

Mains, Trains, and Automobiles:

Utilizing Fort Worth's Risk Assessment Data to
Drive Sanitary Sewer Rehabilitation

UCT 2019 Track I-D: Sewer Construction/Rehabilitation

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Liam Conlon – Fort Worth

Wednesday,
January 30, 2019



Kimley»Horn





Outline

- Interceptor Condition Assessment Program (ICAP)
- Upper Clear Fork Drainage Basin Project
- Further Analysis
- Constructability Considerations



Interceptor Condition Assessment Program (ICAP)

- Overview:
 - Systematic large diameter interceptor evaluation program
 - 250 miles of interceptors evaluated since 2010
 - Identify and rehabilitate pipe segments before failure occur





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ICAP Data Collection

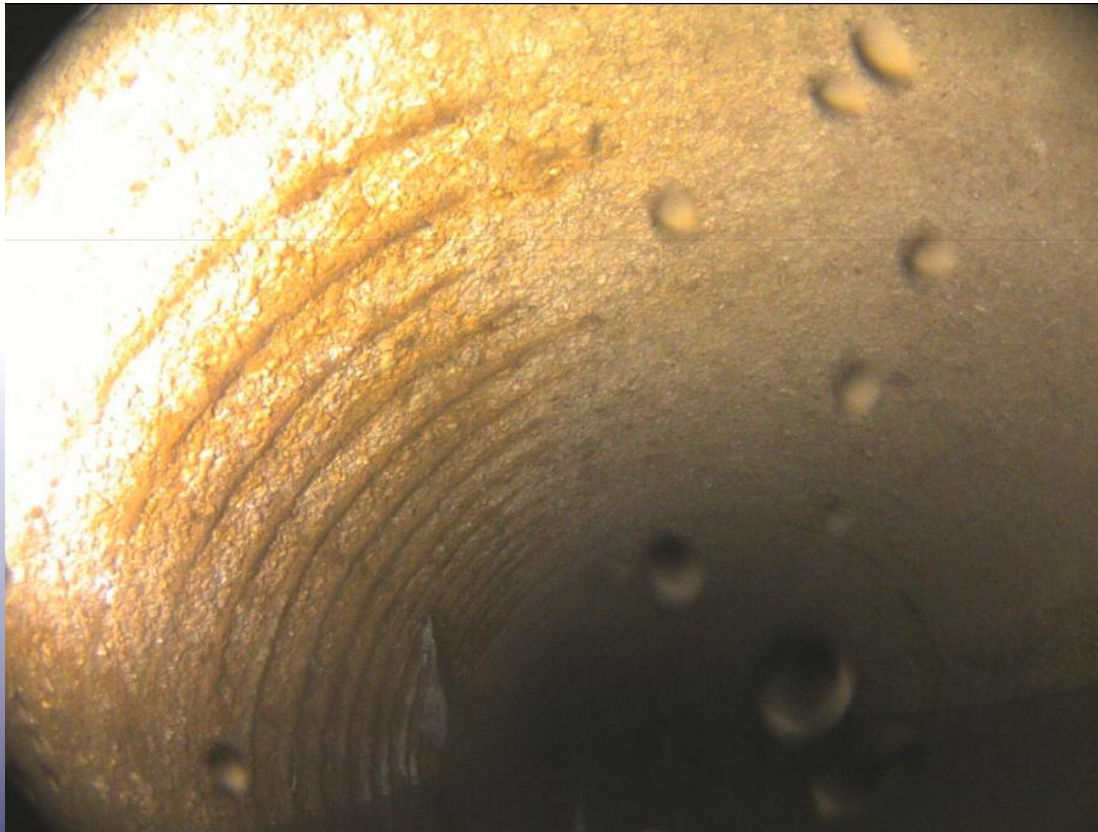
- Floating Platform





ICAP Data Collection

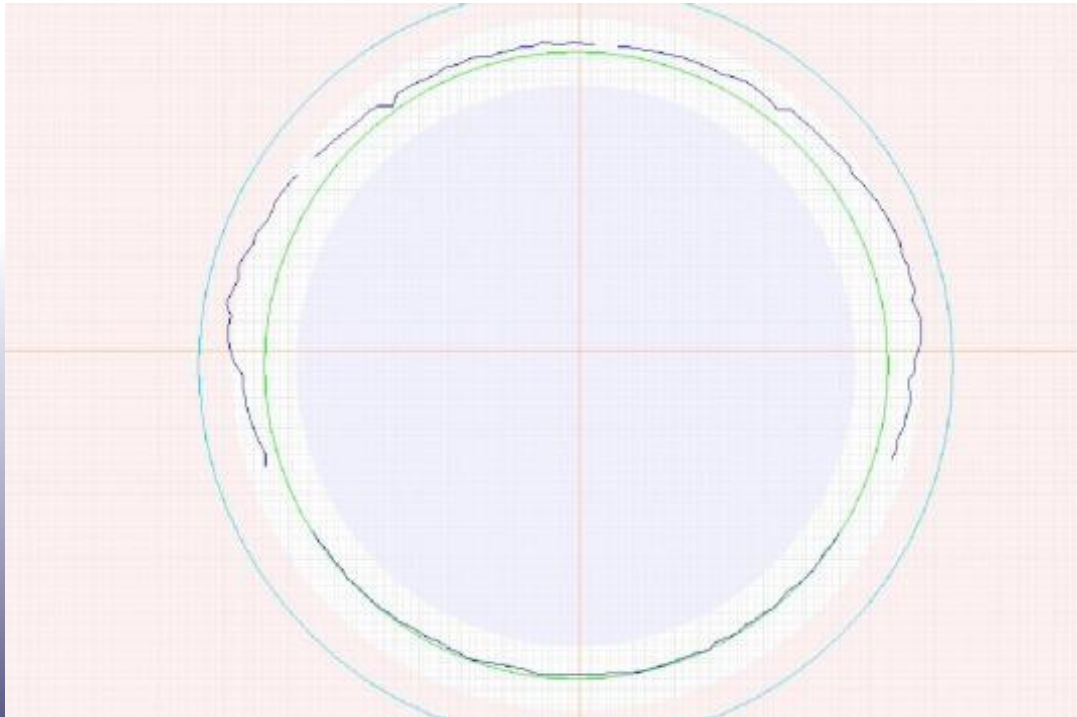
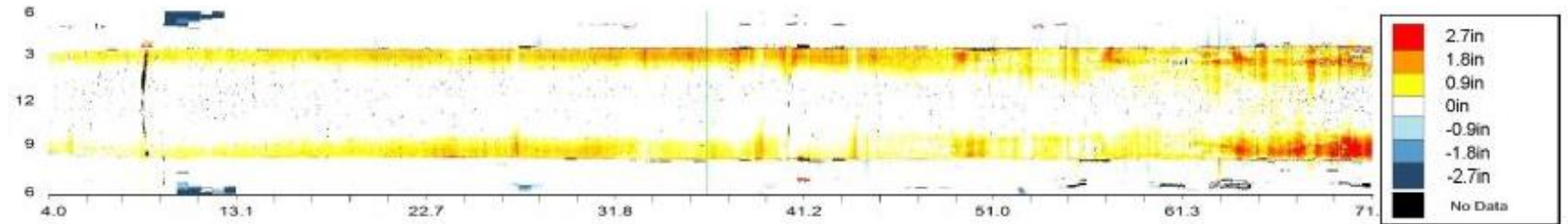
- High-Resolution Video Camera





ICAP Data Collection

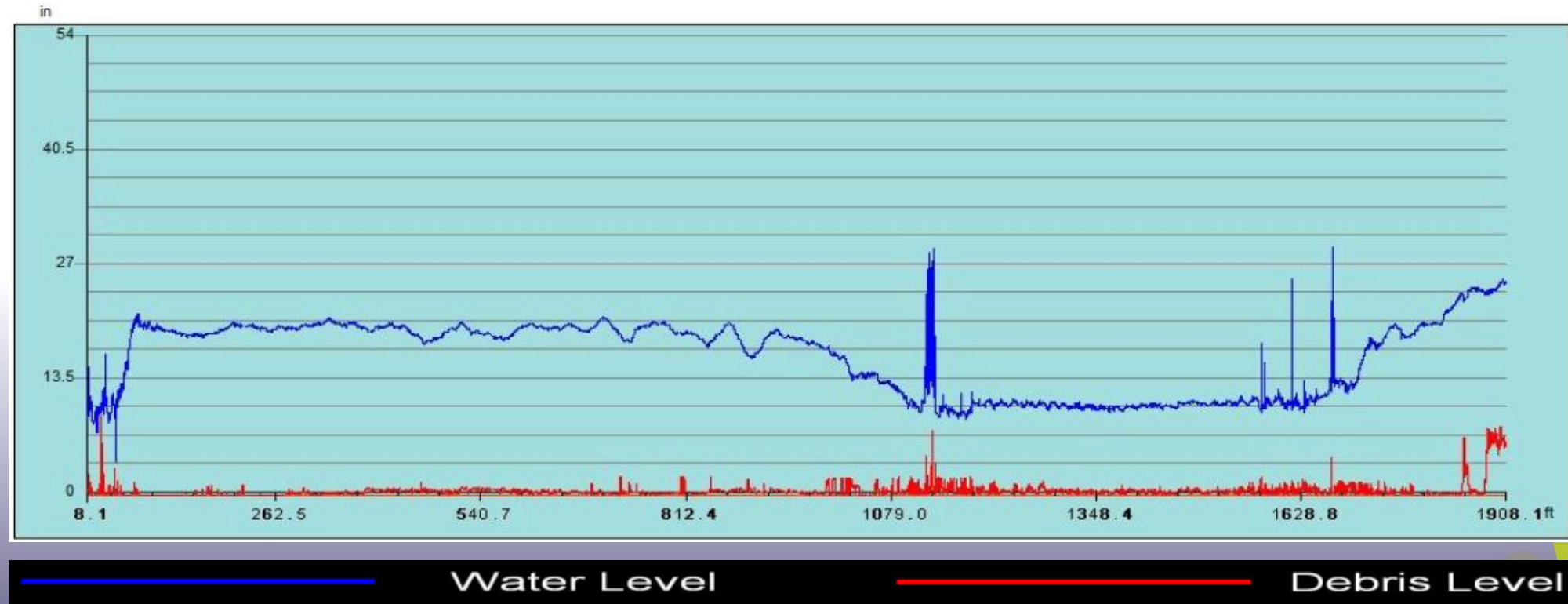
- LIDAR Head





ICAP Data Collection

- Sonar Head





ICAP Initial Condition Rating

48"	Class III, Wall B	Wall Thickness (inches)																			
		0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
						.226												.211			

Rating = 1 (36 to 50 years of RUL)	Rating = 2 (21 to 35 years of RUL)	Rating = 3 (11 to 20 years of RUL)	Rating = 4 (3 to 10 years of RUL)	Rating = 5 (0 to 2 years of RUL)
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Upper Clear Fork Drainage Basin Project

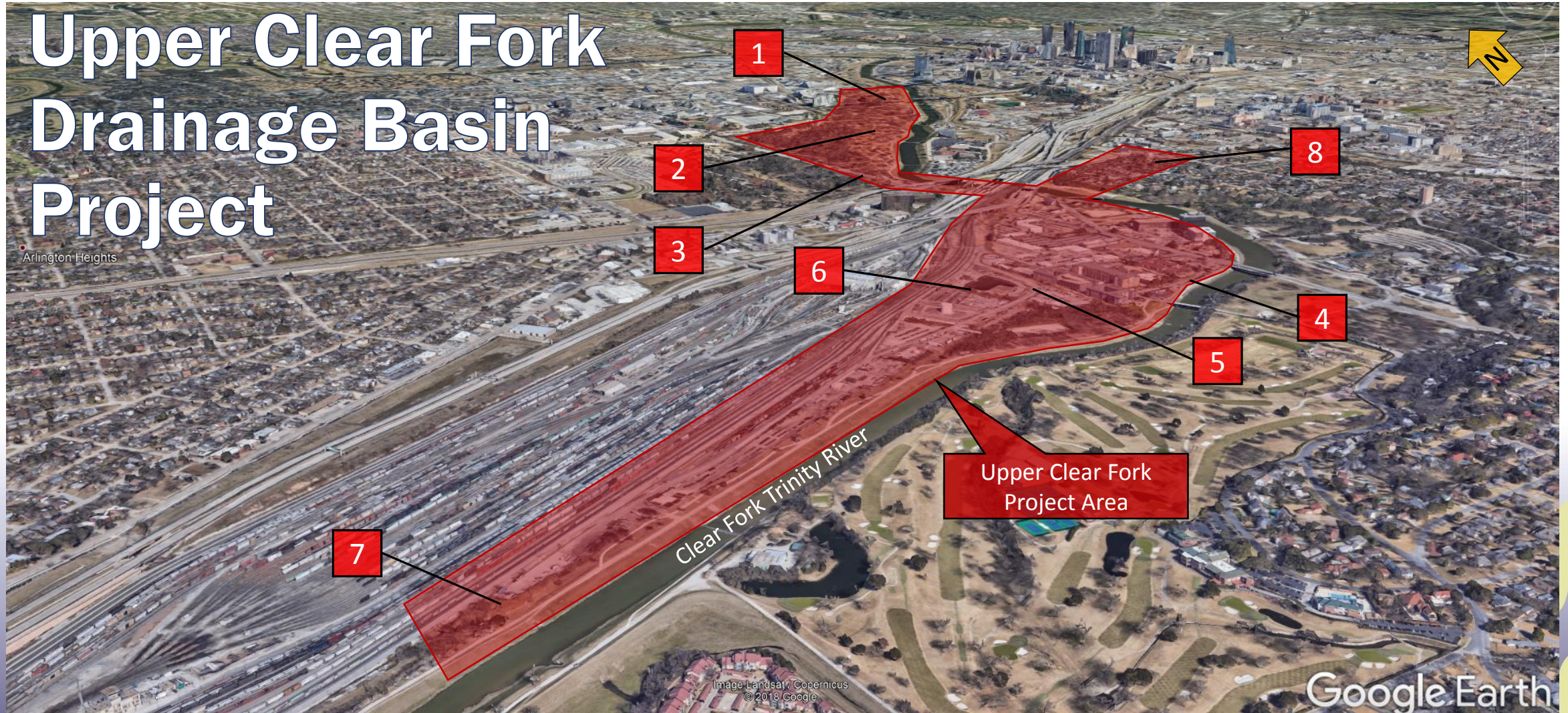
Arlington Heights





Upper Clear Fork Drainage Basin Project

Arlington Heights





Upper Clear Fork Drainage Basin Project



- ~10,000 LF of Sanitary Sewer Interceptors
- 8 Project Locations
- 24-Inch to 54-Inch Lines
- 40 to 90 year old Reinforced Concrete Pipe
- Corrosion identified up to 5.5" in some locations



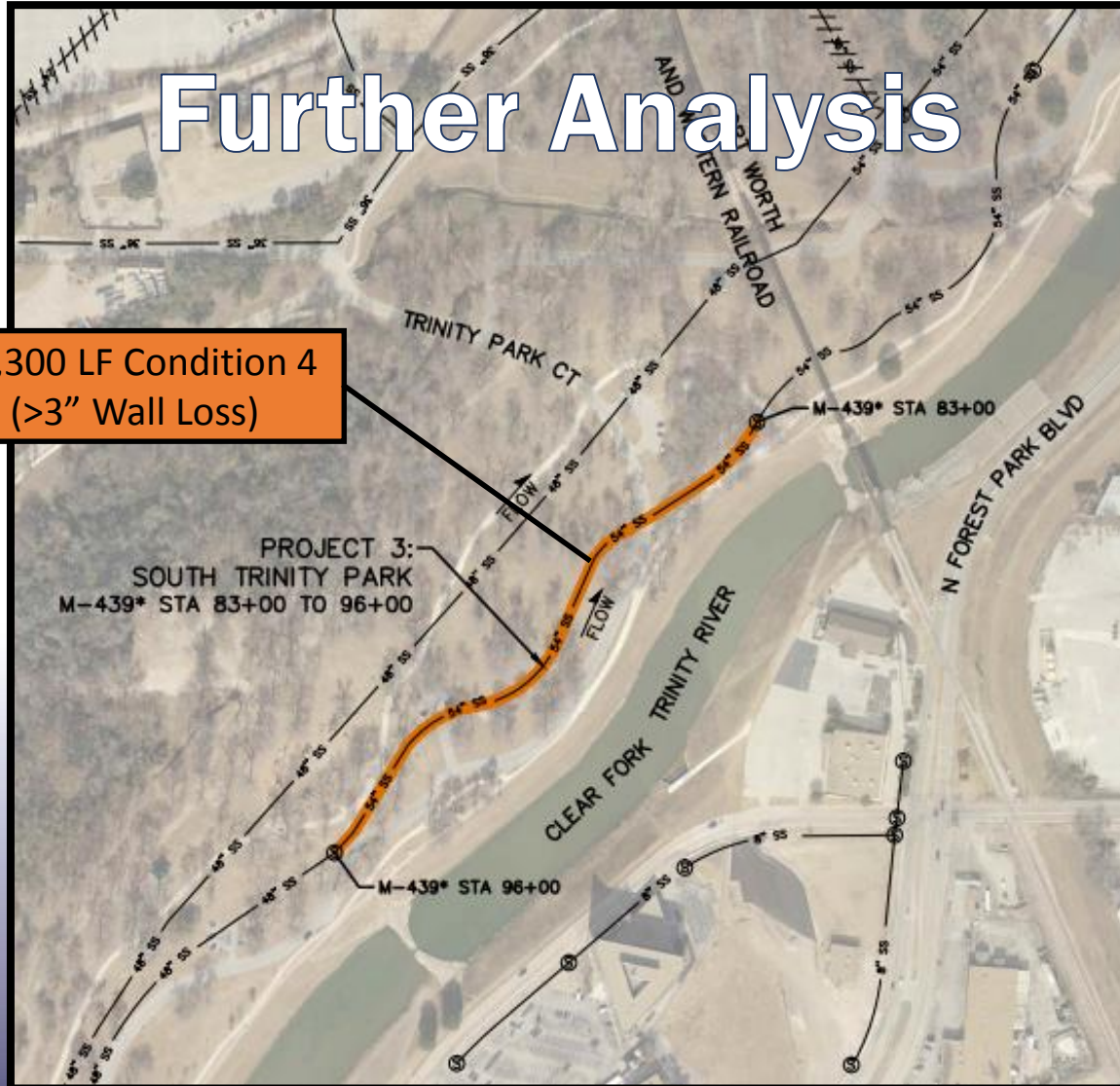
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Further Analysis

~1,300 LF Condition 4
($>3"$ Wall Loss)

PROJECT 3:
SOUTH TRINITY PARK
M-439* STA 83+00 TO 96+00

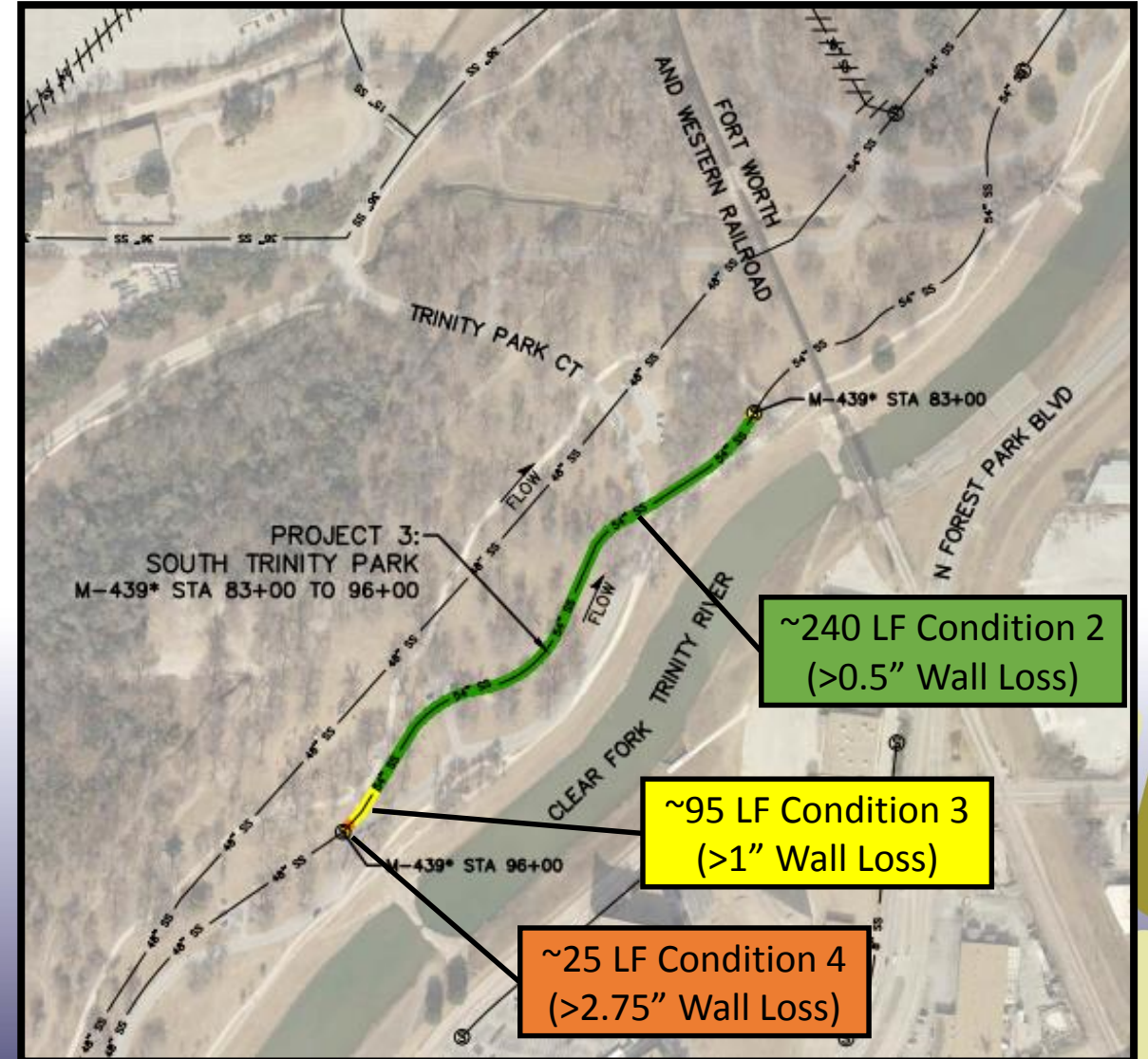


PROJECT 3:
SOUTH TRINITY PARK
M-439* STA 83+00 TO 96+00

~240 LF Condition 2
($>0.5"$ Wall Loss)

~95 LF Condition 3
($>1"$ Wall Loss)

~25 LF Condition 4
($>2.75"$ Wall Loss)





Further Analysis

ICAP Data M-272B

Begin STA: 28+33

Pipe Dia.: 54 in.

End STA: 46+40

Wall Spec: Class III, Wall B

Year Built: 1960

Max. Corrosion (in): 5.5

Years in Service: 55

Max. Corrosion Rate (in/yr): 0.1000

Approx. Distance	Approx. STA	Corrosion (in)	Condition	Remaining Useful Life (Yr)
0	From 28+33 To 28+41	3.1	4	11
16	From 28+41 To 28+64	hole	5	0
46	From 28+64 To 28+81	5.5	5	
50	From 28+81 To 28+89	hole	5	
61	From 28+89 To 29+19	5.0	5	
111	From 29+19 To 29+69	2.8	4	11



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Approx. Distance	Approx. STA	Corrosion (in)	Condition	Remaining Useful Life (Yr)
161	From 29+69 To 30+19	1.5	3	20
211	From 30+19 To 30+69	1.7	3	
261	From 30+69 To 31+19	1.4	3	
311	From 31+19 To 31+69	1.5	3	
361	From 31+69 To 32+19	0.9	2	
411	From 32+19 To 32+69	1.4	3	
461	From 32+69 To 33+19	1.7	3	
511	From 33+19 To 33+69	1.3	3	
561	From 33+69 To 34+19	1.4	3	
611	From 34+19 To 34+69	1.3	3	
661	From 34+69 To 35+19	1.2	3	
711	From 35+19 To 35+69	1.2	3	



Further Analysis

- Rehabilitation reduced from 10,000 LF to 5,000 LF yielding approximately \$3,000,000 in cost savings
- Cured-in-Place Pipe (CIPP) selected for rehabilitation method by City



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Constructability Considerations

- Accessibility





Constructability Considerations

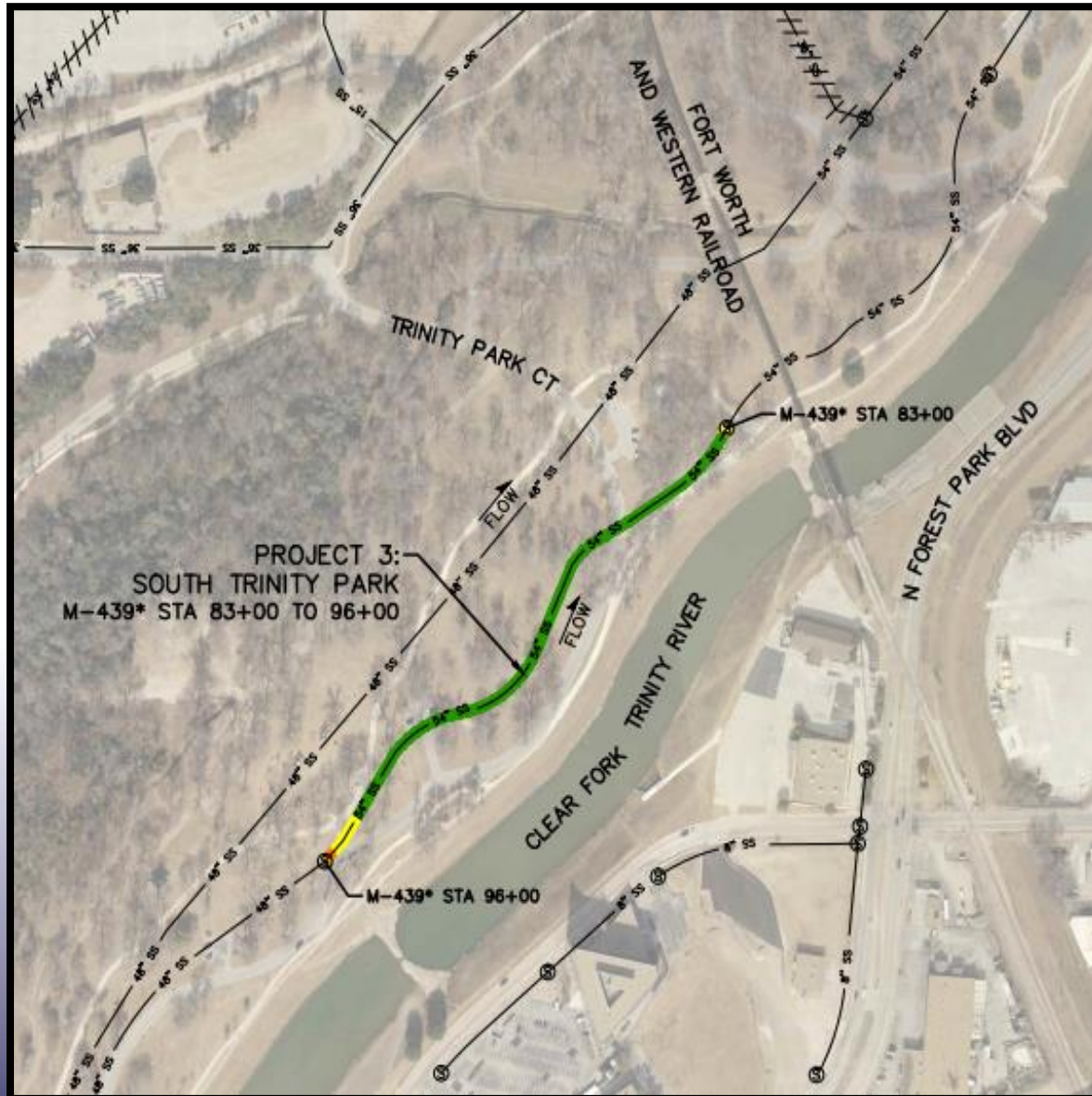
- Railroad Coordination





Constructability Considerations

- Park Land

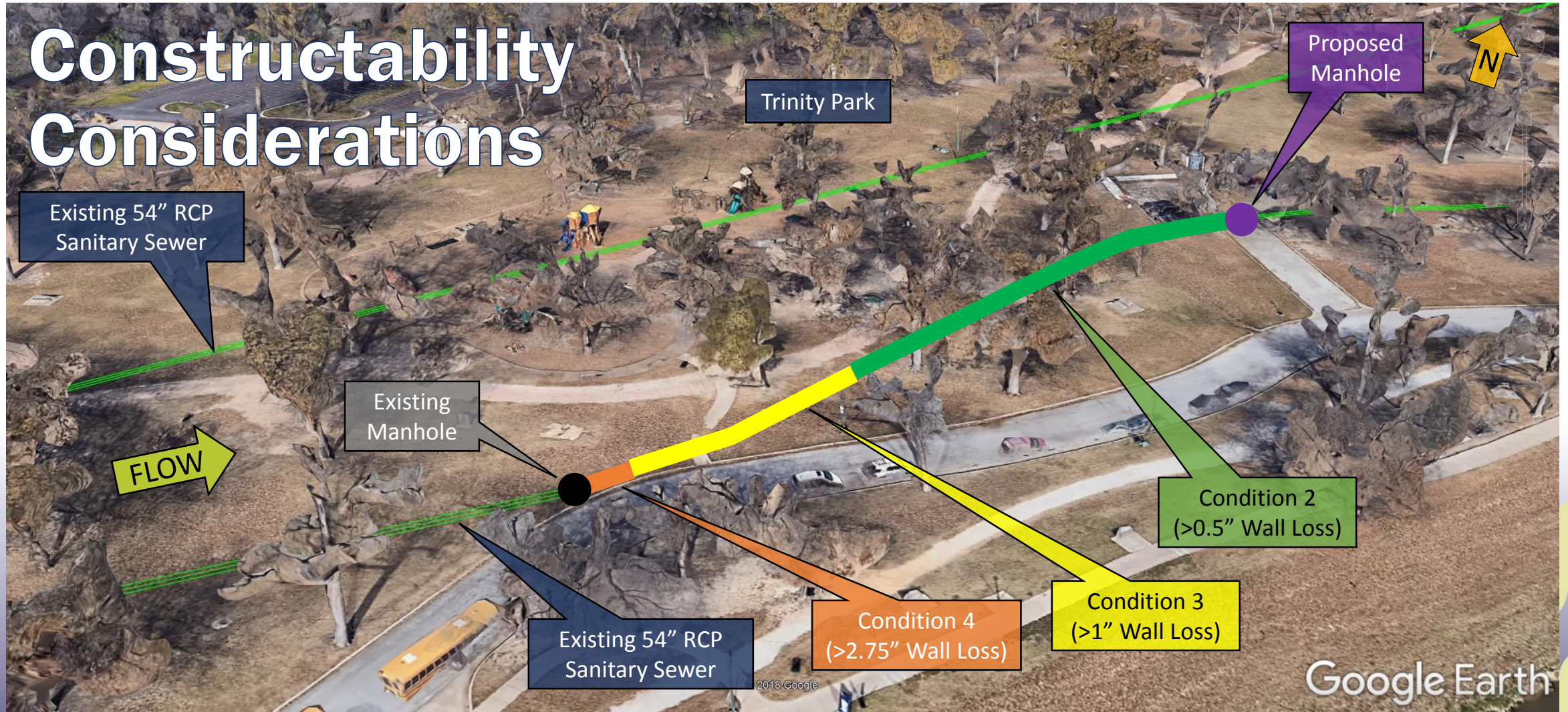




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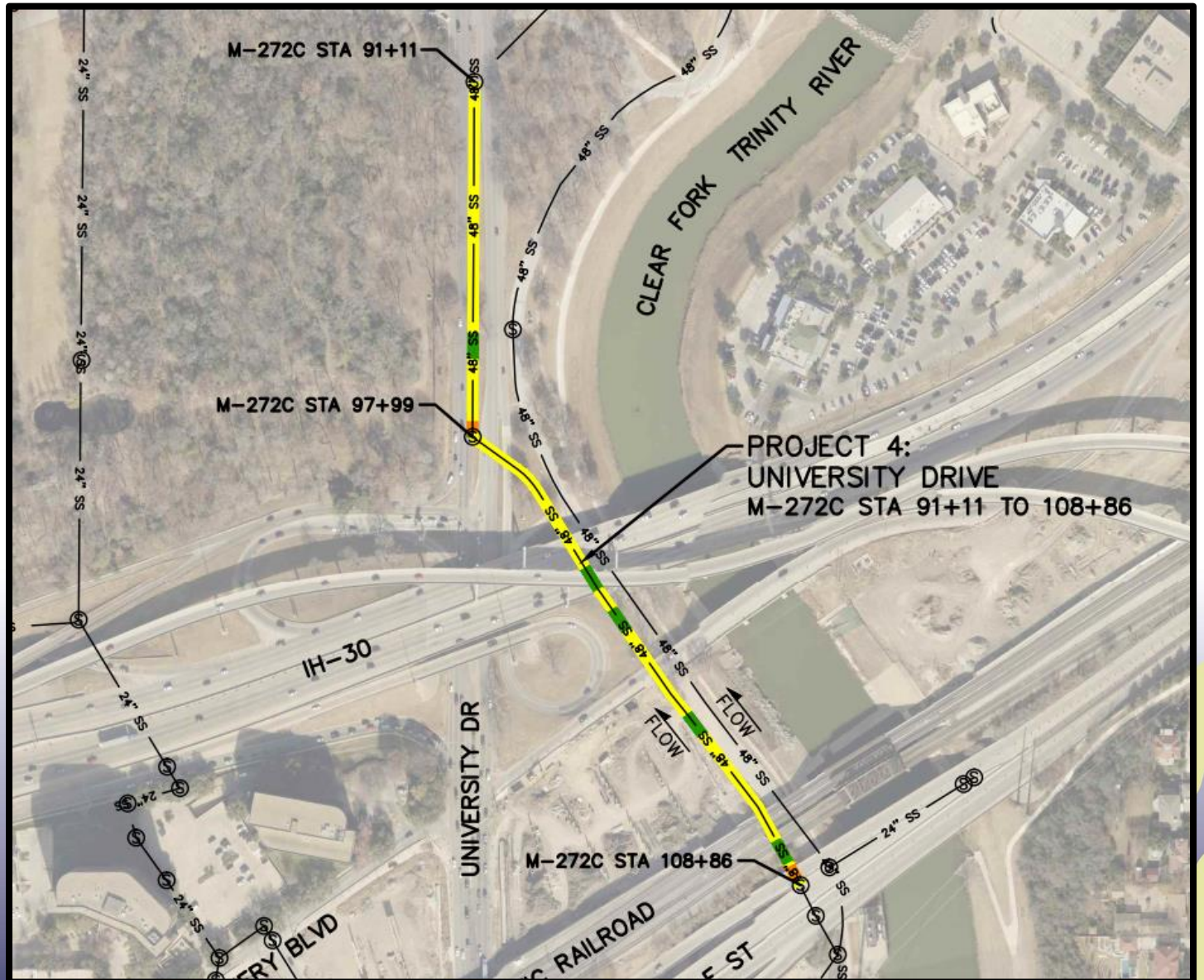
Constructability Considerations





Constructability Considerations

- University Drive

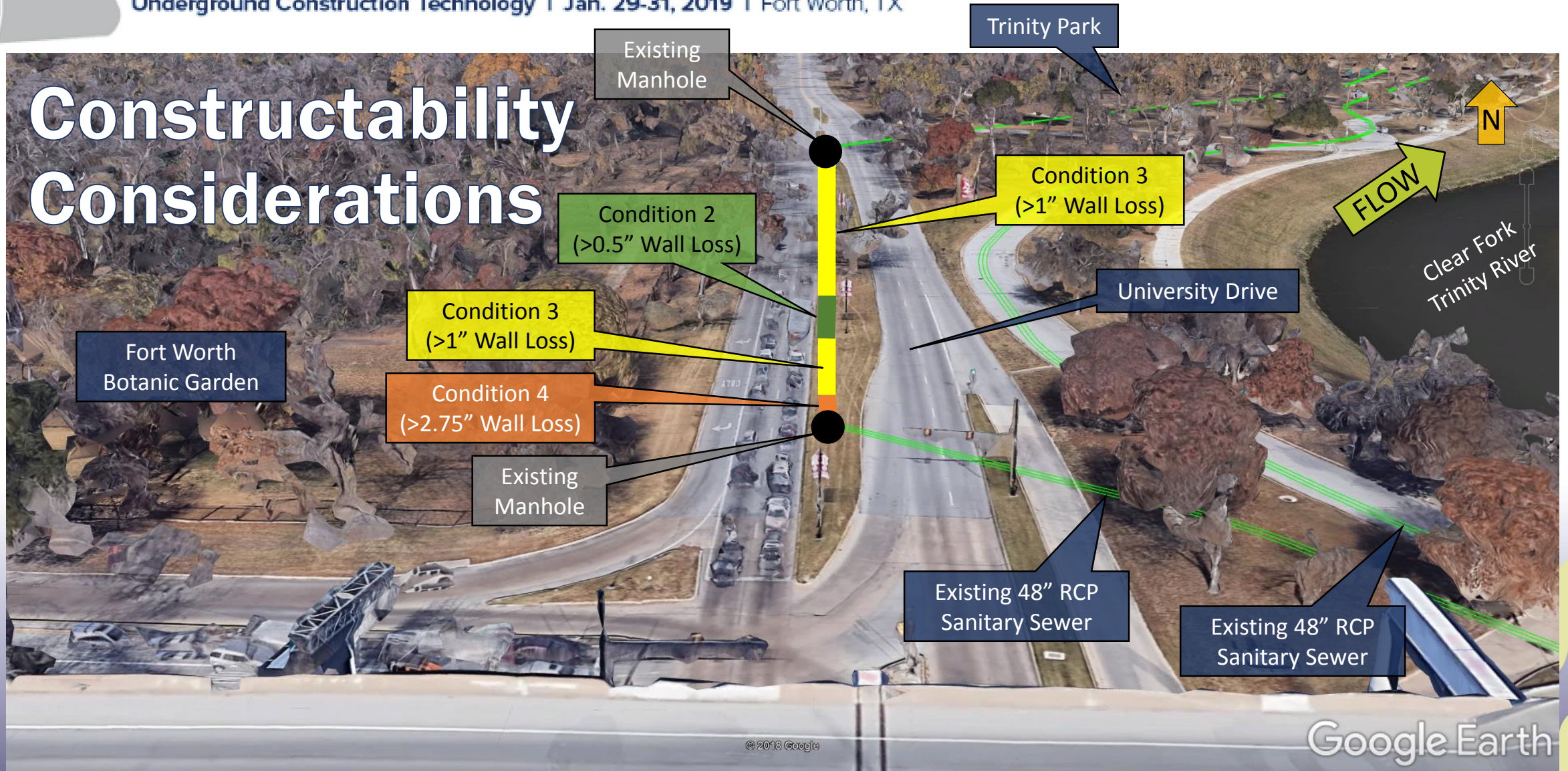




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Constructability Considerations





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Constructability Considerations

- Bypass Pumping

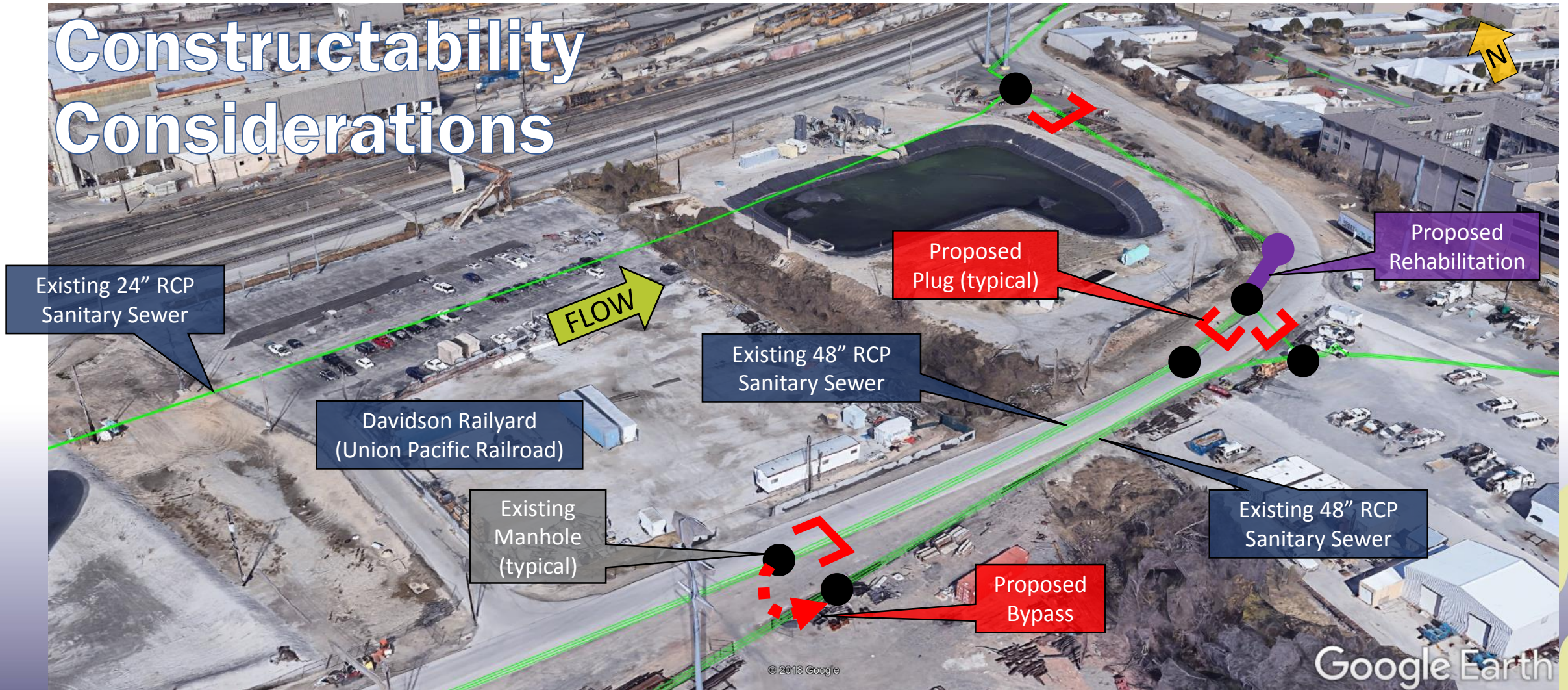




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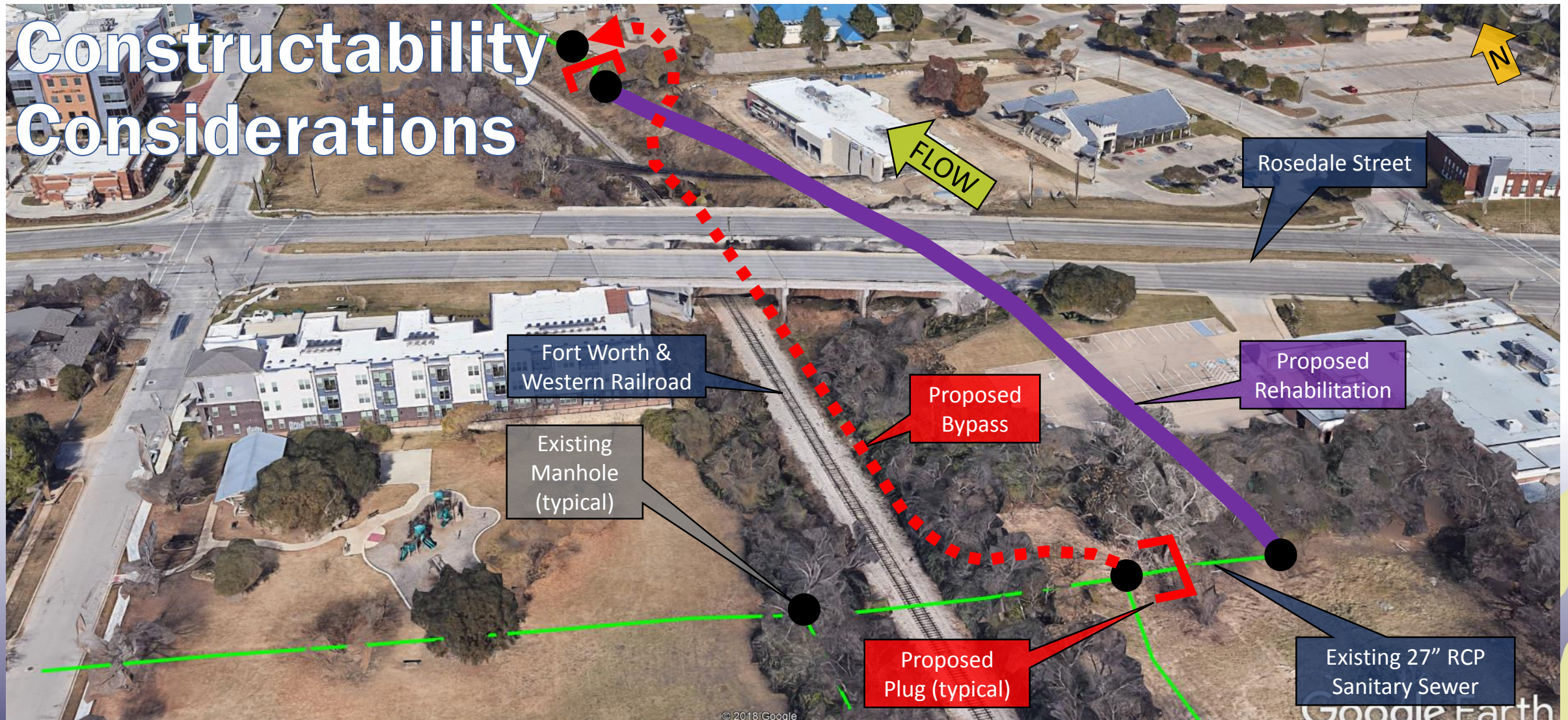




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Constructability Considerations





Items of Note

- Project Advertised in November 2018
- Construction Contract for \$3,637,000
- Construction to begin Spring 2019



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Questions?

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