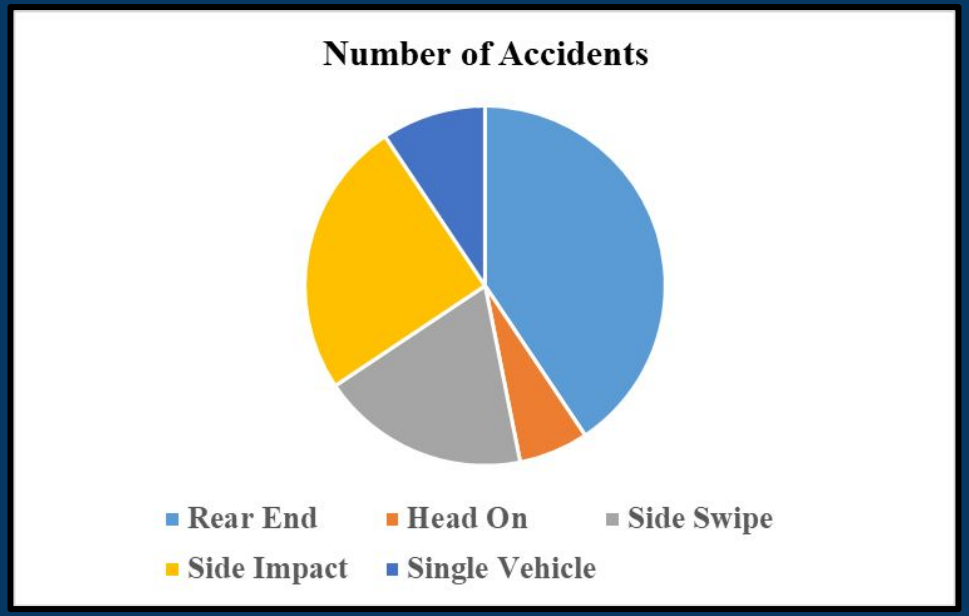


Fig. 3 Crash Statistic Chart.

Table 3 Accident Table.

Type of Accident	Number of Accidents
Rear End	13
Head On	2
Side Swipe	6
Side Impact	8
Single Vehicle	3
Total	32

Parking Lot Geometric Design

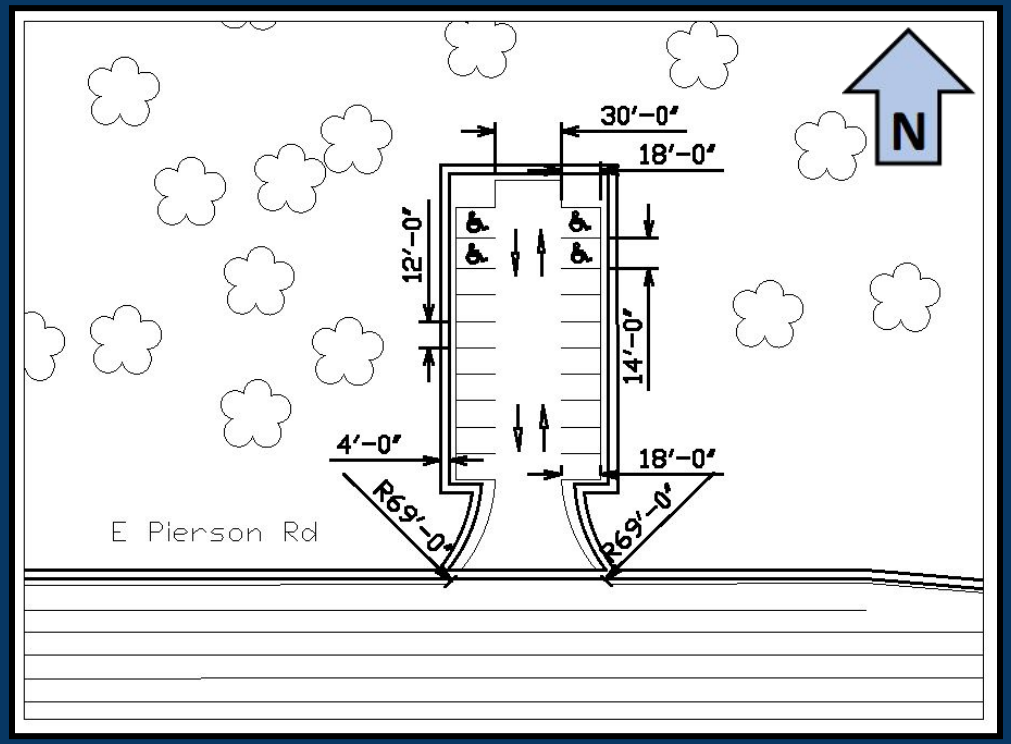


Fig. 4 Parking Lot Design with Dimensions.

Highway Geometric Design

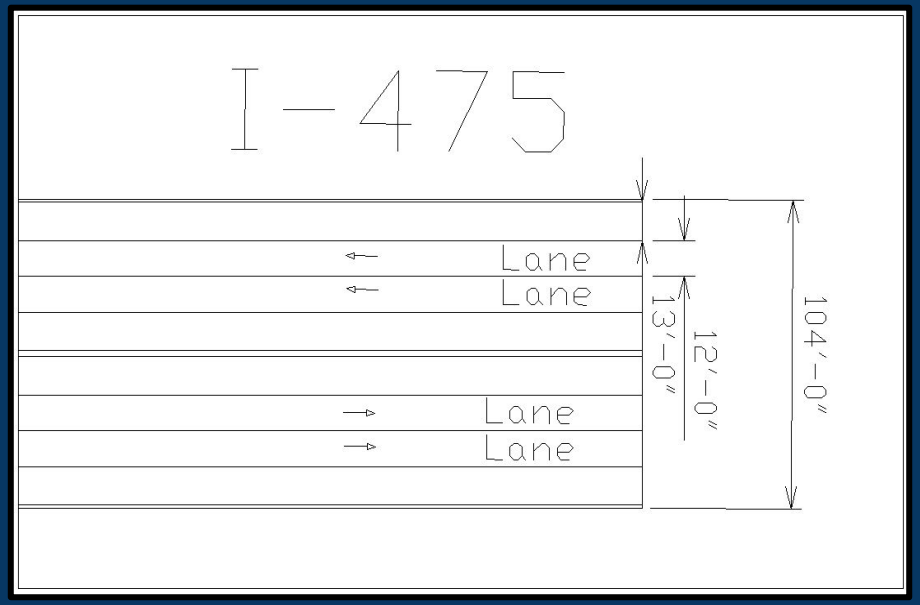


Fig. 5 Top View for Highway Dimensions (1).

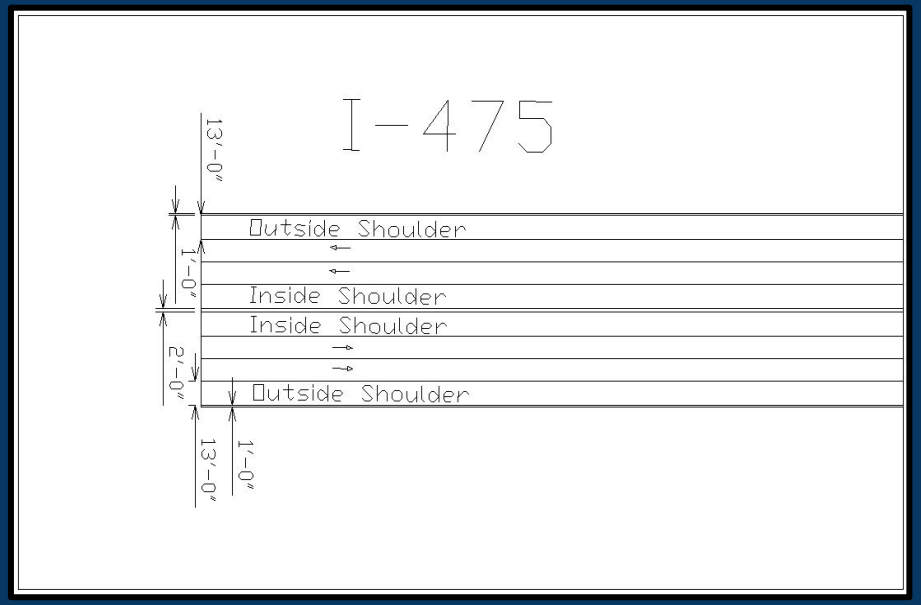


Fig. 6 Top View for Highway Dimensions (2).

Roundabout Geometric Design Tables

Table 4 Existing Conditions.

Intersection Analysis Values		
Largest AADT (Dort Highway)		14866
Speed Limits	Dort Highway	50 mph
	E Stweart Avenue	35 mph

Table 5 Assumed Parameters.

Design Parameters	
Design Vehicle	WB-67
Inscribed Circle Diameter	150.0 ft
Circulatory Roadway Width	20.0 ft
Truck Apron Width	15.0 ft

Table 6 Calculated and Determined Parameters.

Roundabout Design Analysis				
Paramater	Dort Highway NB	Dort Highway SB	Stewart Avenue EB	Stewart Avenue WB
Half Width	16.0 ft	16.0 ft	14.0 ft	11.0 ft
Entry Width	18.0 ft	18.0 ft	18.0 ft	18.0 ft
Effective Flare	78.0 ft	81.5 ft	91.0 ft	60.0 ft
Entry Radius	180.0 ft	182.5 ft	190.0 ft	79.0 ft
Entry Angle	46.5 Degrees	38.7 Degrees	35.5 Degrees	36.7 Degrees
R1 Radius	205 ft	148.5 ft	101.5 ft	84.0 ft
R2 Radius	125.5 ft	90.0 ft	75.0 ft	70.5 ft
R3 Radius	355.0 ft	125.0 ft	122.0 ft	58.5 ft
R4 Radius	75.5 ft	58.0 ft	56.5 ft	52.0 ft
R5 Radius	N/A	205.0 ft	196.0 ft	N/A
R1 V Speed	25 mph	24 mph	24 mph	24 mph
R2 V Speed	20 mph	19 mph	19 mph	17 mph
R3 V Speed	31 mph	22 mph	23 mph	21 mph
R4 V Speed	15 mph	16 mph	15 mph	15 mph
R5 V Speed	N/A	25 mph	25 mph	N/A

Roundabout Geometric Design

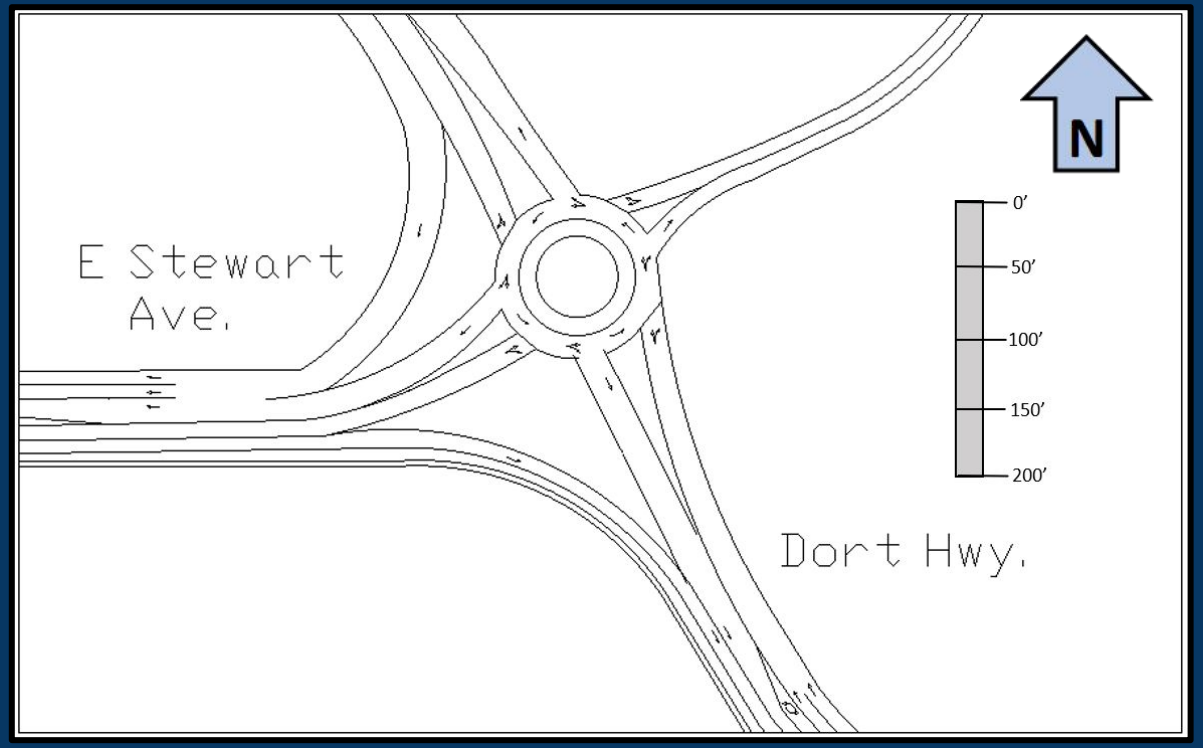


Fig. 7 Design of Roundabout.

Flexible Pavement Design Tables

Table 7 Roundabout Parameters.

Design Parameters	
AADT	14866
ESAL	4751671
Analysis Period	30 Years
Level of Reliability	95.0
Standard Deviation	0.45
Associated Z-Score	1.645
Asphalt Strength	450000 PSI
Aggregate Base Strength	25000 PSI
Subbase Strength	10000 PSI
Initial Serviceability Index	4.2
Terminal Serviceability Index	2.5

Table 8 Roundabout Cross Section.

Roundabout Cross Section Thicknesses		
	Exact	Approximate
HMA Layer (D1)	5.68"	6"
Base Layer (D2)	11.82"	12"
Subbase Layer (D3)	12.95"	14"

Table 9 Highway Cross Section.

Highway Cross Section Thicknesses		
	Exact	Approximate
HMA Layer (D1)	6.36"	7.0"
Base Layer (D2)	12.27"	14"
Subbase Layer (D3)	12.40"	14"

Table 10 Parking Lot Cross Section.

Parking Lot Cross Section Thicknesses		
	Exact	Approximate
HMA Layer (D1)	4.77"	5"
Base Layer (D2)	7.14"	8"
Subbase Layer (D3)	6.91"	8"

Flexible Pavement Cross Section

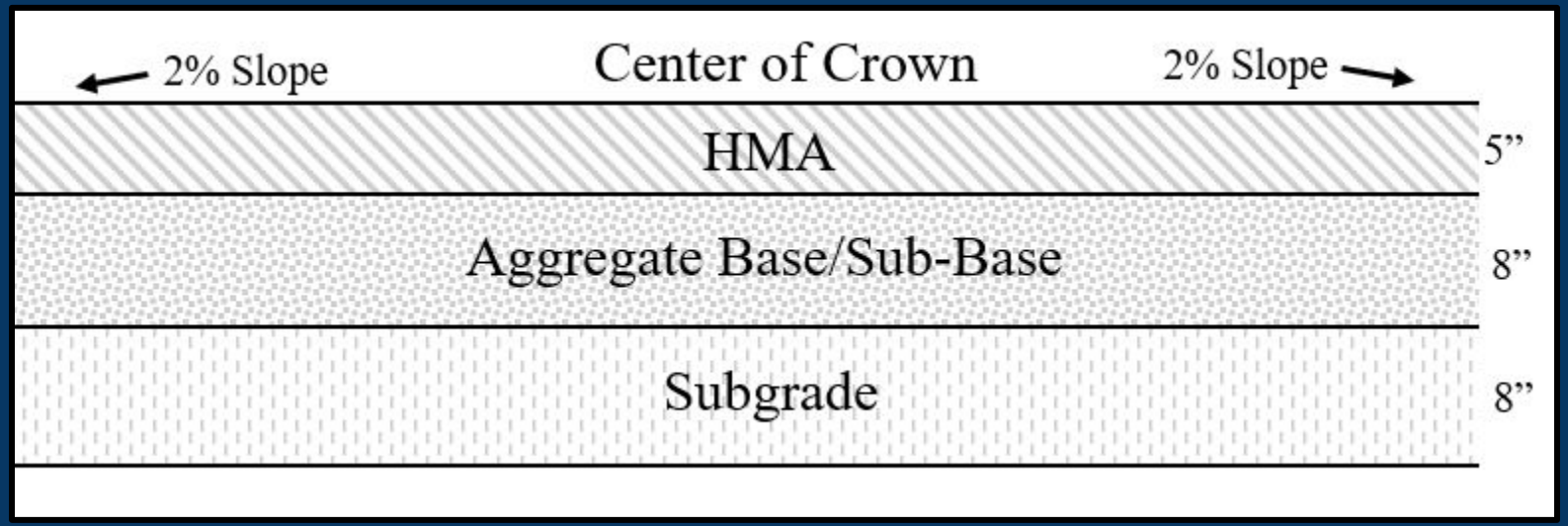


Fig. 8 Example Cross Section for Parking Lot.

Sight Lighting Specifications

Table 11 Lighting Specs and Values.

Lighting Properties: Commercial LED Area Light of 140 W	
SKU	LEDMPALPRO140-5K -T3 | LEDMPALPRO140-4K -T3
Wattage	140 Watts
Delivery	16687 Lumens (119 LPW)
Power Factor	0.9
Type	V
Voltage	120-277 AC Voltage

Sight Lighting Needs

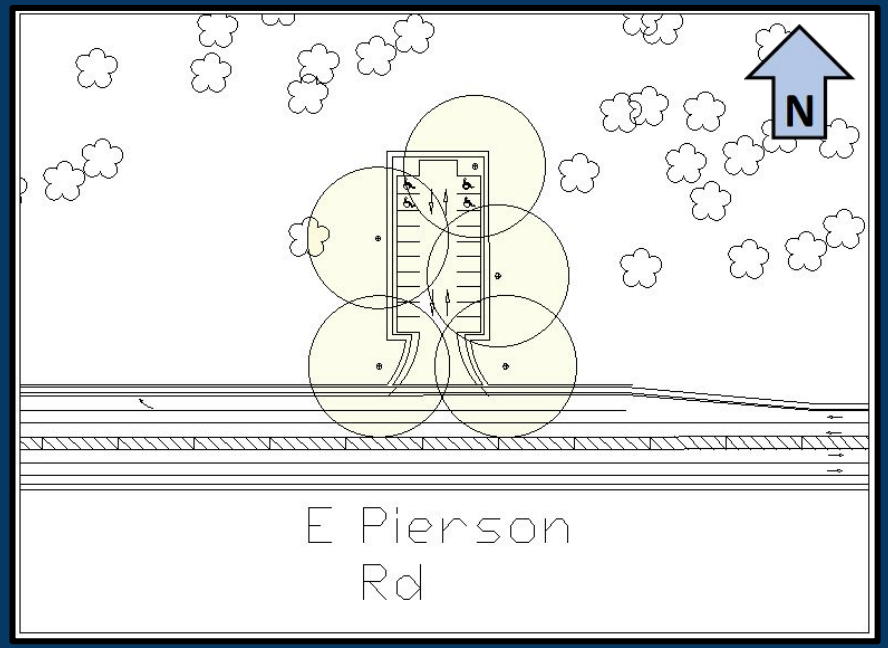


Fig. 9 Parking Lot Lighting Needs.

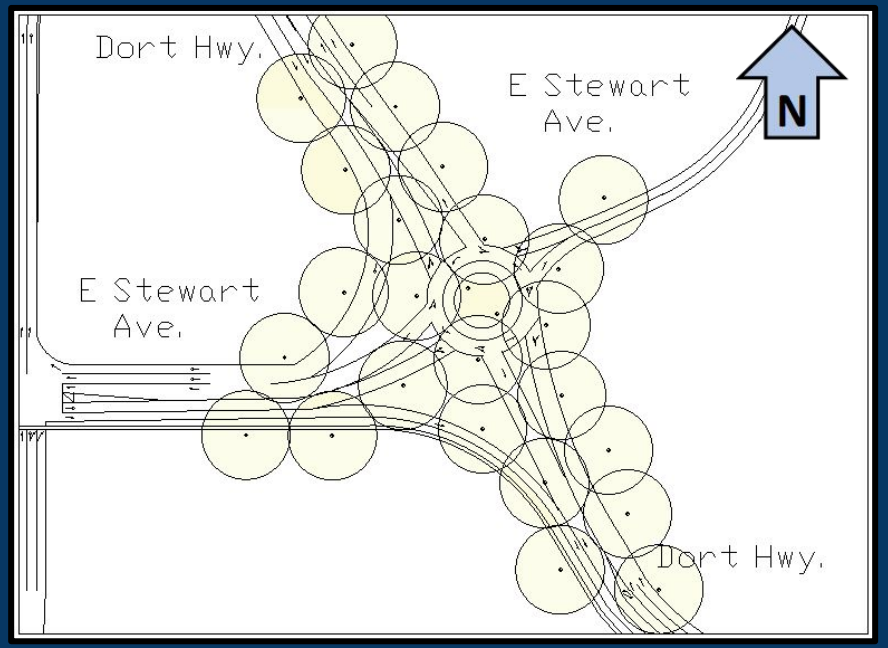


Fig. 10 Roundabout Lighting Needs.

Appropriate Signage

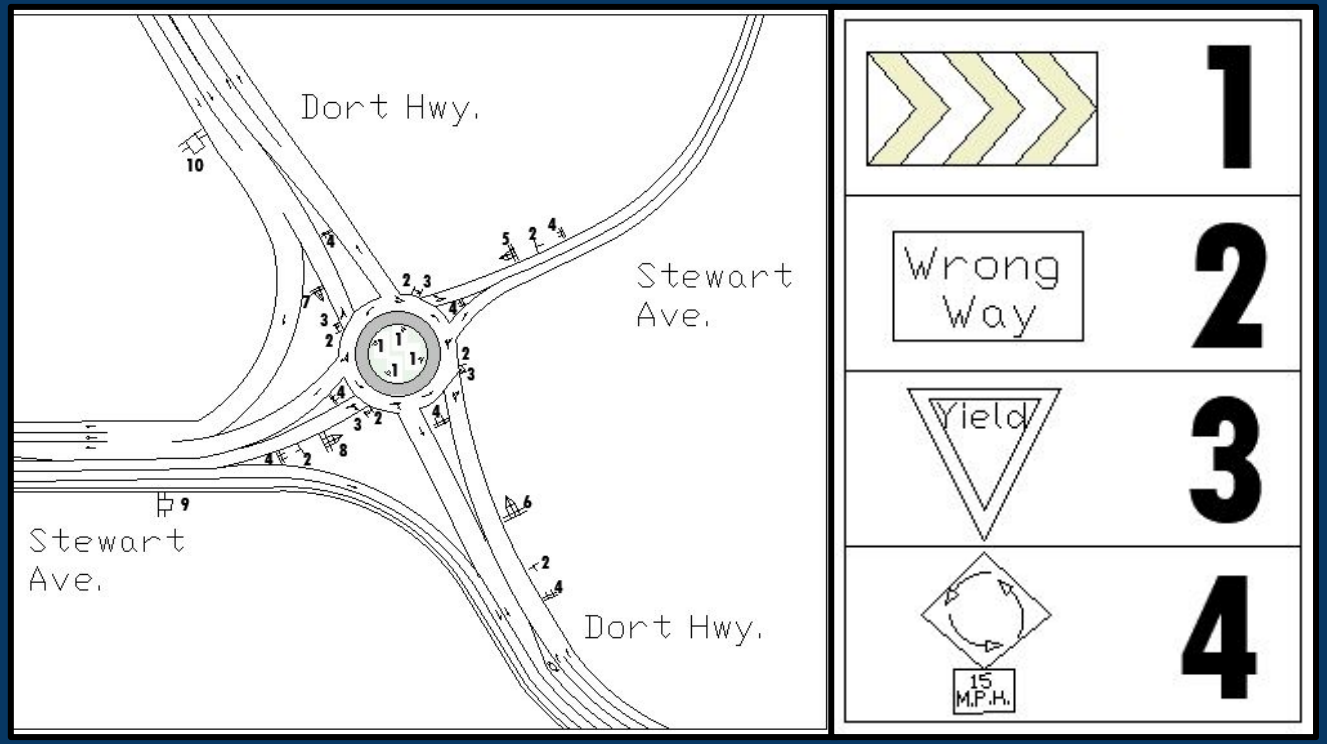


Fig. 11 Roundabout Signage (1).

Appropriate Signage

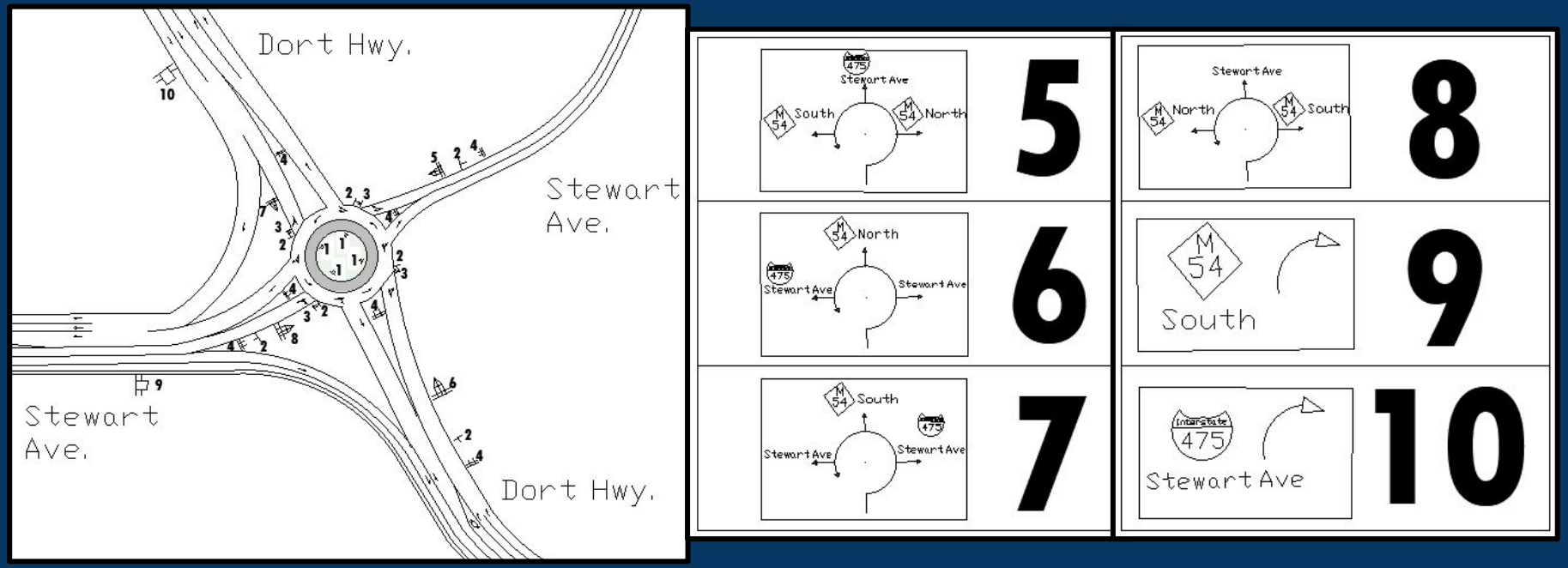


Fig. 12 Roundabout Signage (2).

Structural Lead

Scope of Work

- Load Design
  - AASHTO LRFD Code
- Superstructure
  - Beam
  - Deck
  - Overhang

- Substructure
  - Pier Cap
  - Column

Load Calculations

- Dead Loads
- Live Loads
- Wind Loads
  - Superstructure & Substructure
- Seismic Loads
- Snow Loads (N/A)

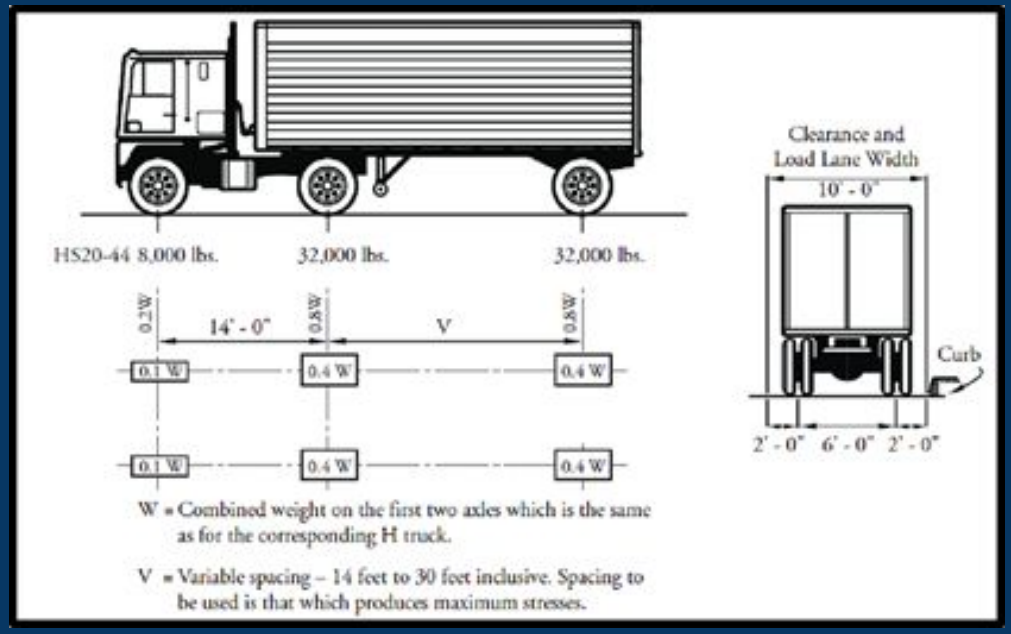


Fig. 13 HL-93 Truck.

Superstructure: Beam Design

- **36in Bulb T Beam**

Table 12 Bridge Variables.

Span Dimension	72ft
Bridge width	156ft
Beam Spacing	6.5ft
Number of Beams	25
Skew angle	38°
Deck overhang	3ft
Deck thickness	9in

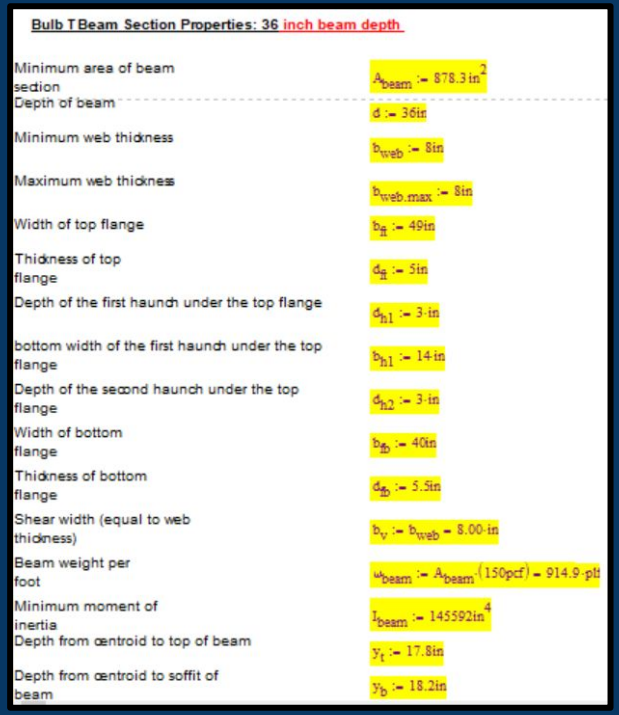


Fig. 14 36in Bulb T Beam Properties.

Superstructure: Beam Design - Flexural

- 23 Strands

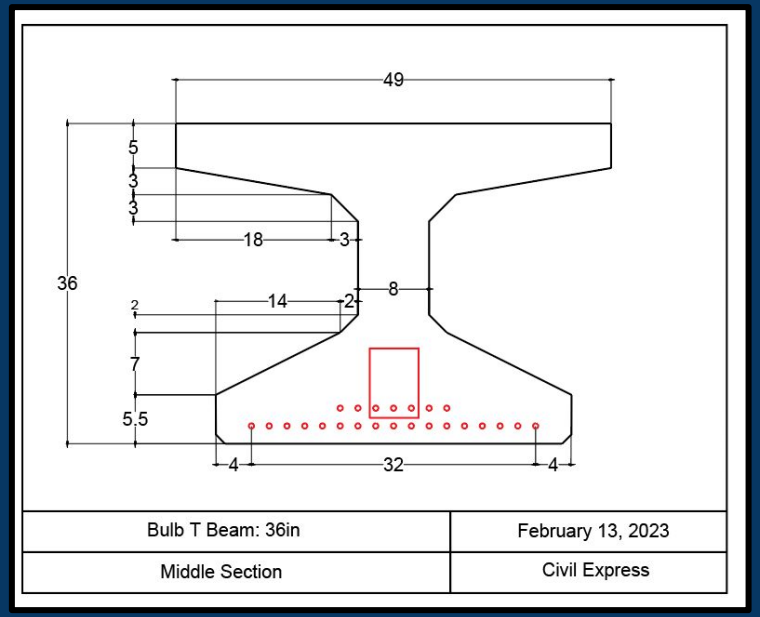


Fig. 15 Bulb T Beam Exterior Girder.

- 35 Strands

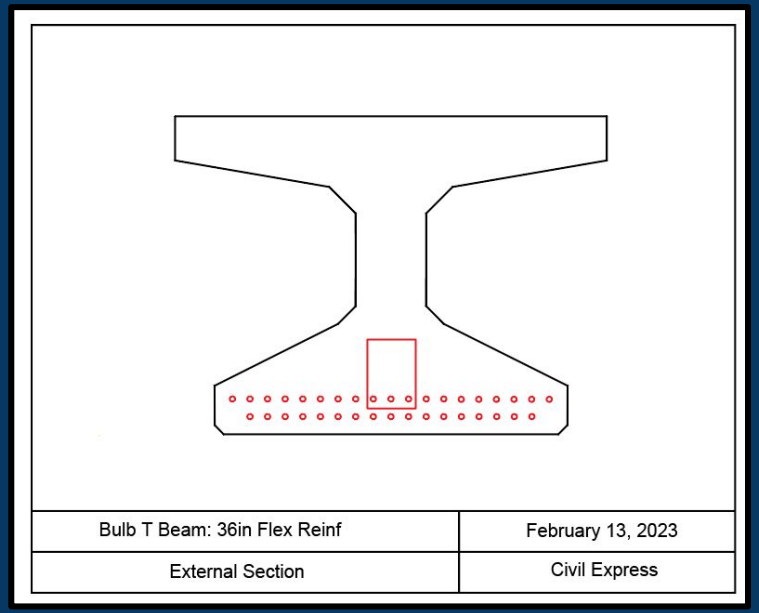


Fig. 16 Bulb T Beam Interior Girders.

Superstructure: Beam Design - Shear

- No. 5 Stirrups
- Stirrup Distribution

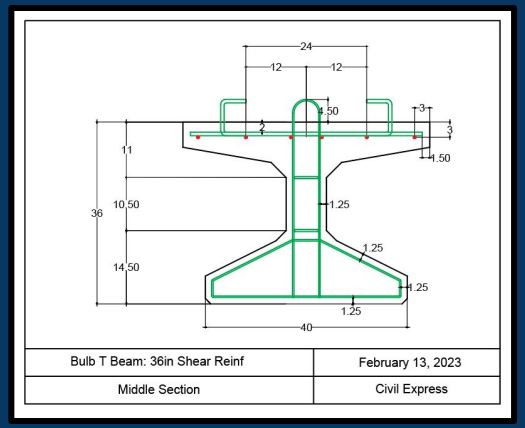


Fig. 17 Bulb T Beam Shear Reinf.

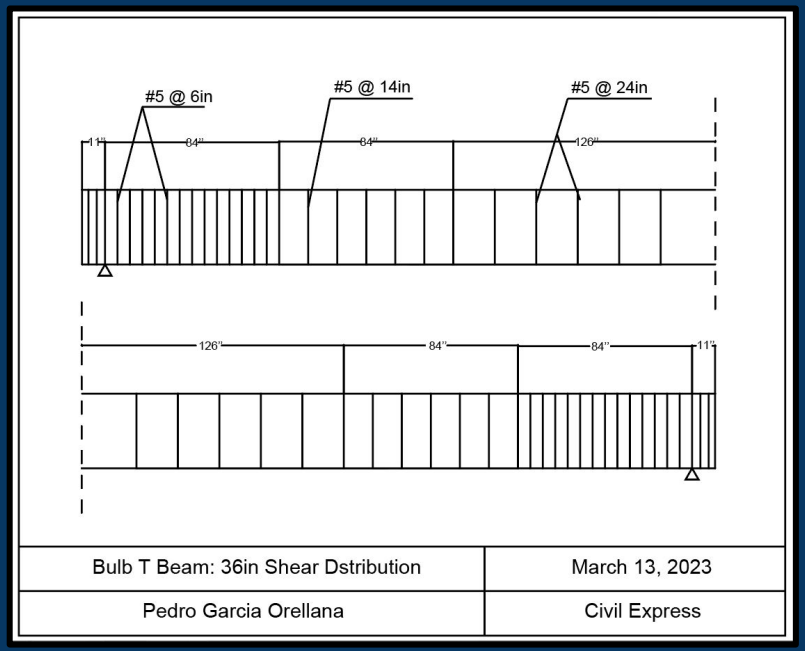


Fig. 18 Bulb T Beam Shear Reinf. Middle Section.

Superstructure: Deck Design

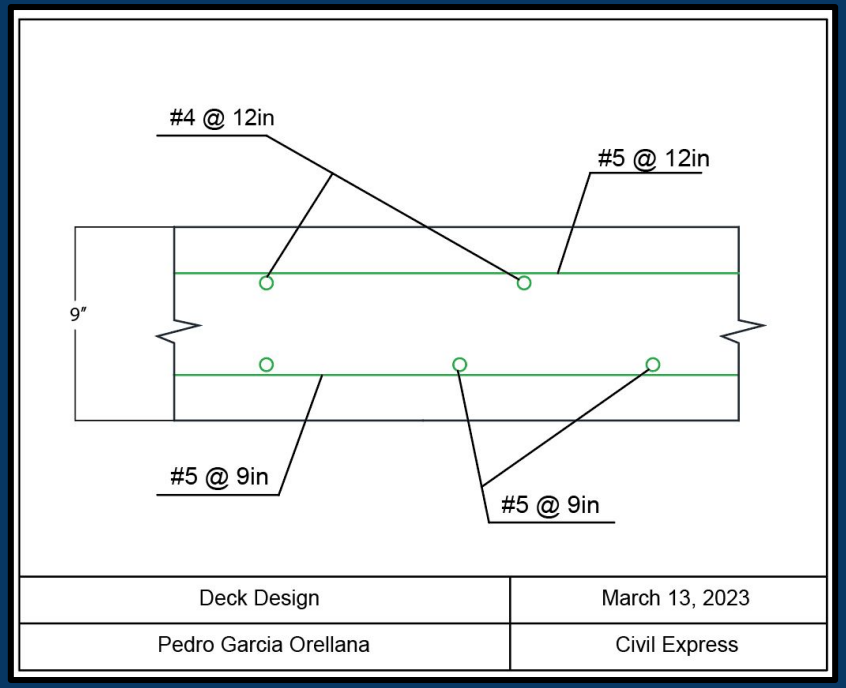


Fig. 19 Deck Design.

Superstructure: Overhang Design

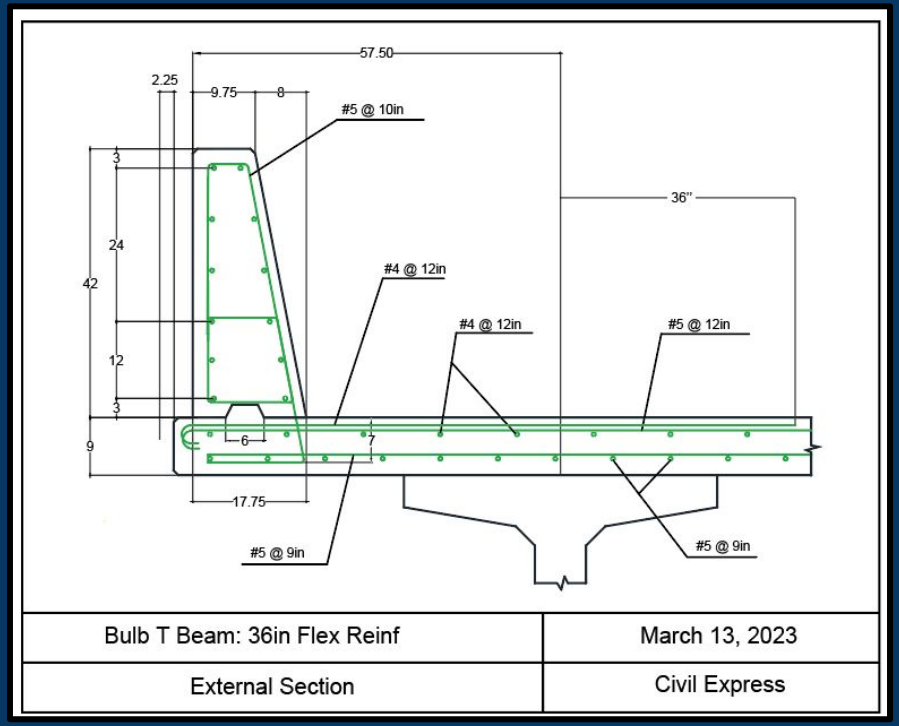


Fig. 20 Overhang Design.

Substructure: Piers & Columns

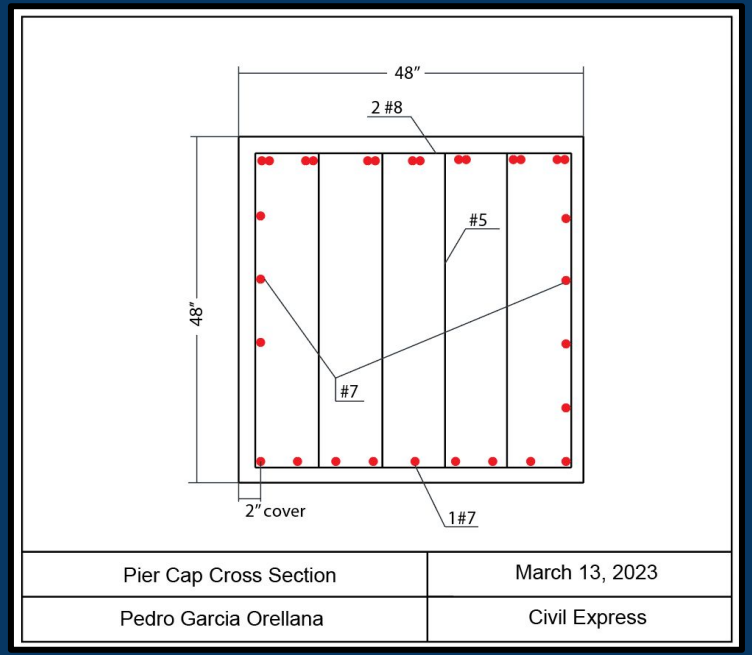


Fig. 21 Pier Cap Cross Section.

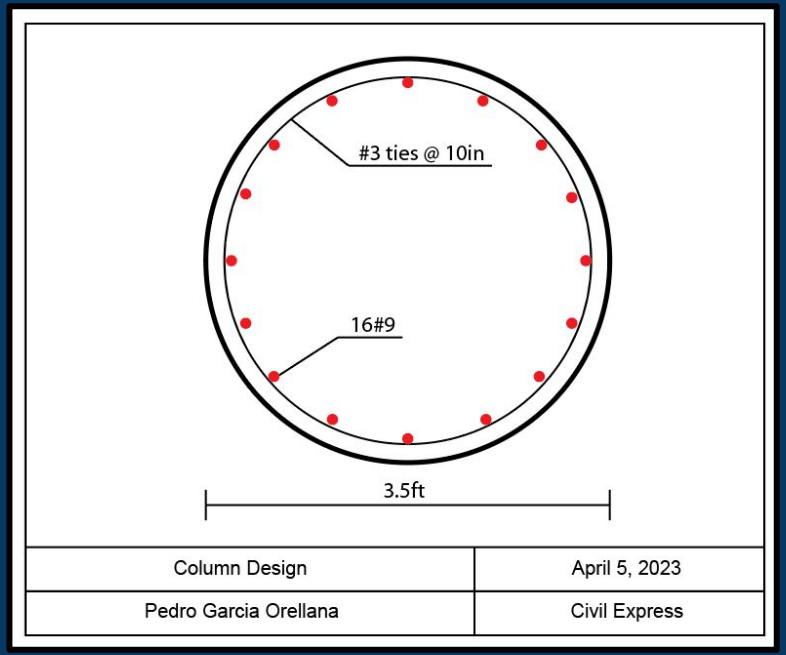
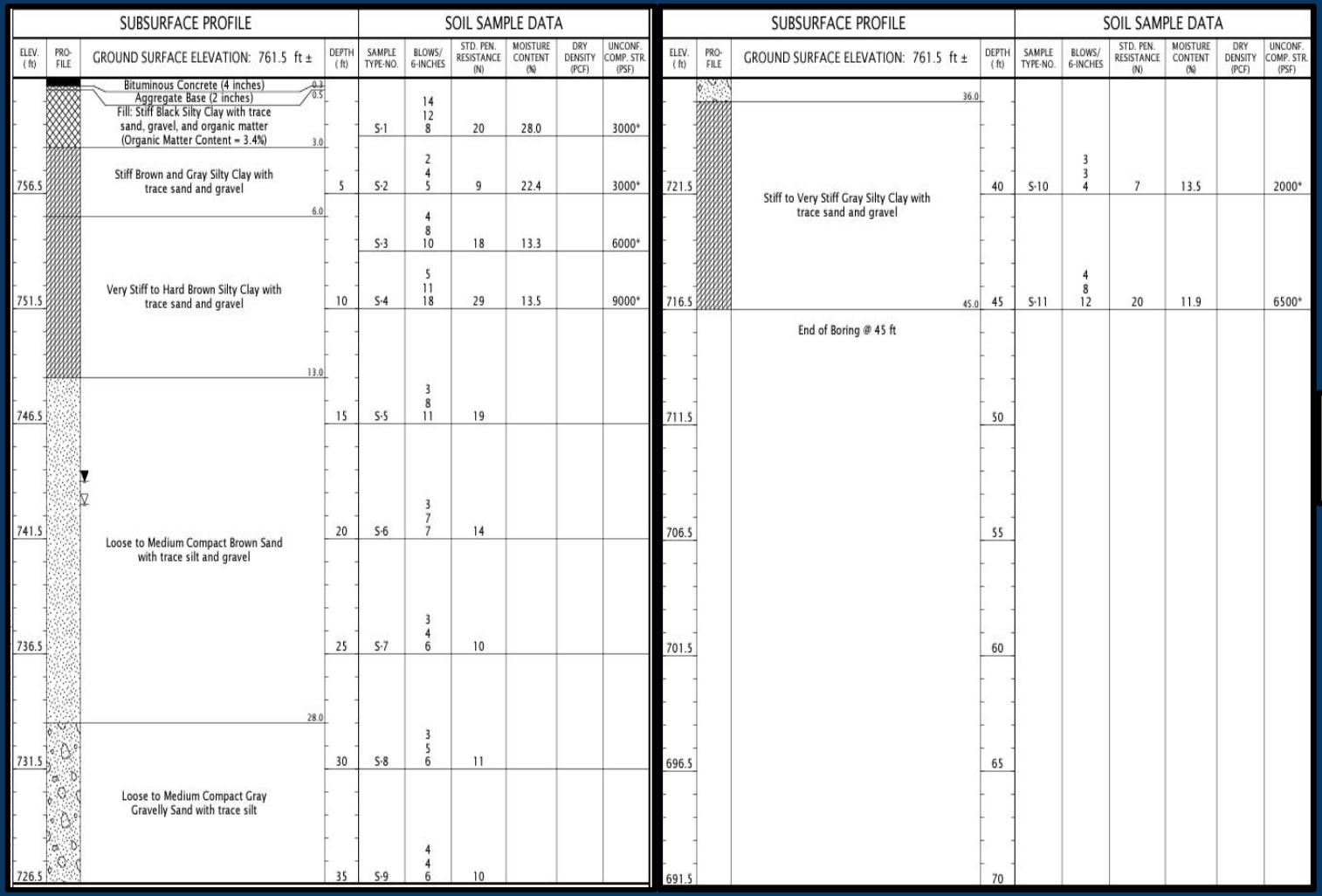


Fig. 22 Column Cross Section.



Water Level Observation:
18-1/2 feet during drilling; wet cave measured at 17-1/2 feet after auger removal

Notes:
Sand heave below 30 feet in augers
* Calibrated Hand Penetrometer

Fig. 23 Localized Soil Boring.

Water Resources Lead

Scope of Work

- Research Codes
- Site Topography
- Data Analysis
  - 10 yr/100 yr Storm Event
  - Allowable Discharge

- Storm Sewer Design
  - StormCAD
  - EPASWMM
- BMP Design

Site Topography

Fig. 24 Highway Topography.

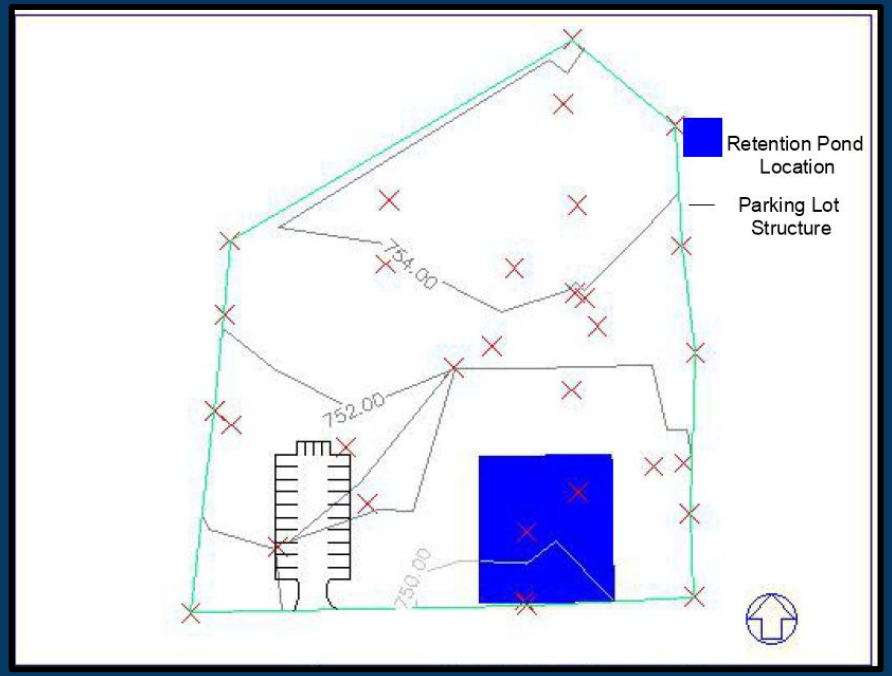


Fig. 25 Park Topography.

Northern Drainage Area Model

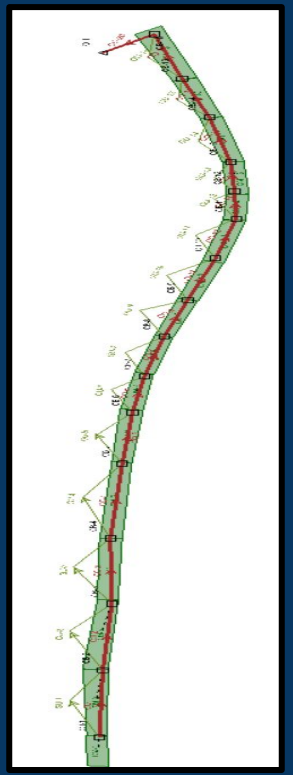


Fig. 26 Northern Stormwater Layout.

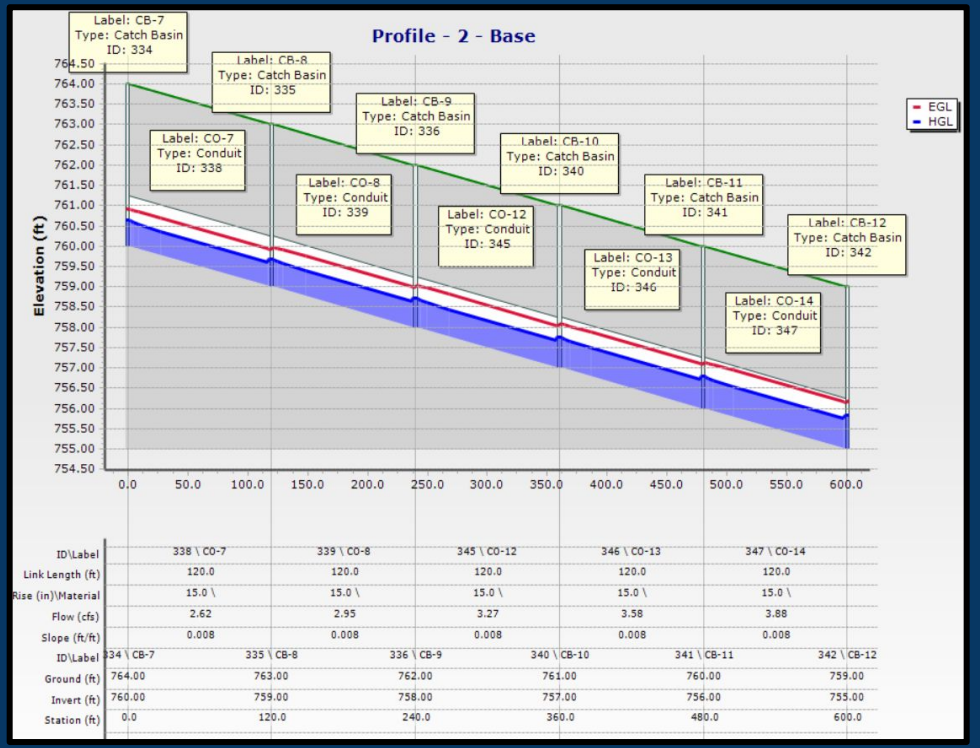


Fig. 27 Stormwater Profile 10 Year Storm Event.

Southern Drainage Area Model

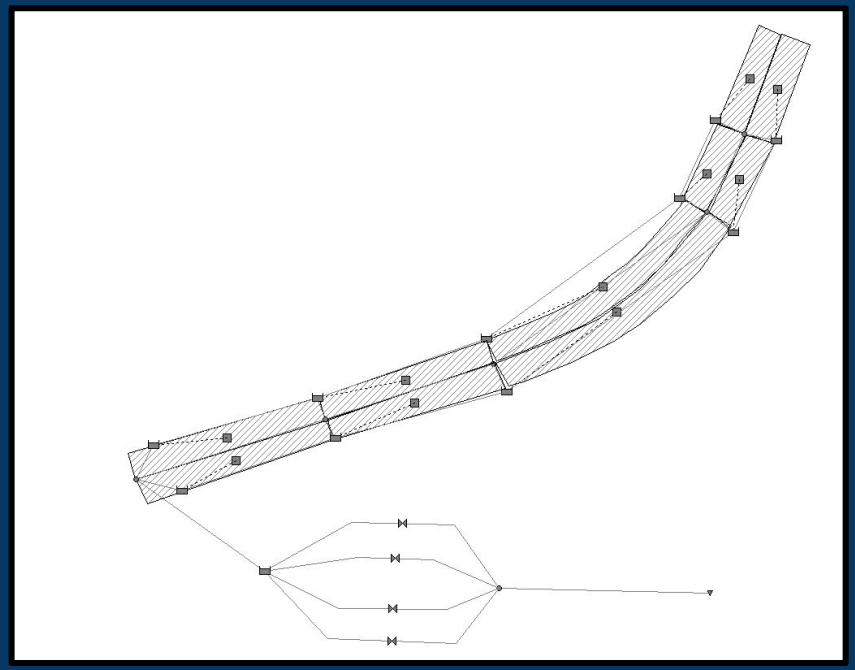


Fig. 28 South Stormwater Layout.

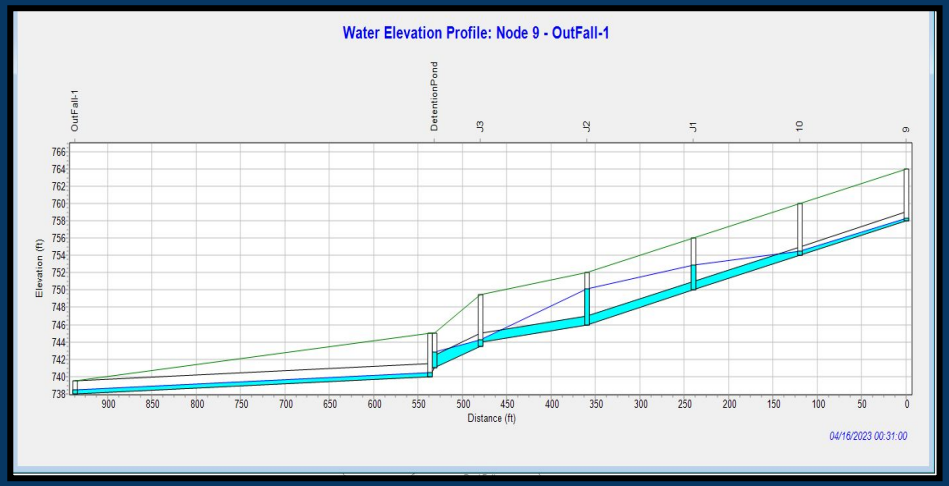


Fig. 29 Stormwater Profile 100 Year Storm Event.

BMP Roundabout

Fig. 30 BMP Roundabout Example.

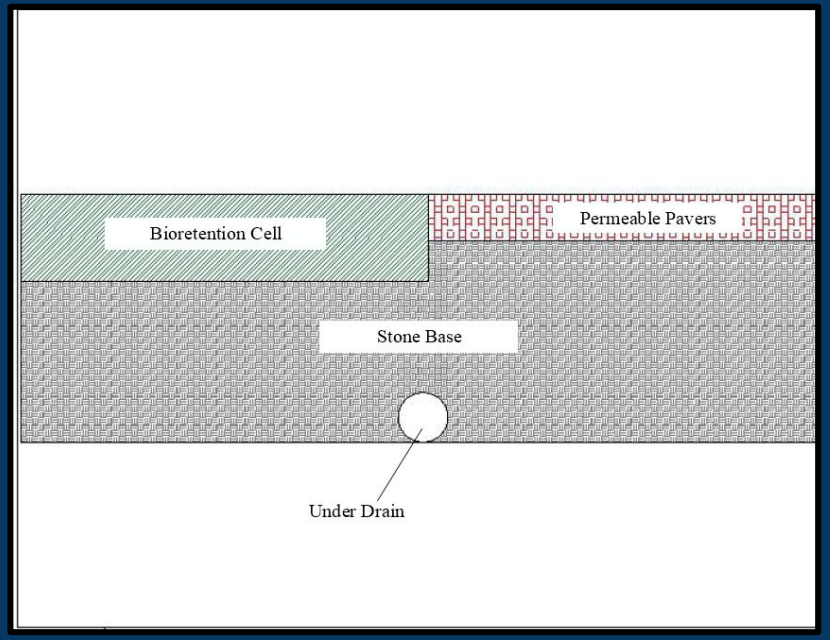


Fig. 31 BMP Roundabout Center Cross Section.

Environmental Lead

Scope of Work

- Water Demand for Park
- Wastewater Collection for Park
- Site Pollution

Water Demand for Park

- 3.5 GPM Necessary
  - 2 Drinking Fountains
  - 2 Sinks
  - 2 Lavatories
- Wastewater Generation 5 gal/person/d
- Tap into Water Main on Pierson
- Wastewater into Sanitary Sewer on Pierson

Fig. 32 Example of Park Restroom Structure.

Site Pollution Considerations

Fig. 33 Cascade Separator Exterior.

Fig. 34 Cascade Separator Interior.

Construction Lead

Scope of Work

- Scope Management Plan
- Cost Management Plan
- Schedule Management Plan
- Permitting/Approval Plan

- Subsurface Utility Engineering Plan
- Safety Management Plan
- Logistics Management Plan

Scope Management Plan

Project Delivery Methods Used

Phases 1, 2, 5:	Phases 3 & 4:
Agency Construction Manager ○ Pre-Construction Services ○ Conceptual Estimate ○ Preliminary Schedule	Design-Build ○ Living Documents ○ Decrease Schedule by 15-20%

Total Project Budget $40 Million and 2 Year Duration

Cost Management Plan

Table 13 Phases 3 & 4 Budget. **$33.4 Million**

Total Cost Breakdown:	($) Total Cost
Highway Scope Cost (Ph. 3)	$12,973,113
Bridge Scope Cost (Ph. 4)	$10,541,151
Total Direct Cost	**$23,514,264**
01 00 00: General Conditions (17%)	$3,997,425
***01 29 00**: Contractor Insurance	
***01 30 00**: Office Overhead	
***01 41 23**: Contractor Fee	
***01 41 26**: Permits	
Total Indirect Costs	**$3,997,425**
Total Indirect & Direct Costs	**$27,511,688**
Contractor Contingency (10%)	$2,751,169
Highway Lighting Allowance	$60,000
Highway Signage Allowance	$50,000
Inflation (4%)	$1,100,468
Architect/Engineering (7%)	$1,925,818
Total Project Cost	**$33,399,143**
*Individual General Condition Costs Included in Total 17% of Cost	

Cost Management Plan

Table 14 Phase 3 Budget.

$12.9 Million

Highway Road Construction Estimate

CSI MasterFormat Item	Quantity (Google Maps Measurement Tool)	Unit	Unit Cost	Total Cost	Assumptions?	RS Means Sections/MDOT Price Unit Index
02 00 00: Existing Conditions						
02 41 13.13: Demo for HMA Pavement	602,766	SFT	5.00 ($/SFT)	$3,013,830	Assuming $5/SFT from WT	WT and HNTB averaged current pricing
02 41 16: Concrete Barrier Removal - "Jersey Concrete Barrier"	4534	LF	41.25 ($/LF)	$187,028	Type A Concrete Barrier Split	MDOT 2021 Price Unit index + 3% inflation rate per year
02 41 16: Vehicle Guide Rails Removal - "W Beam Guide Rails"	6316	LF	3.25 ($/LF)	$20,527	Corrugated Steel, Steel Posts 6'-3" "W Beam"	2021 RS Means Section 02 41 16 Vehicle Guide Rails + 3% inflation rate per year
32 00 00: Exterior Improvements						
32 11 26.19: Base - Bituminous Stabilized Base Courses	66,974	SYD	17.25 ($/SYD)	$1,155,302	Crushed Stone: 6" thick, 3 gal	2021 RS Means Section 32 11 26.19 Bituminous Stabilized Base Courses (#1100) + 3% inflation rate per year
32 12 16: Pavement Type - HMA Pavement	66,974	SYD	87.50 ($/SYD)	$5,860,225	12" Thick, Fixed Foam, 12' pass, unreinforced	MDOT 2021 Price Unit index + 3% inflation rate per year
33 00 00: Utilities						
33 01 01: Sewer, Rem, Less than 24 inch	7,400	LF	26.19 ($/LF)	$193,806	All Pipes are Less than 24"	2022 Weighted Average Unit Prices from MDOT Bid Letting + 3% inflation rate per year, Item ID: 2030015
33 05 39: Sewer, Cl A, 10 inch, Tr Det A	1,480	LF	87.55 ($/LF)	$129,574	Assuming Pipe Type: Sewer, Cl A, Tr Det A	2022 Weighted Average Unit Prices from MDOT Bid Letting + 3% inflation rate per year, Item ID: 4020003
33 05 39: Sewer, Cl A, 12 inch, Tr Det A	2,220	LF	65.36 ($/LF)	$145,099	Assuming Pipe Type: Sewer, Cl A, Tr Det A	2022 Weighted Average Unit Prices from MDOT Bid Letting + 3% inflation rate per year, Item ID: 4020004
33 05 39: Sewer, Cl A, 15 inch, Tr Det A	3,700	LF	91.20 ($/LF)	$337,440	Assuming Pipe Type: Sewer, Cl A, Tr Det A	2022 Weighted Average Unit Prices from MDOT Bid Letting + 3% inflation rate per year, Item ID: 4020005
34 00 00: Transportation						
34 71 13: Concrete Barrier - "Jersey Concrete Barrier"	4534	LF	402.75 ($/LF)	$1,826,069	Type A Concrete Barrier Split	MDOT 2022 Price unit index + 3% inflation rate per year
34 71 13.26: Vehicle Guide Rails - "W Beam Guide Rails"	6316	LF	16.50 ($/LF)	$104,214	Corrugated Steel, Steel Posts 6'-3" "W Beam"	2021 RS Means Section 34 71 13.26 Vehicle Guide Rails + 3% inflation rate per year
Total Cost for Scope	**$ 12,973,113**					

Cost Management Plan

Table 15 Phase 4 Budget.

$10.5 Million

Bridge Construction Estimate

CSI MasterFormat Item	Quantity (Google Maps Measurement Tool)	Unit	Unit Cost	Total Cost	Assumptions?	RS Means Sections/MDOT Price Unit Index
02 00 00: Existing Conditions						
02 41 16: Bridge Demo				$3,800,000		Similar MDOT Bridge Project, Adjusted, and plus Inflation
03 00 00: Concrete						
03 30 53.40: Concrete Bridge Deck (Assume - Two Way Beam & Slab 125 psf)	4,244	CYD	887.00 ($/CYD)	$3,764,822	2ft thickness	2021 RS Means Section 03 30 53.40 Concrete in Place (#2900) + 3% inflation rate per year
03 30 53.40: Concrete Pier (Cast in Place Column)	251	CYD	525.25 ($/CYD)	$131,943	40 piers, 36" diameter, 24' in Height	2021 RS Means Section 03 30 53.40 Concrete in Place (#1400) + 3% inflation rate per year
03 30 53.40: Concrete Pier Cap (Cast in Place Bulb-Tee Beam)	526	LF	510.80 ($/LF)	$268,681	Assumed 36" x 49" beams	MDOT 2022 Price Unit Index + 3% inflation rate per year
03 30 53.40: Concrete Pile Caps	3	CYD	358.60 ($/CYD)	$38,848	4.5*6.5*2.5 Pile Cap: 1 pile cap per piles	2021 RS Means Section 03 30 53.40 Concrete in Place (#5950) + 3% inflation rate per year
03 41 16: Approach Slab	681	CYD	795.70 ($/CYD)	$542,225	Assumed 25' long, 1.5 thickness	2021 RS Means Section 03 41 16 Concrete in Place (#2900) + 3% inflation rate per year
05 00 00: Metals						
05 12 23: Bearing, Elastomeric, 3 inch	2590	Sin	2.10 ($/Sin)	$5,439	Assumed 3 inch Bearings, bearing per girder	MDOT 2022 Price Unit Index + 3% inflation rate per year
05 12 23.75: Structural Span Girders	7640	LF	87.20 ($/LF)	$433,035	Assumed and Counted 40 girders, 191 ft in length	2021 RS Means Section 05 12 23.75 Structural Steel Members (#4900) + 3% inflation rate per year
31 00 00: Earthwork						
31 62 13.23: Concrete Piles	160	V.L.F	74.40 ($/VLF)	$1,190,400	Prestressed Concrete Driven Piles: 18"diameter, drill 100LF	2021 RS Means Section 31 62 13.23 Prestressed Concrete Piles (#2600) + 3% inflation rate per year
32 00 00: Exterior Improvements						
32 32 13.10: Abuntments	600	CYD	425.65 ($/CYD)	$255,390	10' high, 30 degree slope	2021 RS Means Section 32 32 13.10 Retaining Walls, Cast Concrete (#3100) + 3% inflation rate per year
34 00 00: Transportation						
34 71 13: Concrete Parapet (Concrete Barrier)	274	LF	402.80 ($/LF)	$110,367	Type A Concrete Barrier Split	MDOT 2022 Price Unit Index + 3% inflation rate per year
Total Cost for Scope	**$ 10,541,151**					

Schedule Management Plan

~1 Year

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
0		**Ph. 3 and 4**	**275 days**	**Mon 4/15/24**	**Fri 5/2/25**		
1		**Preconstruction/Procurement (Ph. 3 & 4)**	**28 days**	**Mon 4/15/24**	**Wed 5/22/24**		
9		**Long Lead Procurement (Ph. 4)**	**120 days**	**Thu 5/2/24**	**Wed 10/16/24**		
11		**Mobilize on Site (Ph. 3)**	**7 days**	**Thu 5/23/24**	**Fri 5/31/24**		
15		**Demolition (Ph. 3)**	**26 days**	**Mon 6/3/24**	**Mon 7/8/24**		
21		**Utilities (Ph. 3)**	**62 days**	**Mon 6/3/24**	**Tue 8/27/24**		
28		**Subbase/Base (Ph. 3)**	**38 days**	**Wed 8/28/24**	**Fri 10/18/24**		
33		**Paving & Barriers (Ph. 3)**	**65 days**	**Mon 10/21/24**	**Fri 1/17/25**		
39		**Final Clean-up and Occupancy (Ph. 3)**	**61 days**	**Wed 10/30/24**	**Wed 1/22/25**		
42		**Complete Final Inspections (Ph. 3)**	**4 days**	**Tue 1/21/25**	**Fri 1/24/25**		
46		Issue final request for payment (Ph. 3)	1 day	Mon 1/27/25	Mon 1/27/25	42	G.C. Project Management
47		**Preconstruction/Procurement (Ph. 4)**	**13 days**	**Wed 6/26/24**	**Fri 7/12/24**		
50		**Mobilize on Site (Ph. 4)**	**7 days**	**Wed 7/10/24**	**Thu 7/18/24**		
54		**Demolition (Ph. 4)**	**40 days**	**Fri 7/19/24**	**Thu 9/12/24**		
61		**Grading (Ph. 4)**	**6 days**	**Fri 9/13/24**	**Fri 9/20/24**		
65		**Sub Structure Construction (Ph. 4)**	**66 days**	**Thu 10/17/24**	**Thu 1/16/25**		
73		**Super Structure Construction (Ph. 4)**	**67 days**	**Fri 1/17/25**	**Mon 4/21/25**		
80		**Final Clean-up and Occupancy (Ph. 4)**	**6 days**	**Tue 4/22/25**	**Tue 4/29/25**		
83		**Complete Final Inspections (Ph. 4)**	**5 days**	**Fri 4/25/25**	**Thu 5/1/25**		
87		Issue final request for payment (Ph. 4)	1 day	Fri 5/2/25	Fri 5/2/25	83	G.C. Project Management

Fig. 35 Phases 3 & 4 Schedule (1).

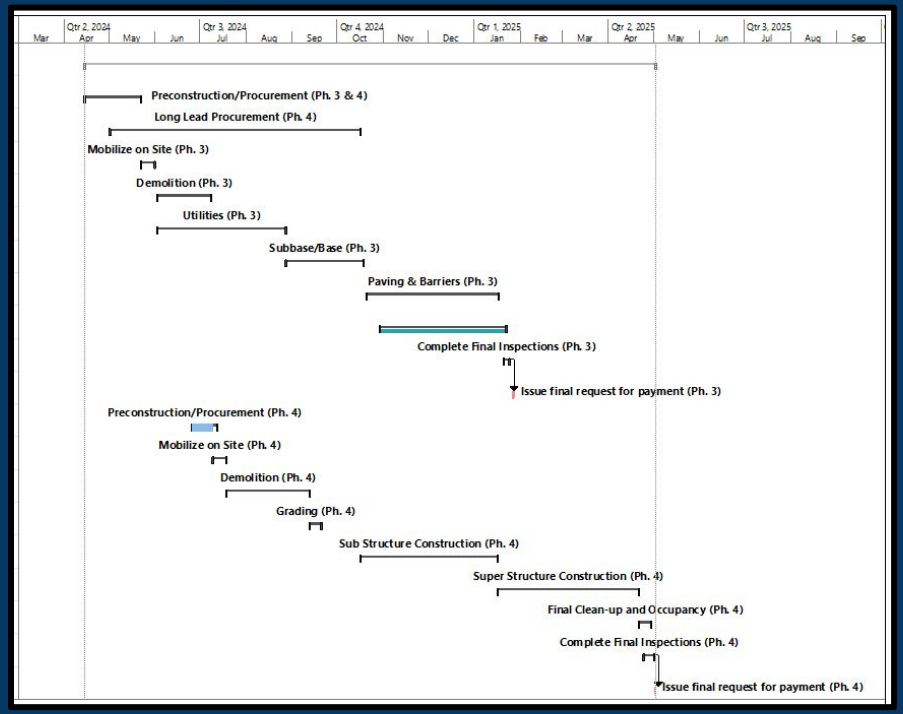


Fig. 36 Phases 3 & 4 Schedule (2).

Schedule Management Plan

Utilities (Ph. 3)	62 days	Mon 6/3/24	Tue 8/27/24		
Rough Grade Site - Cut/Fill	5 days	Tue 7/9/24	Mon 7/15/24	15	Site Grading Contractor
Utilities	31 days	Wed 7/10/24	Wed 8/21/24	22SS+1 day	Electric Contractor, Environmental/Water
Inspections	31 days	Wed 7/10/24	Wed 8/21/24	23FF	Civil Engineering Contractor
Perform Final Site Grading	3 days	Wed 7/17/24	Fri 7/19/24	24SS+1 wk	Site Grading Contractor
Issue design devlopment (DD) drawings	7 days	Mon 6/3/24	Tue 6/11/24	14	G.C. Project Management - Structural
Adverse Weather Days	4 days	Thu 8/22/24	Tue 8/27/24	24	

Fig. 37 Phase 3 Milestone Example (1).

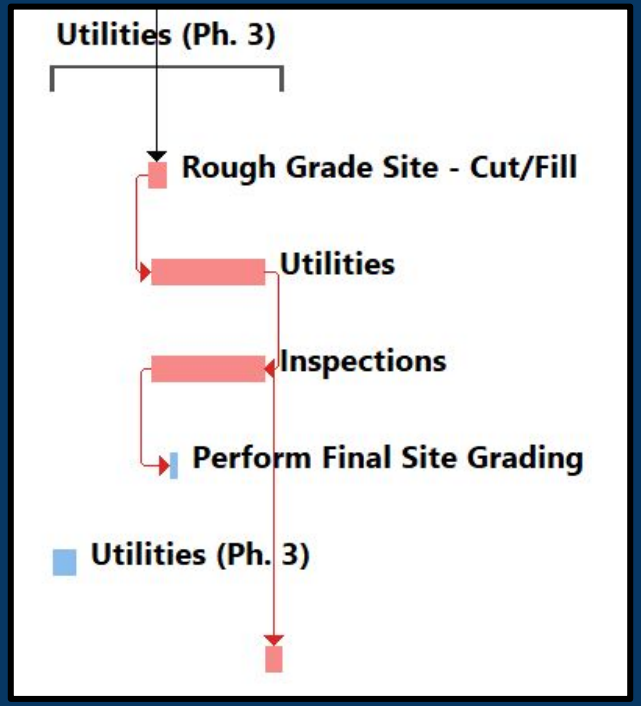


Fig. 38 Phase 3 Milestone Example (2).

Permitting/Approval Plan

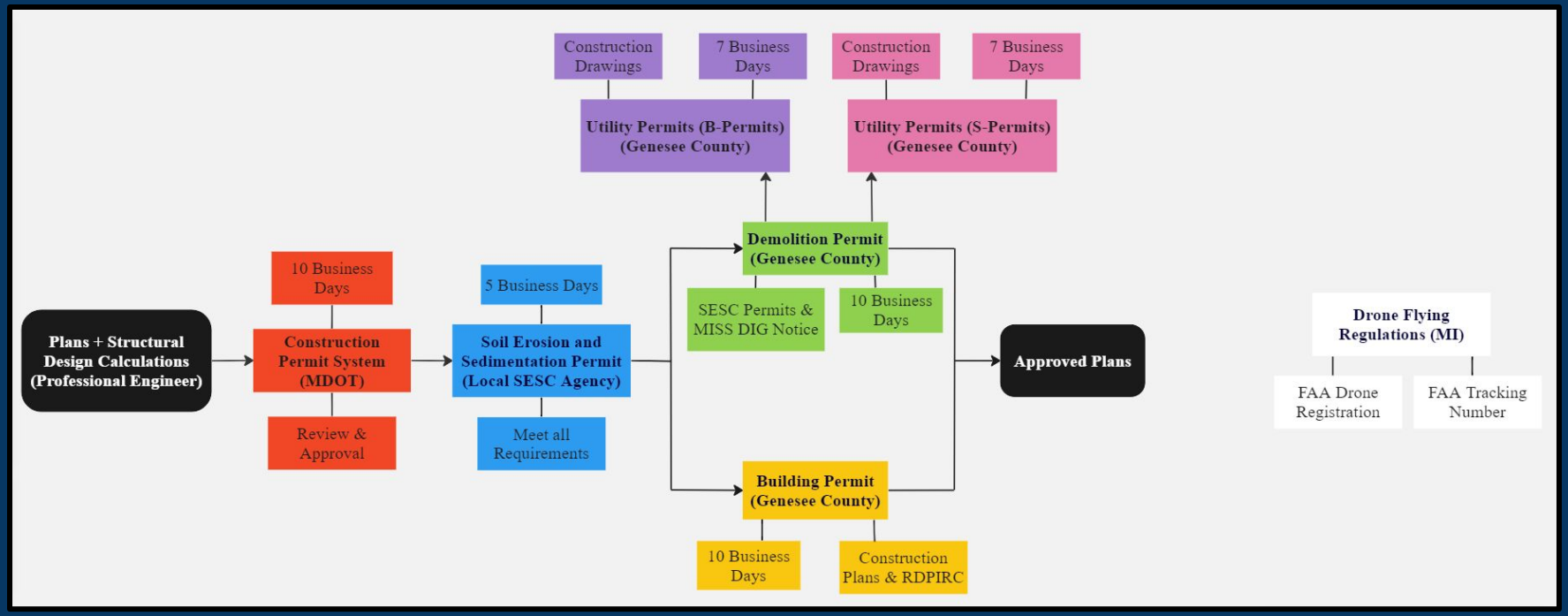


Fig. 39 Required Permits Timeline.

Permitting/Approval Plan

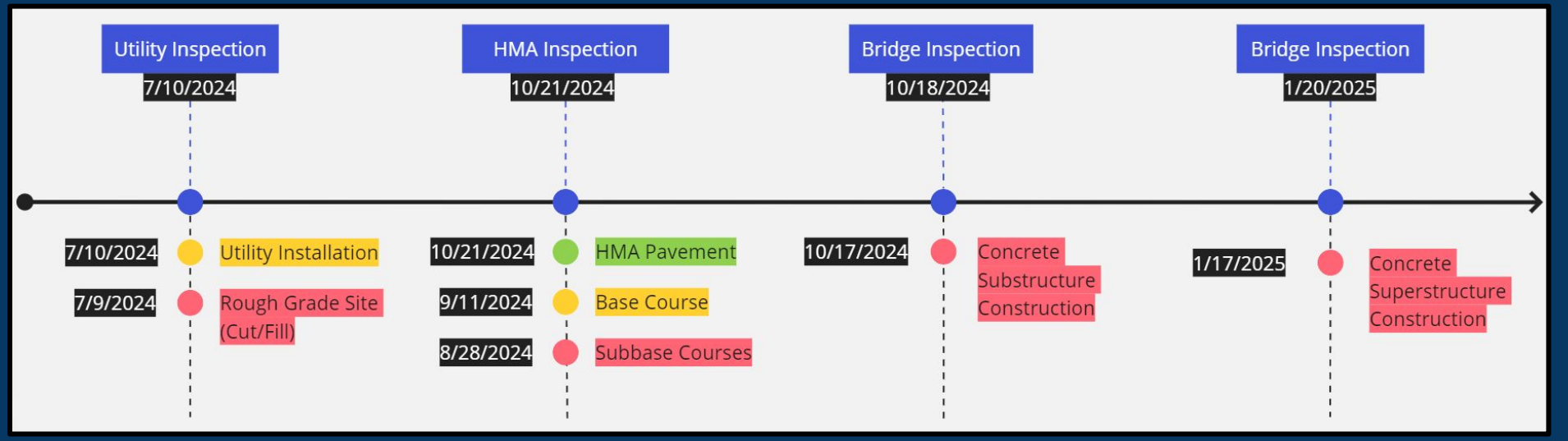


Fig. 40 Required Inspections Timeline.

Subsurface Utility Engineering Plan

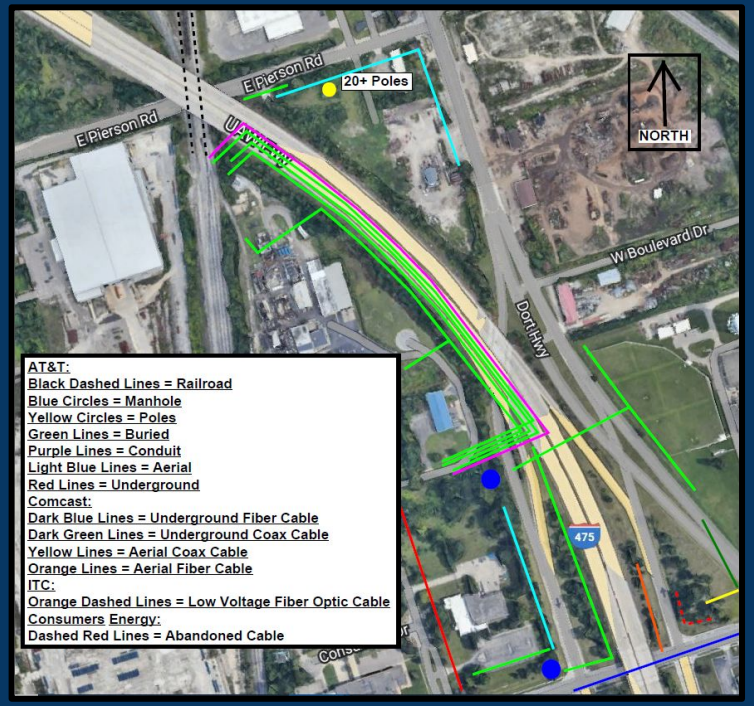


Fig. 41 Northern SUE Plan.

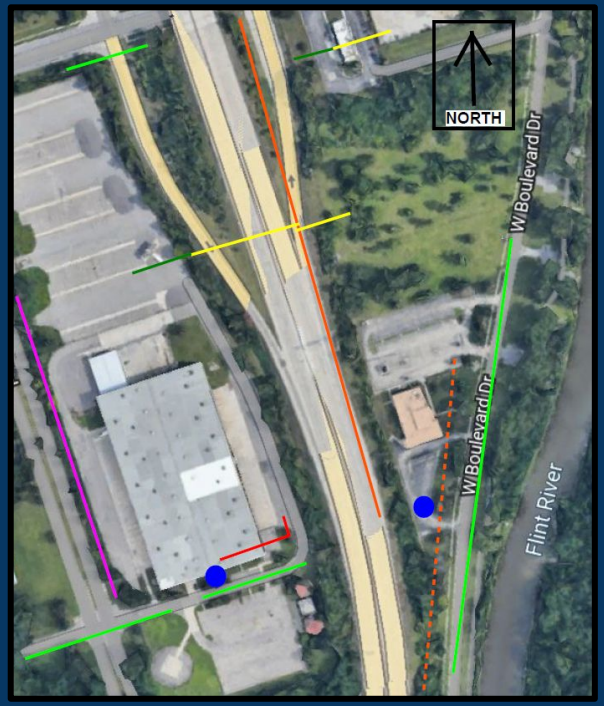


Fig. 42 Southern SUE Plan.

Safety Management Plan

- General Safety Plan
  - MIOSHA
  - Drone Coverage
- Site Specific Plans
  - Heat Safety
  - TTCP

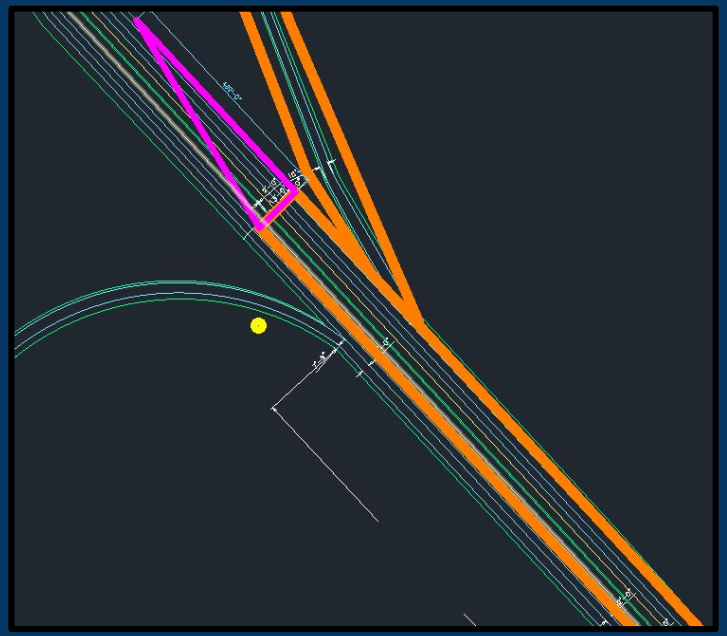


Fig. 43 NB Closure Site Plan.

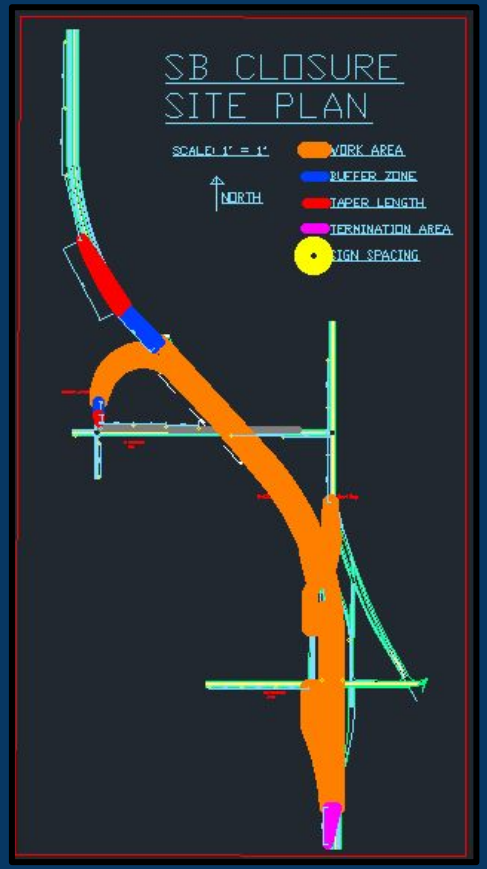


Fig. 44 SB Closure Site Plan.

Logistics Management Plan

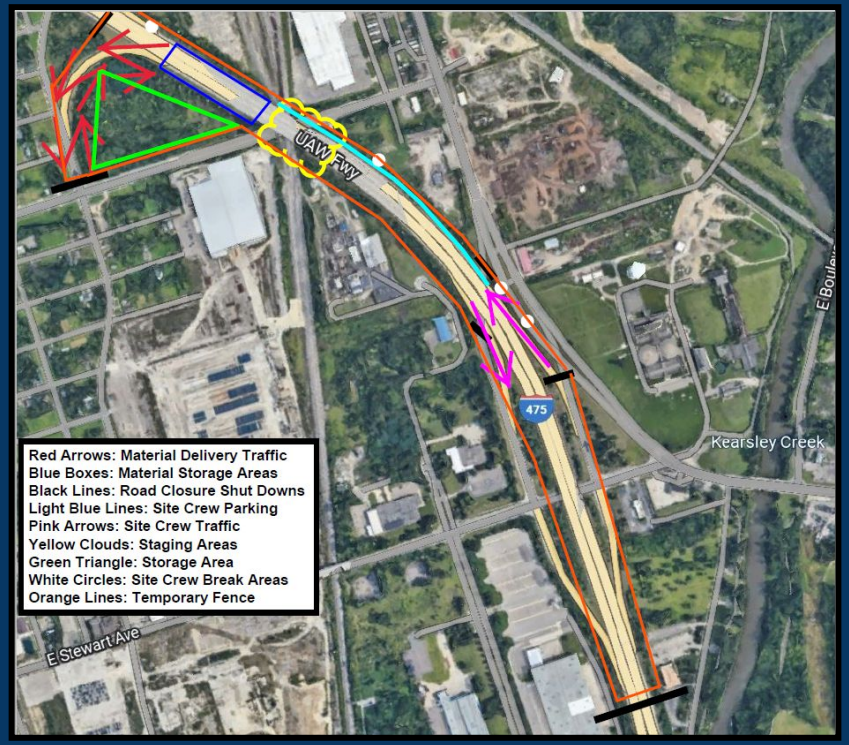


Fig. 45 Logistics Plan at 75%.

Sustainability Considerations

Sustainability Considerations

- Construction:
  - Lean Construction Mindset with Schedule
  - Management with Transportation Lead of LED Roadway Lights
- Water Resources and Environmental:
  - Tracking Water Consumption on Site
  - Wetting Materials, Clean Up, etc
- Structural:
  - Steel Beam Recycling for Local Industry
- Transportation:
  - Assessment of Aggregate Base Material from Concrete Excavation and Existing Aggregate Base

In Memory of Christian Cygan

Civil Express

Appreciate Everyone's Support

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