- 1. Introduction (1 slide)
- 2. Project Introduction (1 slide)
  - a. Project Team
    - i. Contractors, Owner, Architects
  - b. Building Location, Cost, Scope
- 3. Presentation Outline (1 slide)
- 4. Analysis 1: Driving Collaboration with Lean Construction (6 slides)
  - a. Collocation
    - i. What is it?
    - ii. How it can be used on 900 16th Street
      - 1. Site Plans and possible locations
    - iii. How it is beneficial?
  - b. Last Planner
    - i. What is it?
      - 1. What are the steps
    - ii. What should and should not be used on 900 16th Street
- 5. Analysis 2: Exterior Façade Redesign (7 Slides)
  - a. Existing Conditions
  - b. Proposed Alternative System
    - i. Definition of system composition
    - ii. Transportation to site
  - c. Schedule Analysis
  - d. Cost Analysis
- 6. Structural Breadth (3 slides)
  - a. Comparison of average weight of panels
  - b. Calculations showing structural system adequacy
- 7. Mechanical Breadth (3 slides)
  - a. Definition of spaces used for analysis
  - b. Comparison of façade system R-values and system performance
- 8. Analysis 3: VE of Prismatic Curtainwall Glazing Units (5 slides)
  - a. Explain the curtainwall system in detail and the risks associated with procuring material from current manufacturer
  - b. Introduce the proposed alternative manufacturer
    - i. Comparison of the two methods
  - c. Cost Analysis
    - i. Initial costs followed by the costs associated to fix issues
  - d. Schedule Analysis
- 9. Recommendations (1 slide)
- 10. Final Remarks (1 slide)



## 900 16<sup>th</sup> Street NW

Washington, DC

Final Presentation
AE Senior Thesis 2016

Douglas Watson Construction Management Advisor – Rob Leicht



Douglas Watson				900 16 <sup>th</sup> Street NW		AE Senior Thesis 2016			
Project Introduction	Analysis #1	Analysis #2	Structural Breadth	Mechanical Breadth	Analysis #3	Recommendations	Final Remarks		
Analysis Background			Existing Facade		Alternative Facade				
Problem	Erection of precast façade sy consuming	stem is time		G G1	SILL EXTENSION, PROVIDED BY MULLION MANUFACTURER, FINISH TO MATCH MULLION INSULATION UNDER SILL EXTENSION ALUMBULM WINDOW W. PVDF FINISH WOOD BLOCKING BACKER ROD AND SEALANT		6" METAL STUDS w/FIBERGLASS INSULATION SHEATHING		
Proposed Solution	Implementation of an altern	ative façade system			CONTINUOUS VAPOR BARRIER, WRAP OVER INSULATION AND SEAL WATERTIGHT AT WINDOW FRAMING  LIMESTONE ON PRECAST PANEL  58° GMB ON METAL STUD  EMBED AND PRECAST ANCHORAGE. SEE STRUCT  EL. 102 T. 112 S  FIRE STOP W. SMOKE SEAL  CAST IN PLACE CONCRETE  SEMI-RIGID FOIL FACED INSULATION		BASE COAT  GALVANIZED EXPANDED METAL, WELDED OR WOVEN WIRE SELF-FURRING LATH		
Goals	Reduction in the installation	uction in the installation duration			LINEAR SLOT DIFFUSER, SEE MECHANICAL  MARBLE ON PRECAST PANEL  ROLLER SHADE SYSTEM AND ASSOCIATED FRAMING INSTALLED AS PART OF BASE BUILDING, TYP  GYPSUM SOFFIT AND FRAMING, PRICE AS BID ALTERNATE, TYP  BACKER ROD AND SEALANT		CODE APPROVED BUILDING FELT (TWO LAYERS)  3/8" MIN. THERMOCROMEX		
	Reduction of exterior façade system costs  Increase ease of installation			235 7-6	MULLION EXTENSION, PROVIDED BY MULLION MANUFACTURER ALLIMINUM WINDOW W PVDF FINISH				
	Improved thermal performa system	nce of exterior wall							

## **Analysis Description**

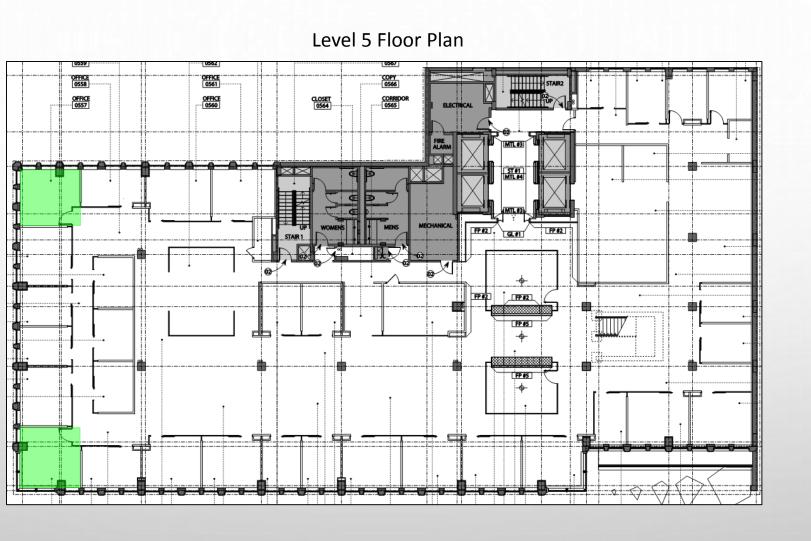
Project Introduction

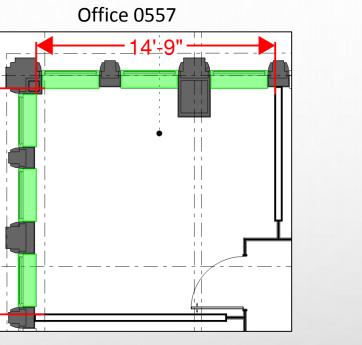
Issue Changing the façade of the building could change

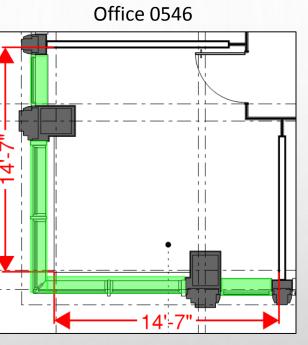
the mechanical loads

Goals Determine if the current mechanical system

performs adequately with the alternative façade







Room Characteristics									
Space	Exterior Wall	Length	Height	SF of Wall	% Window Coverage				
fice 0557	West	14'-9"	11'-2 1/2"	165 SF	50%				
	South	14'-0"	11'-2 1/2"	157 SF	50%				
fice 0546	South	14'-7"	11'-2 1/2"	164 SF	68%				
	East	14'-7"	11'-2 1/2"	164 SF	68%				

	900 16 <sup>th</sup> Street NW					AE Senior Thesis 2016							
Project Introduction	Analysis #1 Analysis #2	Structural Breadth		Med	chanical Breadt	h	Ana	llysis #3	Recom	nmendations	Final Remark	S	
Analy	Cost Analysis												
	Initial Base Costs												
Problem	Manufacturer Location created extended turn around time on material	Manufacturer	Delivery Method	Cost of Delivery	# of Shippments	Total Delive Costs	ry Cost of Material & Labor	Total Cost					
		Original	Sea Freight	t \$ 12,000.00	3	\$ 36,000.0	00 \$ 282,295.00	\$318,295.00					
		Alternative	Truck	\$ 19,577.58	3	\$ 19,577.5	58 \$ 326,293.00	\$345,870.58	Existing				
Proposed Solution	Locate Manufacturer of prismatic curtainwall glazing units within the United States								Alternate				
		Manufactu		Manufacturer Delays  Design/Fab Broken Glazing Units Improp		proper Fabrication	per Fabrication		e				
Goals	Reduction of material procurement duration		Original	\$ 276,000.00	\$ 58,	125.00 \$	119,865.00						
Joans	Reduction in cost of prismatic curtainwall system			\$ 13,000.00 \$(263,000.00)		603.00 \$ 522.00) \$	125,257.00 5,392.00						
											Cost		