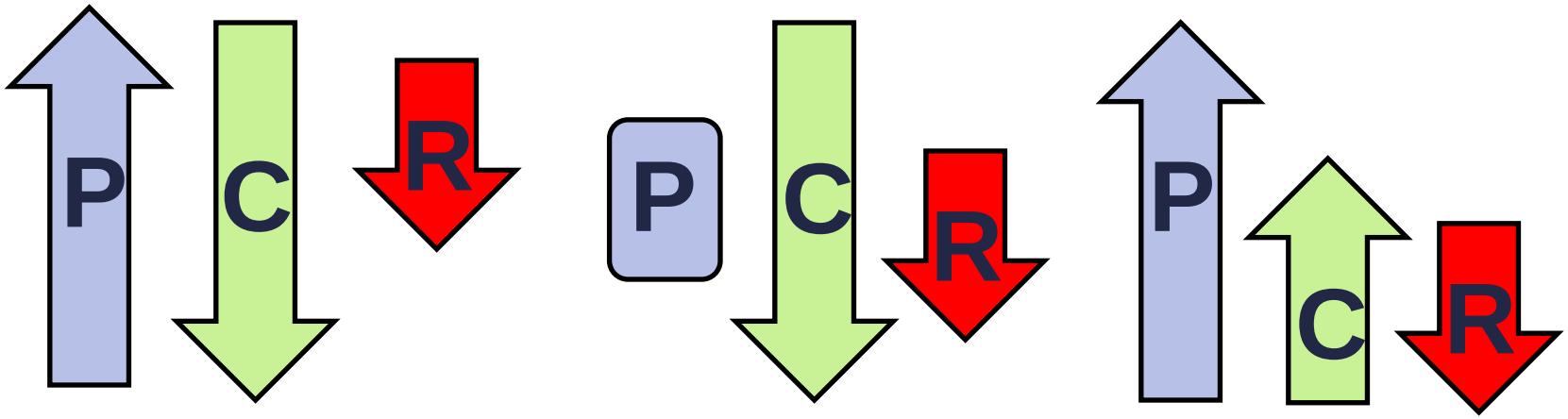
VE on a Big Local Project

ITE conference – April 12, 2017

Terry Beuthling, P.E. – HNTB
Dan Tyler, P.E. - WisDOT

Assist the Design Team

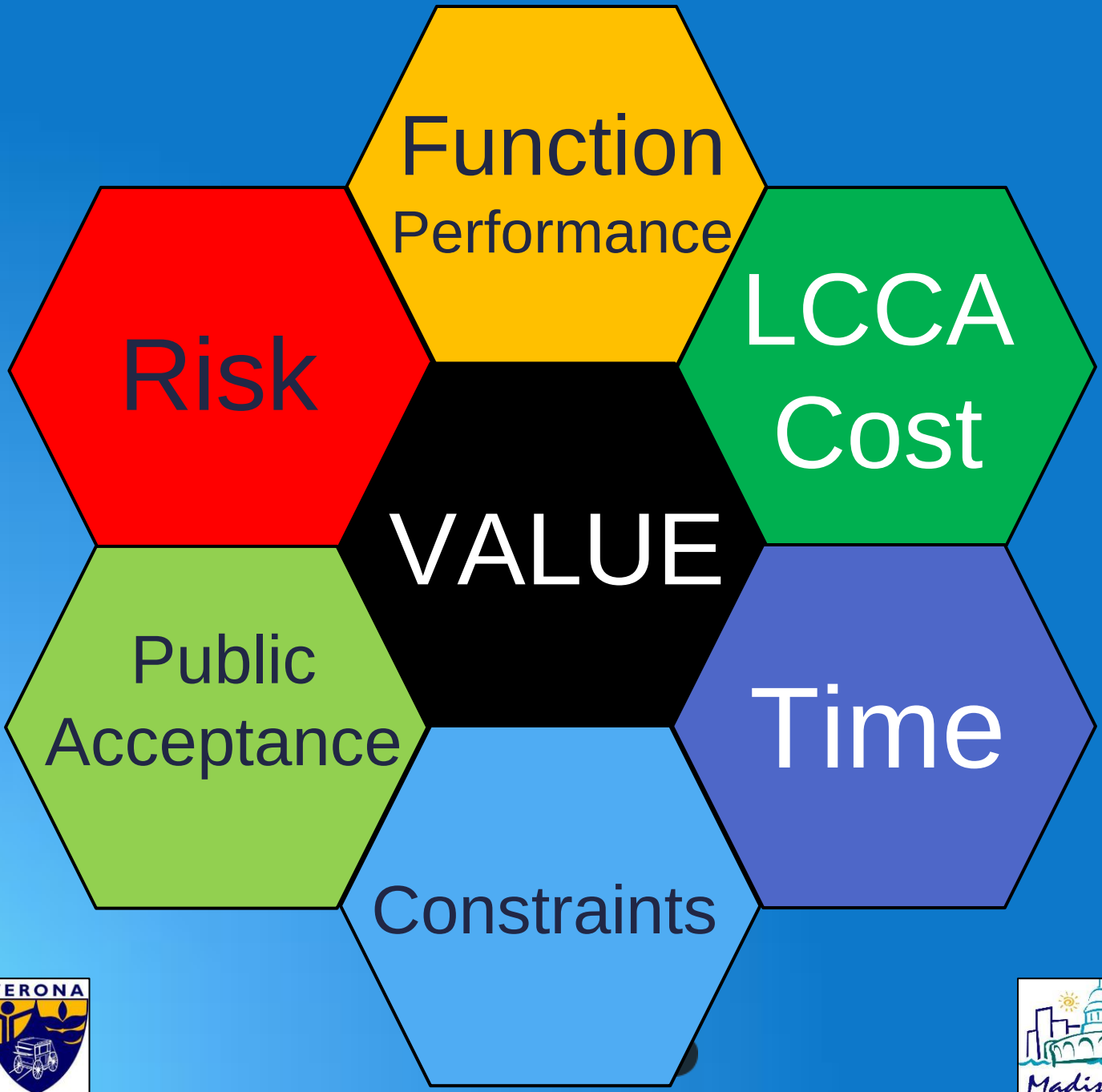
Value Engineering seeks to improve performance (P) and reduce costs (C)



plus reduce risks (R)

Value Methodology

- VE is flexible and multi-faceted
- You can apply VE techniques outside of a study
- VE is a collaboration tool


Function
Performance
Risk
LCCA
Cost
VALUE
Public
Acceptance
Time
Constraints

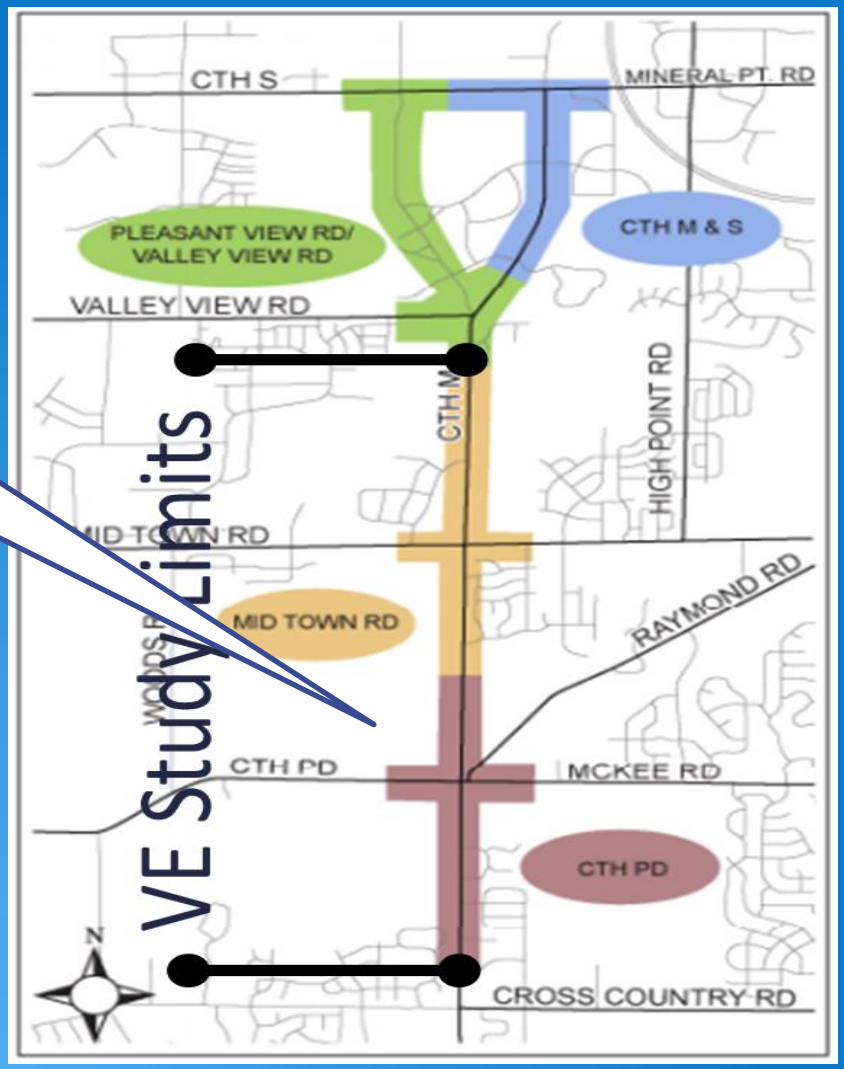
County Highway M
Cross Country to Prairie Hill
Value Engineering Study

October 17 - 21, 2016

Madison

University Ridge Golf Course

EPIC



Assist Design Team

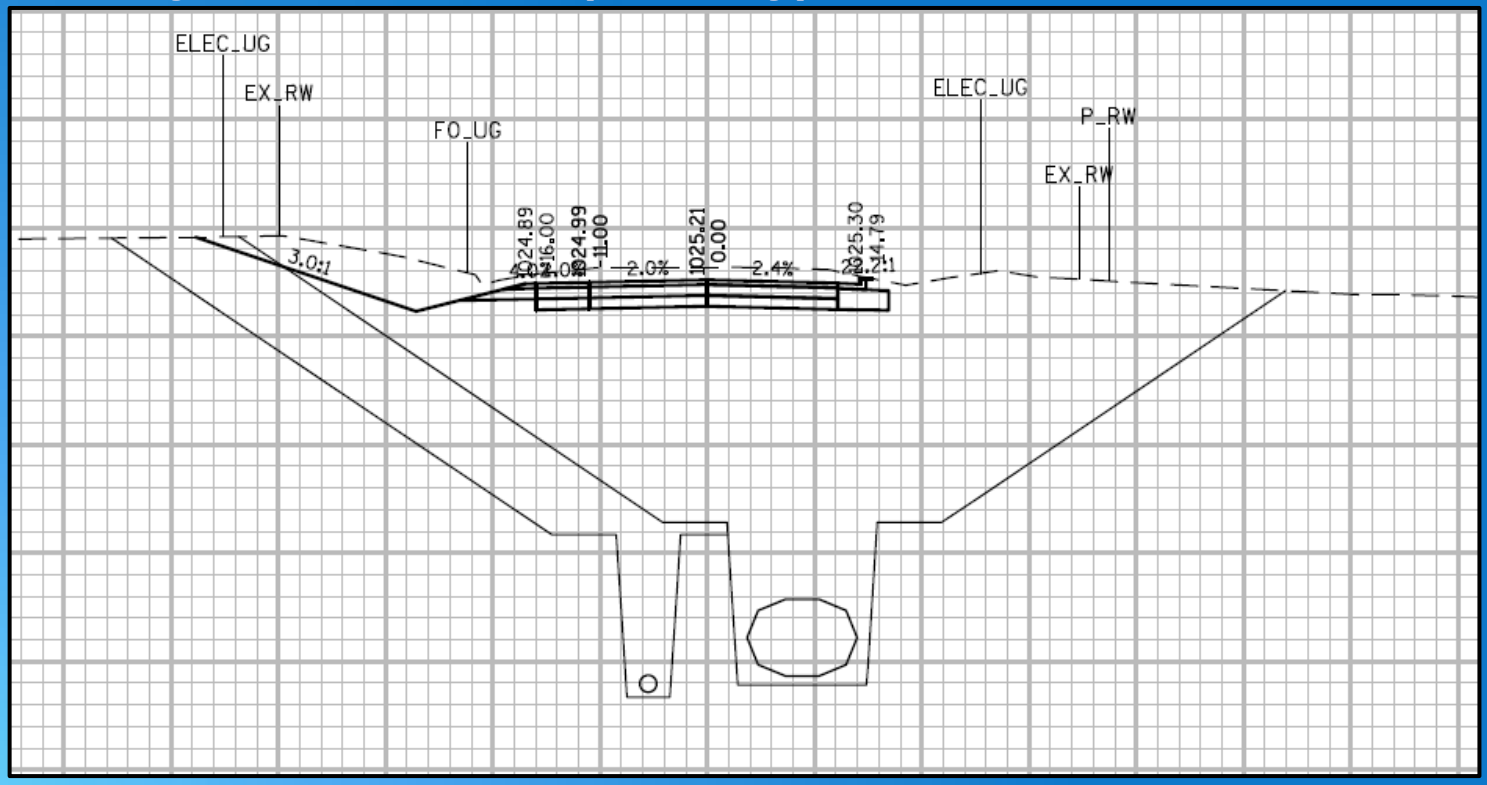
- Multi-Modal Operations
- Constructability/Staging/Schedule
- Construction Costs
- Risks
- Drainage
- Structures

Construction Cost Analysis

5992-09-CC CTH PD and Raymond Road							
20	B-13-845 Bridge Structure ($ / SF of deck)	15,560	SF	$150.00	$2,334,000	15.9%	15.9%
	Storm Sewer Pipe 68x106 Inch	3,800	LF	$400.00	$1,520,000	10.3%	26.2%
(CTH PD Bridge & Ret. Walls)	R-13-306 Ret Wall (NW Quadrant of Bridge)	10,613	SF	$110.00	$1,167,375	7.9%	34.1%
(CTH PD UP & Ret. Walls)	R-13-300 Ret Wall (NW Quadrant of Ped Under	8,800	SF	$130.00	$1,144,000	7.8%	41.9%
	Contingency	20	%		$1,109,705	7.5%	49.4%
	HMA Pavement (Including Oil)	15,300	TON	$72.00	$1,101,600	7.5%	56.9%
	Base Aggregate	59,000	TON	$10.00	$590,000	4.0%	60.9%
10	Common Excavation	75,000	CY	$6.00	$450,000	3.1%	64.0%
	Select Crushed Material	50,000	TON	$8.00	$400,000	2.7%	66.7%
	Contingency (Signing & marking, staking, extra la	10	%		$361,486	2.5%	69.1%
	Mobilization	0.16	EACH	$2,000,000.00	$328,000	2.2%	71.4%
30	C-13-2086 Underpass Box Culvert (14' x 9')	155	LF	$2,000.00	$310,000	2.1%	73.5%
70	Traffic Signals	1	LS	$300,000.00	$300,000	2.0%	75.5%
(CTH PD UP & Ret. Walls)	R-13-303 Ret Wall (SE Quadrant)	2,025	SF	$130.00	$263,250	1.8%	77.3%
	Structural Pavement Approach Slab	390	CY	$550.00	$214,500	1.5%	78.7%
	Contingency	10	%		$210,983	1.4%	80.2%

Investigate Stormwater Management Options
Avoid Building the Raymond Road Storm Sewer

Raymond Road - Proposed Typical Section at Sta 506+00



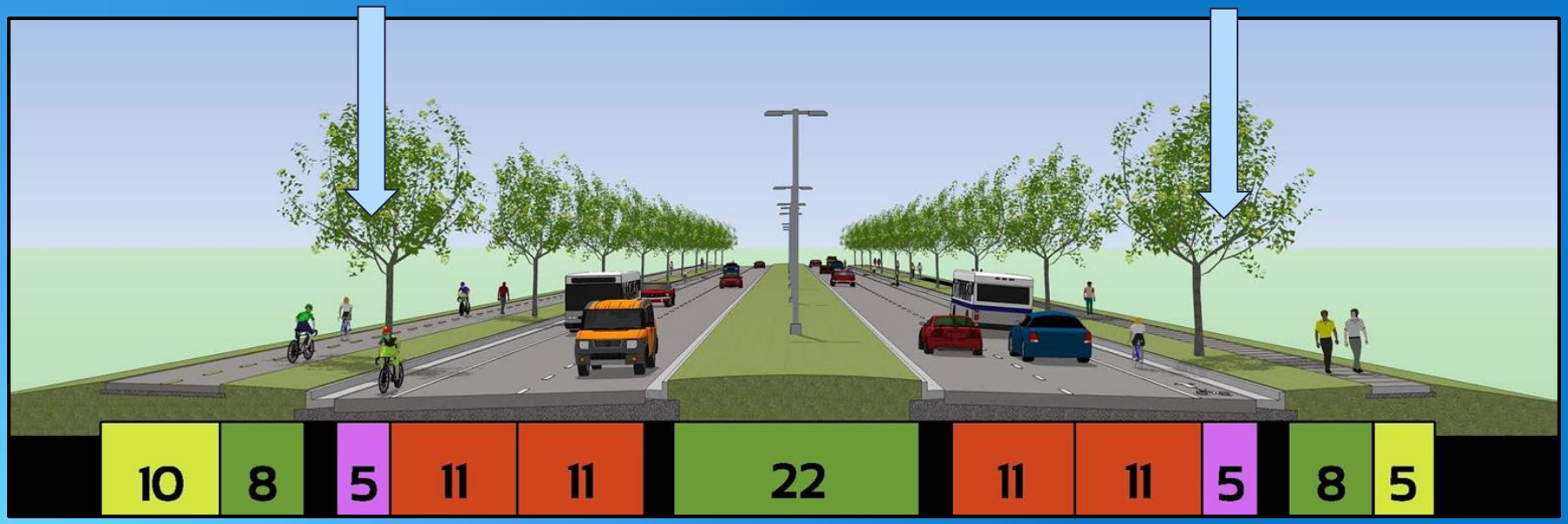
Recommendation 2

Construct MSE Walls with an Aesthetic Treatment

Validate On-road Bicycle Lanes

Current Design:

- 5’ bike lanes in each direction: ~$750,000
- Variable sidewalks and paths



Recommendation 4 - Conclusions
Validate On-road Bicycle Lanes

Basic Functions:

Improve mobility, reduce congestion

Upgrade SW's to Paths	$ 50,000
Add paths to project limit	$ 285,000
Add underpass	$ 1,200,000
Total - 'mitigation'	**$ 1,535,000**

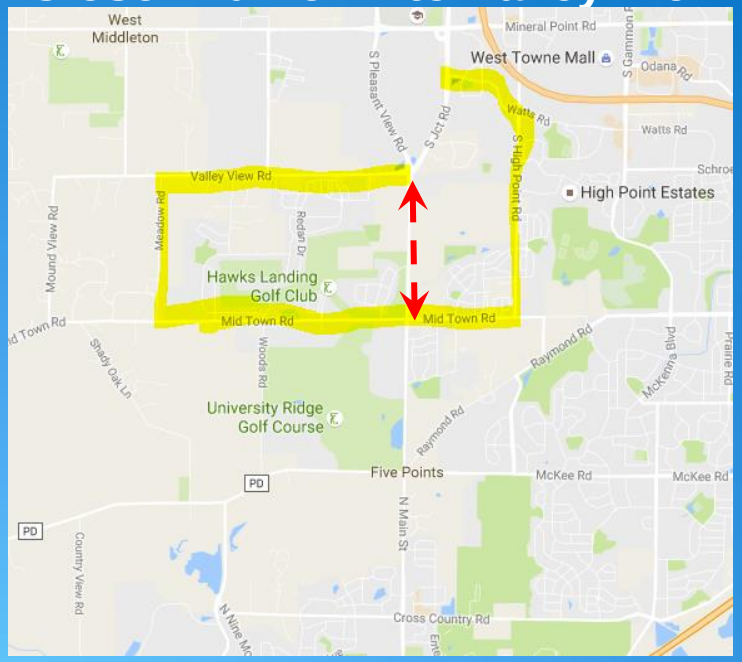
VE Team Recommends:

Retain unless other, equal provisions made

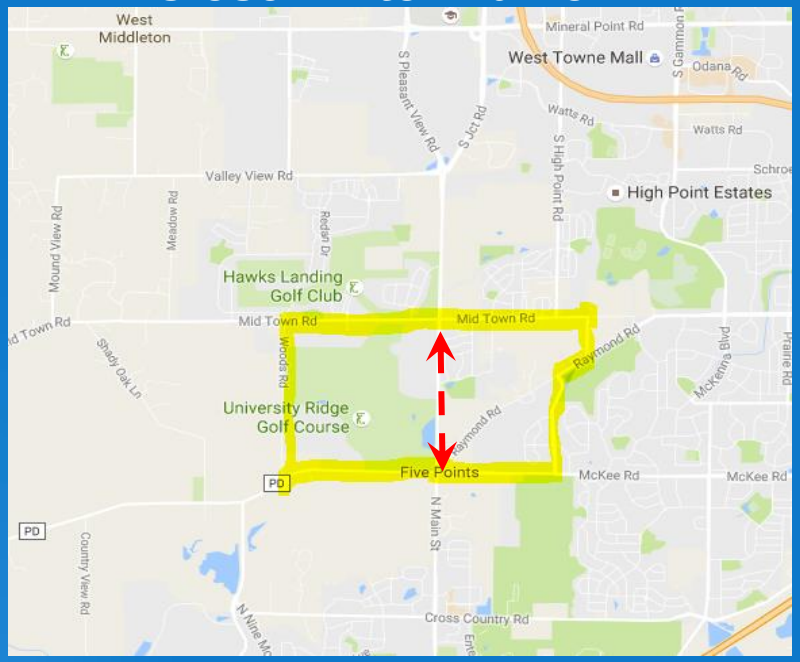
Validate Construction Staging

Design Suggestion
Phased closure of CTH M

Close Mid Town to Valley View



Close PD to Mid Town



Benefits: Expedited schedule, reduced costs, construction efficiencies, and increased contractor competition.

VE Best Practices

- Timing: 30% - 40% design
- Team: include users, stakeholders, operators
- Want PM's to embrace VE as a useful tool and opt-in

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