

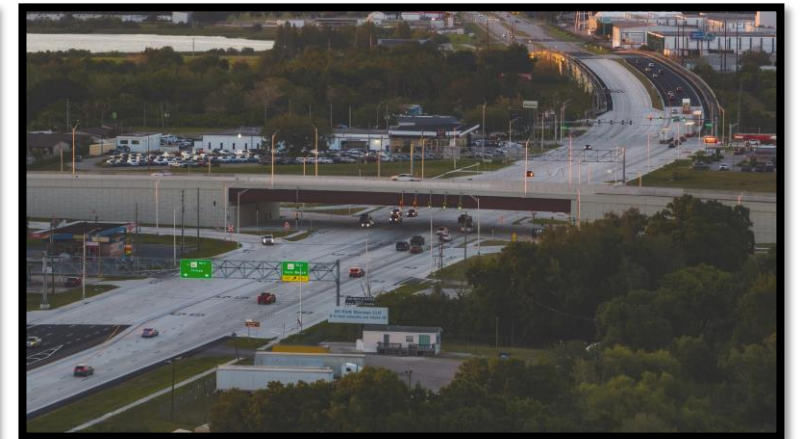
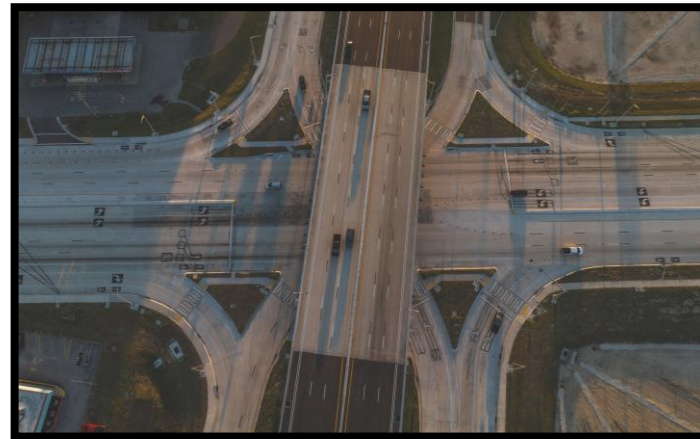
Orlando, FL

November 7-8, 2024



2024 TRANSPORTATION SYMPOSIUM

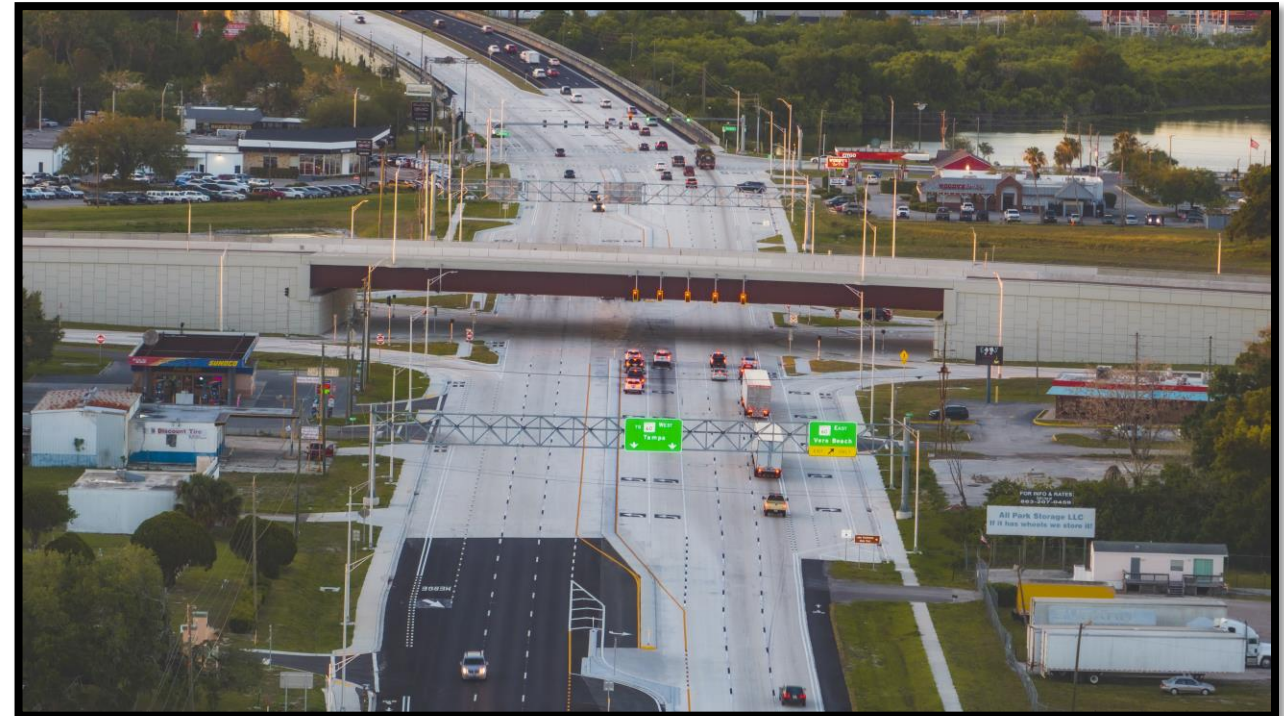
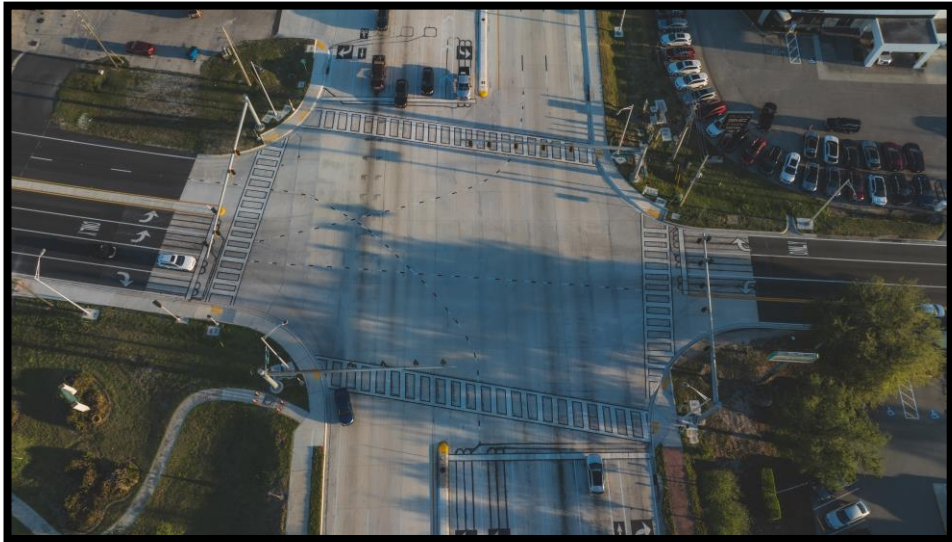
Case Study on Detours



Stacy Hill, District 1 Heartland Operations
Dan Foss, PE, Eisman & Russo, Inc

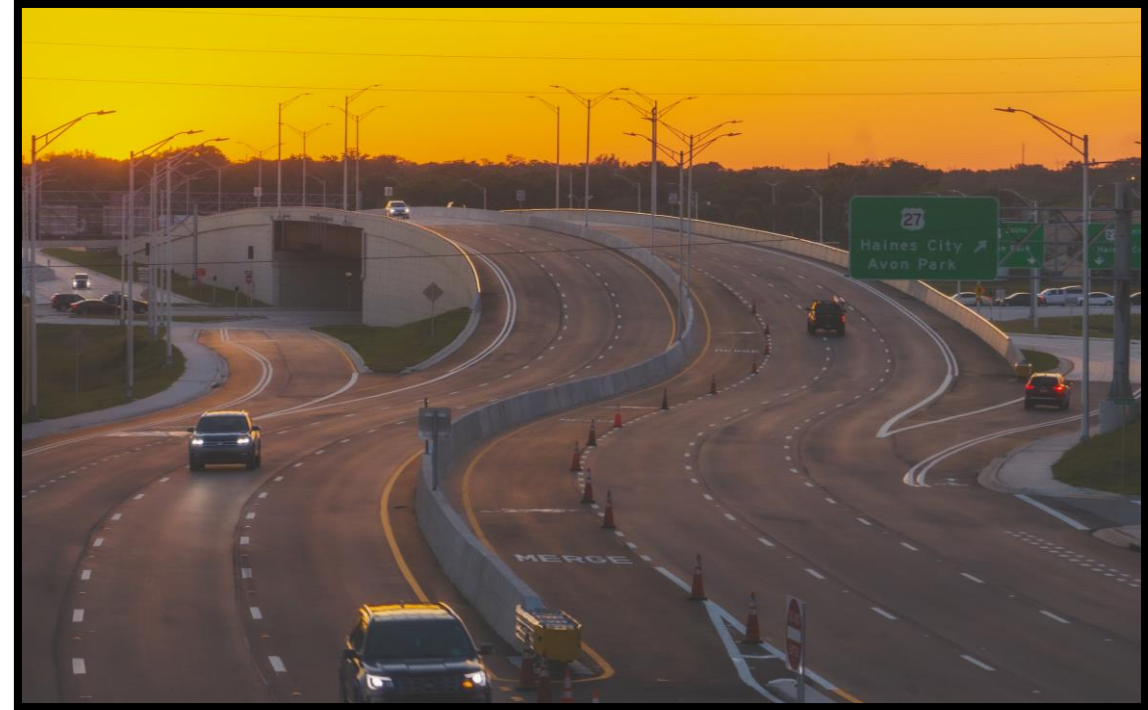
Introduction

- Extended road closures/detours very advantageous for some work
 - Setting bridge beams
 - Concrete pavement intersections
- US 27 at SR 60 Interchange



Objectives

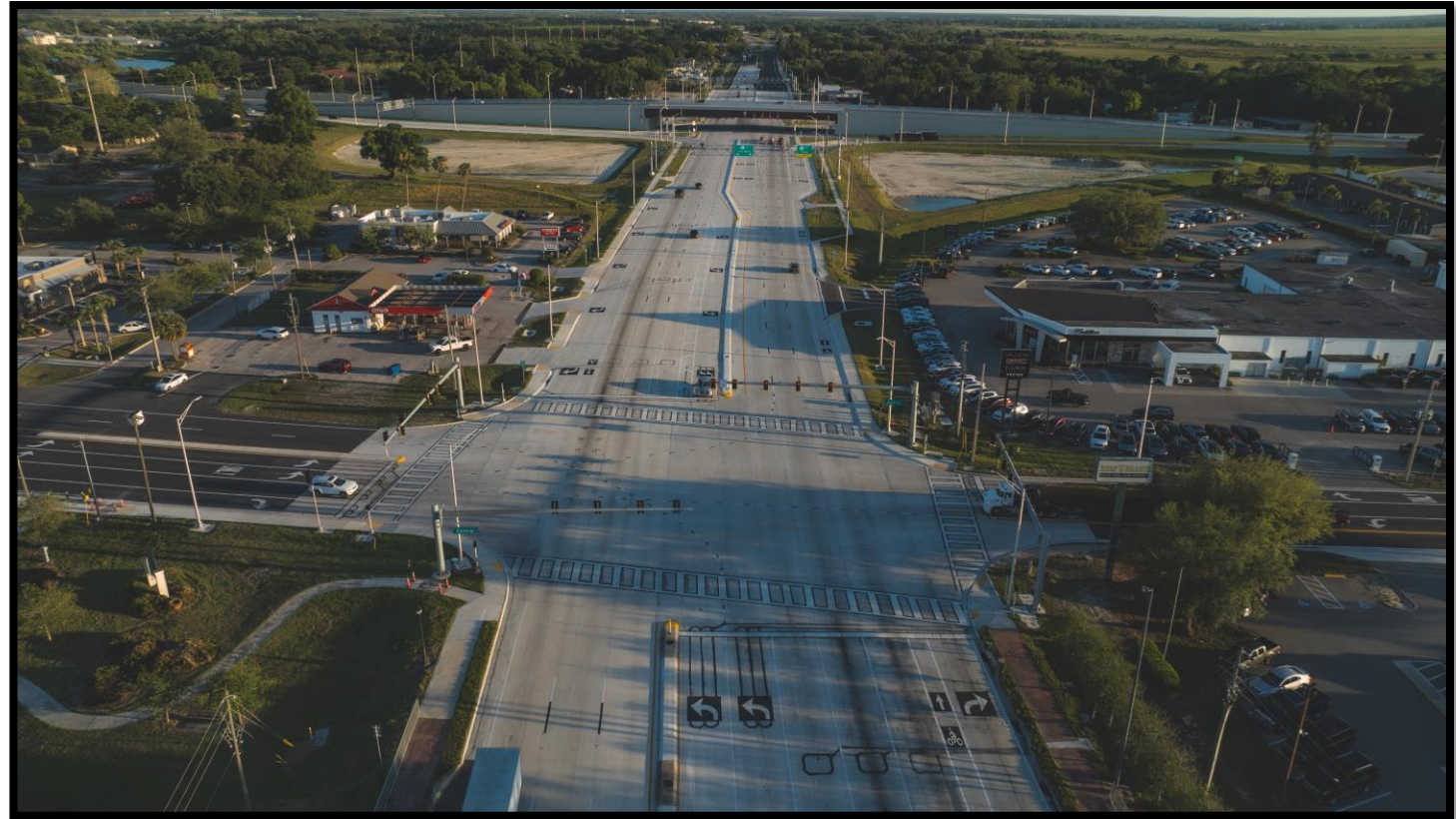
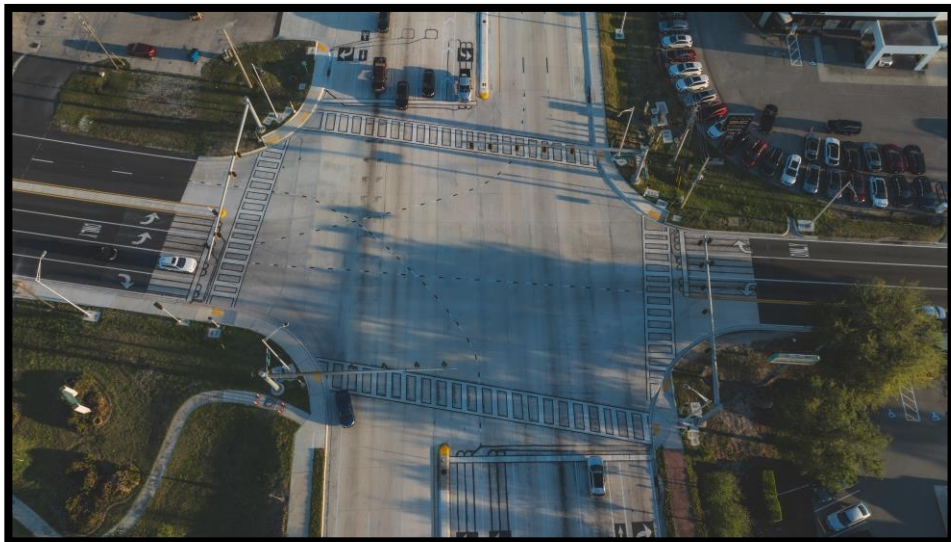
- Discuss advantages and difficulties of extended closure/detour
- Present examples of changing TTCP during construction from nightly closing to extended closing
- Discuss process used, stakeholder and decider involvement
- Outline benefits and encourage designs to make every effort to include extended closure in TTCP



Project Specifics – Concrete Intersection

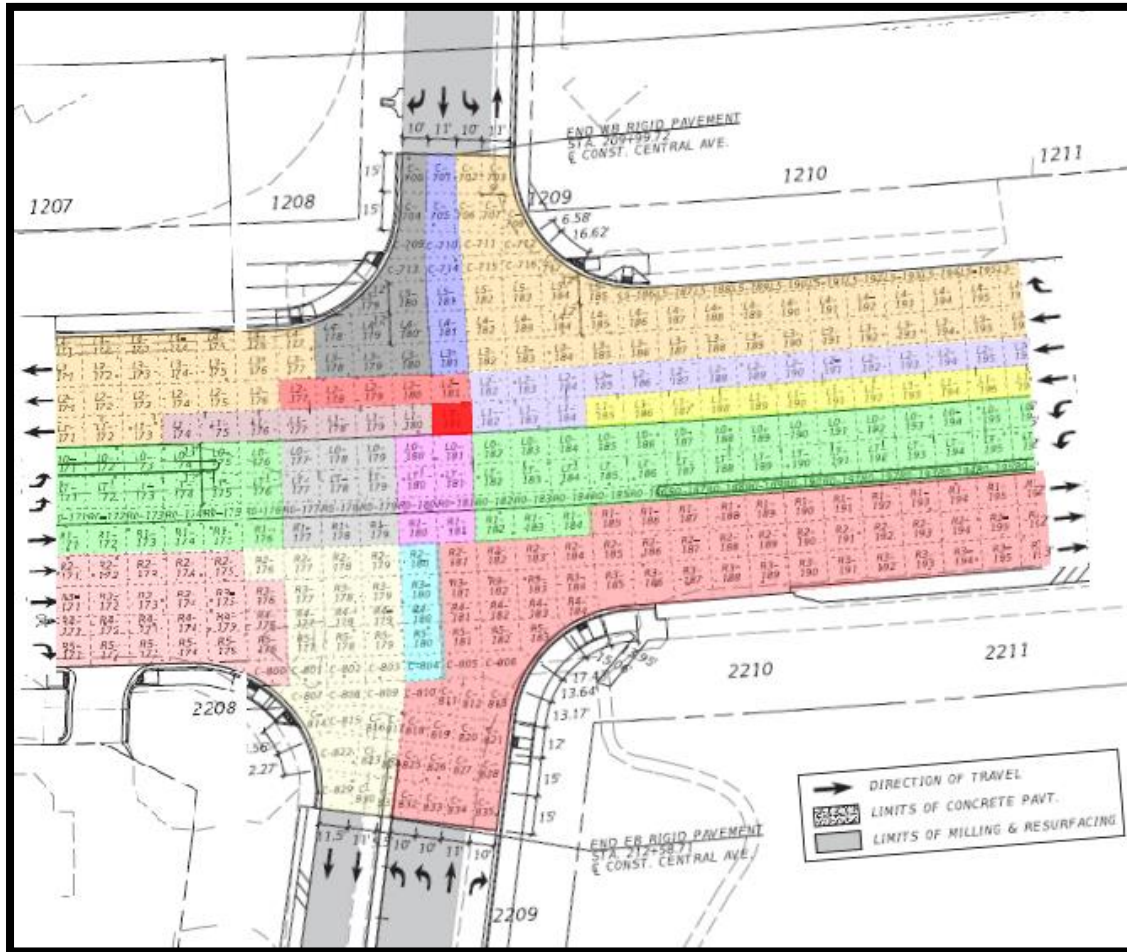
- Central Ave – Concrete Pavement
- Traffic

	AADT	% Trucks
US 27	34,000	18%
Central Ave	14,400	18%

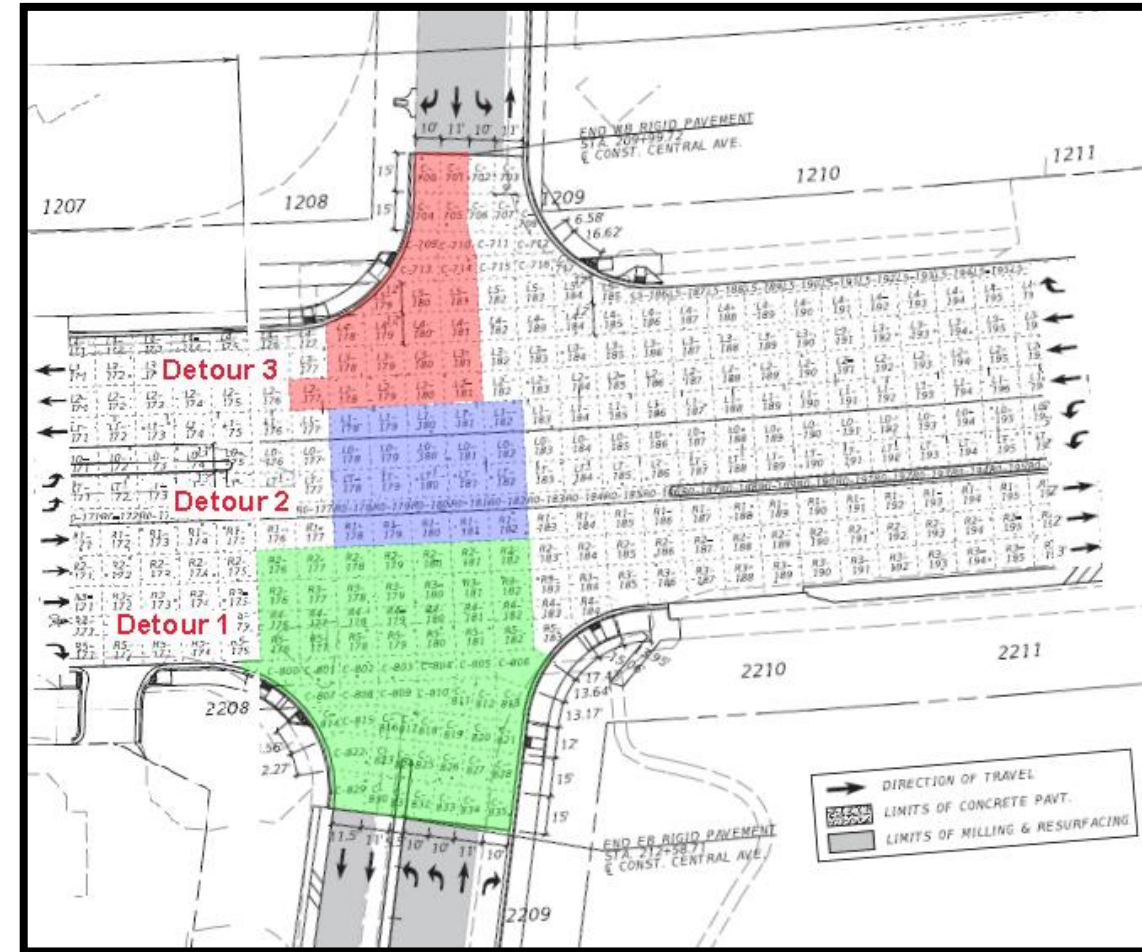


Project Specifics – Concrete Intersection

- Plan TTCP

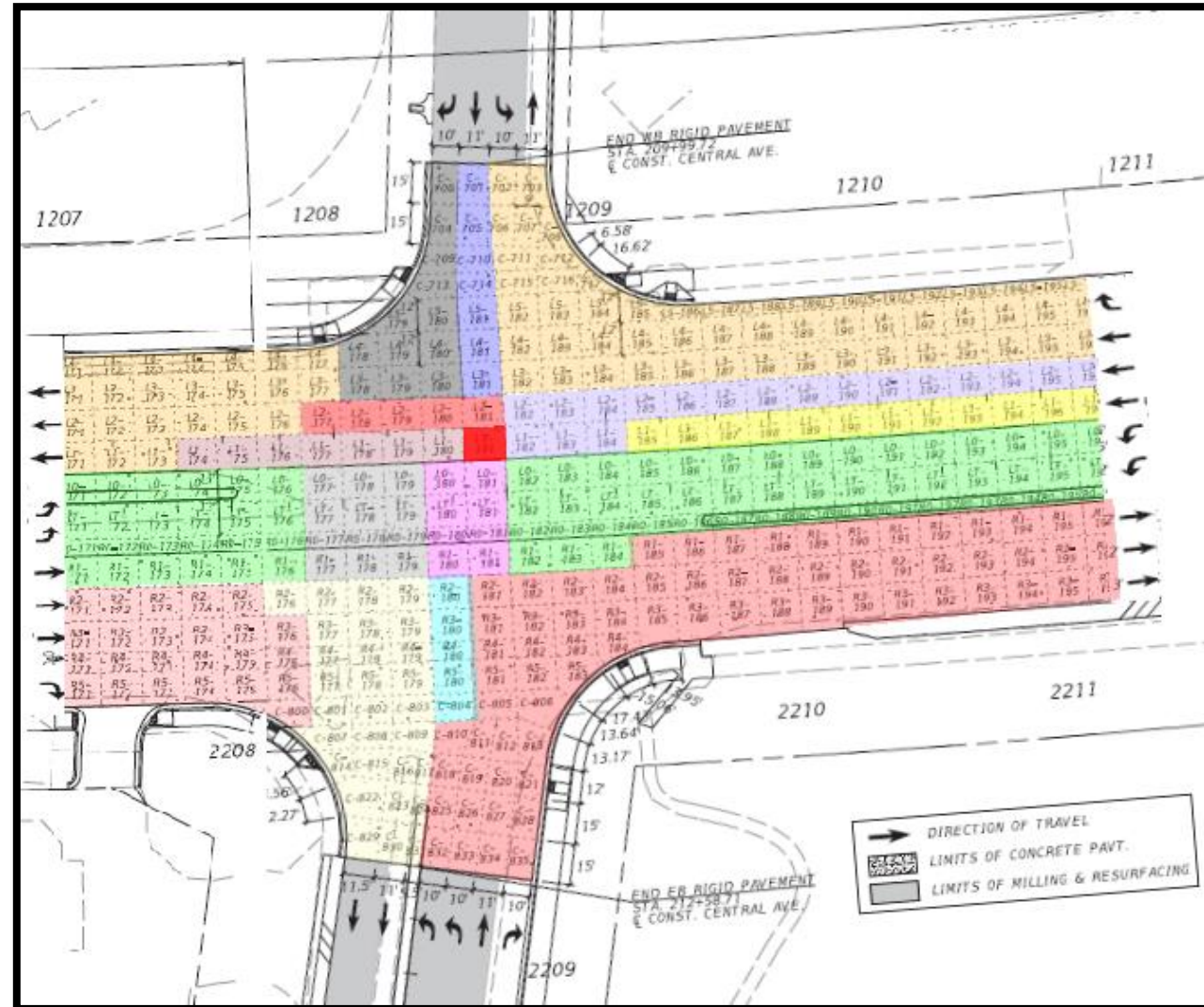


- Revised TTCP



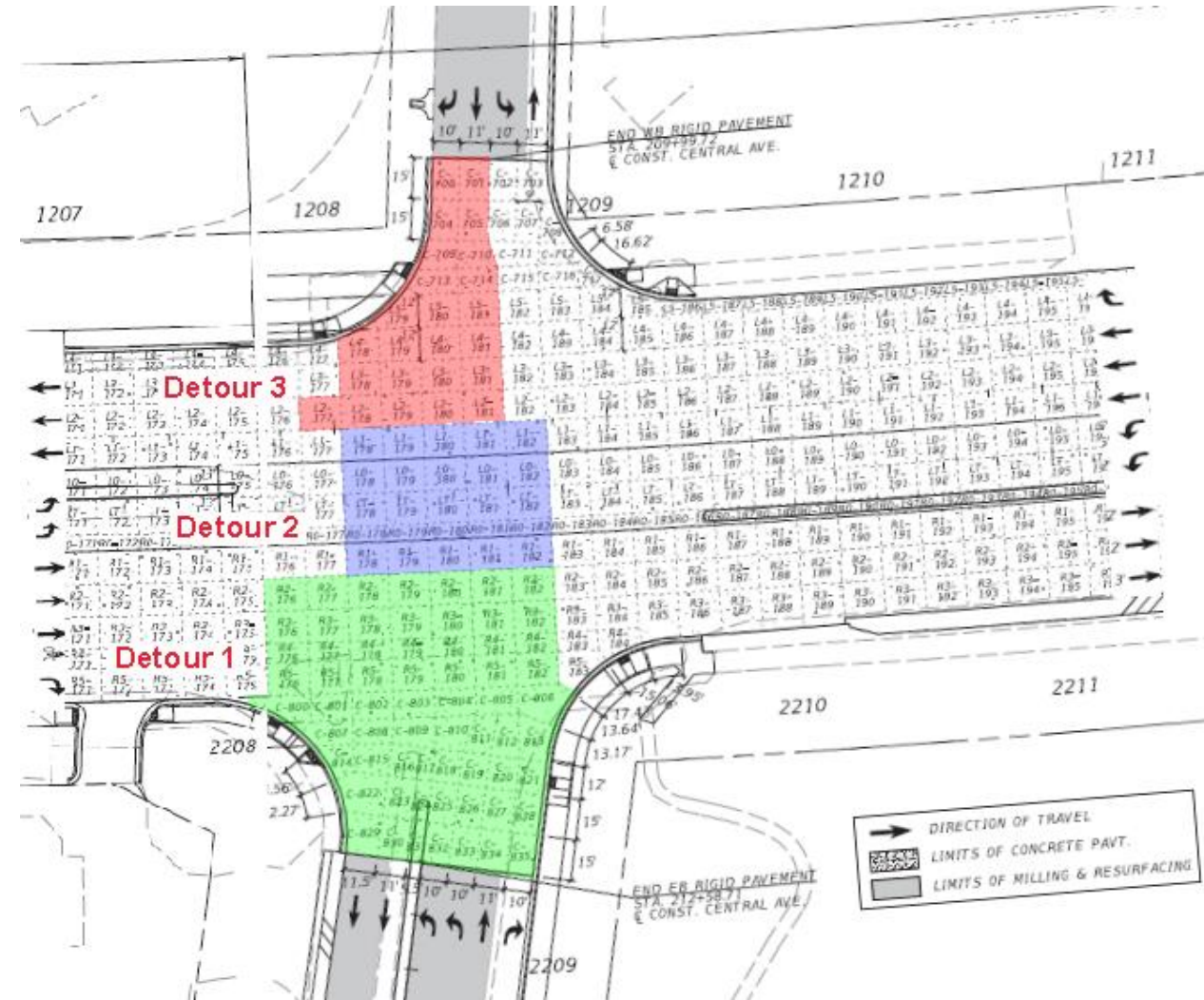
Project Specifics – Concrete Intersection

- Plan TTCP
- 16 Traffic Shifts
 - Some only 1 night long
- Night work
- Overall duration 7 months
- Frequent changes in MOT
 - Confusion potential
 - Older population

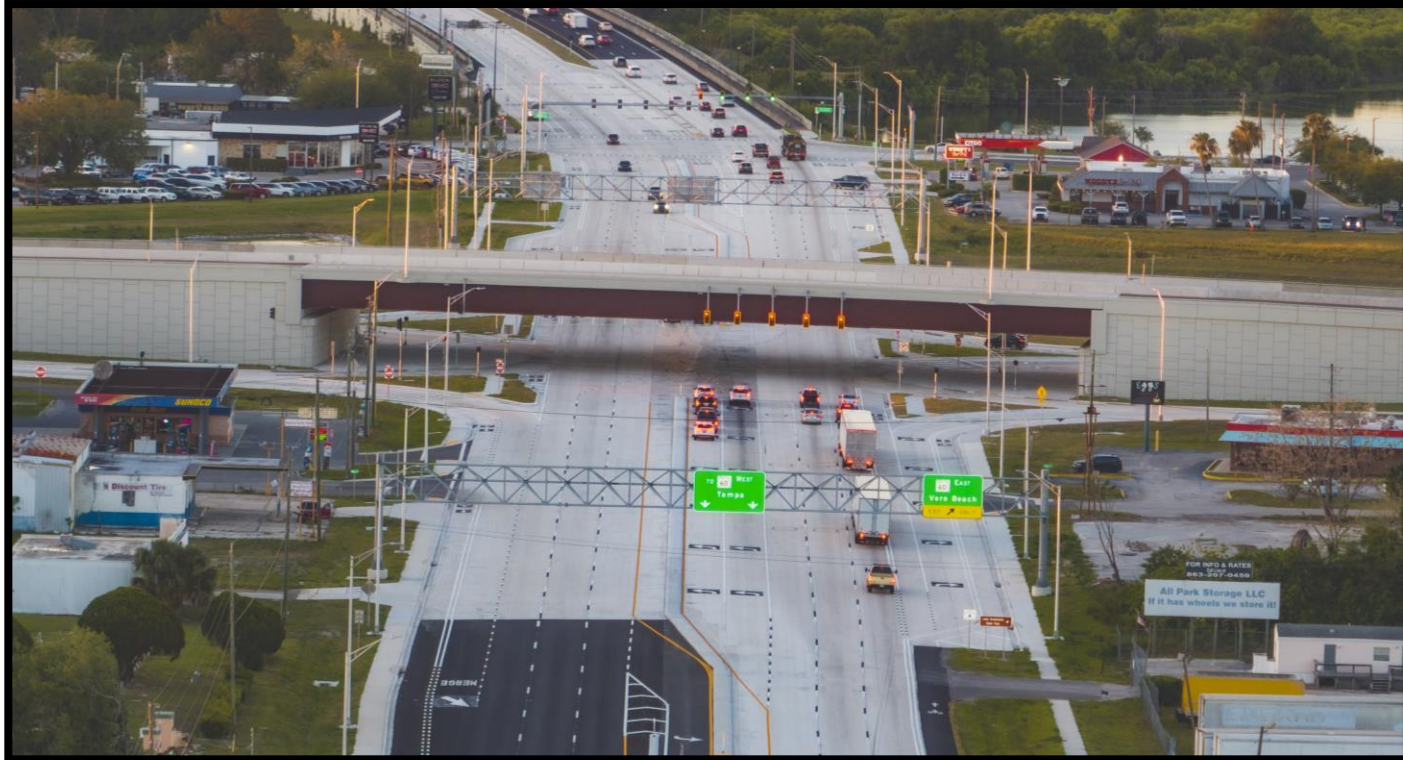


Project Specifics – Concrete Intersection

- Revised TTCP
- 3 closures/detours
 - 2 to 3 week closure durations (41 Days overall)
 - Only Central Ave
 - No US 27 mainline impact
 - Several months apart to coincide with mainline phases

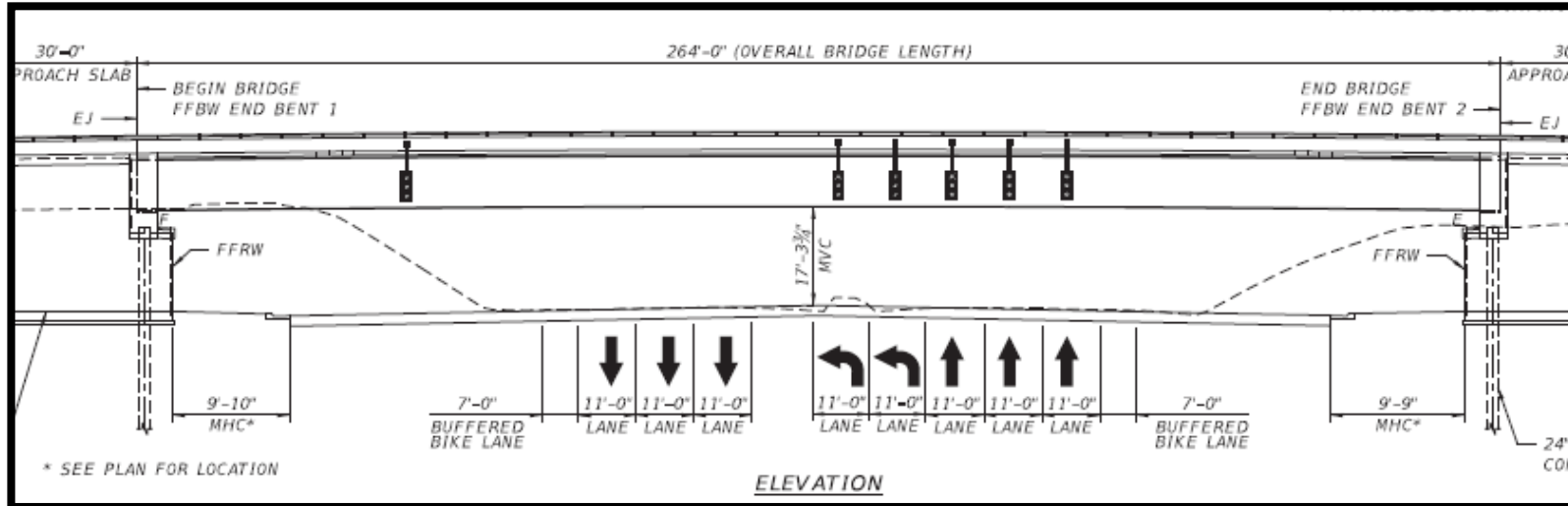
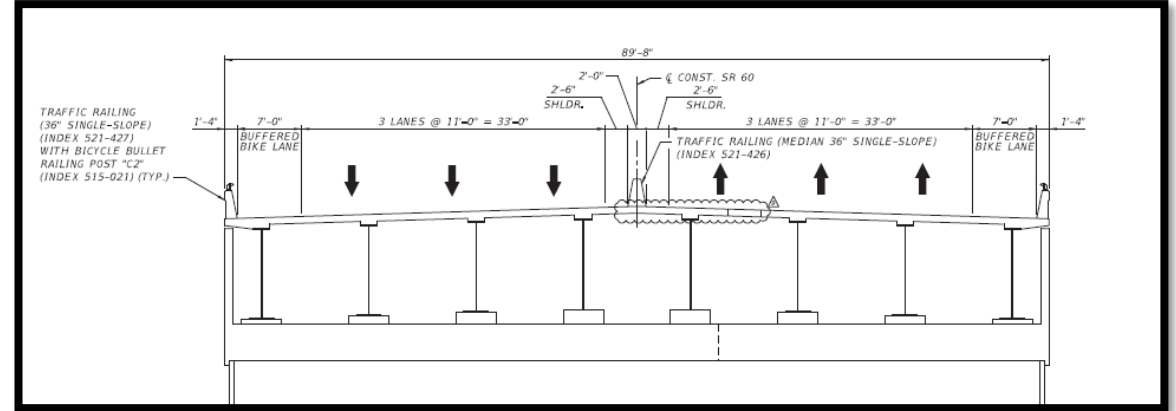


Project Specifics – Setting Bridge Beams



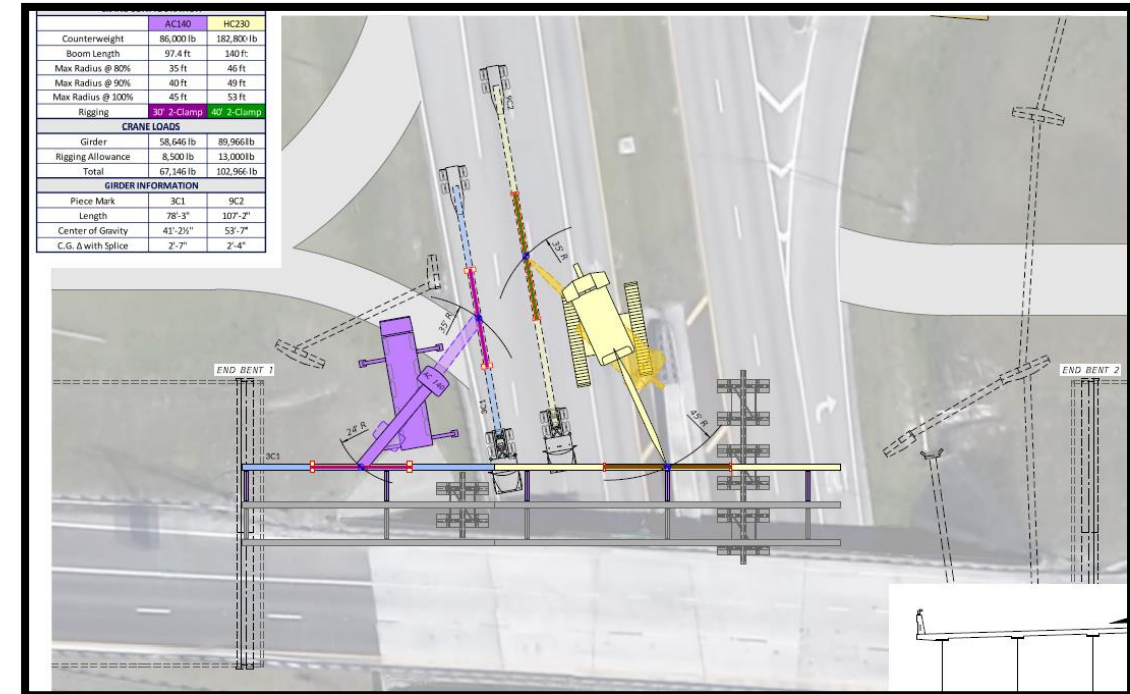
Project Specifics – Setting Bridge Beams

- 264' Steel Beams
- 8 Beams
 - 3 sections per beam (78', 107', 78')
 - 9'2" height
- ATCP – from 3 phase to 2 phase

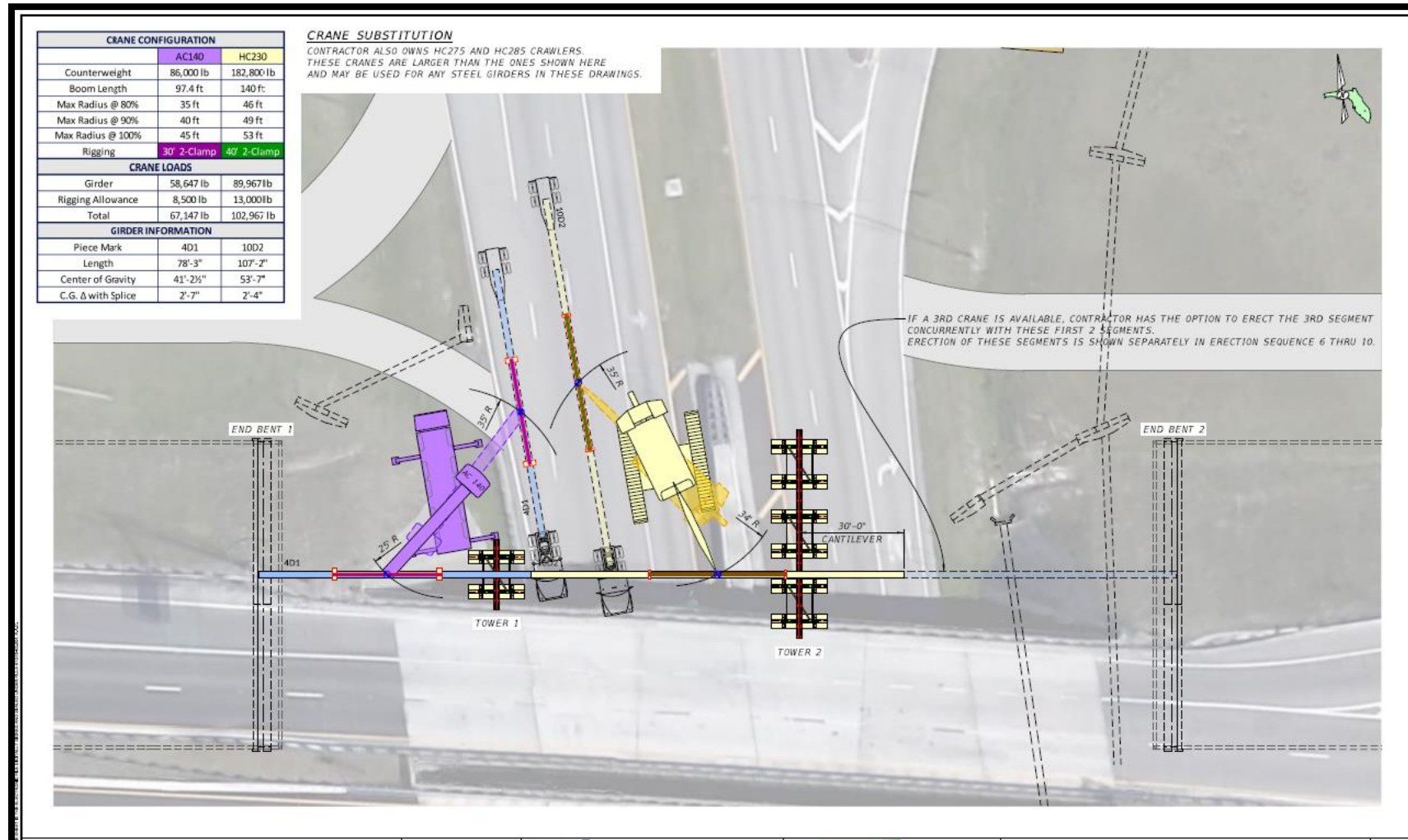


Project Specifics – Setting Beams, Plan TTCP

- Nightly Closures of US 27
 - 11:00 pm to 5:00 am
 - 3 months duration for each phase
- Move cranes into position
- Time consuming operation
 - Very heavy segments
 - Difficult to align
 - Many bolts in splices and cross frames
- Risks
 - Not opening on-time
 - Traffic under beams with temp support



Project Specifics – Setting Beams



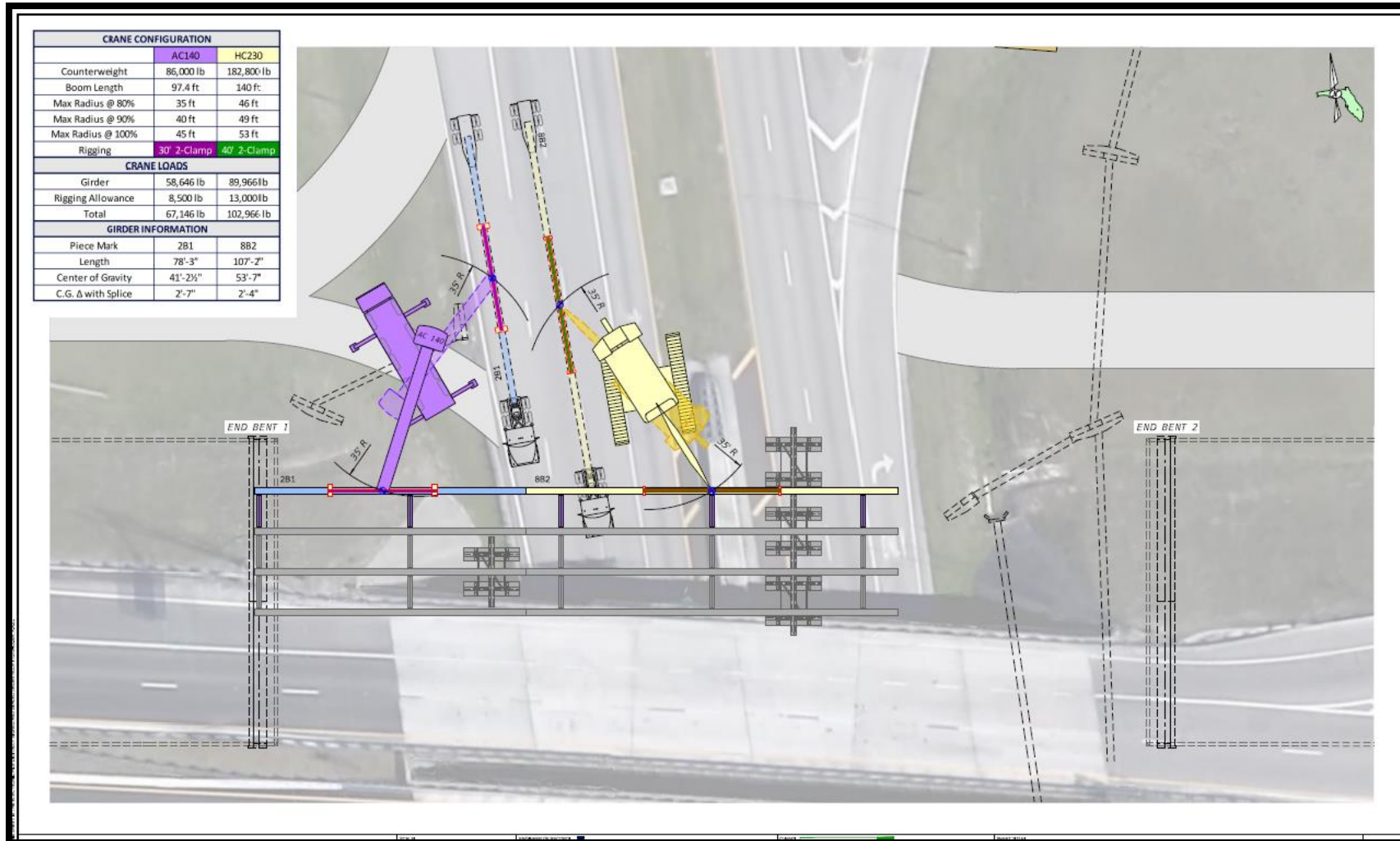
Project Specifics – Setting Beams



Project Specifics – Setting Beams



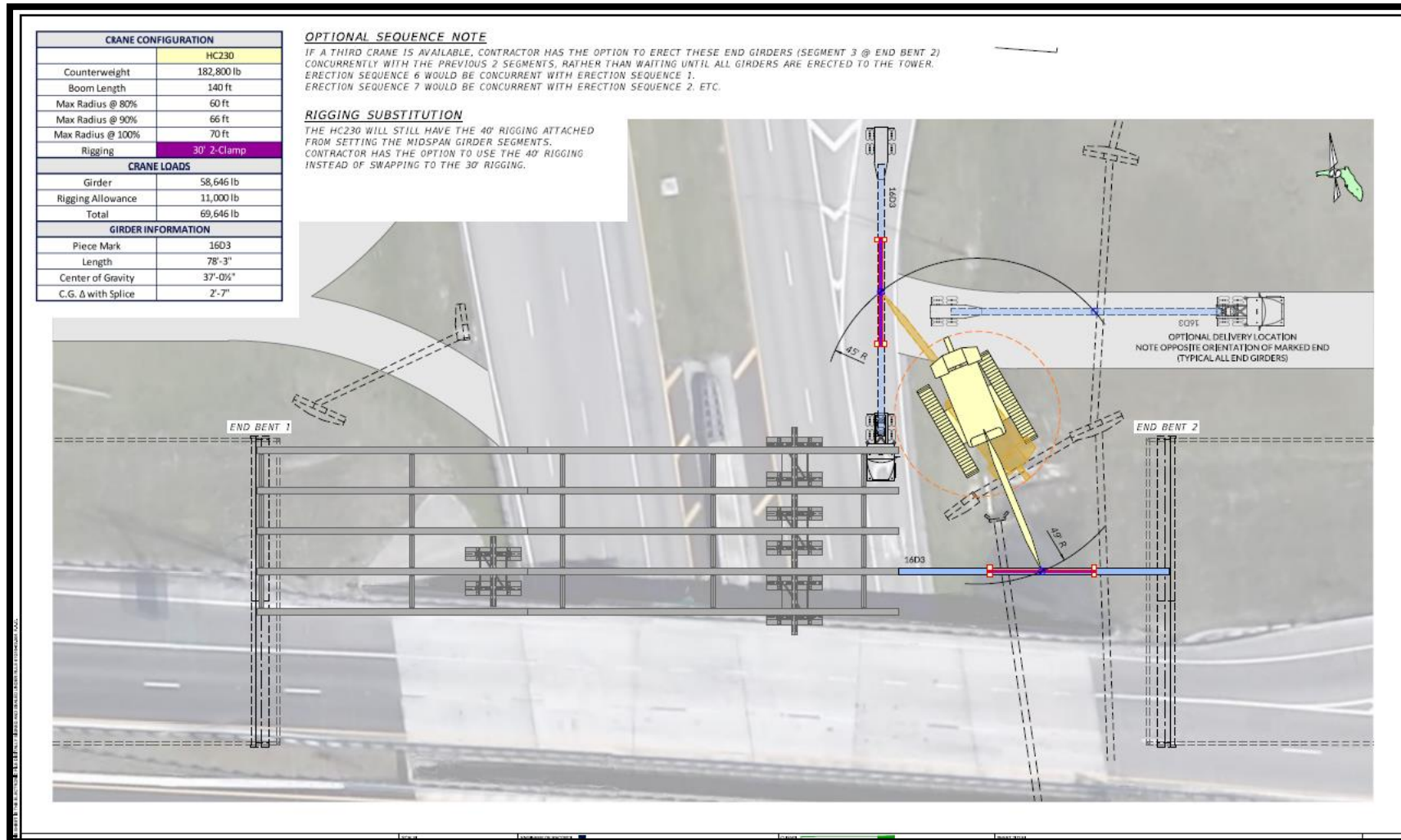
Project Specifics – Setting Beams



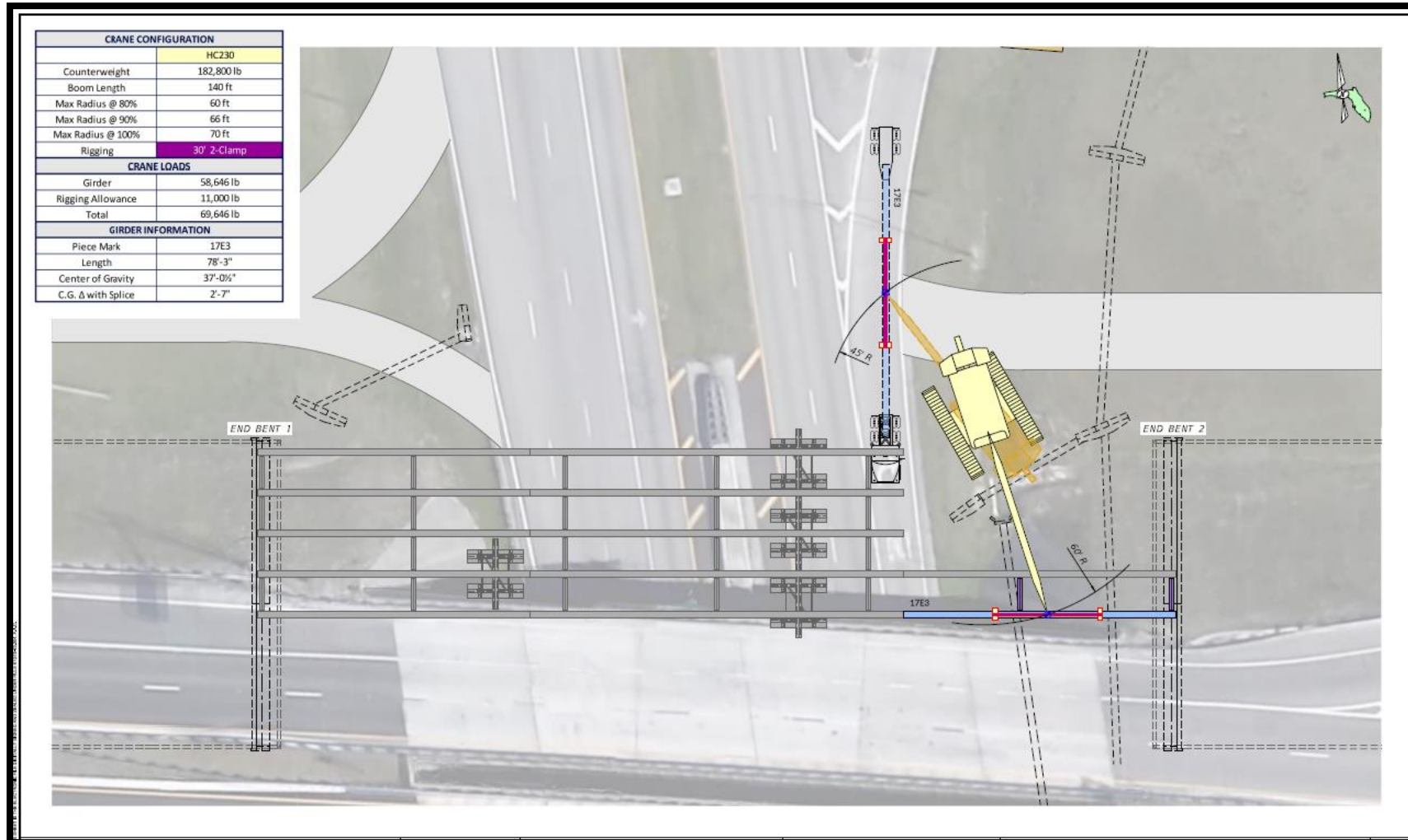
Project Specifics – Setting Beams



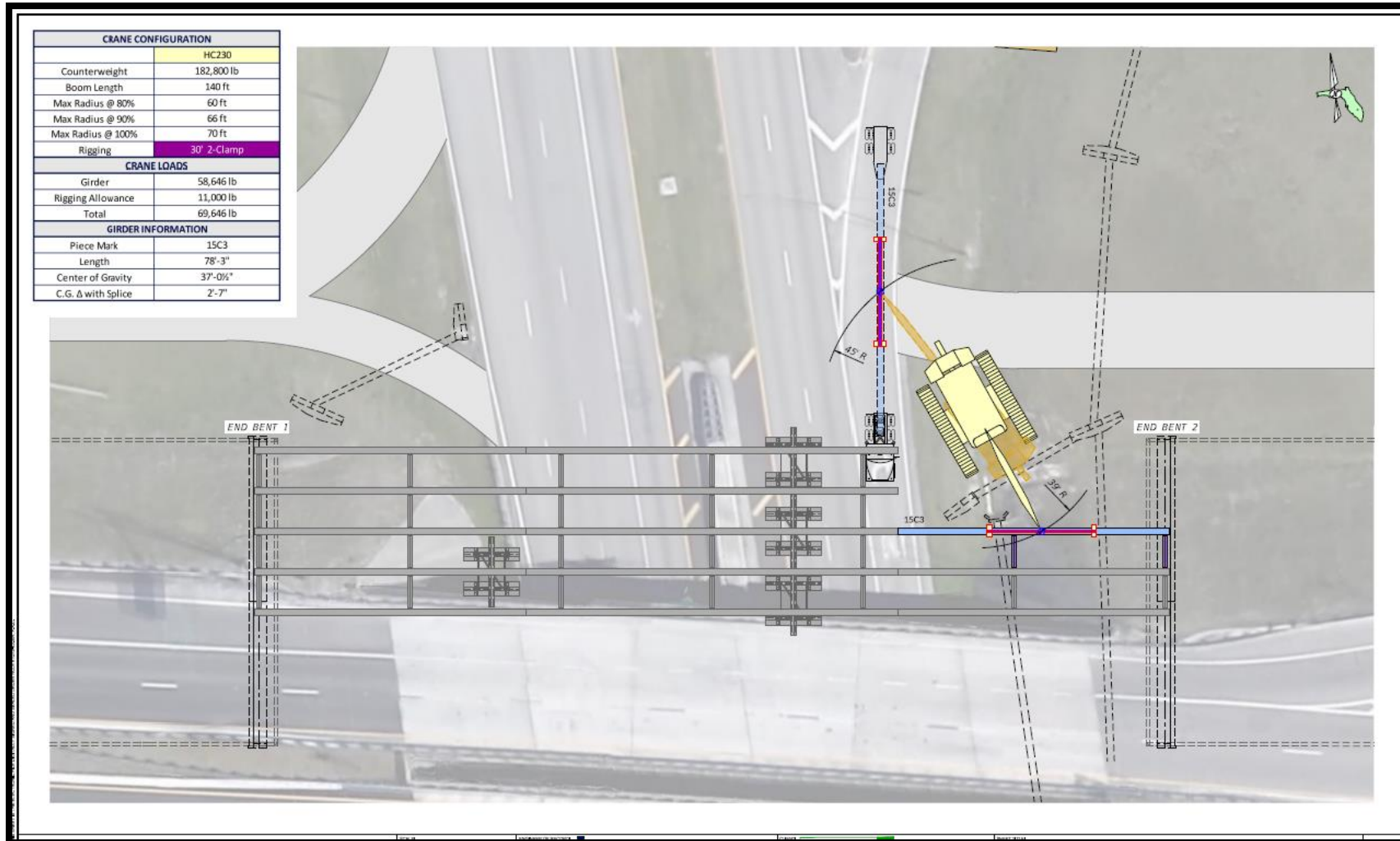
Project Specifics – Setting Beams



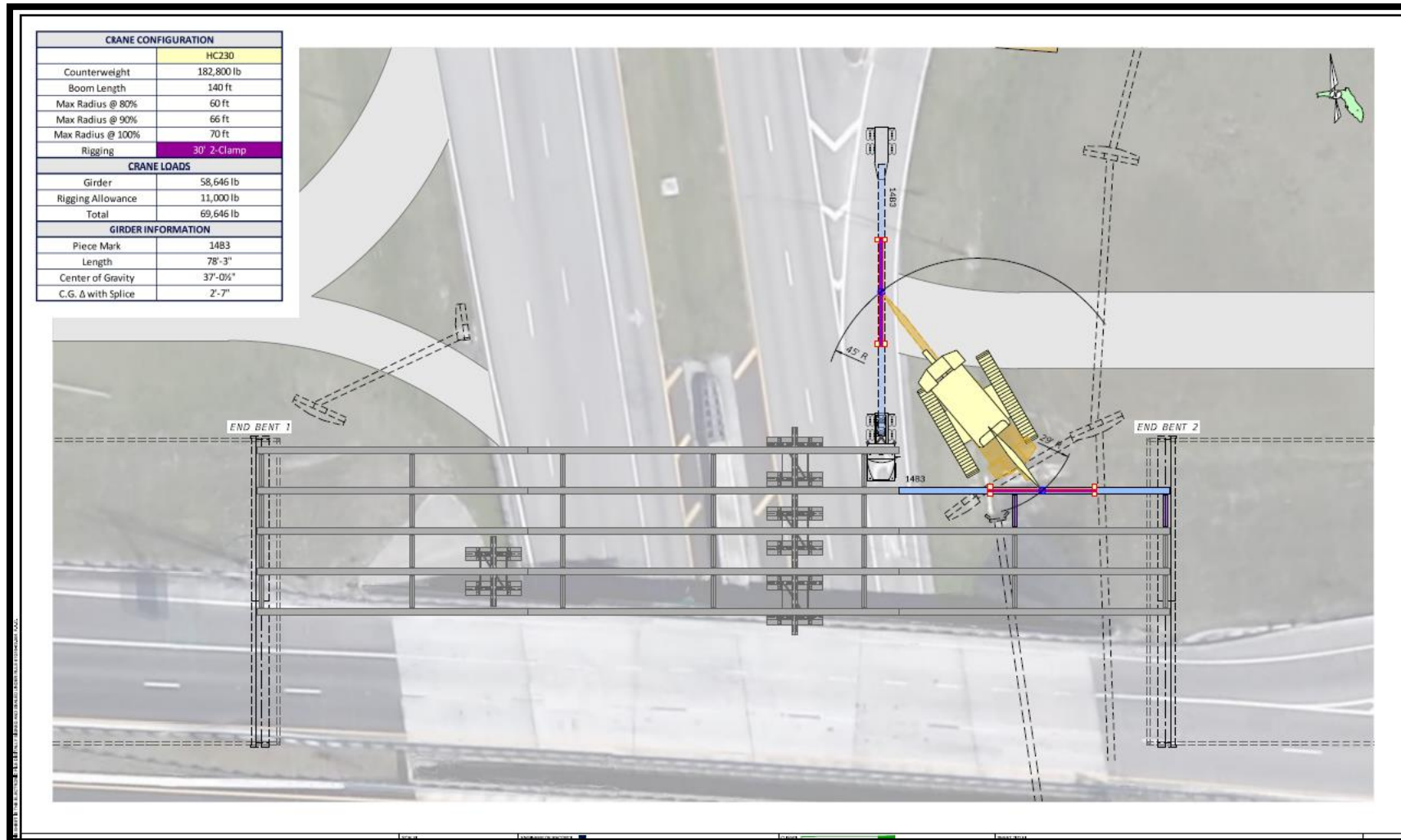
Project Specifics – Setting Beams



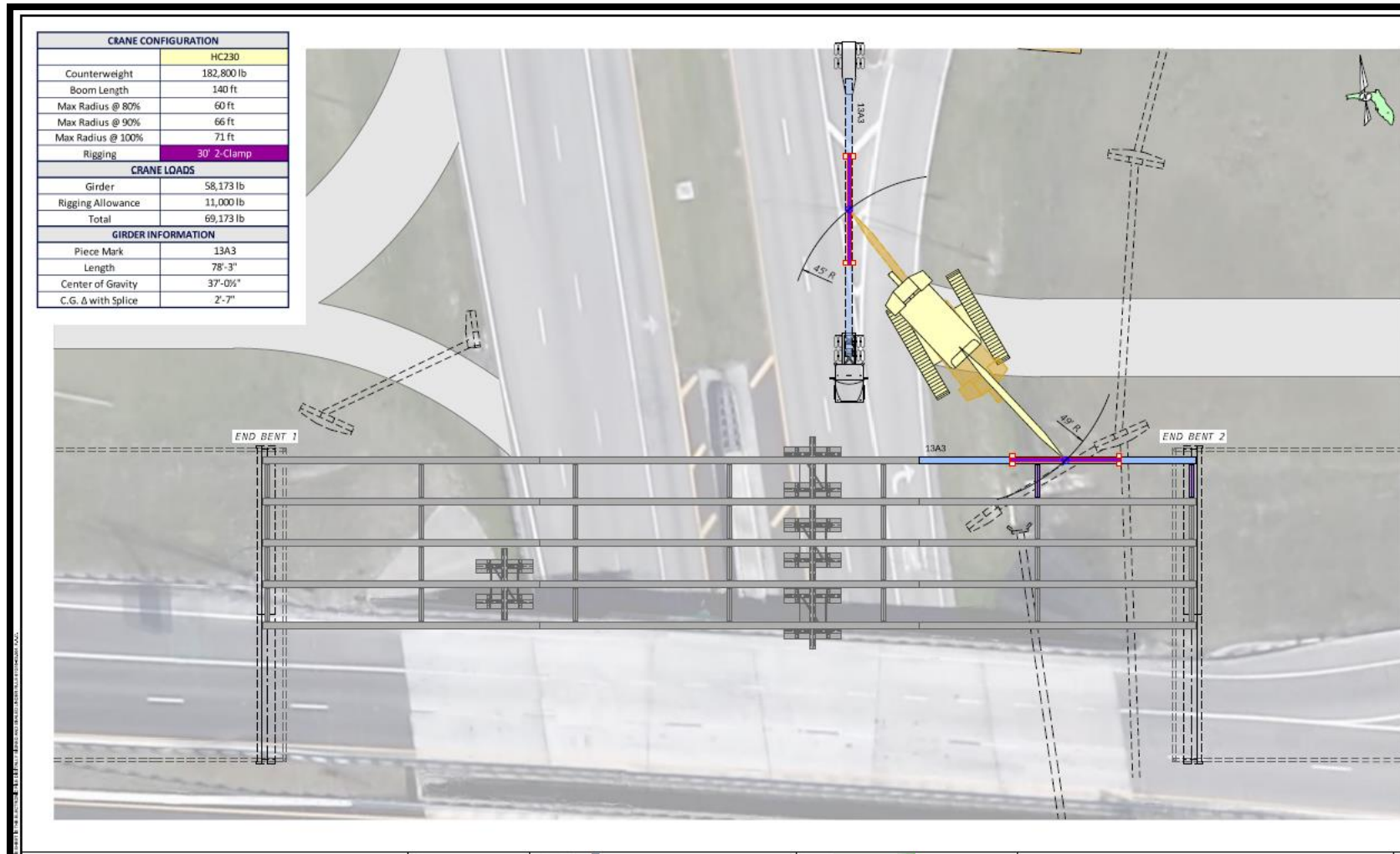
Project Specifics – Setting Beams



Project Specifics – Setting Beams



Project Specifics – Setting Beams



Project Specifics – Setting Beams, Revised TTCP

- 2 weekend closures, about 6 months apart
- 11:00 pm Friday to 5:00 am Monday
- ATCP – 2 phases (5 beam lines then 3 beam lines)





Closure Approval Process

- Established credibility with Local Officials
- White Papers
- 14 LEOs
 - Monitoring key locations, manually running signals when necessary, responding to incidents, flagging traffic
- Extensive public outreach
 - Tailored and targeted to trucking
- Traffic Ops – temp monitoring stations
- Contingency plans and Go-NoGo decision points

US 27 at SR 60 Interchange
(Financial Project Number: 419243-4-52-01 / Contract Number: T1754)
September 16, 2022, Weekend Closure of US27 to Set Bridge Beams

The Contractor for the US 27 at SR 60 interchange reconstruction project within District One (Polk County) proposed an alternative method for constructing the 264' single span, steel beam bridge over US 27. This alternative uses a weekend closure of US 27 to set beams rather than the nightly detours shown in the plans. Detour routes remain the same as shown in the plans including a detour for local traffic and a detour for commercial/truck traffic. The weekend closure of US 27 would be from Friday at 11:00 pm to Monday at 5:00 am and is currently scheduled for September 16, 2022. This alternative method was previously used when setting the beams for the new westbound portion of the SR 60 bridge during the weekend of January 14-17, 2022.

The advantages, disadvantages, impacts, and mitigation measures related to implementation of the Contractor's alternative construction method are discussed below.

US 27 at SR 60 Interchange
(Financial Project Number: 419243-4-52-01 / Contract Number: T1754)
January 14-17, 2022, Weekend Closure of US27 to Set Bridge Beams

Update on Outcome of Weekend Closure/Detour

- US 27 was closed Friday night and reopened before 5:00 am on Monday morning
- Traffic ran smoothly through the detour with minimal backups and no traffic crashes
 - District 1 Traffic Operations coordinated signals on the detour route to maximize flow and help clear queues
 - To evaluate the detour, District 1 Traffic Operations obtained baseline traffic data on US 27 at peak Saturday hours to compare to the detour
 - Traffic data during peak Saturday hours showed travel speeds of 22 mph – 25 mph on the detour route versus 31 mph – 33 mph typically on US 27
- Contractor completed all necessary construction to reopen, but not all activities they had planned
 - Beam erection subcontractor lost working time through inefficiencies by other subcontractors
 - Weather, with rain and high winds on Sunday, stopped work for 4 hours and slowed progress

The Contractor for the US 27 at SR 60 interchange reconstruction project within District One (Polk County) proposed an alternative method for constructing the 264' single span, steel beam bridge over US 27. This alternative uses a weekend closure of US 27 to set beams rather than the nightly detours shown in the plans. Detour routes remain the same as shown in the plans including a detour for local traffic and a detour for commercial/truck traffic. The weekend closure of US 27 would be from Friday at 11:00 pm to Monday at 5:00 am and is currently scheduled for January 14-17, 2022.

The advantages, disadvantages, impacts, and mitigation measures related to implementation of the Contractor's alternative construction method are discussed below.

Enhanced Safety

- Eliminates shoring and falsework in place adjacent to traffic for several months
- Provides for a complete set of beams secured on permanent end bents before any traffic travels under the beams eliminating traffic under beams that are temporarily secured on temporary shoring towers
- SR 60 remains open and new ramps will be available for emergency access to US 27
- Significantly reduces the number of times the detours are installed which limits potential traffic delays and exposure of Maintenance of Traffic personnel

Improved Mobility - reduced duration of impact from almost 3 months to one weekend

- The plans provide for nightly US 27 closures and detours to set beams
 - Closures allowed from 11:00 pm to 6:00 am with detour setup and takedown times leaving very limited nightly construction windows
- The Contractor built an almost identical bridge recently taking almost 3 months to set beams using nighttime detours

Closure Approval Process

- Results
 - Traffic safety and mobility
 - Only crash was first night (ran into PCMS)
 - No injury crashes
 - Speed: travel times -vs- Saturday daytime peak
 - US 27 Baseline: 31 mph – 33 mph
 - Detour Route: 22 mph – 25 mph
 - Community
 - Local Officials – supportive
 - Trucking industry – no complaints
 - Press – mostly positive
 - Construction
 - Overcame weather delays, finished and opened roadway early



Closure Approval Process

- Coordination with FDOT
 - Heartland Operations
 - Construction PM
 - Community Outreach
 - District 1
 - Management
 - Freight Coordinator
 - Traffic Ops
 - Central Office
- Coordination with Local Officials
 - Length of intersection closure
 - Least impactful timeframes



FLORIDA DEPARTMENT OF TRANSPORTATION
US 27 AT SR 60 INTERCHANGE IMPROVEMENT PROJECT
US 27 CLOSURE & DETOUR ROUTES
BEGINNING MID-SEPTEMBER 2022

Financial Project ID: 419243-4-52-01

August 2022

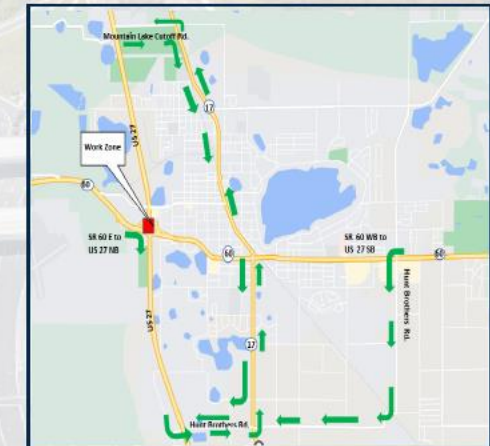
US 27 CLOSURE/DETOURS FOR SETTING BEAMS FOR THE NEW BRIDGE

In mid-September 2022, the Florida Department of Transportation's contractor will close US 27 northbound at the SR 60 bridge and US 27 southbound at Central Avenue, to set beams for the new SR 60 bridge. The closure will be from 11 p.m. Friday, until 5 a.m., Monday. Detours will be in place for local traffic and commercial truck traffic. Signage will direct motorists to the detours, which are shown below. Law Enforcement will be on site to assist motorists. Please allow extra travel time and use caution in the construction zones.

Local Traffic Detours



Commercial Vehicle Detour



Step by step detour directions located on back of page

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TRANSPORTATION
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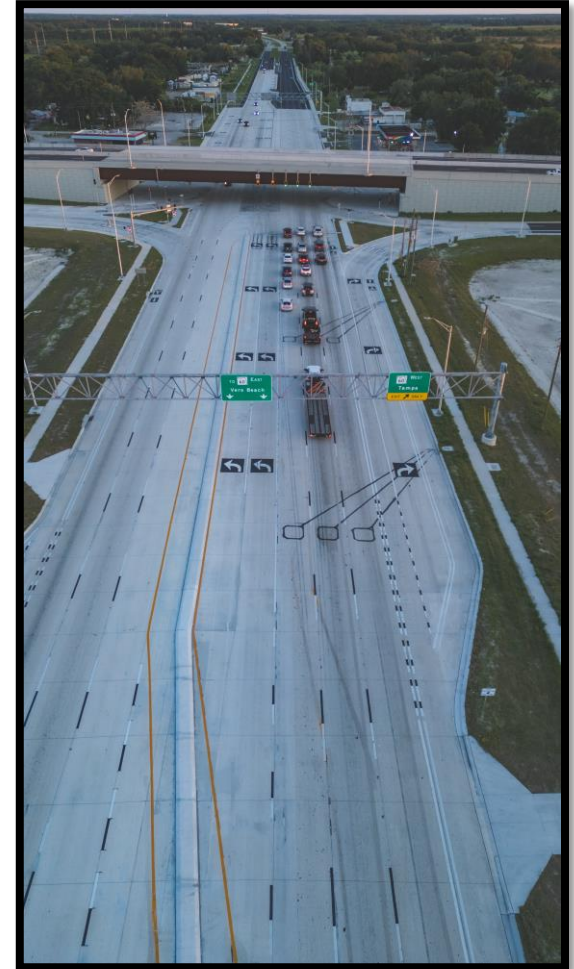
Closure Advantages and Difficulties

- Advantages (Improve Mobility, Enhance Safety, Reduce Costs, Accelerate Construction, Improve Quality)
 - Beam Setting
 - Far less likely to impact traffic by not clearing the roadway when nightly window expires
 - Eliminates traffic running under temporarily braced beams
 - More efficient operations (improve quality and reduce costs)
 - Concrete Intersections
 - Better product (likely better ride, more consistent concrete)
 - More efficient (reduce costs)
 - Improve traffic safety (substantially reduced traffic shifts, less likelihood of confusion creating errant vehicles)

Closure Advantages and Difficulties

- Difficulties

- Don't have contractor onboard so harder to be specific
 - How work can be done
 - Duration of closures
 - Cost trade-offs for acceleration methods (cost of options –vs- time saved or costs of extended work hours -vs- time saved)
- Harder to show deciders and influencers the trade-offs and get approval
- Takes more work/coordination during Design Phase
- Run the risk of deciders changing and then detour no longer allowed (e.g., SR 33 bridge replacement in Lake County)



**TRANSPORTATION
SYMPOSIUM**

Encouragement for Closures

- Significant benefits by including closures in design
 - Enhance safety
 - Improve mobility
 - More economical construction by reducing risk and accelerating work
 - Reduce community impacts
 - Enhance quality
- Engage Operations Center PMs and Community Outreach Specialists to help obtain local approvals
- Plan for contingencies to maintain production schedule
 - Add milestone to production schedule when moving toward PID to confirm detour with deciders
 - Have alternative to closure that can be quickly implemented

Safety Message



***Koda Learns to MOVE OVER
at Safety Village With FDOT & FHP***

Koda the Fluff YouTube:

https://www.youtube.com/watch?v=RaK_trZa4Hc

Contact Us



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