

Canal Street Laredo Mitigation

TFMA Fall 2014 Technical Seminar



Presented by
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Managing Engineer, RPS Group

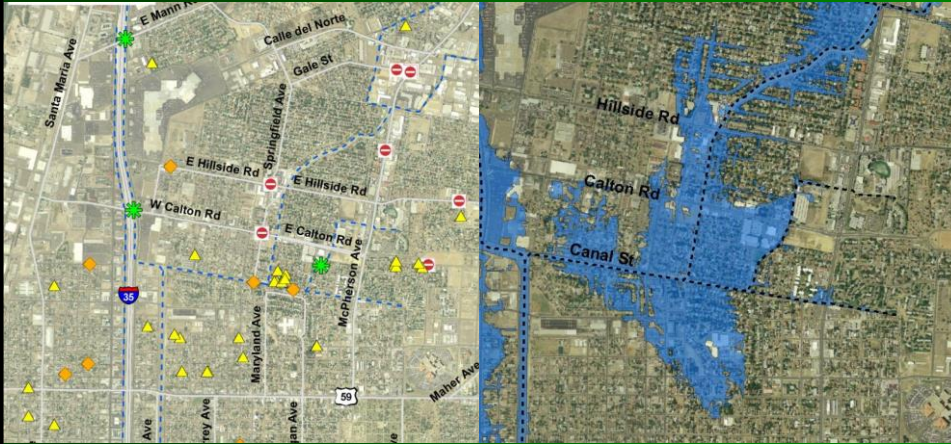


Riazul Mia, P.E., CFM
Environmental Services Director
City of Laredo, Texas

Flooding Issues



Flooding Issues



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Zacate Flood Control Projects

- Identified in the 2000 Zacate Master Plan
- After the flood of 2007, the project was a priority
- 2008, City was awarded a grant from TWDB to develop the Zacate Creek Flood Protection Plan & update the master plan for other completed projects



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Zacate Flood Control Projects

- Other flood mitigation projects in the watershed:
 - Backwoods detention pond
 - Del Mar Culvert addition
 - Alexander detention pond (private)
 - Upper Zacate detention pond
 - Upper Zacate channel improvement
 - McPherson acres drainage
 - Calton/Chaparral channel const.
 - Canal Street Phase 1

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Zacate Flood Control Projects



How We Got Here



HMGP GRANT (\$3.7 Million)

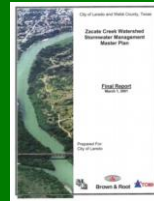


Grant from TWDB for Zacate Creek Flood Protection Plan (FPP)

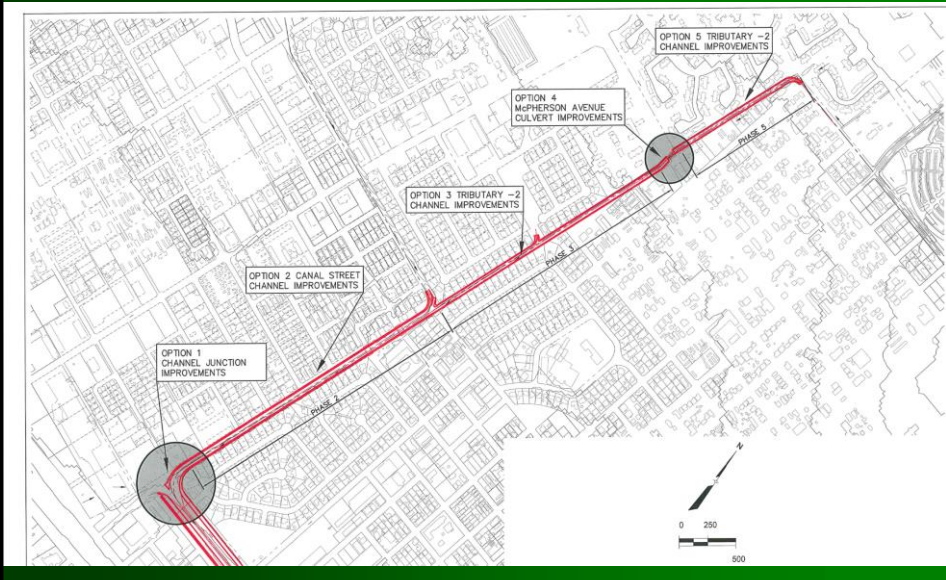


Canal Street Preliminary Engineering

Zacate Creek Master Plan

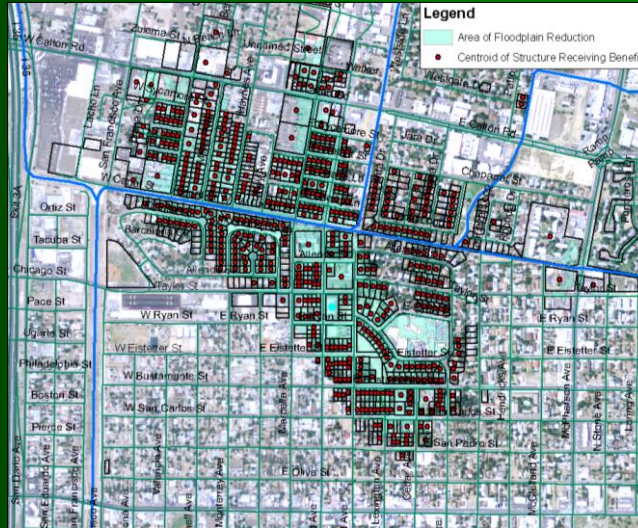


The Canal Street Projects



Canal Street BCA Structure

- 621 Structures would receive Benefit
- For the BCA,, reached a BCR of >1.0 after analyzing only 13 structures.
- FEMA likes to see that they can reduce future flood insurance liabilities for multiple structures with a single investment in drainage infrastructure.



Canal Street Improvements

Table 6. Design Option Summary

Design Option	Design Storm Capacity	Design Characteristics	Prelim. Cost Estimate
Reach 1			
Option 1-A	100-yr	50 ft. bottom, 1:1 ss, 10 ft. depth, 70 ft. TW	\$1,592,900.00
*Option 1-B	100-yr	40 ft. bottom, 0.5:1 ss, 10 ft. depth, 50 ft. TW	\$1,509,624.00
Reach 2			
Option 2-A	100-yr	50 ft. bottom, 1:1 ss, 10 ft. depth, 70 ft. TW	\$10,473,137.00
*Option 2-B	50-yr	40 ft. bottom, 0.5:1 ss, 10 ft. depth, 50 ft. TW	\$4,646,378.00
Reach 3			
Option 3-A	100-yr	35 ft. bottom, 1:1 ss, 6 ft. depth, 47 ft. TW	\$3,211,929.00
*Option 3-B	50-yr	27 ft. bottom, 1:1 ss, 6 ft. depth, 40 ft. TW	\$2,842,907.00
Reach 4			
Option 4-A	100-yr	New 3-10ft x 5ft MBC, Lower flowline 2 ft.	\$997,385.00
*Option 4-B	100-yr	Add 2- 10 ft x 5 ft MBC, match exist. flowline	\$874,641.00
Reach 5			
Option 5-A	100-yr	35 ft. bottom, 1:1 ss, 4 ft. depth, 43 ft. TW	\$1,723,168.00
*Option 5-B	100-yr	27 ft. bottom, 1:1 ss, 3 ft. depth, 35 ft. TW	\$1,365,684.00
TOTAL COST OPTIONS A			\$17,998,519.00
TOTAL COST OPTIONS B			\$11,239,234.00



Reach 2 - Canal St Projects

Addresses flooding along Canal Street
(Reach 4) and Trib 2

- **Phase 1** under construction Fall 2009, completed in 2012. The total cost was \$1.0 million.
- **Phase-2** was awarded in February 2012, completed in July 2014. The total cost is \$3.1 million.
- **Phase-3** was awarded in March 2012 and was completed in February 2013. The total cost was \$727,000.



Construction Challenges

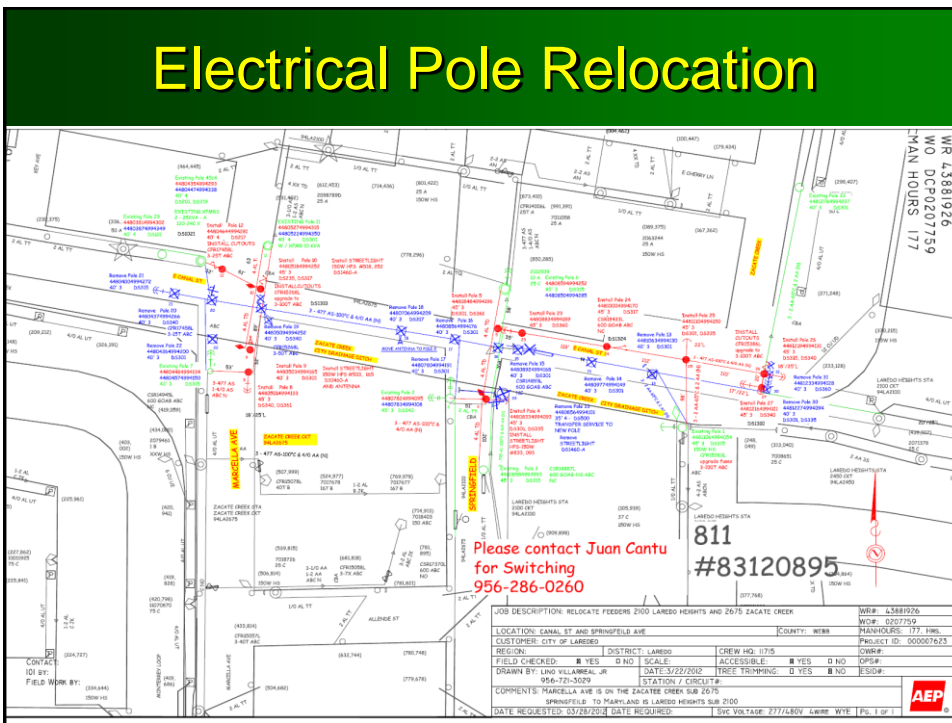
- Two change orders were approved for another \$600,000 for extra concrete and demo.
- Due to financial issue, Project completely stopped for weeks
- Emergency construction by Public Works during work stoppage
- Bonding company started to manage the project in February 2013. Finally took over completely in August 2013.
- 17 power poles had to be relocated @ \$60,000.00 causing delays.
- Conflicts with Time Warner Cable @ \$31,000.00
- Water line conflict & Sewer Line relocation @ Marcella bridge
- Sewer line relocation at McPherson Bridge
- Redesign of Boxes under the McPherson Bridge



Construction Challenges - WATER



Electrical Pole Relocation



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Construction Challenges



Construction Challenges



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Construction Challenges



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Construction Challenges



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Construction Challenges



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Construction Challenges



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Final Project Costs

- Engineering \$ 442,000.00
- Testing \$ 33,000.00
- AEP \$ 60,000.00
- Cable \$ 30,000.00
- Phase-2 cont. \$2,971,700.00
- Phase-3 cont. \$ 727,400.00
- **Total \$4,264,100.00**

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Next Step – FEMA LOMR

Zacate Creek LOMR Request
Canal Street Drainage Improvement Project

Date Submitted: June 16, 2014
Client: City of Tacoma
Project Number: 140100

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

PREPARED BY: RPS

DATE: 06/16/2014

PROJECT NUMBER: 140100

PROJECT TITLE: Zacate Creek LOMR Request

PROJECT LOCATION: Tacoma, WA

PROJECT DESCRIPTION: This project is a request for a Letter of Map Amendment (LOMA) to update the Flood Hazard Boundary Act (FHBA) Flood Insurance Rate Map (FIRM) to reflect the proposed drainage improvements for the Canal Street area in Tacoma, WA. The project includes the installation of a new drainage system, including a new drainage pipe, manhole, and catch basin, and the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT OBJECTIVES: The project objectives are to improve the drainage system for the Canal Street area in Tacoma, WA, and to reduce the risk of flooding. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT BENEFITS: The project benefits include improved drainage, reduced risk of flooding, and increased property values. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT RISKS: The project risks include the possibility of flooding, and the possibility of property damage. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT COSTS: The project costs include the cost of the drainage pipe, manhole, and catch basin, and the cost of the installation. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT SCHEDULE: The project schedule includes the installation of the drainage pipe, manhole, and catch basin, and the installation of the drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT CONTACTS: The project contacts include the City of Tacoma, and the State of Washington. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

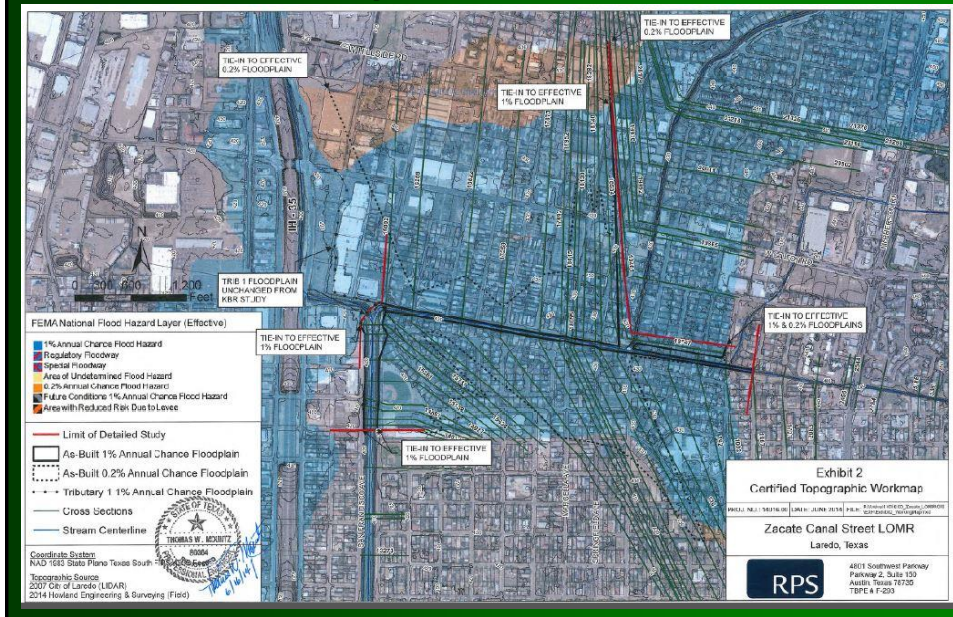
PROJECT APPROVALS: The project approvals include the City of Tacoma, and the State of Washington. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

PROJECT SIGNATURES: The project signatures include the City of Tacoma, and the State of Washington. The project also includes the installation of a new drainage pipe, manhole, and catch basin. The project also includes the installation of a new drainage pipe, manhole, and catch basin.

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Next Step – FEMA LOMR



Questions?

•Contact:

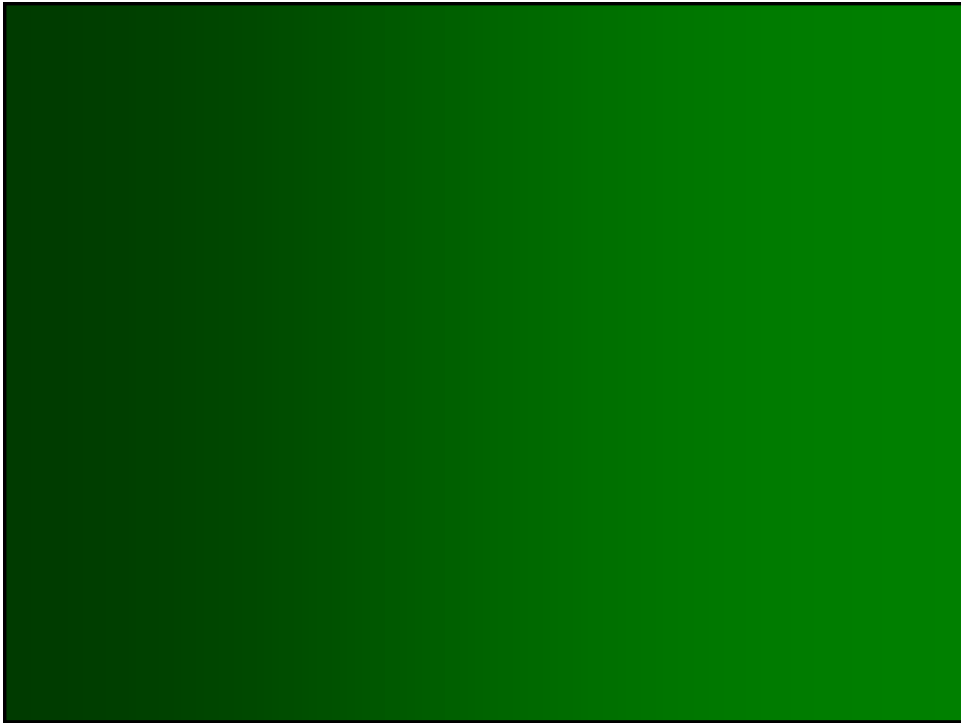
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Zacate Creek FPP Study



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