

Value Planning

VALUE ENGINEERING
AS A PLANNING TOOL



VALUE ENGINEERING • RISK MANAGEMENT • CONSTRUCTABILITY • ITR • ORGANIZATIONAL OPTIMIZATION

Agenda

- Introduction to Value Planning
- Why did we develop this tool?
- When do you use Value Planning?
- How does it work?
- Examples/Case Studies
- Questions

Introduction to Value Planning



Value Planning

- Value Planning uses the same systematic and structured process as Value Engineering
- This process is called the **Value Methodology**
- This methodology has been standardized by SAVE International®, the professional society for Value Engineering and codified in ASTM E1699
- The focus is on Improving **Value**; not cost cutting
- Where **Value** is found by identifying the *most resource efficient way to reliably accomplish the required functions* of the program, project, or process, in a way that meets the performance expectations of the customer



Value Planning

- Value Planning is typically a very short duration study – 6 to 12 weeks from start to finish
- The Value Planning process is executed with a multidisciplinary team of subject matter experts (SMEs) within a workshop format – typically 1-2 weeks
- The SMEs are often a combination of key project team members and independent SMEs (fresh perspective)
- The workshop is facilitated by a Certified Value Specialist® (CVS®), as designated by SAVE International®

Value Expression

$$\text{Value} \approx \frac{\text{Function}}{\text{Resources}}$$

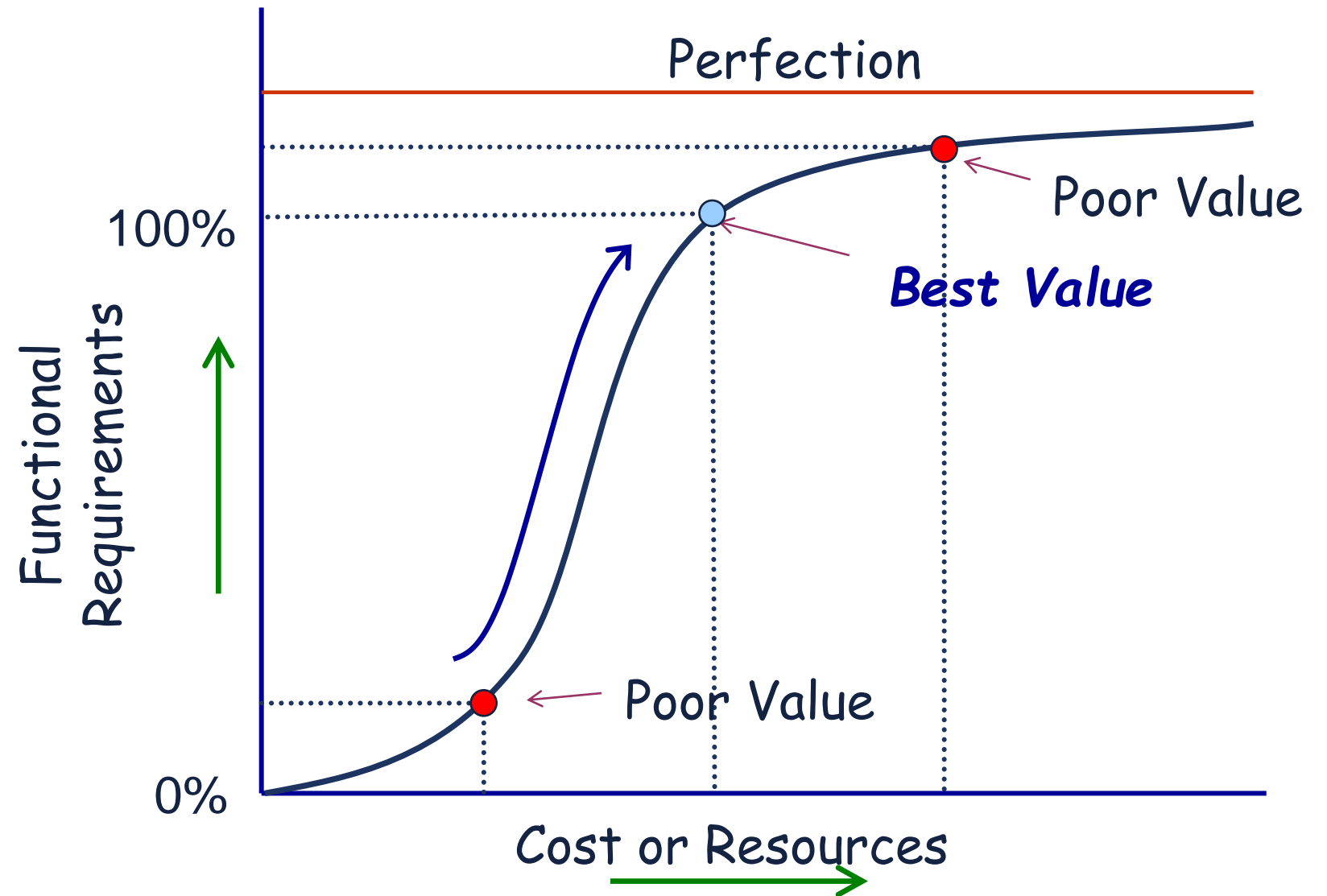
Where:

- Function(s) represent what the project must do
- Functions are not easily quantified
- Resources are the materials, labor, funding, time, etc. needed to accomplish the function
- Resources are most often quantified as costs

Goal of Value Planning

$$\text{Best Value} \simeq \frac{\text{Maximize Function}}{\text{Minimize Resources}}$$

The Value Curve



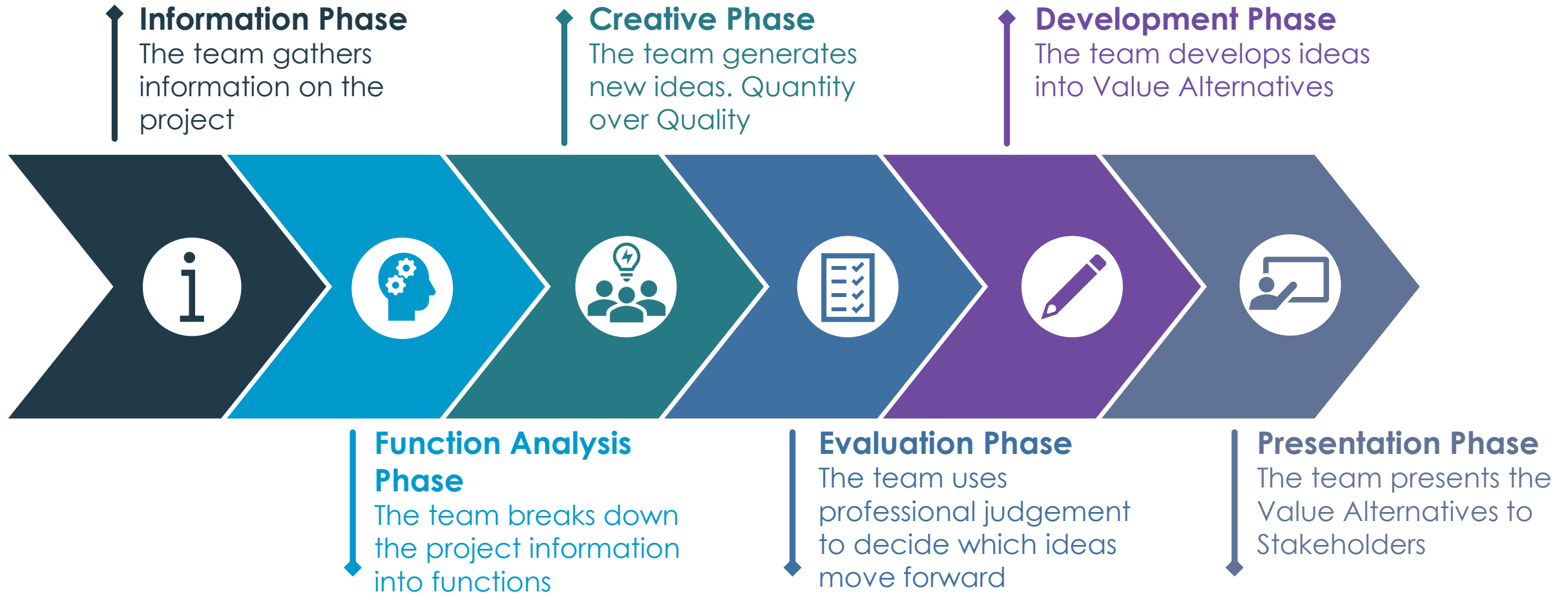
Proprietary Property of Strategic Value Solutions, Inc.



Return on Investment

- Increased Confidence
 - ✓ Estimated Construction Cost
 - ✓ Estimated Construction Schedule
 - ✓ Construction Phasing and Packaging
 - ✓ Project Performance
 - ✓ Risk Identification
 - ✓ Key Assumptions are Appropriate
 - ✓ Key Constraints are Appropriate
 - ✓ Externalities have been Identified and Addressed
- Typical 20%-40% Construction Cost Savings Opportunity

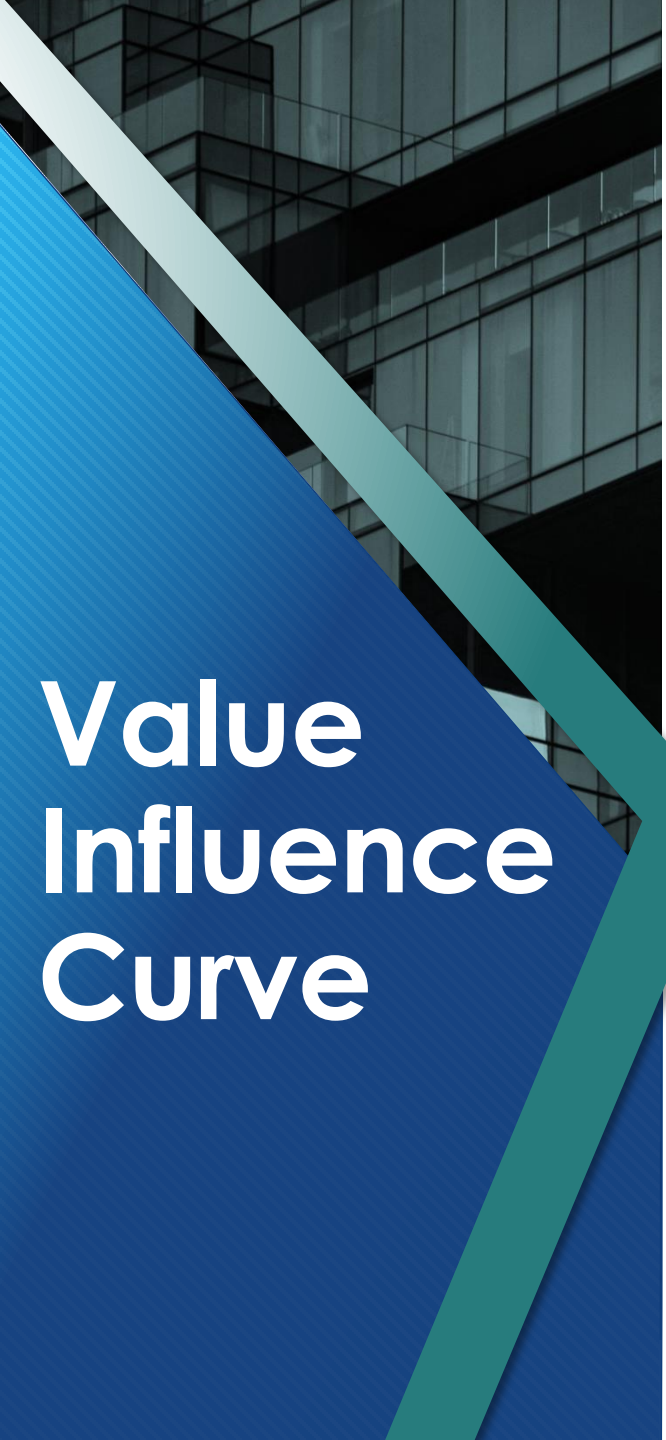
Value Methodology





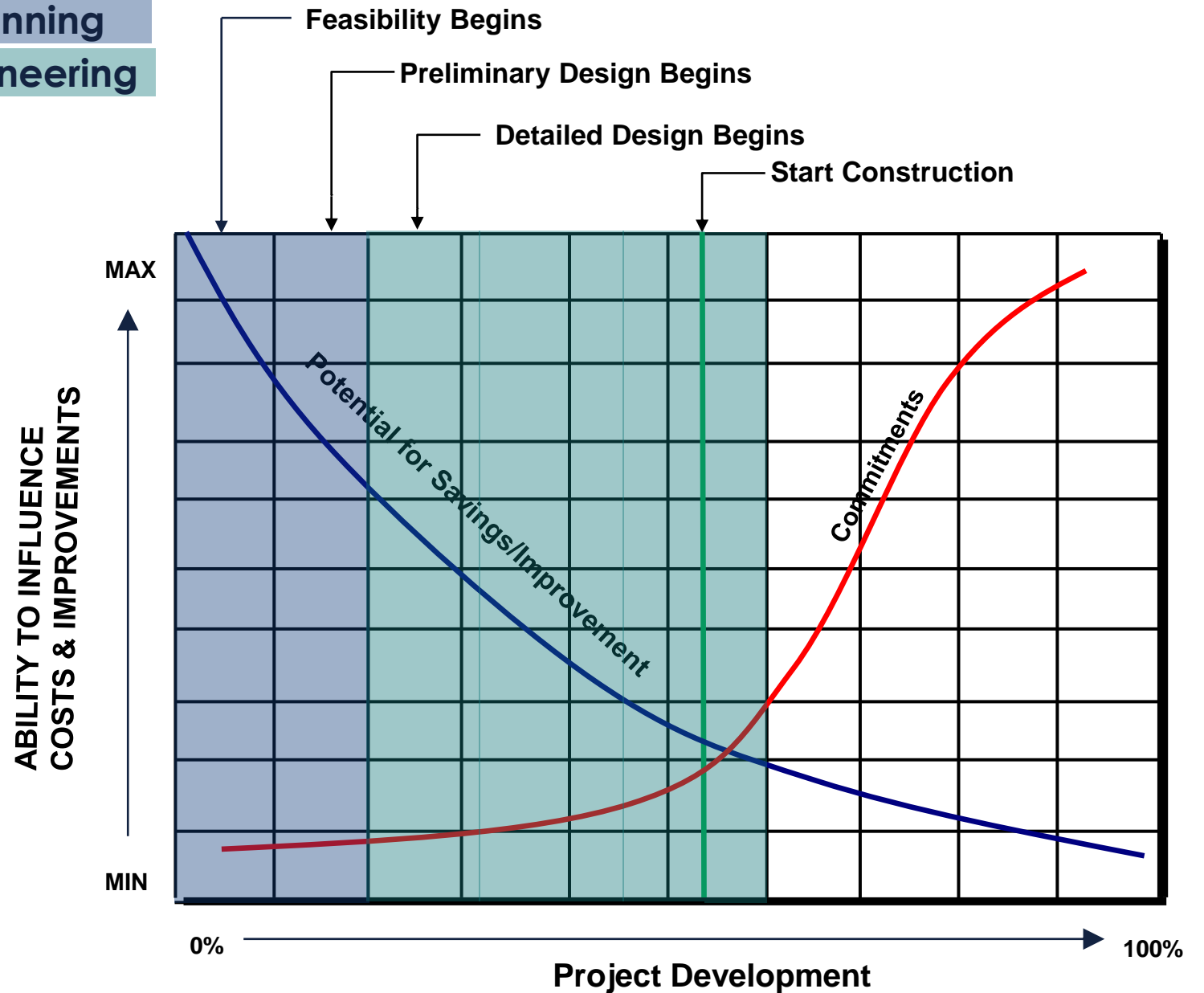
Value Planning

- Uses Value Methodology as a structured framework for alternatives identification and analysis
- Applied in the earliest stages of project conceptualization
- Used to analyze alternatives identified through a conventional planning process
- Or, used to enhance the identification of alternatives to satisfy the basic functions of the proposed project



Value Influence Curve

Value Planning
Value Engineering



Why did we develop this Tool?





Performance issues cause major cost and schedule deviations, particularly in bigger projects

What % of Mega projects go over budget?

How much do they go over budget on average (%)?

Of these same projects, how do you think they do on schedule?

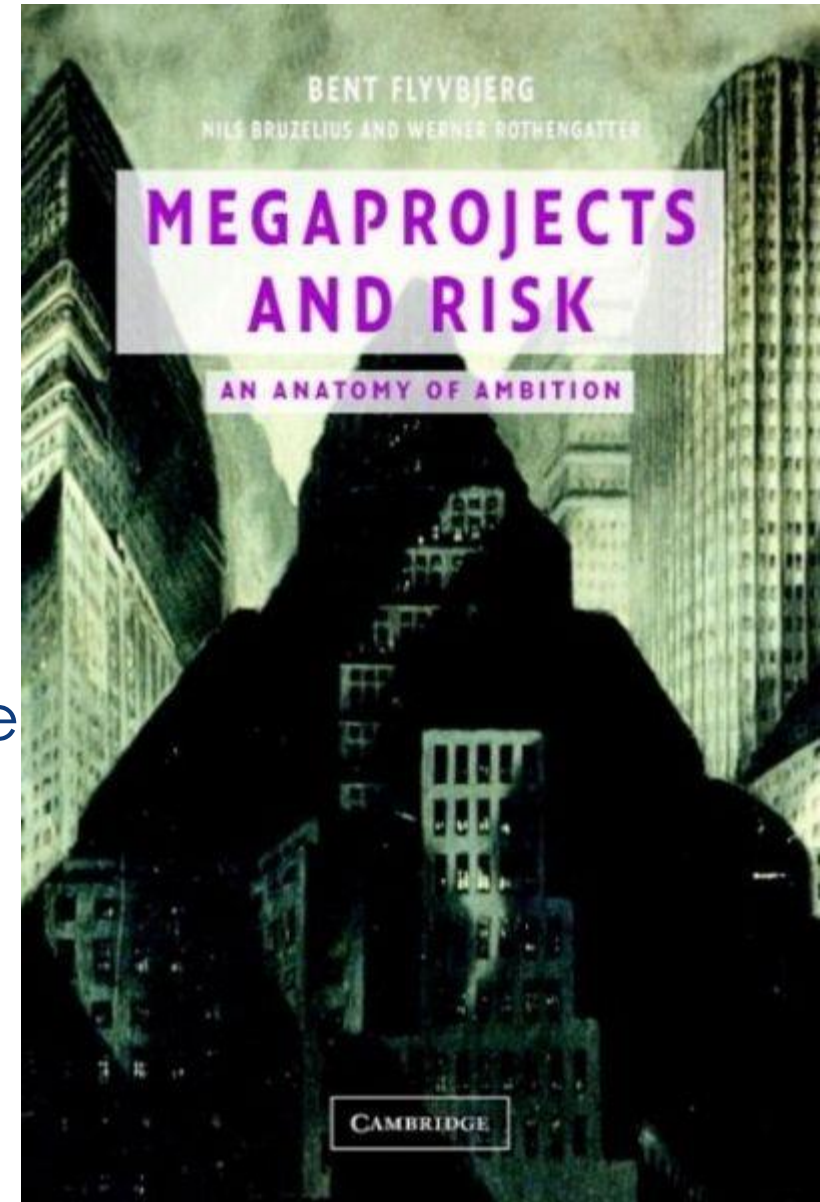


Source: McKinsey & Co, 2015



Why??

- Budgets and schedules are based on what Decision Makers think will be politically acceptable rather than what they think it will really cost
- Decision Makers make commitments and decisions without fully understanding the cost and schedule impacts
- Many Project Teams don't truly manage risk; optimism is more popular





Why did we develop this tool?

- **That's Why!!**
- From my 35+ years of professional experience working with major infrastructure projects I have come to conclude:
- In my opinion, the conventional models for project delivery, project management, planning, and design are broken
- Project owners need objective and unbiased information so that they can make better informed decisions
- The most impactful decisions are made at the beginning; pre-feasibility through initial design phases
- If we can help Owners make better decisions from the start, that will add significant **Value** to the project and the Owner

When do you use Value Planning?





Application

- Larger and complex projects
- High visibility projects
- Projects where it is important to demonstrate the consideration of multiple alternatives
- Projects where it is important to demonstrate that every effort is being taken to control costs, risks, schedules, and ensure project performance
- Situations where increased confidence in key decisions is critical

How does it Work?





Techniques

There are two primary techniques:

1. **Function Based Planning**

- Used when still formulating a Preferred Alternative
- Identifies alternative concepts for each basic function that must be accomplished
- Combines alternative concepts into different scenarios or options for the project solution

2. **Preferred Alternative Testing**

- Optimizes the Preferred Alternative
- Looks to optimize other identified alternatives for one of them to become the new Preferred Alternative

Ideas

- Brainstorming ideas by the Value Team on how to satisfy the functions

Value Alternatives

- Ideas selected by the Value Team that are developed with narrative descriptions, sketches, calculations, and cost analyses

Scenarios

- Combinations of Value Alternatives that collectively provide a complete solution for the project

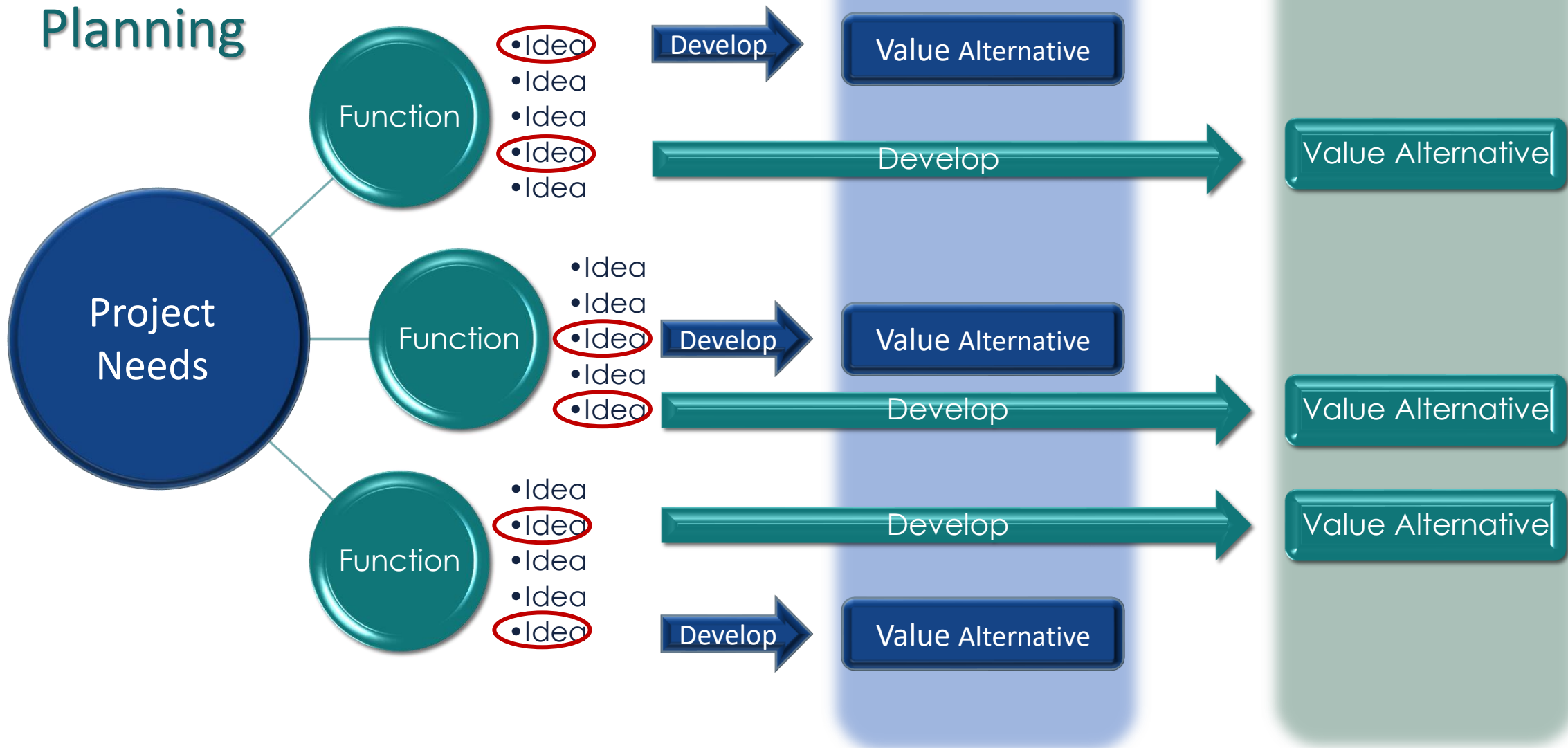
Recommended Alternative

- The Scenario (combination of Value Alternatives) selected by the Value Team to recommend to the Owner for acceptance as the Preferred Alternative to be advanced as the project solution

Preferred Alternative

- The project solution that is selected by the Owner and advanced into detailed feasibility and design

Function-Based Planning



Function-Based Planning

Recommended Scenario= \$\$\$\$\$,\$\$\$\$,\$\$\$\$
Scenario 2 = \$\$\$\$\$,\$\$\$\$,\$\$\$\$
Scenario 3 = \$\$\$\$\$,\$\$\$\$,\$\$\$\$

Each Scenario Cost represents a Total Construction Cost

Each Scenario provides a complete solution for the Project

All required functions are satisfied

Recommended Scenario

Value Alternative

Value Alternative

Value Alternative

Value Alternative

Value Alternative

Scenario 2

Value Alternative

Value Alternative

Value Alternative

Scenario 3

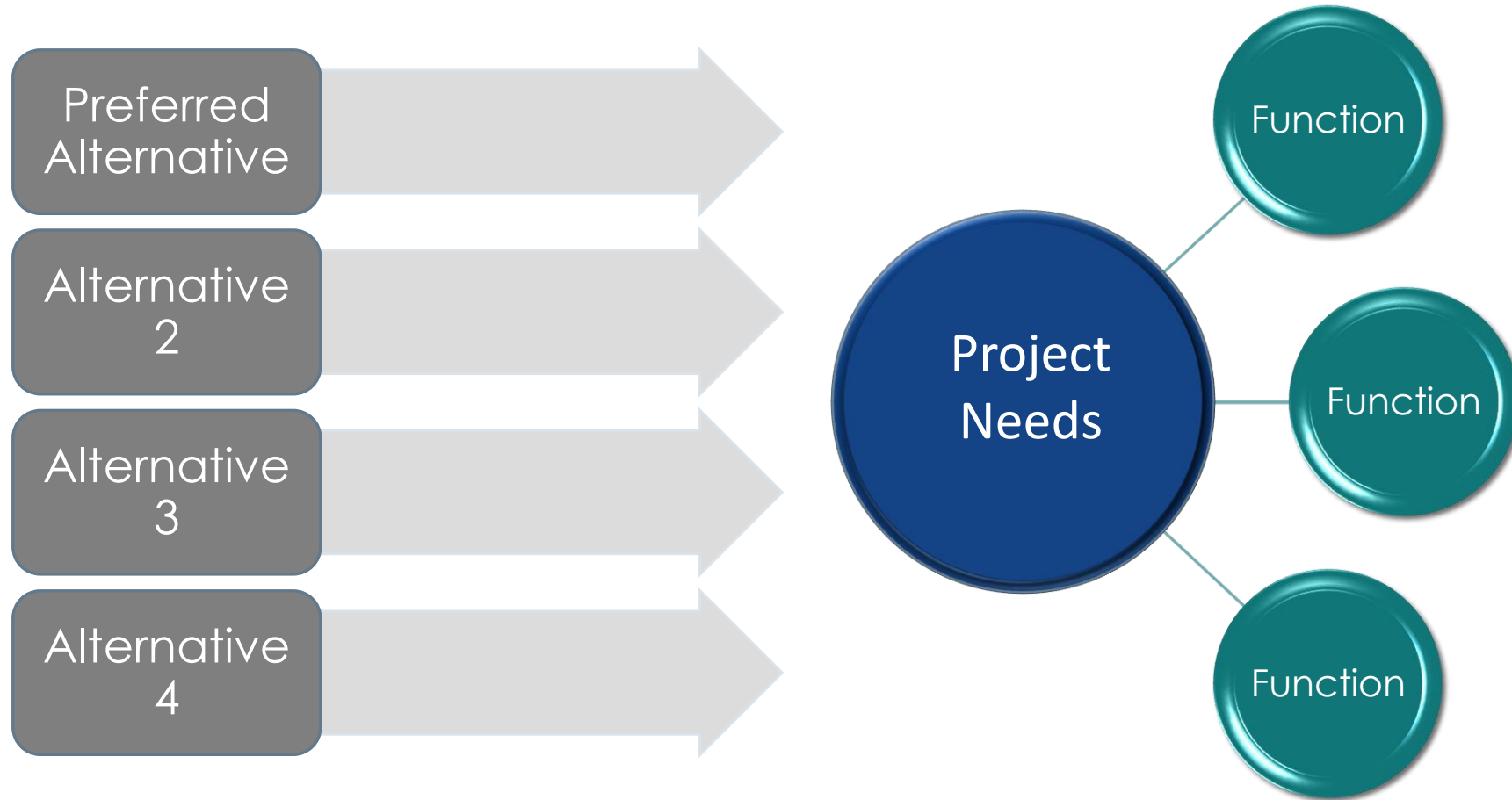
Value Alternative

Value Alternative

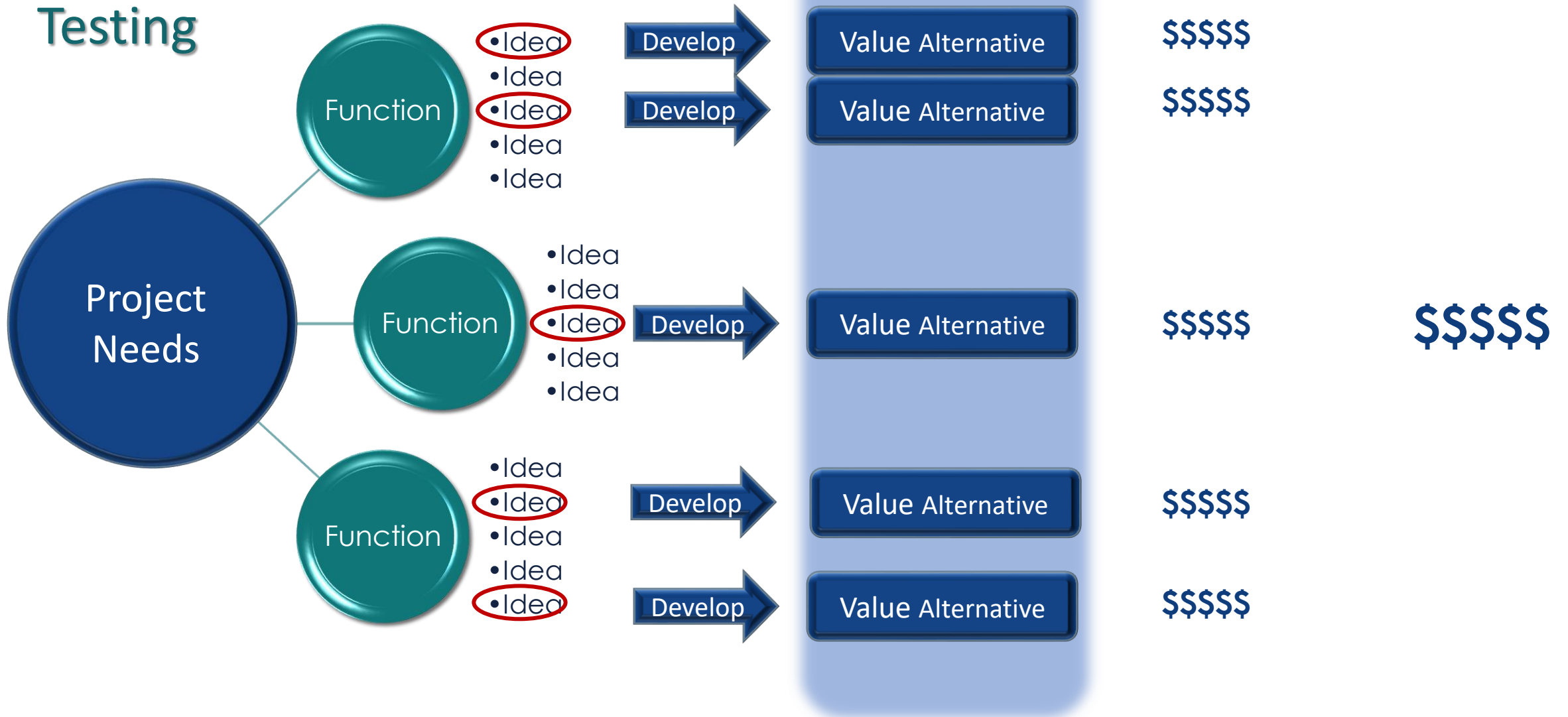
Value Alternative



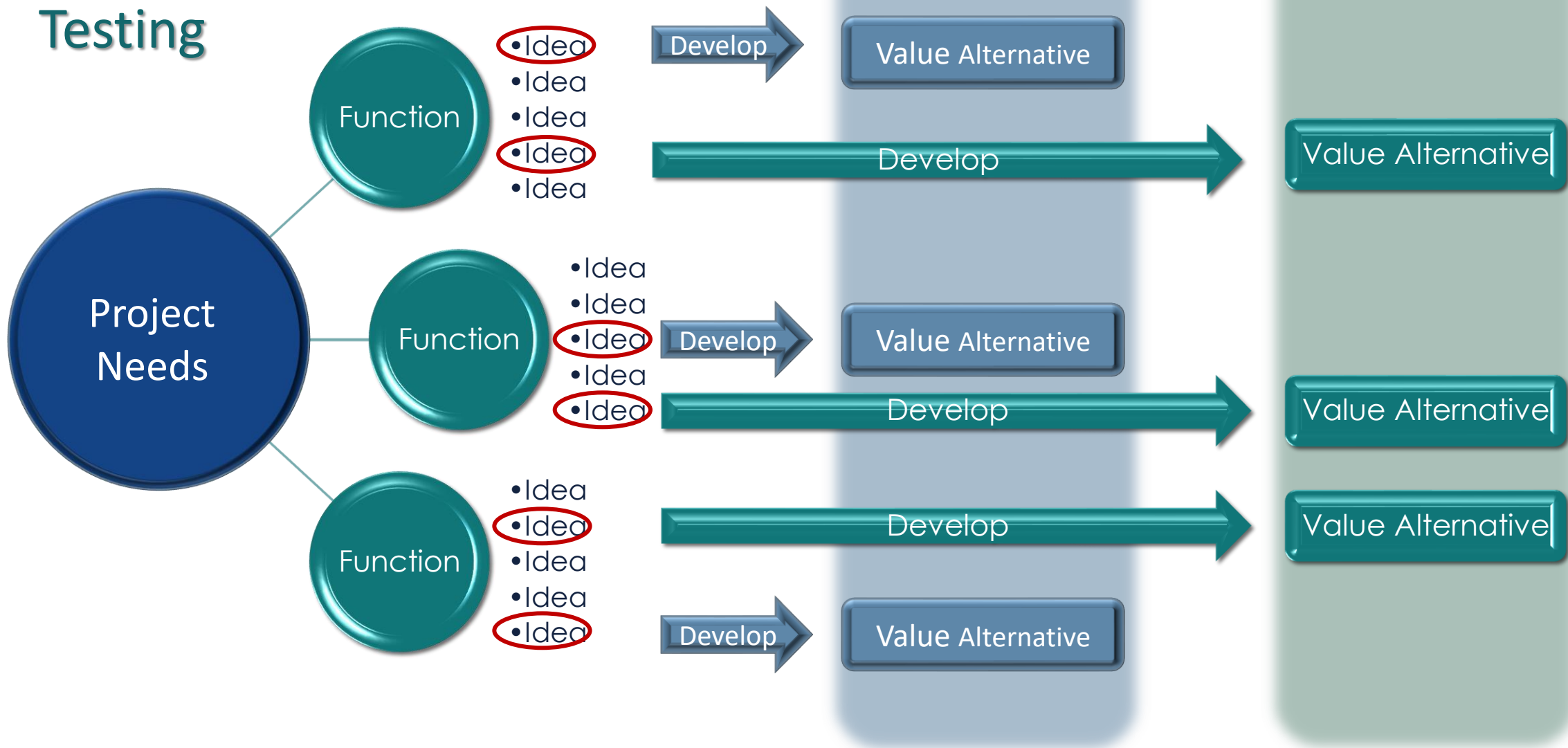
Preferred Alternative Testing



Preferred Alternative Testing



Preferred Alternative Testing



Preferred Alternative Testing

Preferred Alternative = \$\$\$\$\$\$, \$\$\$\$\$\$, \$\$\$\$\$\$
 Alternative 2 = \$\$\$\$\$\$, \$\$\$\$\$\$, \$\$\$\$\$\$
 Alternative X = \$\$\$\$\$\$, \$\$\$\$\$\$, \$\$\$\$\$\$

Savings Calculated as
 Comparative Estimates to
 the Original Estimate of the
 Preferred Alternative

Preferred Alternative



Optimized Alternative 2



New Alternative X



Case Study


Eastside Coastal Resiliency Project



Lower Manhattan

Write a description for your map.

Legend

 New York

New York

Google Earth

1 mi




VALUE ENGINEERING • RISK MANAGEMENT • CONSTRUCTABILITY • ITR • ORGANIZATIONAL OPTIMIZATION

Eastside Park

Write a description for your map.

Legend

 New York

Google Earth

3000 ft



VALUE ENGINEERING • RISK MANAGEMENT • CONSTRUCTABILITY • ITR • ORGANIZATIONAL OPTIMIZATION

Eastside Park 2

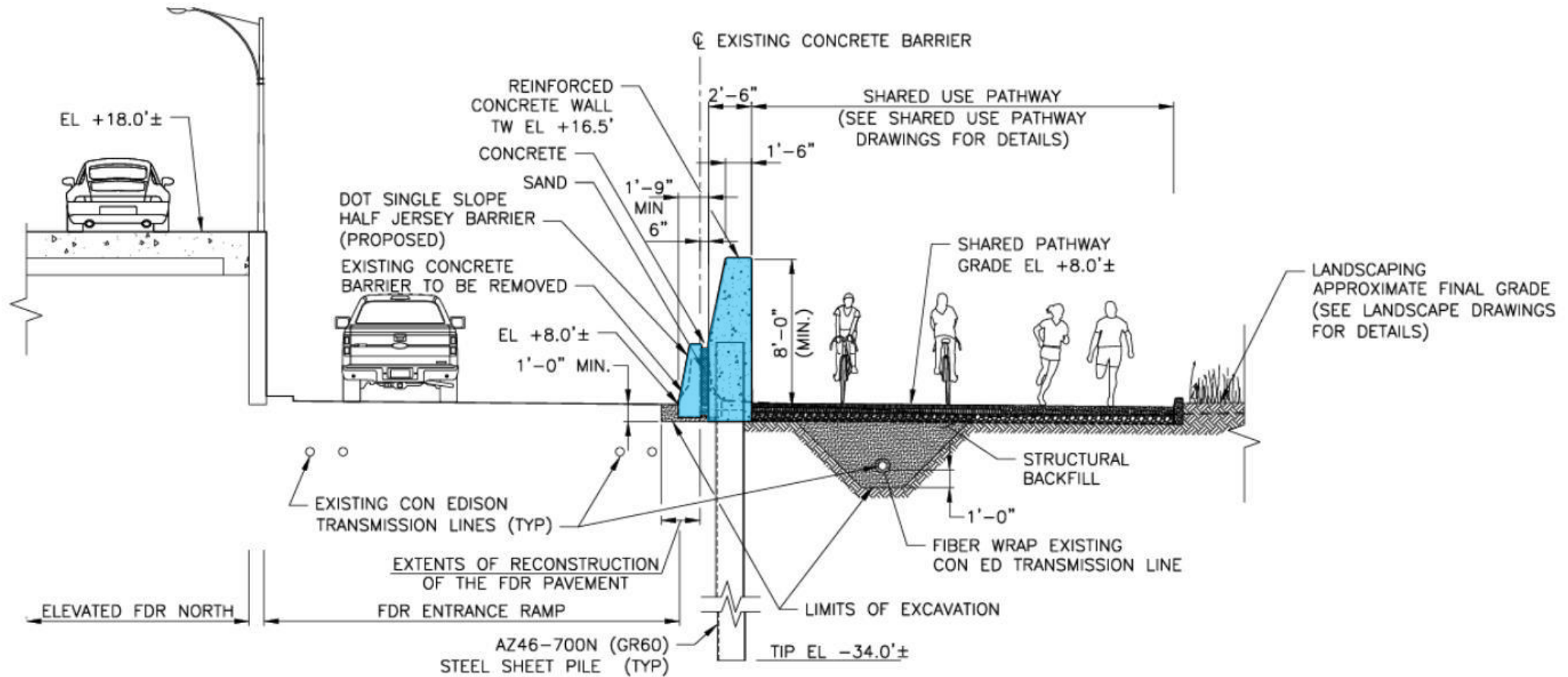
Write a description for your map.

Legend

 New York

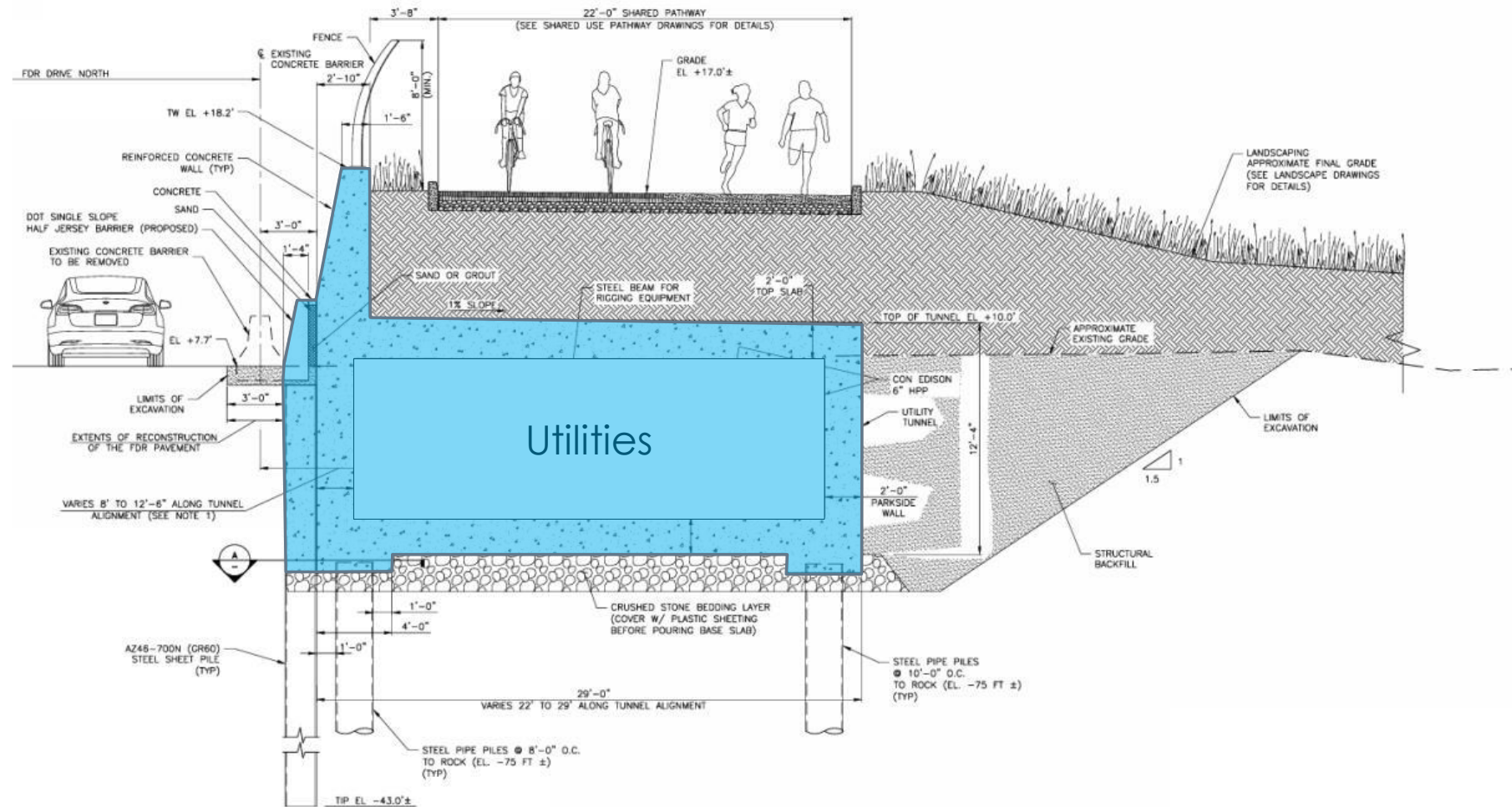


TYPICAL SECTION – INDEPENDENT FLOODWALL: I WALL



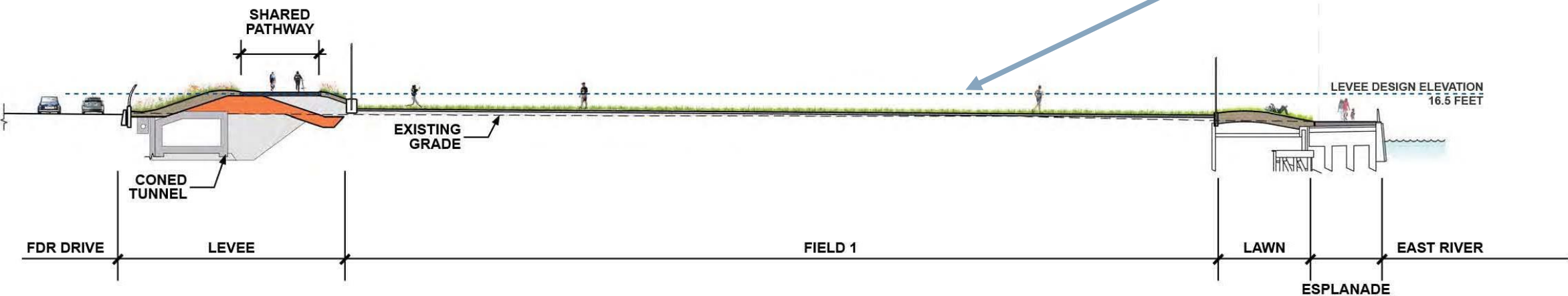
A4 SECTION AT STA. 14+65
F300 SCALE: 3/16" = 1'-0"

TYPICAL SECTION – INTEGRATED FLOODWALL & TUNNEL

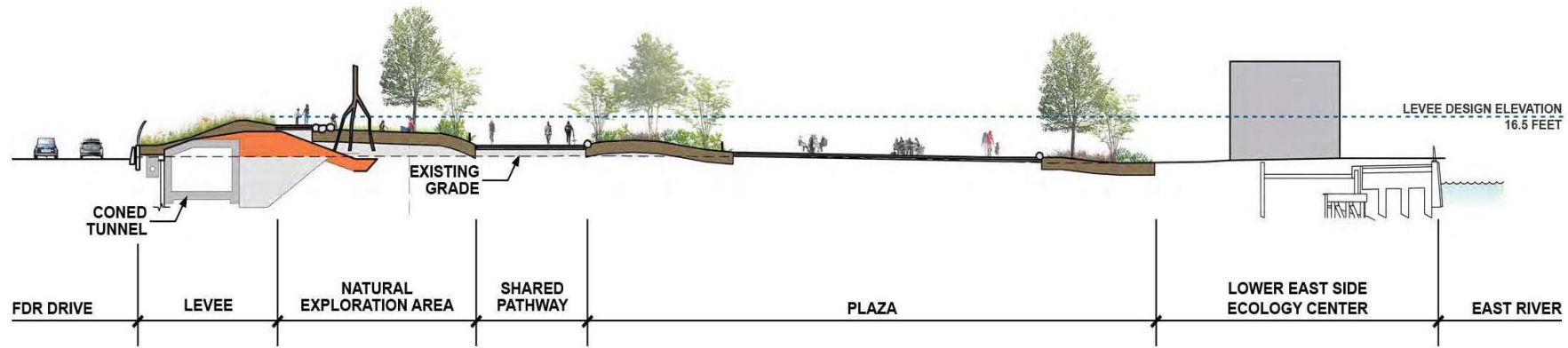


12 SECTION AT STA. 76+72
SCALE 3/8"=1'-0"

Level of Protection



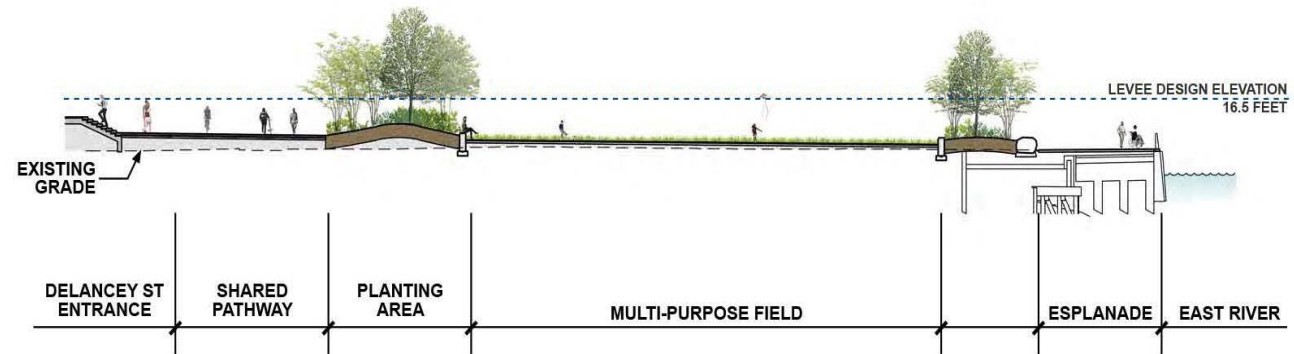
SECTION A1-A1
STA. 33+76
Scale: 1"= 30'



SECTION C1-C1

STA. 36+50

Scale: 1"= 30'



SECTION D1-D1

STA. 41+32

Scale: 1"= 30'

█ FLOOD PROTECTION

IN TEAM PROPOSAL

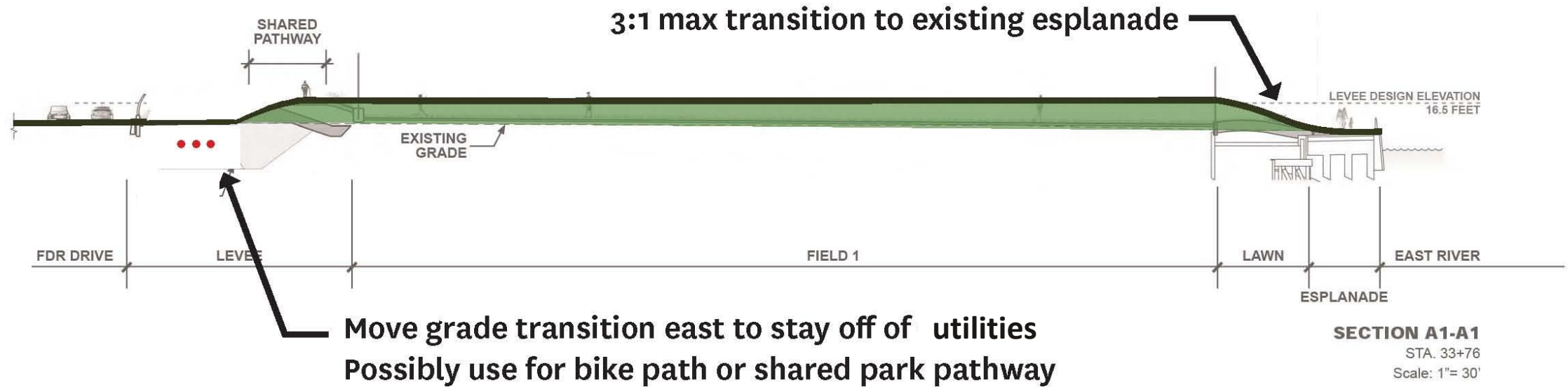
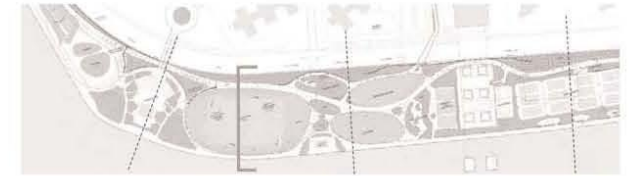
Reaches D-E
Sections - Preliminary

41

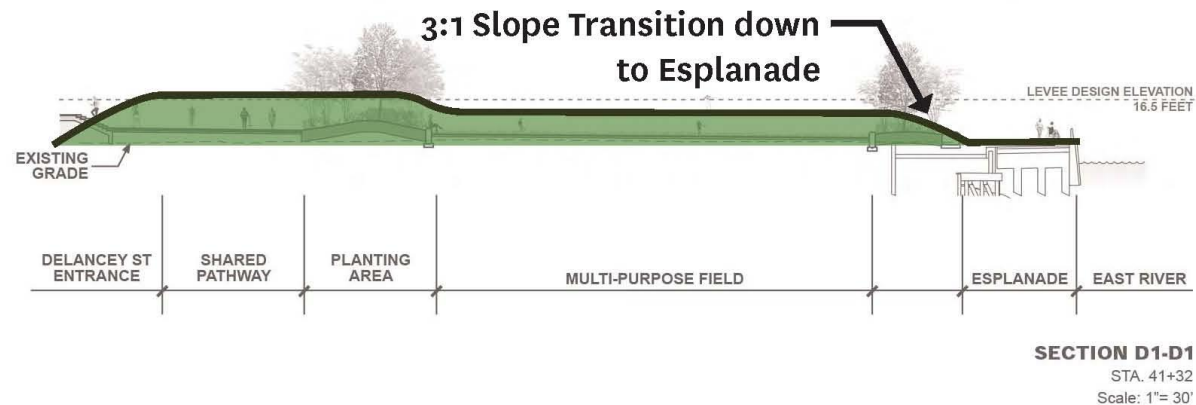
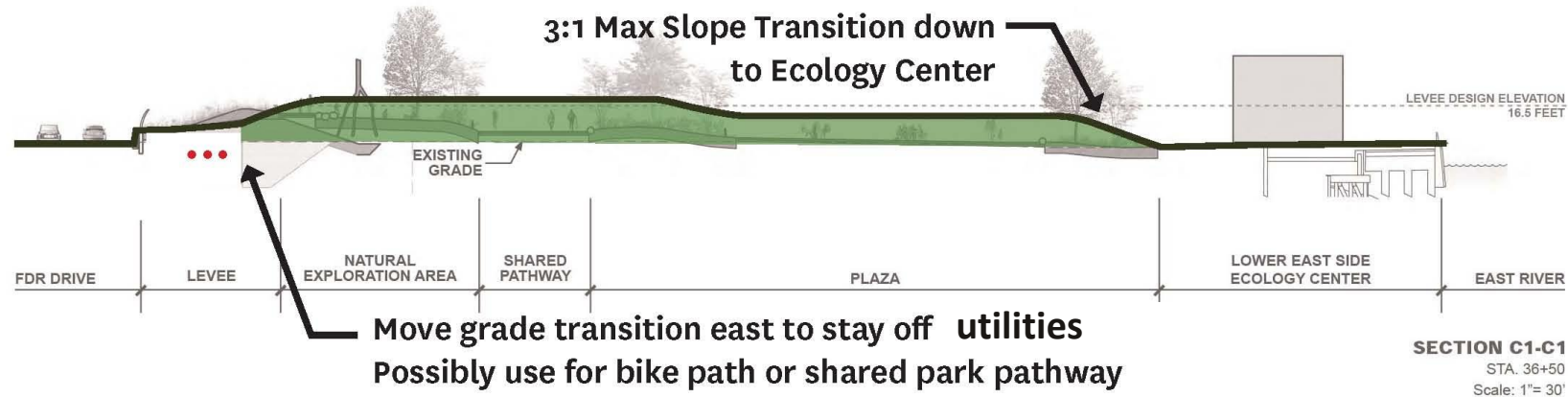
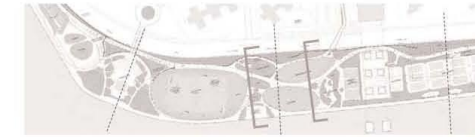




Raise the grade to 16.5 and maintain this elevation where fields are located to provide needed width.



Raise Park to elevation 16.5 to provide flood protection
(Elevation can be less in some places once levee requirements are met)

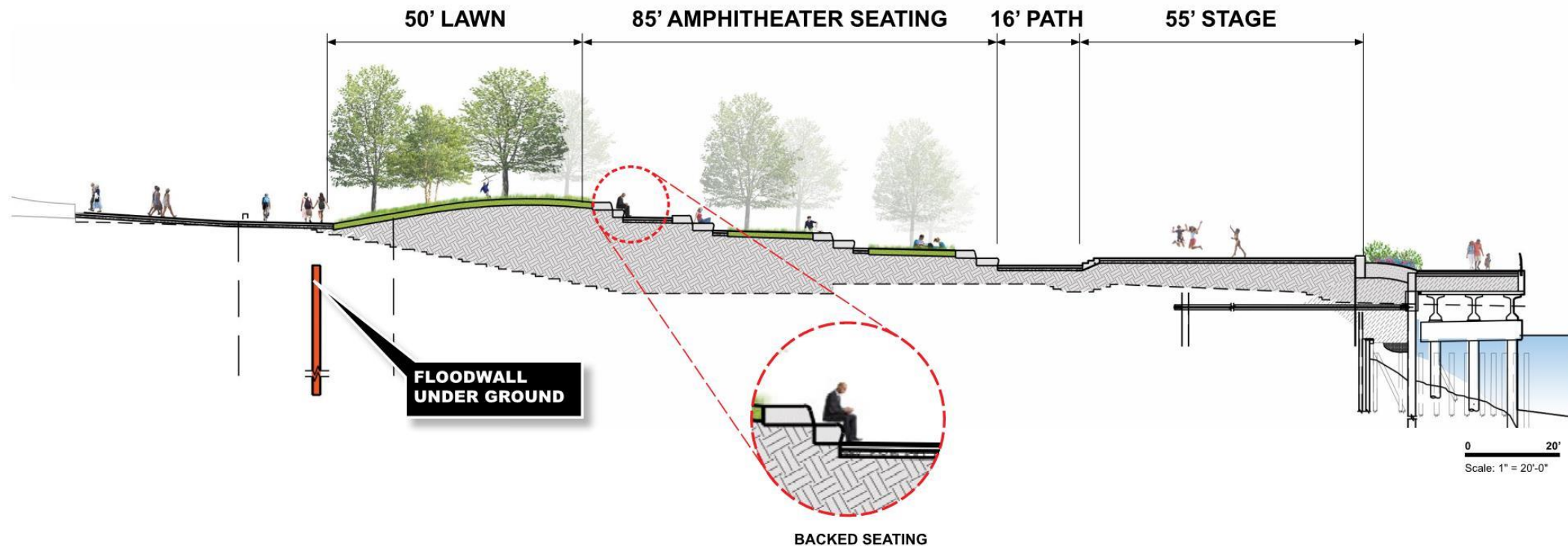


FLOOD PROTECTION

VE TEAM STUDY

Reaches D-E
Sections - Preliminary

41



AKRF-KSE, JV	BJARKE INGELS GROUP	MATHEWS NIELSEN LANDSCAPE ARCHITECTS, P.C.	ONE ARCHITECTURE AND URBANISM	NEW YORK CITY DEPT. OF DESIGN AND CONSTRUCTION	NEW YORK CITY DEPT. OF PARKS AND RECREATION	NEW YORK CITY DEPT. OF TRANSPORTATION	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION	NEW YORK CITY MAYOR'S OFFICE OF RESILIENCY
--------------	---------------------------	--	-------------------------------------	--	---	---	---	---

PDC FINAL REVIEW
EAST SIDE COASTAL
RESILIENCY PROJECT
 DECEMBER 16, 2019

Amphitheater
Section 32





AKRF-KSE, JV	BJARKE INGELS GROUP	MATHEWS NIELSEN LANDSCAPE ARCHITECTS, P.C.	ONE ARCHITECTURE AND URBANISM	NEW YORK CITY DEPT. OF DESIGN AND CONSTRUCTION	NEW YORK CITY DEPT. OF PARKS AND RECREATION	NEW YORK CITY DEPT. OF TRANSPORTATION	NEW YORK CITY DEPT. OF ENVIRONMENTAL PROTECTION	NEW YORK CITY MAYOR'S OFFICE OF RESILIENCY
--------------	---------------------------	--	-------------------------------------	--	---	---	---	---

PDC FINAL REVIEW
EAST SIDE COASTAL
RESILIENCY PROJECT
 DECEMBER 16, 2019

Reaches E-G
Final Review 48



VALUE ENGINEERING • RISK MANAGEMENT • CONSTRUCTABILITY • ITR • ORGANIZATIONAL OPTIMIZATION





The East Side Coastal Resiliency Project



About

Project Updates

Community Engagement

Contact

Search



“The project design integrates flood protection into the community fabric, improving waterfront open spaces and access, rather than walling off the neighborhood.”



LEARN MORE

"It is affirmational to be honored for our work to protect New Yorkers from the impacts of climate change," said Mayor Eric Adams. "In the face of the biggest environmental threat we all face – we will continue to plan ahead, innovate, and get stuff done for New Yorkers."

ESCR Receives Envision Gold Award ▸

Conclusions

- Original estimate = \$1 Billion
- Original Plan was anticipated to be highly disruptive to traffic (130,000 vehicles per day)
- With sea level rise (5 feet) the park was predicted to be flooded every few years – brackish water would kill the vegetation
- Value Planning Recommend Alternative saved \$300 million
- Provided 100-year protection to the park
- Removed perceived barrier between the community and the park
- Value Planning Alternative was selected by Mayor de Blasio

Case Study

Blue River Grade Control Project



Blue River Grade Control Structure



- 100-year flood protection
- 1st Phase in 1983
- Objective: Increase Flow Capacity

Missouri River

"Improved"

Brush Creek



Imagery Date: 6/5/2011

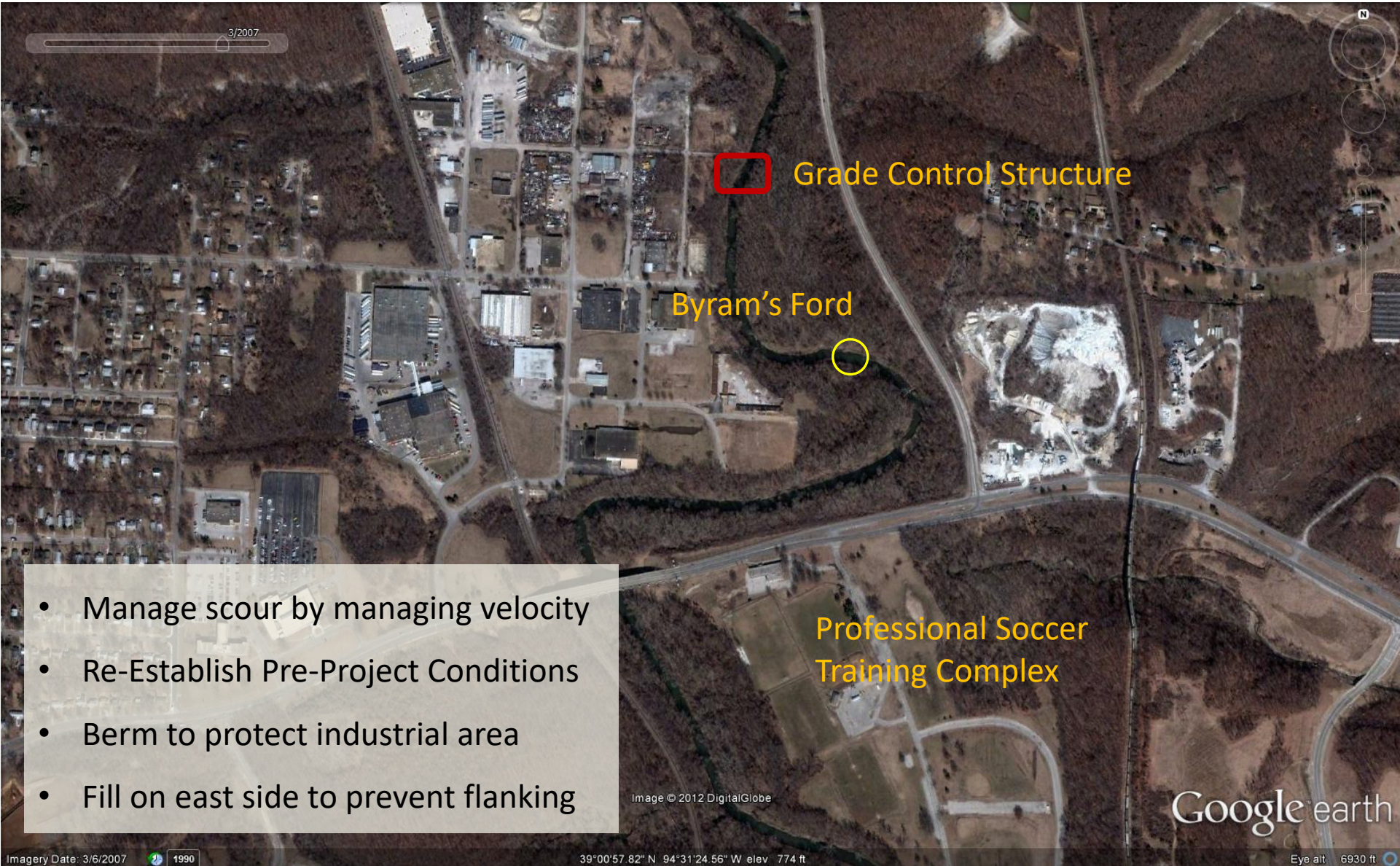
39°04'19.51" N 94°29'06.99" W elev. 821 ft





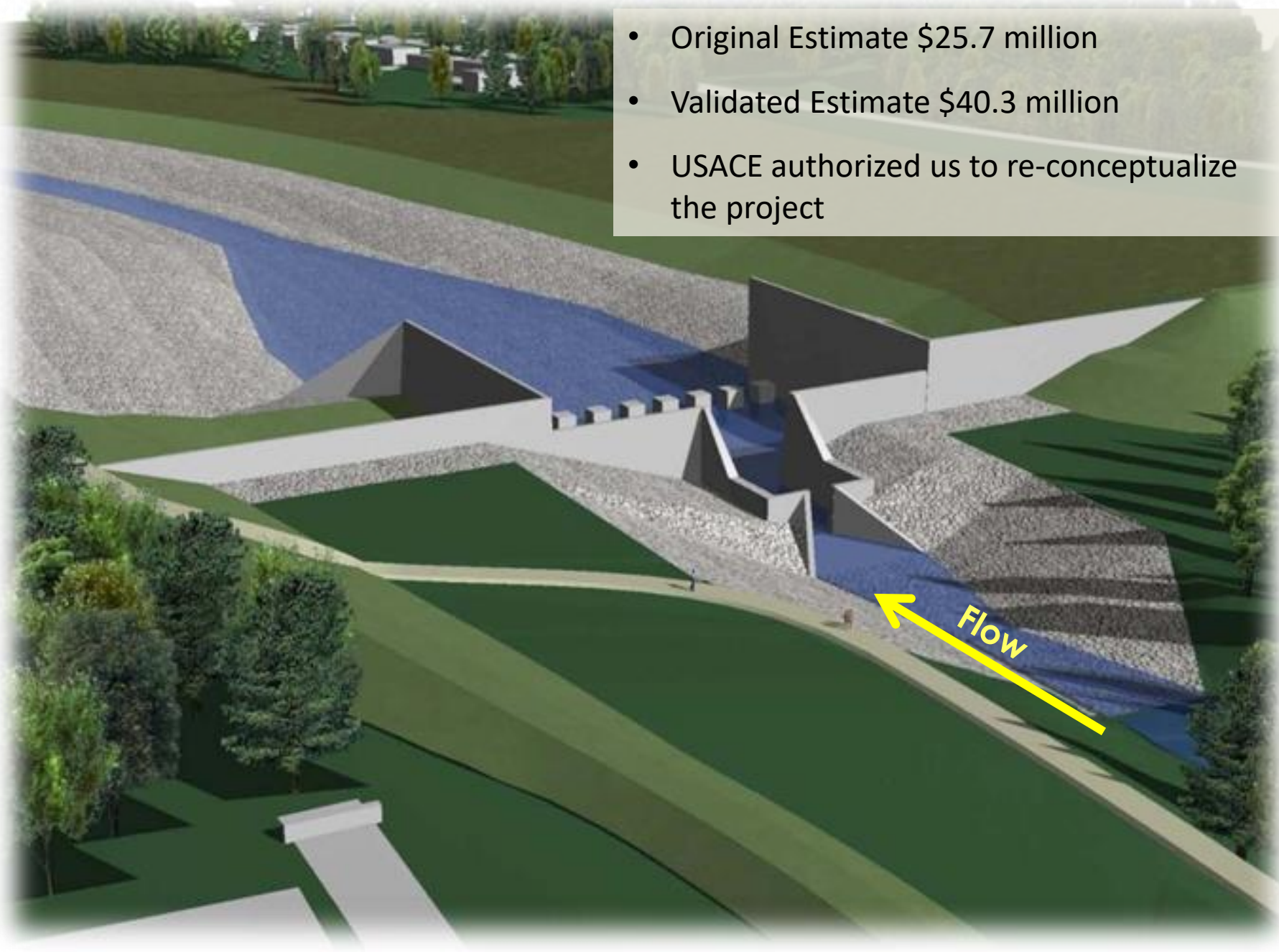
1. Increased flow levels
2. Increased velocities
3. Increased headcut
4. Increased incision
5. Increased bank failures

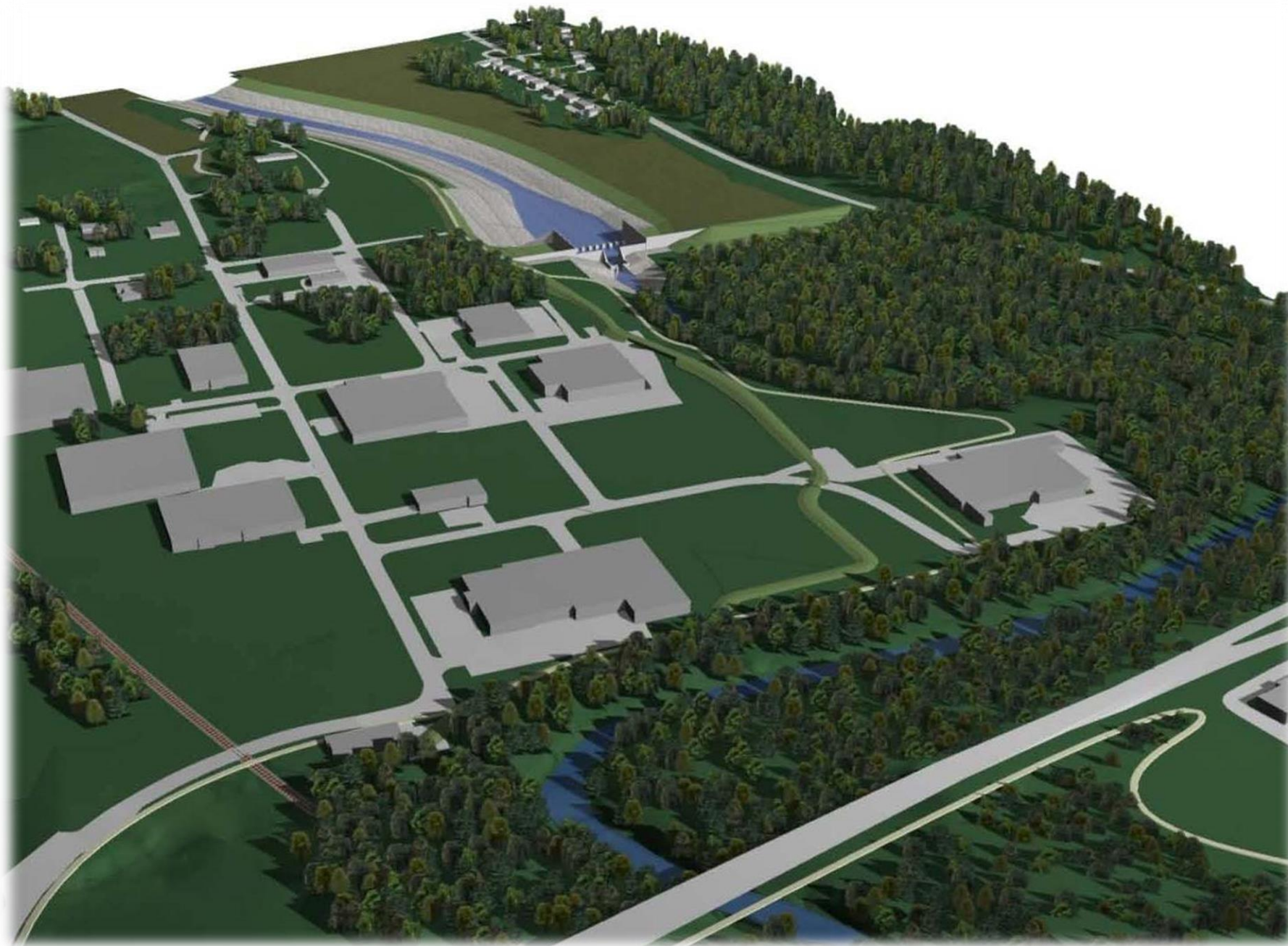


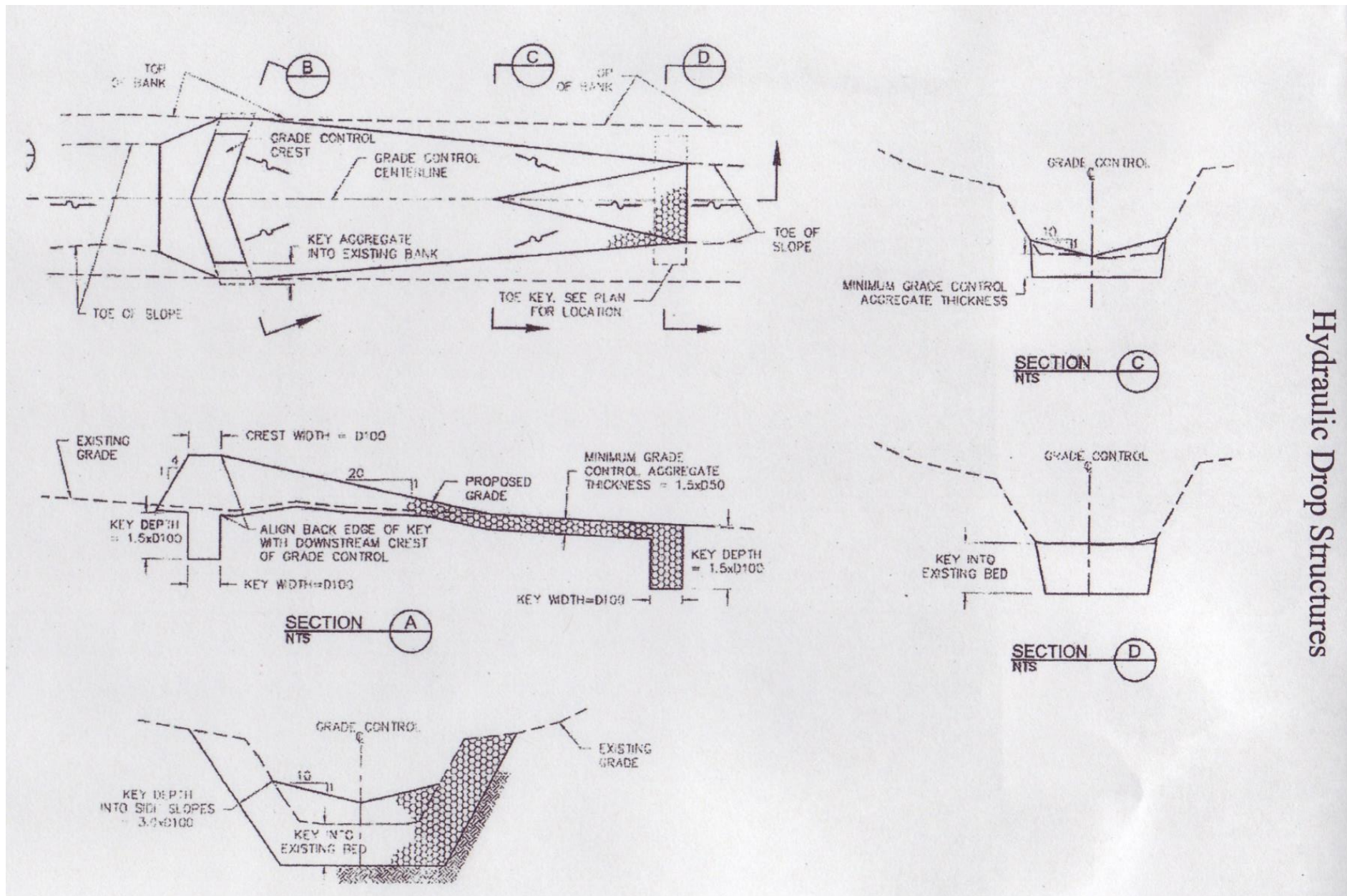


- Manage scour by managing velocity
- Re-Establish Pre-Project Conditions
- Berm to protect industrial area
- Fill on east side to prevent flanking

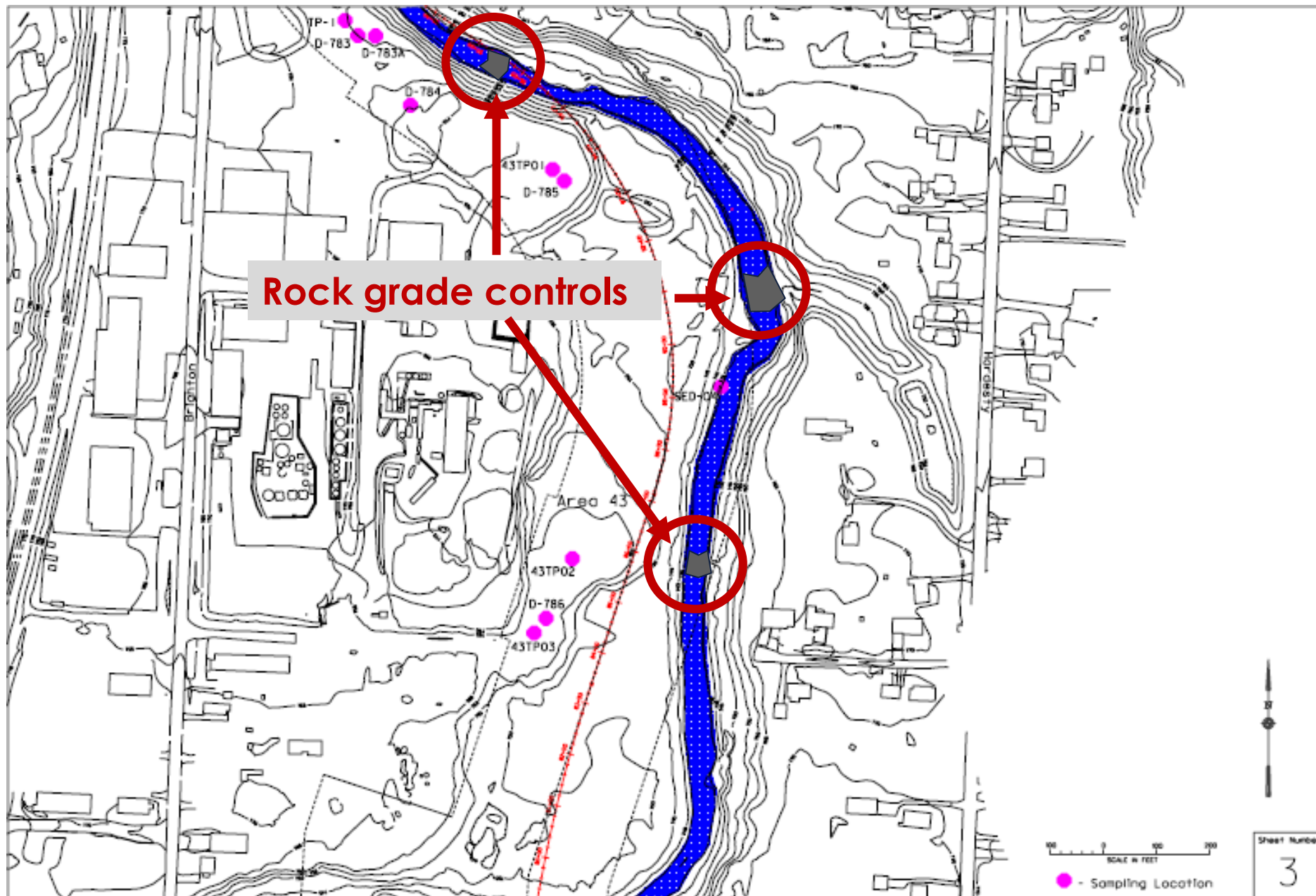
- Original Estimate \$25.7 million
- Validated Estimate \$40.3 million
- USACE authorized us to re-conceptualize the project

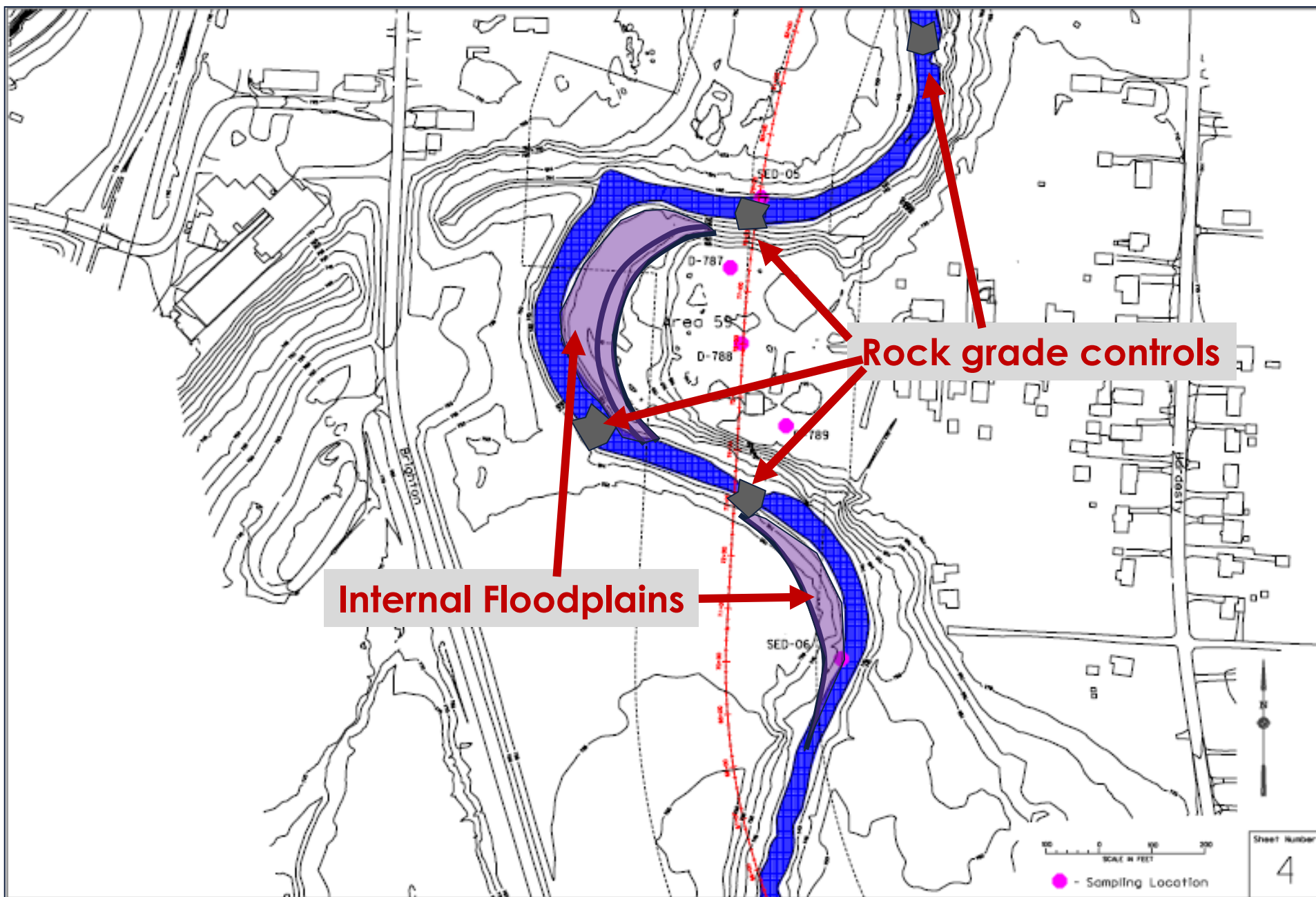




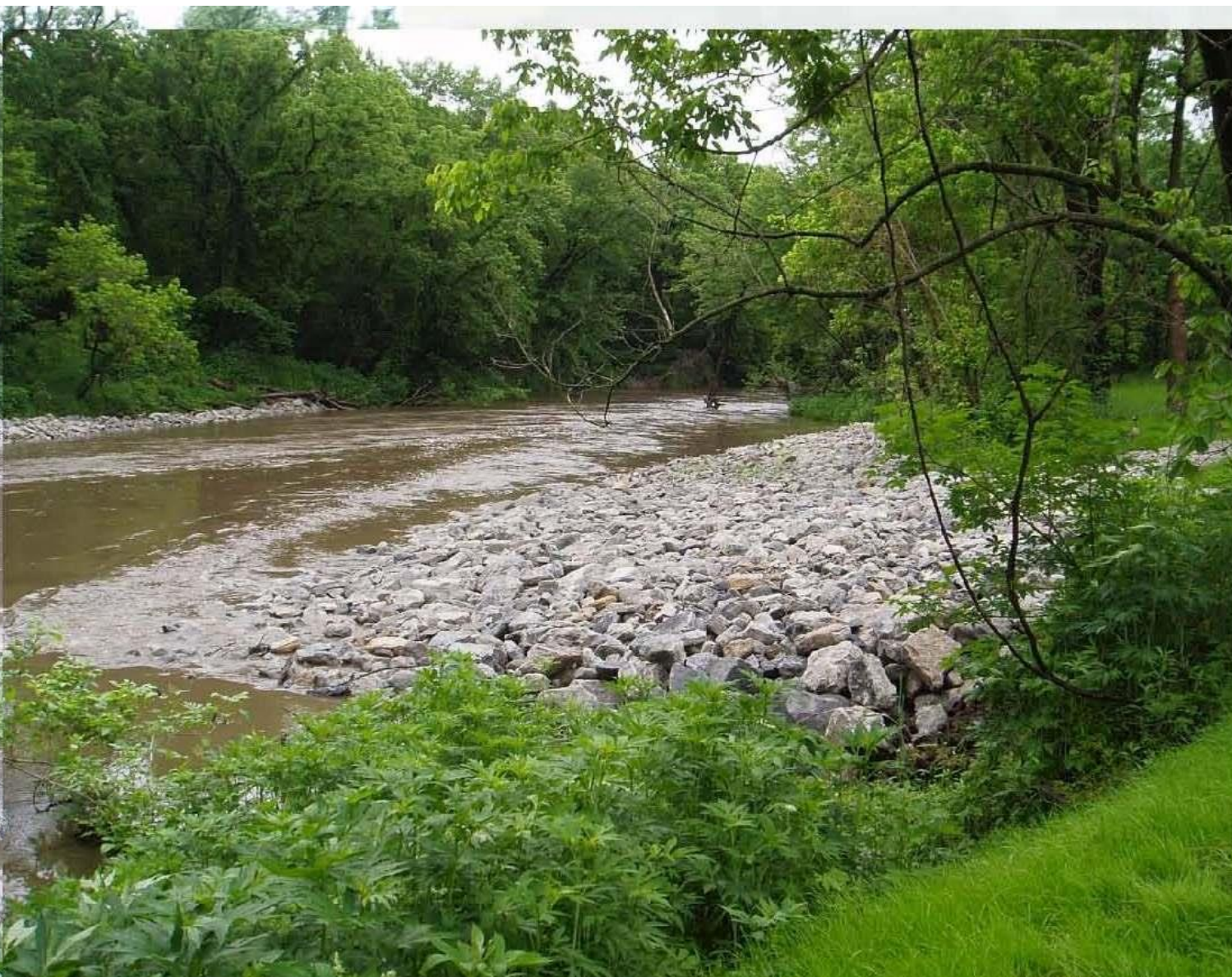


Hydraulic Drop Structures











Conclusion

- More compatible with the City's goals to develop a park
- More environmentally appropriate solution
 - Won an environmental award
 - Won an ASCE design award
- Improved sustainability for fish habitat and recreation
- Reduced City maintenance
- Original construction cost of \$40.3 million
- Final constructed cost = \$5,528,550
- Savings of 86%

Closing Remarks



Closing Remarks

- Value Planning does not replace the traditional planning processes
- It augments or enhances the traditional planning processes
- It can accelerate the planning process
- Increases divergent thinking so many more alternative ideas/concepts are initially assessed at a high level than in a typical planning process
- It typically improves overall buy-in from all stakeholders
- Increases confidence in the selection of a preferred alternative to focus planning and design

John L. Robinson, PE, CVS-Life, FSAVE

Strategic Value Solutions, Inc.
1650 NE Grand Avenue, Suite 100
Lee's Summit, Missouri 64086

John.Robinson@SVS-Inc.com
+1 816-877-8882



www.svs-inc.com



VALUE ENGINEERING • RISK MANAGEMENT • CONSTRUCTABILITY • ITR • ORGANIZATIONAL OPTIMIZATION