

# Item 5-569 – I-65 Study

Bridge Cost – Interim Meeting

June 16, 2021

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# Bridges

Bridge 056B00179N – the bridge over Hill/Burnett at MP 133.873

Bridge 056B00183N – the bridge over Kentucky/Brook at MP 134.753

Bridge 056B00191N – the bridge over Jacob/Broadway/Gray at MP 135.273

*Bridge 056B00192N – the bridge over Chestnut at MP 135.43*



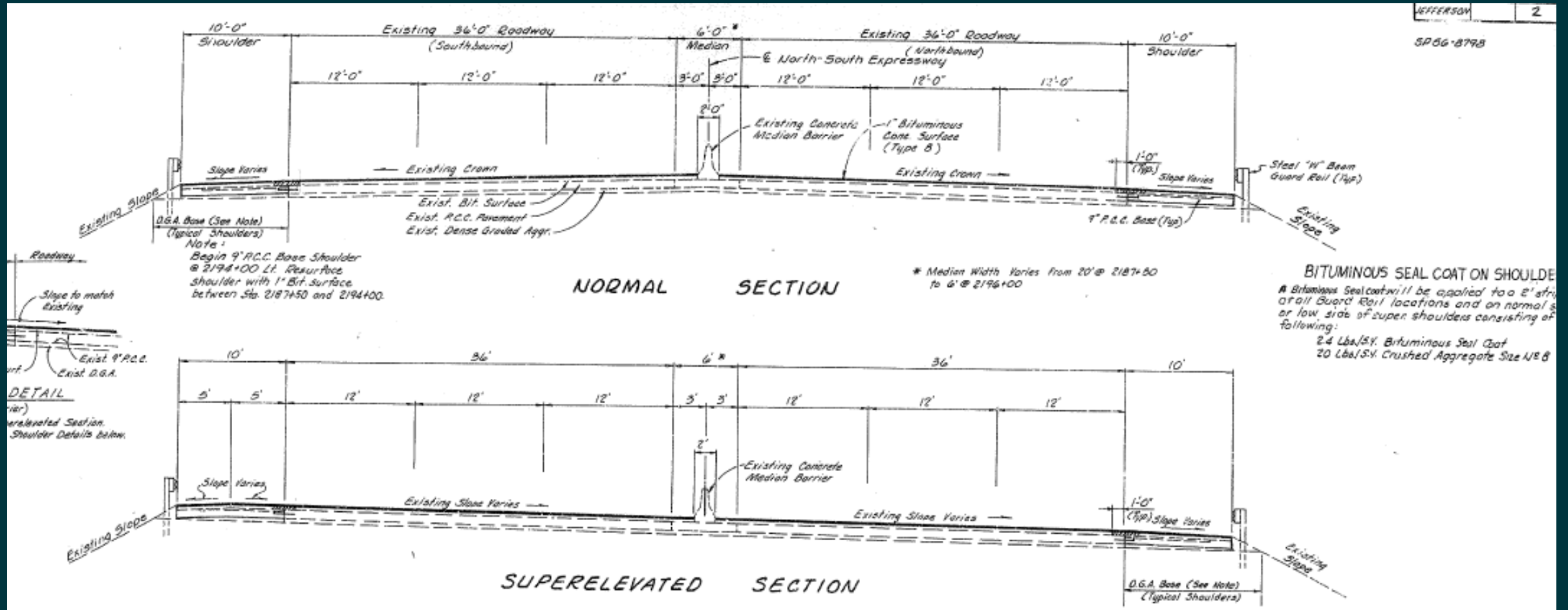
# Location



# Location



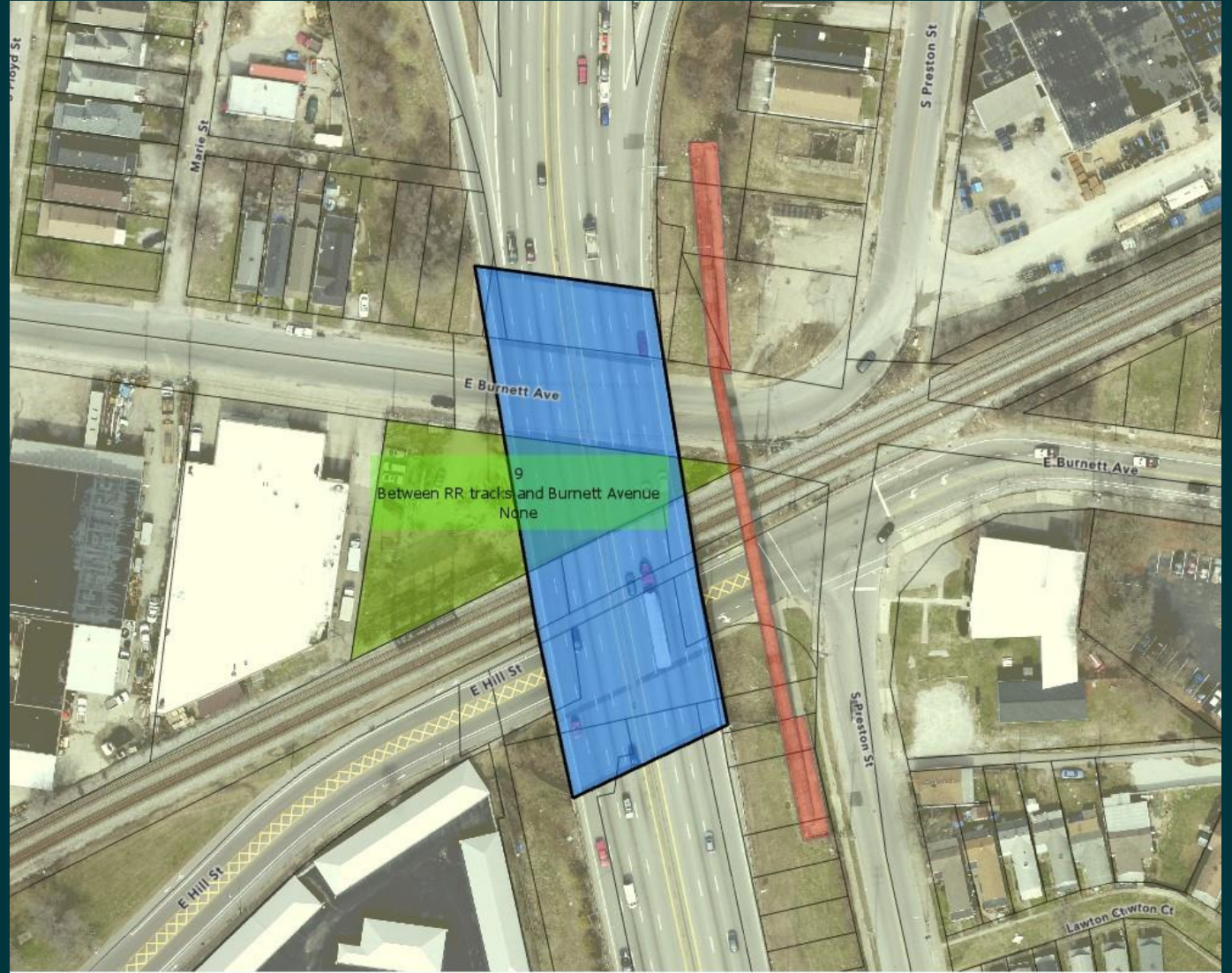
# Typical Section





# Hill/Burnett

- Railroad
- Adjacent ped bridge
- Triangular lot (former KYTC Traffic Facility)
- Potential staging areas
- Aerial utilities
- Tail spans
- Slide



# Hill/Burnett





# Hill/Burnett





# Hill/Burnett

Potential staging areas





# Kentucky/Brook

- Major intersection below
- Atypical abutment
- Parking/airspace
- Temporary repairs
- SB off-ramp bridge
- NB on-ramp needs extending
- Limited staging/construction working areas
- Aerial utilities





# Kentucky/Brook





# Kentucky/Brook





# Kentucky/Brook – update with pic of repair





# Jacob/Broadway/Gray

- Adjacent Buildings
- Parking/airspace
- Limited staging/construction working areas
- Flared ramp structures complicate prefab options
- Aerial utilities
- Shared pier with Chestnut bridge





# Jacob/Broadway/Gray



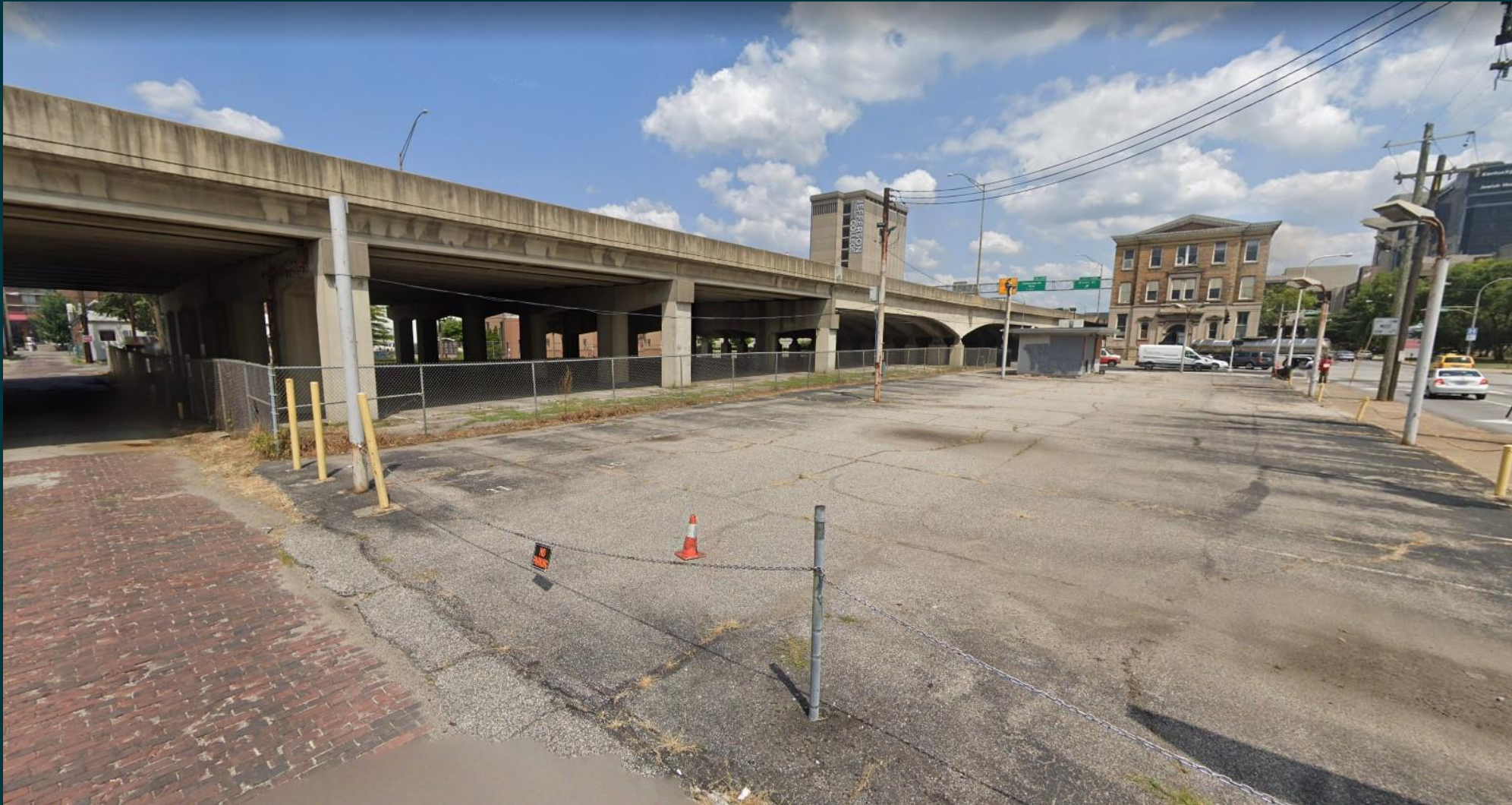


# Jacob/Broadway/Gray





# Jacob/Broadway/Gray





# Chestnut

- *Adjacent Buildings*
- *Parking/airspace*
- *Limited staging/construction working areas*
- *Flared ramp structures complicate prefab options*
- *Aerial utilities*
- *Shared pier with Jacob/Broadway/Gray bridge*
- *Consider superstructure focused repairs?*





# Chestnut





# Chestnut





# MOT Scenarios

- Complete Closure (with only some local access)
- Directional Closure
- Bi-directional (1 lane/ 2 lane)
- Weekend Closures
- 9 Day Closures

Weekend or 9 Day Closures are CM/GC dependent – consider MSE walls and no (or less) parking, eliminate tail spans and using existing substructure

# Cost Opinion

Existing Footprint	Hill/Burnett	Kentucky/Brook	Jacob/Broadway/Gray	Chestnut	Total for 3	Total for 4	Closure Days (each direction)	MOT Total	Grand Total for 3	Grand Total for 4
Conventional	\$12,900,000	\$23,300,000	\$43,800,000	\$11,400,000	\$80,000,000	\$91,000,000	90	\$9,360,000	<b>\$89,000,000</b>	\$100,000,000
ABC Substructure	\$14,200,000	\$25,600,000	\$48,200,000	\$12,500,000	\$88,000,000	\$100,500,000	70	\$7,280,000	<b>\$95,000,000</b>	\$108,000,000
ABC Superstructure	\$15,700,000	\$28,400,000	\$53,500,000	\$13,900,000	\$98,000,000	\$112,000,000	30	\$3,120,000	<b>\$101,000,000</b>	\$115,000,000

MSE Walls	Hill/Burnett	Kentucky/Brook	Jacob/Broadway/Gray	Chestnut	Total for 3	Total for 4	Closure Days (each direction)	MOT Total	Grand Total for 3	Grand Total for 4
Conventional	\$12,500,000	\$19,900,000	\$32,500,000	\$10,500,000	\$65,000,000	\$75,000,000	90	\$9,360,000	<b>\$74,000,000</b>	\$84,000,000
ABC Substructure	\$13,800,000	\$21,900,000	\$35,800,000	\$11,600,000	\$71,500,000	\$83,100,000	70	\$7,280,000	<b>\$79,000,000</b>	\$90,000,000
ABC Superstructure	\$15,100,000	\$23,900,000	\$39,100,000	\$12,700,000	\$78,000,000	\$91,000,000	30	\$3,120,000	<b>\$81,000,000</b>	\$94,000,000



# MOT Cost

AECOM Calculated MOT Cost	\$51,600/day
MemFix4 MOT Cost	\$47,833/day
JFK Rehab MOT Bid Cost	\$90,455/day
Cost used	\$52,000/day

# Differences between I-65 and the I-40 corridor

- Superstructure replacements vs. full replacements
- Distance between first and last bridge is 2500' vs. 1.5 miles
- Bridges were shorter vs. I-65 bridges
- More area adjacent to I-40 corridor vs. I-65 residential / constrained ROW
- Bridge Farm created in I-40 median vs. I-65 tight median
  - *NOTE: The I-40 median enabled the use of a self-propelled modular transporter (SPMT)*
- Most superstructure replacements reduced to single span vs. I-65 multi-span bridges (TBD)



# ABC Strategies

- Prefabricated Bridge Elements
- Bridge Movement & Installation Methods
- Rapid Embankment & Retaining Wall Construction
- Contracts & Bidding

# ABC Strategies

## Prefabricated Bridge Elements

- Precast footers
- Precast concrete pier caps and columns
- Precast concrete deck panels with Ultra High-Performance Concrete joints
- Precast concrete abutment with cast-in-place concrete backwall
- Super structure girder slab units

## Bridge Movement & Installation Methods

- Self-Propelled Modular Transporter (SPMT)
- Bridge Slide



# ABC Strategies

## Rapid Embankment & Retaining Wall Construction

- Lightweight fill for MSE retaining walls
- Expanded Polystyrene EPS Geofam for MSE retaining wall
- Ground modification
- Wick Drains
- Precast moment slabs for MSE retaining walls
- Stone Columns

## Contracts & Bidding

- Construction Manager / General Contractor (CM/GC)
- Design-Build
- Advanced beam procurement
- Advanced MSE wall procurement
- A + B
- Dis-incentives
- Lane Rental

# Go's - No Go's

- Closure time – what can you tolerate?
  - Interstate and surface streets
- Use of existing substructure?
- What about parking?
- Temp running on prefab slabs before overlay?
- 4hr concrete?



# Other considerations

- User cost
- Loss of toll revenue
- Life cycle cost
- Airspace agreements/parking

# Team

**AECOM**



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CM/GC  
Specialist

Eric Ozimok  
ABC  
Specialist

Greg Groves  
Principal



# Recommended Next Steps

- Program funding
- Contract with design consultant
- Complete 15% design
- Advertise for CM/GC and ICE

**AECOM**



Engineering Planning

**Thank you.**





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