Flood Control under Environmental Constraints—
A Bexar County Example

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Thank You Nat Hardy (BCFC)

Project Location

- City of Helotes, Texas
- Bexar County Flood Control Capital Improvement Program
Scope

Flood Control Project Consisting of Four Parts:
1. 3 Low Water Crossings (LWCs) on Circle S Drive
2. Channel Improvements for French Creek and Tributaries
3. LWC/Channel at Diamond K Trail/Bar X Trail and LWC/Drain at Diamond K Trail/Rocking M Trail
Exist Conditions – Diamond K Trl

Project Purpose

- Natural Waterway Conveyance
- Project Purpose - FLOOD CONTROL!
- Elements of Natural Channel Design
- Primary project purpose WAS NOT stream restoration or rehabilitation
- Stream showed minimal signs of lateral instability (bank erosion). Minimal depth to bedrock.
- Why Natural Channel Design (NCD) elements?
  - Geomorphic stability
  - Minimize environmental impacts (Edwards Aquifer)
  - Provide natural stream function (NO HARD ARMORING)

Project Timeline

- Project Kick Off Meeting
  - 2/2013
  - 100% Submittal: 7/2012
- Design
  - 60% Submittal: 12/2013
  - 100% Submittal: 4/2016
  - TCEQ Permitting: 4/2016 - 2/2017
- Construction
  - BAI: 9/2016
  - RCHN Corporation: 9/2016

TSCM Initial Work in Progress
Environmental Constraints

- Edwards Aquifer Recharge Zone
- Bedrock
- Tree Preservation
- USACE – Individual Permit

What is Natural Channel Design?

- Design a STABLE channel
- Self-sustaining channel that requires limited maintenance
- Stream is able to balance incoming sediment load
- Improve stream “function”

Stream Assessment

- A series of measurements and analysis must be conducted to determine adequate NCD


- Concrete Channel
- Articulated Concrete blocks with open area - will allow plant growth to infill and stabilize
- Ungrounded Rock Riprap - protects outfall while allowing for infiltration
Importance of Flood Control

- October 30, 2015 Flood - 5.6 inches of rain
- 2 school buses in City of Helotes needed high water rescues!
- Bus driver on Circle S Dr. reported water up to 3ft mark at 6:50am

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Project Benefit

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Project Benefit
- Homes no longer in the FEMA floodzone: 26 homes
- Homes no longer in the local floodzone: 3 homes
- Private Lot no longer in the FEMA floodzone: 1 lot
- Number of improved Low Water Crossings: 5 LWCs
- Substantial acreage of floodplain reduction
- 30 Homes no longer in FEMA floodzone (LOMR)

Cedar Springs LOMR

Cedar Springs LOMR