Diamond Peak
Incline Creek Culvert Rehabilitation
Project Update

December 13, 2017

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INCLINE VILLAGE
GENERAL IMPROVEMENT DISTRICT
ONE DISTRICT ~ ONE TEAM

District Strategic Plan

Long Range Principle #5 – Assets & Infrastructure

The District will practice perpetual asset renewal, replacement, and improvement to provide safe and superior long term utility services and recreation activities.

- Maintain, renew, expand, and enhance District infrastructure to meet the capacity needs and desires of the community for future generations.
- Maintain, procure, and construct District assets to ensure safe and accessible operations for the public and the District's workforce.

Budgeted Initiatives for 2017-2018

- Complete final design and construction permitting of the Incline Creek Culvert Rehabilitation at Diamond Peak.

Diamond Peak Culverts

- ~1,800-lf of 72"+ and ~3,500-lf+ of 24" – 36" diameter corrugated metal pipe culverts carrying Incline Creek and tributary
- Runs beneath parking lots, base area, and Schoolyard, Lodgepole, and Spillway runs
- Constructed in early 1960's
- No construction as-builts or maintenance/ inspection data
- Identified to be in poor condition during 2010 construction of Skier Services Building

Past Board Project Discussions

- August 2011 – Engineering Investigation Contract Award, Hydraulic Analysis, and Video Inspection
- August 2012 – Preliminary Engineering Contract Award, Rehabilitation Alternatives Evaluation, and Preliminary Cost Estimating
- November 2013 – Additional Preliminary Design Engineering Contract Award, Hydraulic Mitigation Design, Base Map Development, and Preliminary Cost Estimate Update
- June 2016 – Design Contract Award, Laser Profiling of Pipe Interior, and Probable Cost of Construction Estimate
- February 2017 – Legacy Project Discussion
- Annual Capital Budget Project Tours

"Legacy" Project Board Direction

At the February 8, 2017 meeting, the Board of Trustees voted to direct Staff to apply the following approach to "Legacy" project planning:

- Continue implementation planning and budgeting for the following projects in the upcoming 5-year CIP (in descending order of funding priority based on infrastructure condition):
  - Diamond Peak Culvert
  - Ski Way Paving
  - Incline Beach House
- Slow Mountain Golf Course project implementation
  - Address capital maintenance at both Clubhouse and Maintenance Building as necessary
  - Implement Americans with Disabilities Act compliance and electric cart charging as CIP funding allows (Option 6)
  - Postpone building replacements
- Continue evaluating options for Administration Building
  - Address capital maintenance as necessary

Diamond Peak Major Culverts

Multi-year Culvert Rehab Plan

2017 Branch Culvert Emergency Repair

Emergency Repair Work Completed

- Repair quantities
  - 2,065 linear feet of 24-inch and 30-inch culvert (1,918-lf scoped)
  - 14 drainage inlets (8 scoped)
  - 10 groundwater cut-off walls (8 scoped)
  - 3 groundwater and surface drainage interceptor curtains (none scoped)
- Board Awarded Construction Contract and Contingency
  - $328,328 – unit rate contract
  - $65,600 – 20% contingency
  - $393,928 – total
- Final Construction Cost
  - $328,328 – base contract
  - $31,452 – additional unit rate work
  - $84,145 – contract change orders
  - $443,925 – total actual cost

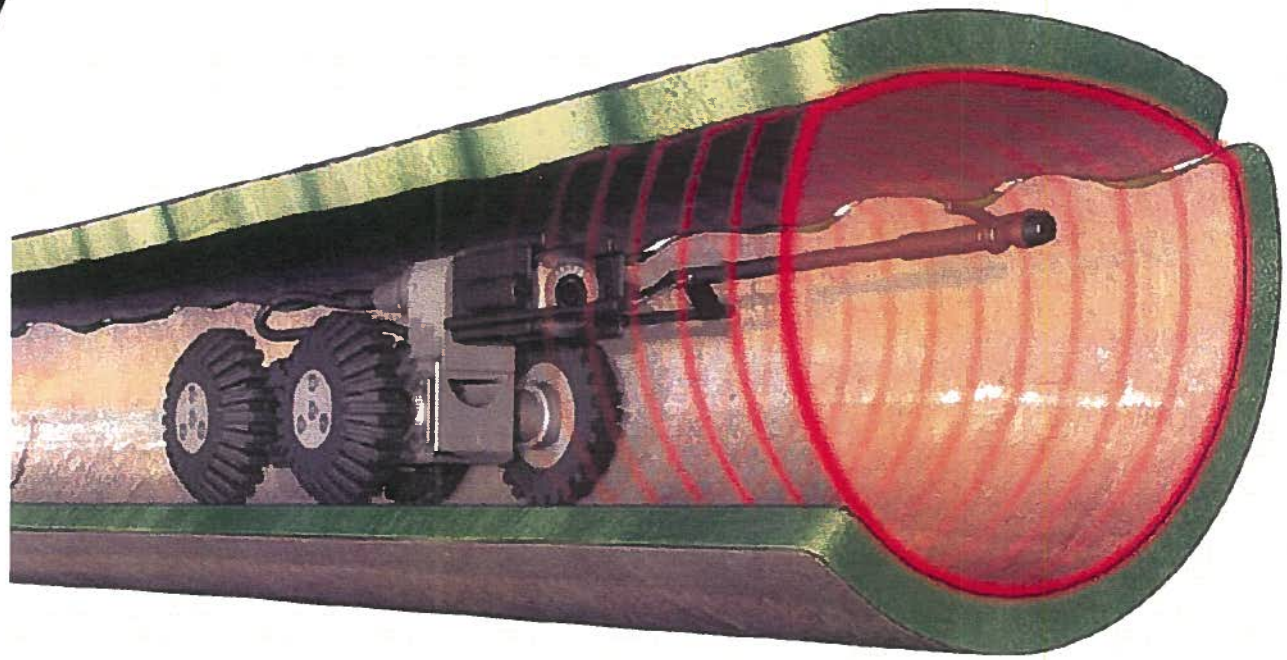
(Utilized $49,997 of GM's authority granted under Board Practice 13.2.0.3.8.7.2)

- FEMA reimbursement eligible
  - 75% reimbursement – $332,943.75
  - District Share – $110,981.25

Culvert Project Planned for 2018

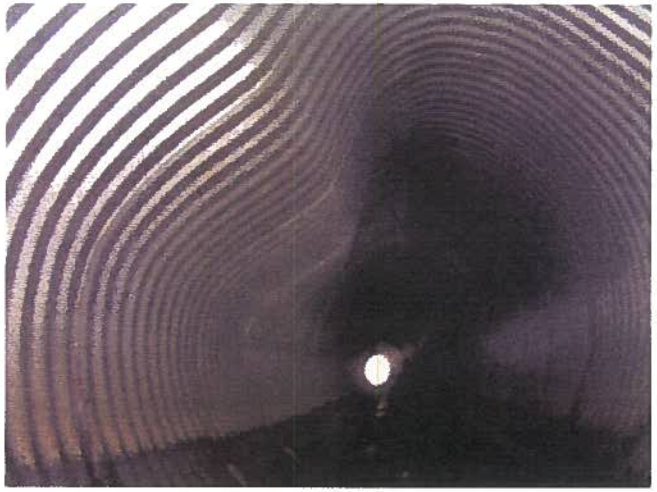
Condition Assessment

- Video Survey in 2011
- Comprehensive laser profiling and video reassessment of culverts completed in Fall 2016
- Data Assessment and Analytics Winter-Summer 2017

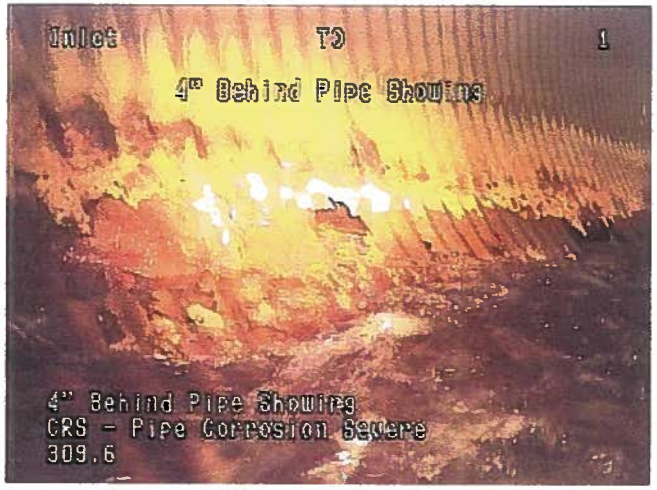


Video Inspection

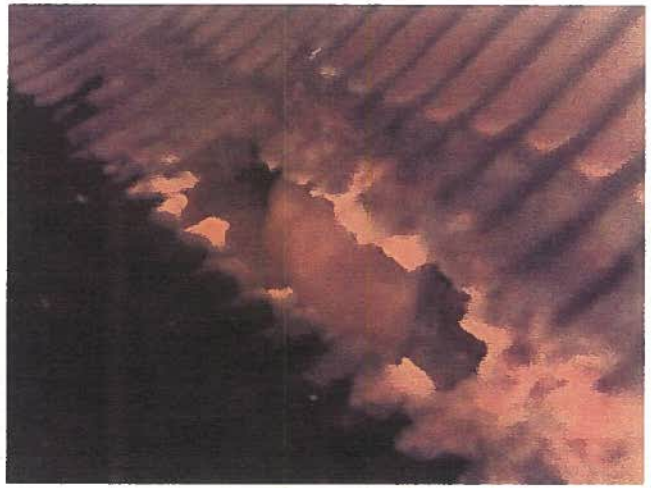
October 2011 STA 1+33 (US->DS)



October 2016 STA 1+43 (DS->US)



October 2011 STA 3+10 (US->DS)

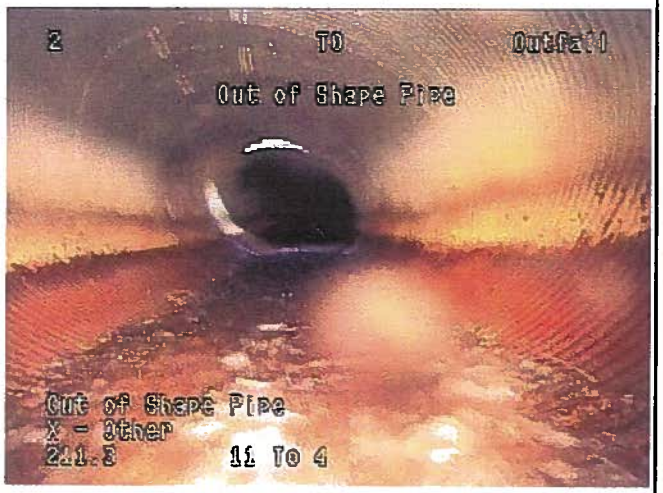


October 2016 STA 3+15 (DS->US)

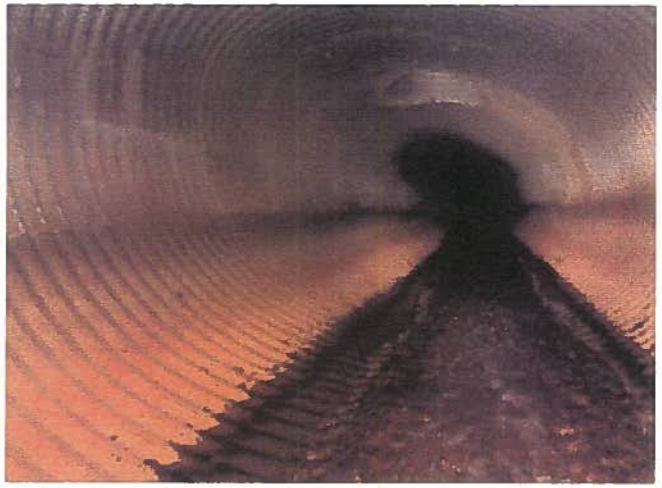
Video Inspection

October 2011 STA 6+08 (US->DS)

October 2016 STA 6+08 (DS->US)

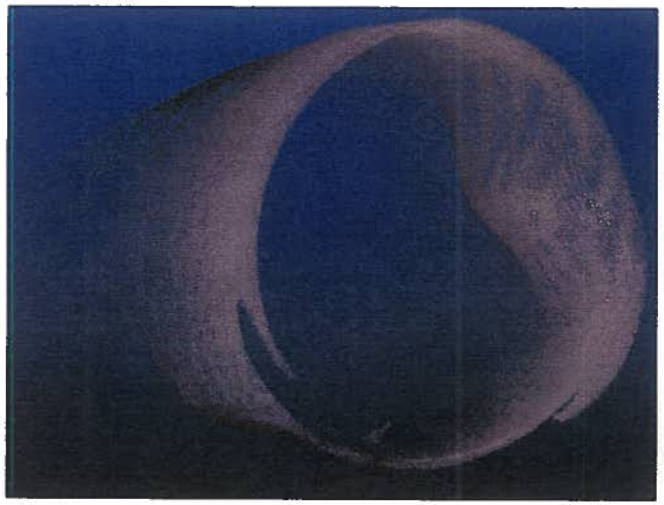


October 2011 ~4+35 (US->DS)

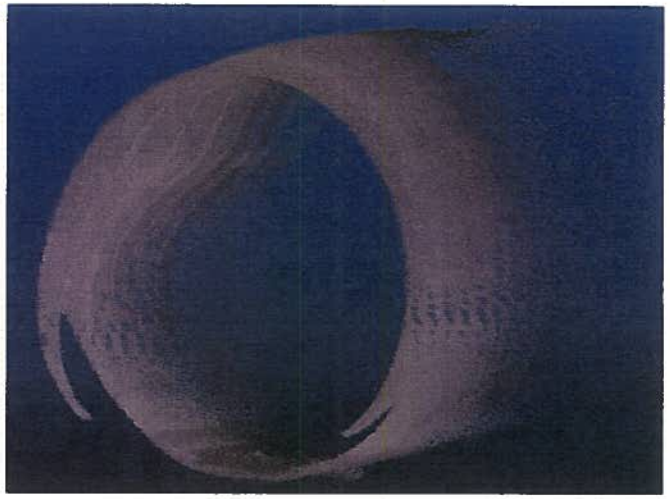


October 2016 STA 4+56 (US->DS)

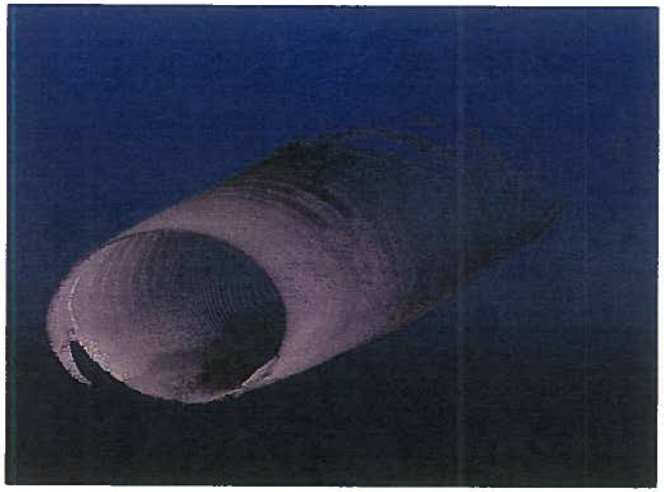
Laser Profiling



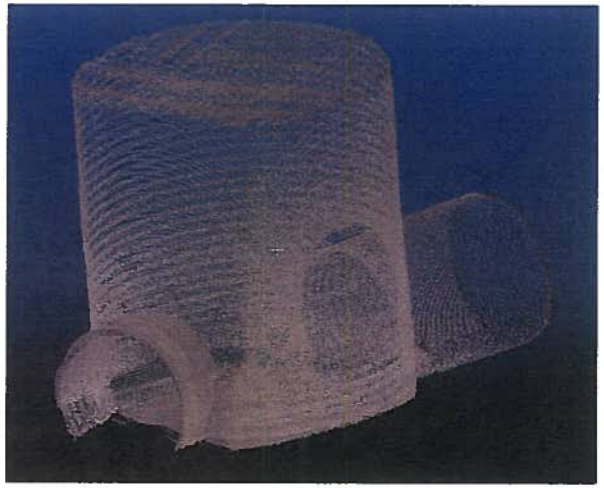
Pipe Buckling



Pipe Buckling and Ovality



Severe Ovality



Manhole Chamber

Key Defect Locations

Laser Profiling Conclusions

- Pipe deterioration in 2016 consistent with findings from 2011
- Structural damage to pipe much worse than anticipated
  - Large areas of significant ovality (>10%) with some severe areas (>15%) and select locations >20-40%
  - Locations of structural buckling and reverse curvature
  - Likely the result of construction quality and burial depths at time of construction
    - Culvert has locations that are both too shallow and too deep for pipe material type

Structural Condition Project Impacts

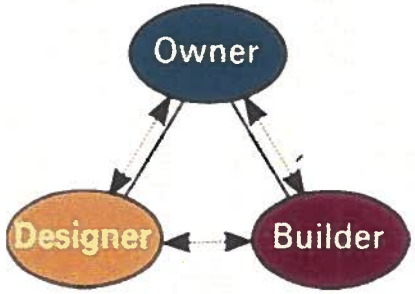
- Limits ability to in-situ rehabilitate pipe in a cost effective manner
- Increase to project costs
- Project now anticipates large sections of culvert replacement (>60% of project length)
- Areas where in-situ rehabilitation will still occur due to burial depths (>25-ft) and infrastructure proximity
- Project still contains uncertainty and construction risk
- Project an ideal candidate for alternative project delivery methods allowed in the Nevada Revised Statutes (NRS)
  - Construction Manager at Risk (CMAR)
  - NRS 338.169

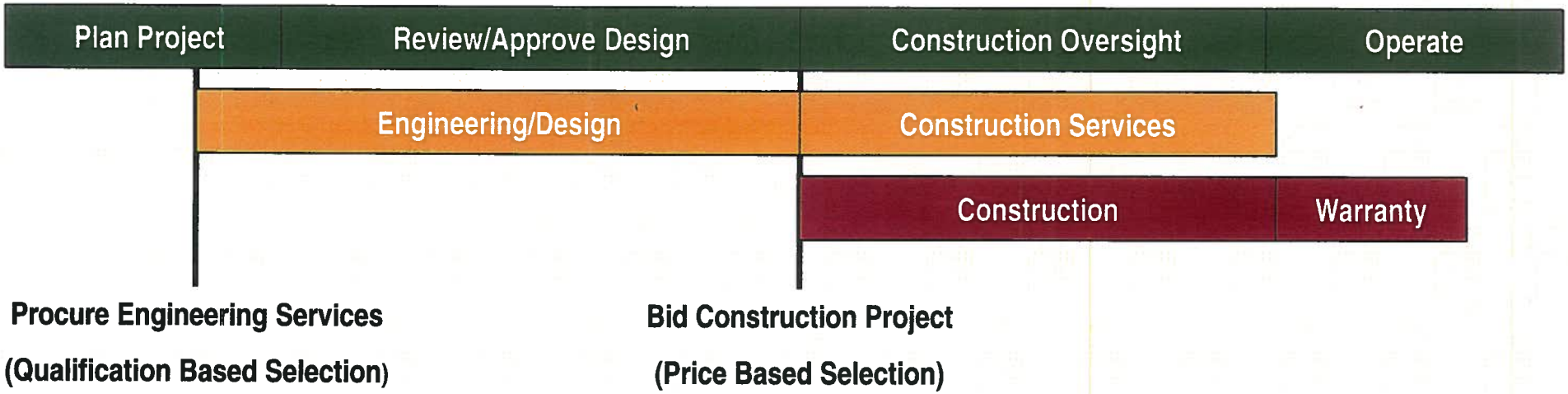
Project Delivery Methods

- Three public works project delivery methods allowed by NRS 338
- Design-Bid-Build (DBB)
  - Traditional project delivery method utilized by IVGID
- Construction Manager at Risk (CMAR)
  - Last utilized by IVGID in 2002-04 to construct Public Works Building and Chateau
  - Substantial revisions in statute and process since
- Design Build (DB)
  - Until recent 2017 legislative session was limited to projects >$5M

Design-Bid-Build

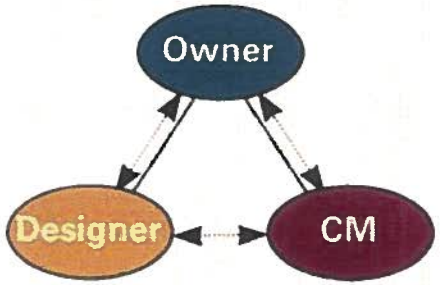
- Well-established, defined, linear process that is proven to work
- Distinct milestones to ensure expected results
- Design completed before bidding
- Bidding completed before construction



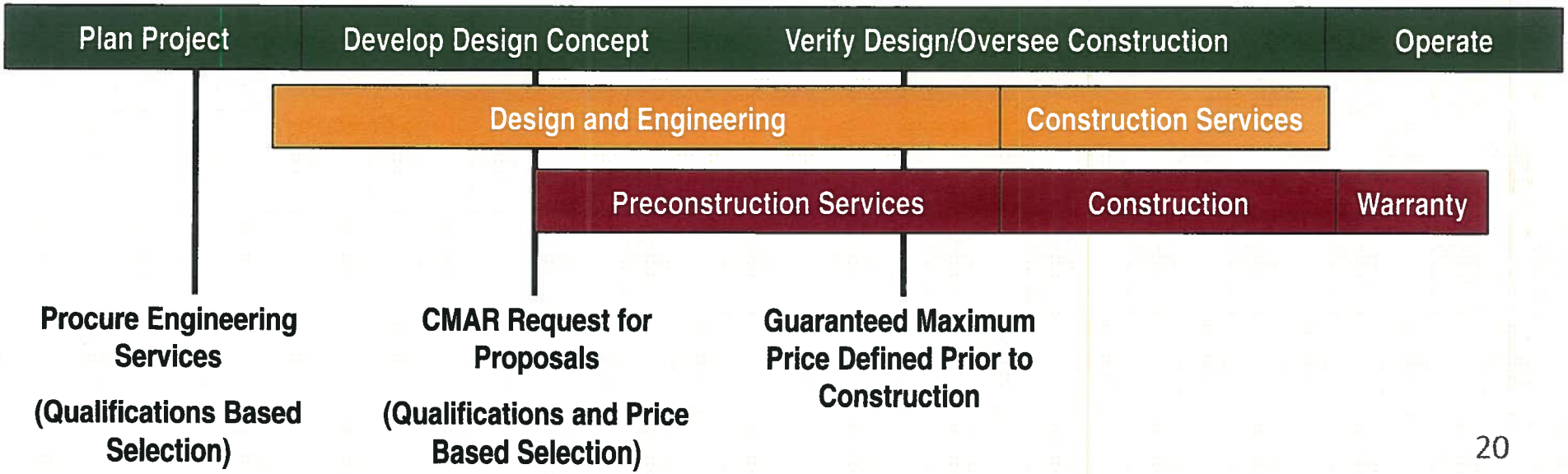


Construction Manager at Risk

- Similar to traditional delivery – but more collaborative
- Allows traditional selection of engineering services
- Design Build "light" – helps reduce risk
- Two contracts with Owner
- Design and construction pricing in parallel



Trade Subcontractors



Benefits of CMAR

- Direct Lines of Accountability – *reduces finger pointing and disputes*
- Contractor Involvement in Design – *reduces change orders and disputes*
- Best Value Selection – *qualified contractor building the project*
- Schedule Certainty and Schedule Enhancement – *contractor is endorsing and agreeing to the schedule prior to construction*
- Early Cost Knowledge – *contractor develops costs early in design*
- Potential Cost Savings – *more opportunity for construction creativity, value engineering, and getting within Owner's budget*

Project Construction Estimate

Description	Amount
Estimated Probable Cost of Construction	$3,800,000
Construction Contingency @ 10%	$380,000
Construction Management and Inspection	$75,000
Design Services During Construction	$100,000
District Staff Time	$80,000
Estimated Project Total	**$4,435,000**

- Construction Estimate + Contingency = $4,180,000
- Previous Estimate + Contingency = $3,175,000

Estimated Available Project Budget

Description	Amount
Available Project Budget as of 11/08/2017	$1,358,211
District Share of Emergency Repair	($110,981)
Estimated Remaining Design Costs	($160,000)
Estimated District Staff Time	($75,000)
Estimated CMAR Preconstruction Services	($75,000)
Estimated Available Project Budget (end of FY 17/18)	**$987,230**

- $1,962,500 identified for FY 18/19 in current CIP Budget 5-year Plan
- Pending outcome of CMAR Process FY 18/19 Project Budget will need to be increased by ~$1,500,000

Project Next Steps

- Open contractor bid packages – *December 2017*
- Interview and select contractor – *December 2017 - January 2018*
- Negotiate and award preconstruction services contract – *January 2018*
- CMAR preconstruction phase – *February - April 2018*
- Complete final design – *February - April 2018*
- Negotiate construction guaranteed maximum price (GMP) – *April 2018*
- Award GMP construction contract – *May 2018*
- Construct project – *May - October 2018*

Questions and Discussion