


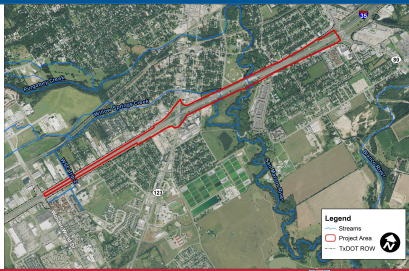
TXDOT DRAINAGE: A COLLABORATIVE APPROACH TO MOBILITY IMPROVEMENTS


John Conquest, PE
Katie Lewis, PE
Marita Moya, EIT

August 2019 

SAN MARCOS, TX

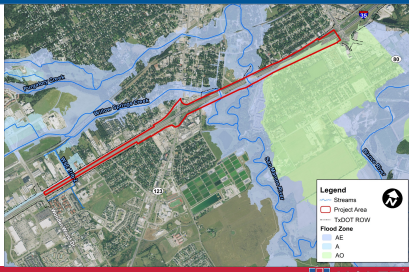
- Mobility 35 Project
- Project Goals:
 - Widen frontage roads
 - Elevate frontage road bridges
 - Reverse Ramps






SAN MARCOS, TX

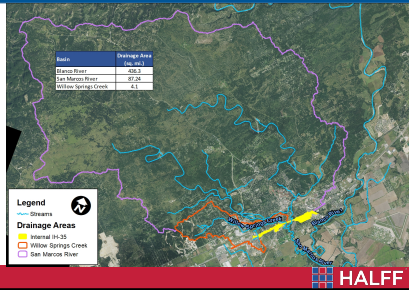
- Mobility 35 Project
- Project Goals:
 - Widen frontage roads
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 - Reverse Ramps





WATERSHEDS

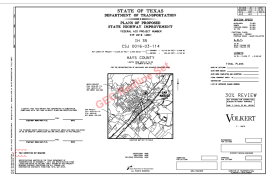
- Spans 2 major river crossings
 - San Marcos River
 - Willow Springs Creek
- Located near the confluence of the Blanco and San Marcos Rivers



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TXDOT DESIGN CRITERIA

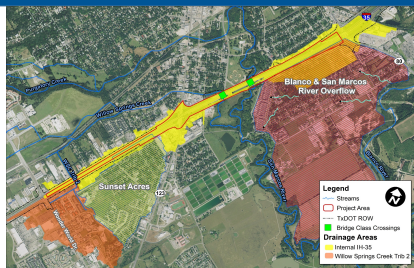
- 30% Design
 - 8 Outfalls
 - 4 Water Quality Ponds
- 10-year storm sewer design



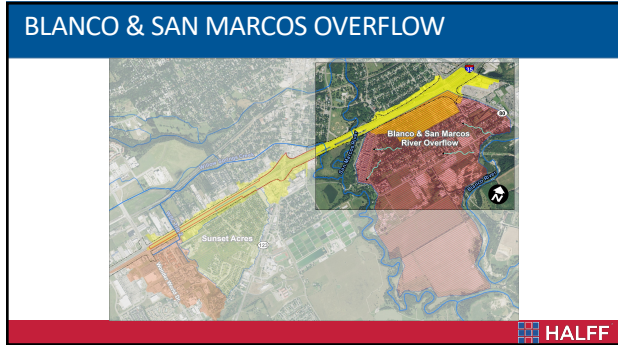
TXDOT Drainage Criteria			
Roadway	Bridge Class	Ditches	Storm Drain Systems
Maintenances	50-year	10-year	10-year
Access Ramps		10-year	10-year
Frontage Roads	50-year	10-year	10-year

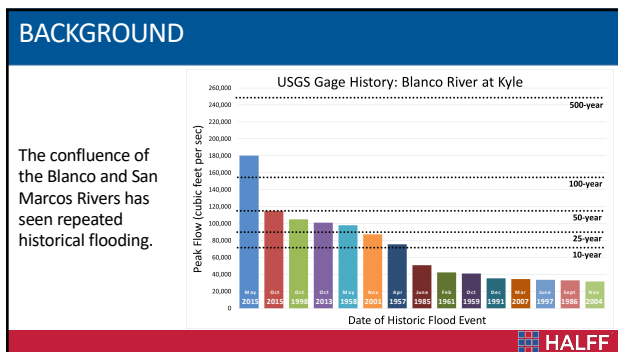
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DRAINAGE



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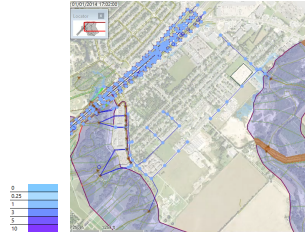




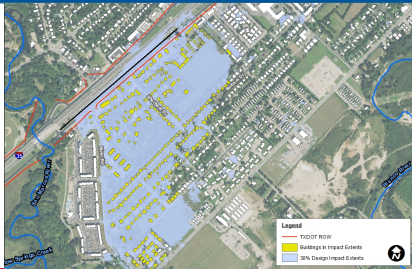
EXISTING INUNDATION

Evaluate impacts with a 1D/2D
Infoworks Integrated Catchment
Modeling (ICM) model

- Blanco River
- San Marcos River
- Willow Springs Creek
- Overflow areas (including IH 35 between the two rivers)
- IH 35 roadway drainage systems



ROADWAY IMPACTS



MITIGATION ANALYSIS

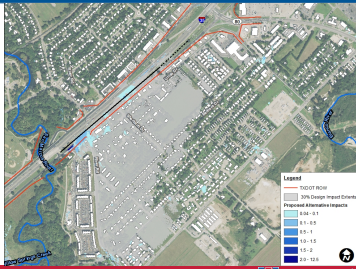
Mitigation options investigated
in various configurations:

- Upsized existing culverts
- Additional culverts
- Maximized ditch capacity
- Extended bridge
- Altered frontage road profiles
- Offsite pond

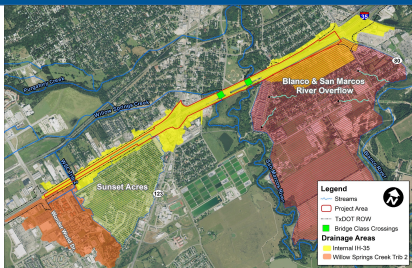


PROPOSED MITIGATION

- Upsize existing culvert along IH 35
- Optimize ditches along IH 35
- Lower profile of the frontage road back to existing

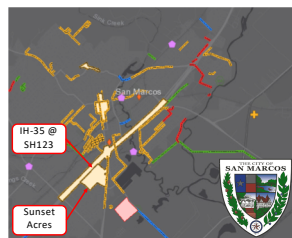


DRAINAGE



CITY BETTERMENT

- Design Improvements
 - Increase storm sewer capacity to the 25-year
 - Accept local flows into the TxDOT system
- Supplement Additional Cost



CITY BETTERMENT

SUNSET ACRES

- Residential Area
60" CMP Trunk
- Resides within
TxDOT ROW

SUNSET ACRES BETTERMENT

Sunset Acres Additional Flows		
Location	25-WE 01 (CFS)	180-WE 01 (CFS)
Overflow from Willow Springs Creek Tributary 2	5	85
Broadway Street	200	225
Downstream of Ebony Street	200	300
Total	405	610

Ongoing Drainage Improvements

- Detention of Overflow from Willow Springs Creek Trib 2
- Update residential storm sewer design

QUANTITIES

DESCRIPTION	UNIT	QUANTITY 60% BASE DESIGN	QUANTITY 60% DESIGN WITH BETTERMENT	TOTAL AMOUNT 60% BASE DESIGN	TOTAL AMOUNT 60% DESIGN WITH BETTERMENT
CONC BOX CULV (4 FT X 4 FT)	LF	0	82	\$ -	\$ 22,500
CONC BOX CULV (6 FT X 4 FT)	LF	1071	1082	\$ 345,900	\$ 349,500
CONC BOX CULV (6 FT X 6 FT)	LF	105	105	\$ 42,000	\$ 42,000
CONC BOX CULV (8 FT X 5 FT)	LF	0	3634	\$ -	\$ 1,584,400
CONC BOX CULV (10 FT X 6 FT)	LF	0	8179	\$ -	\$ 4,550,500
CONC BOX CULV (12 FT X 4 FT)	LF	4971	4971	\$ 3,156,600	\$ 3,156,600
RC PIPE (CL III)(18 IN)	LF	5074	6780	\$ 507,400	\$ 678,000
RC PIPE (CL III)(24 IN)	LF	2700	2505	\$ 270,000	\$ 250,500
RC PIPE (CL III)(30 IN)	LF	2532	2094	\$ 379,800	\$ 314,100
RC PIPE (CL III)(36 IN)	LF	1006	692	\$ 140,800	\$ 96,900
RC PIPE (CL III)(42 IN)	LF	599	1001	\$ 80,300	\$ 134,100
RC PIPE (CL III)(48 IN)	LF	824	606	\$ 135,800	\$ 99,100
RC PIPE (CL III)(54 IN)	LF	1578	931	\$ 347,200	\$ 204,800
RC PIPE (CL III)(60 IN)	LF	2870	0	\$ 888,800	\$ -
RC PIPE (CL III)(66 IN)	LF	1880	0	\$ 526,400	\$ -
TOTAL TxDOT:				\$ 7,980,000	\$ 7,980,000
TOTAL C&SM:				\$ -	\$ 5,175,200
TOTAL:				\$ 7,980,000	\$ 13,155,200

QUESTIONS

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