



http://content.asce.org/studentcompetition/index.html



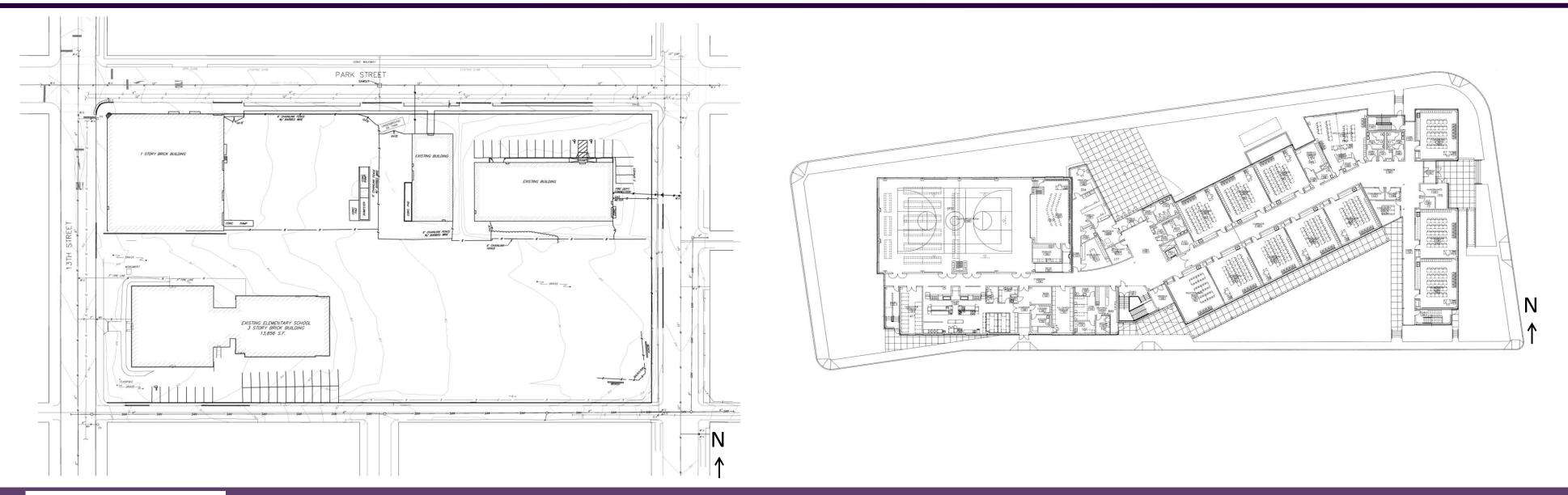
AEI Team 2013-02

3 April 2013



Brian LaChance | Mike Palmer | Rachel Barrow Alex Byard | Melanie Fonner Brad Frederick | Pat Allen





Goals

BIM Execution Plan

Site Plan

Building Analysis

Competition Challenge



Conclusion

Sustainability Analysis

Site Logistics

Schedule

Cost Estimate







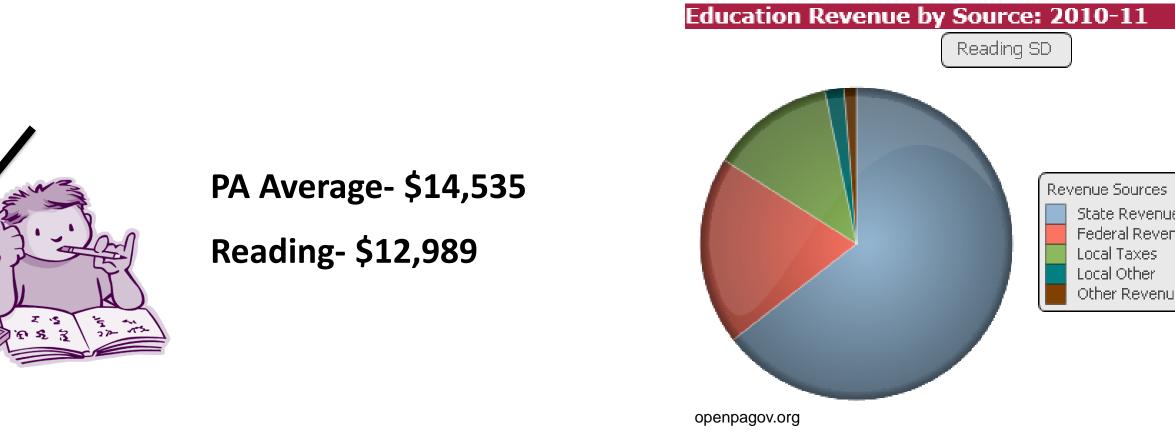
https://www.google.com/imghp?hl=en&tab=wi

Goals

BIM Execution Plan

Project Background

Reading School District



Cost Estimate

Sustainability Analysis

Building Analysis

Site Logistics

Schedule

Site Plan

Conclusion

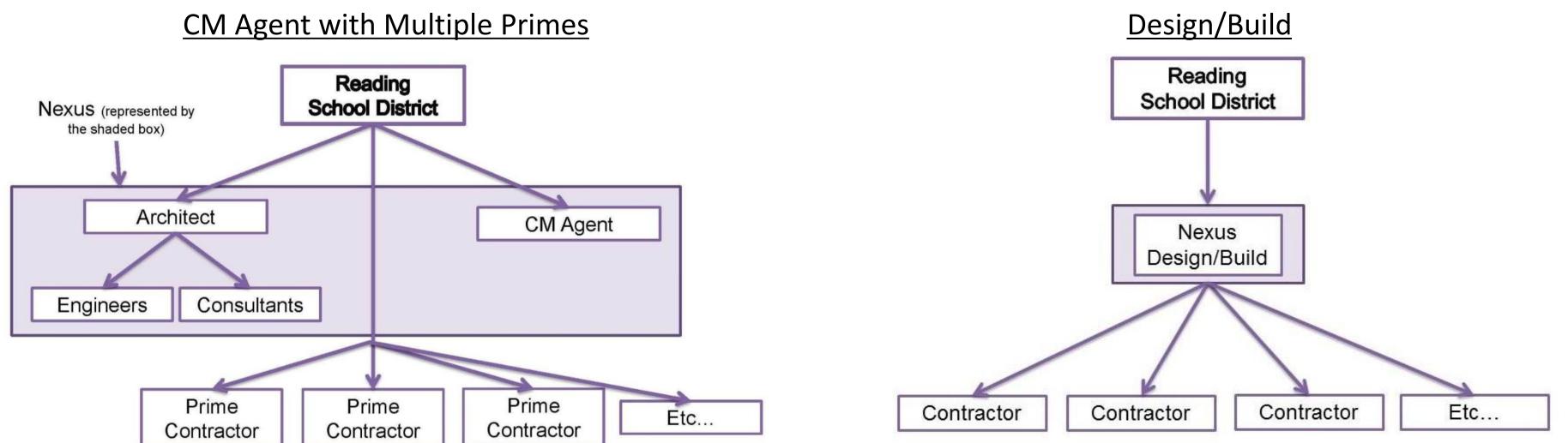
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venue	64.5%
Revenue	19.5%
xes	12.8%
her	2.0%
evenue	1.3%



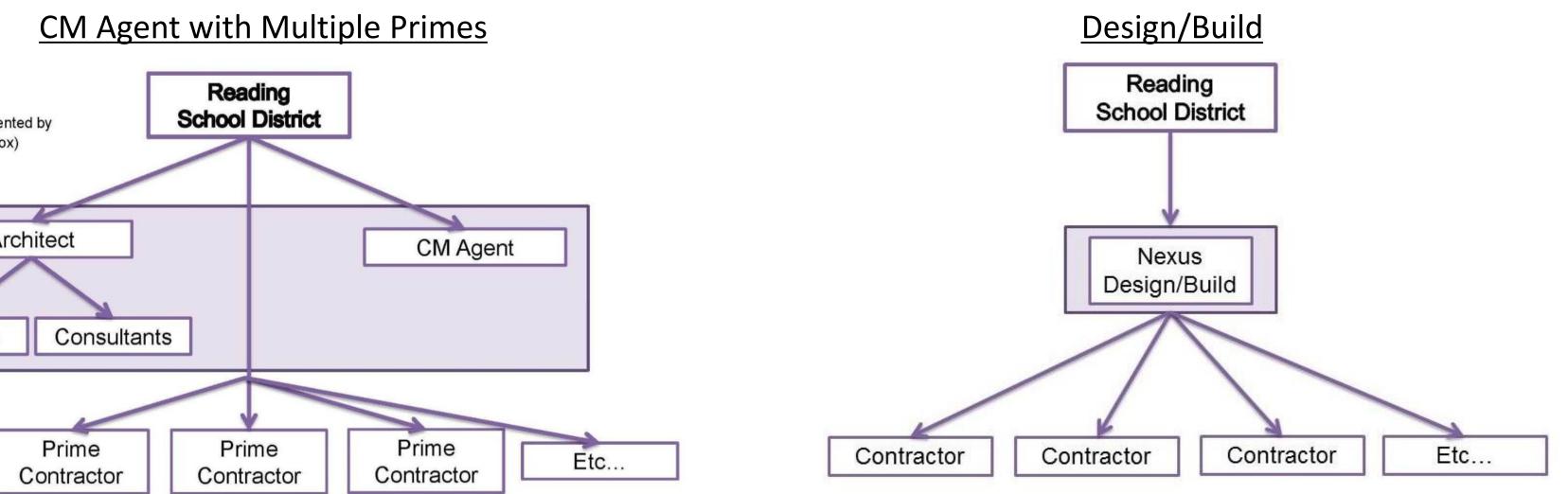
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https://www.google.com/imghp?hl=en&tab=wi



Project Background

Goals

BIM Execution Plan

Site Plan

Building Analysis

Delivery Method

Site Logistics Schedule

Cost Estimate

Sustainability Analysis

Conclusion



Owner Core Values









Project Background

Goals

BIM Execution Plan

Site Plan

Building Analysis

Goals



Nexus Goals







Schedule

Cost Estimate

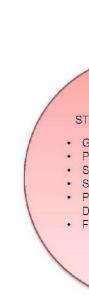
Sustainability Analysis

Conclusion









Goals

BIM Execution Plan

Site Plan

Building Analysis

BIM Execution Plan



BIM Uses

MECHANICAL ENGINEERS

- Utility Available and Capacity Mechanical System Options
- Mechanical System Space
- Requirements Mechanical System Selection
- Preliminary Mechanical System
- Design
- Energy Model Review
- Final Mechanical Design
- Updated Energy Model

NEXUS

- Precedent Research
- Engineering Goals / Criteria
- Work Flows
- Multidisciplinary Integration
- Security
- Systems Integration
- Sustainability Work Plan
- Sustainability StrategiesLEED Certification Analysis
- Final Project Documentation Functional Layout

STRUCTURAL ENGINEERS

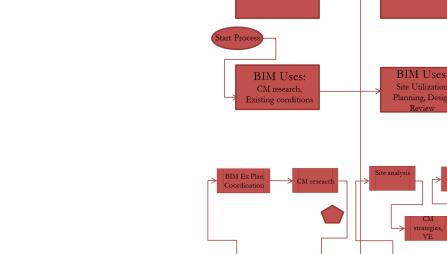
 Geotechnical Report Preliminary Base Model Structural Systems Options Structural System Selection Preliminary Structural System Design

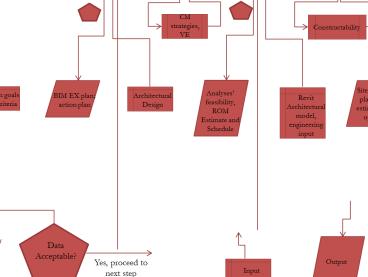
Final Structural System Design

CONSTRUCTION MANAGERS

- BIM Execution Plan
- Site Investigation
- Utility Tie-in Points
- Constructability Input Preliminary Estimate
- Preliminary Schedule
- Site Logistics Input
- Value Engineering
- Final Estimate
- Final Schedule
- 4D Modeling

- LIGHTING / ELECTRICAL ENGINEER
- Utility Availability and Capacity
- Daylighting Options
- Lighting/Electrical System Selection
- Preliminary Lighting/Electrical System Design
- Site Lighting Design
- Energy Model Review
- Final Electrical Design
- Detailed Lighting Design
- Updated Energy Model





Site Logistics

Schedule

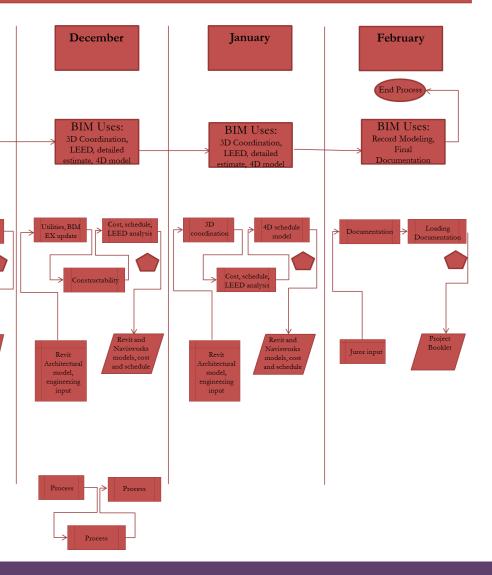
Cost Estimate

Sustainability Analysis

Conclusion

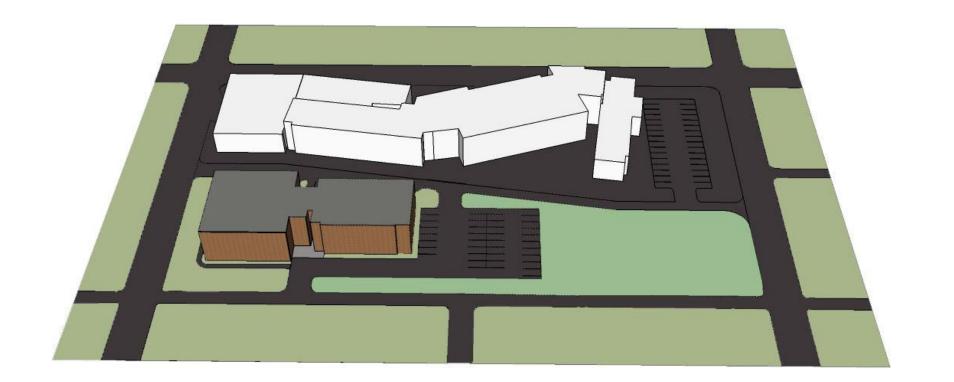
Construction Managers















Building Analysis

Project Background

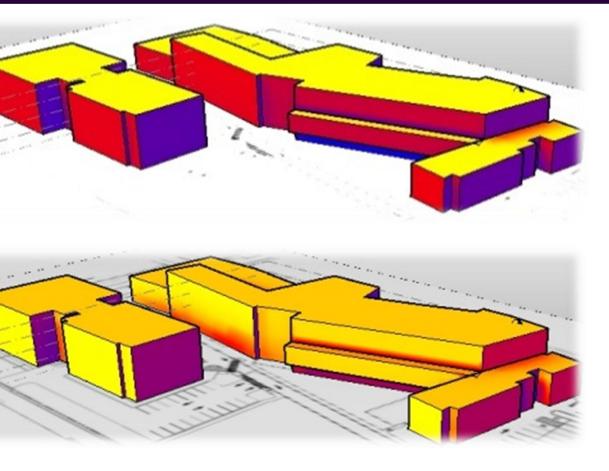
Goals

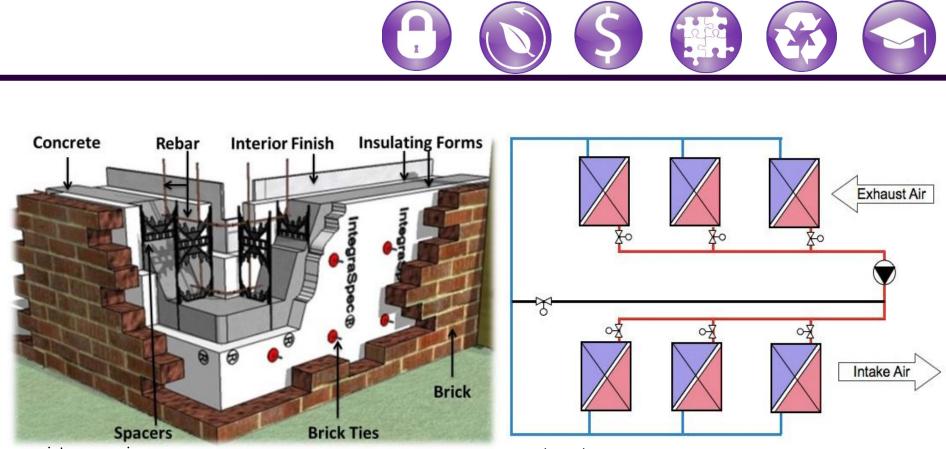
BIM Execution Plan

Site Plan

Collaborative Progression







www.integraspec.ie







Conclusion

Schedule

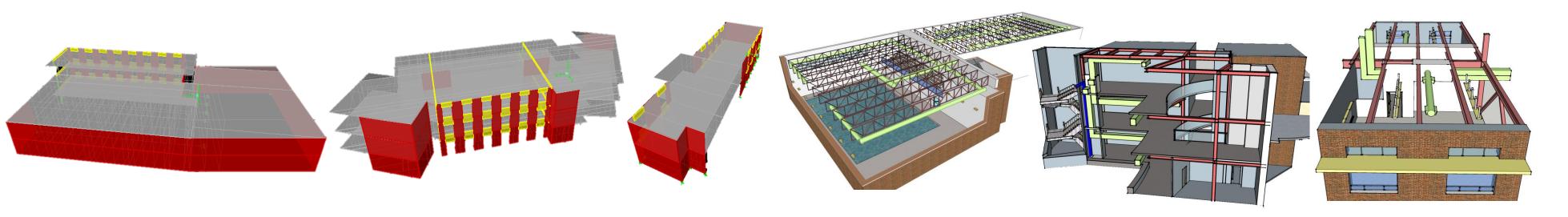
Cost Estimate

Sustainability Analysis

www.konvekta.com











Goals

BIM Execution Plan

Site Plan

Building Analysis

Collaborative Progression











Site Logistics

Schedule

Cost Estimate

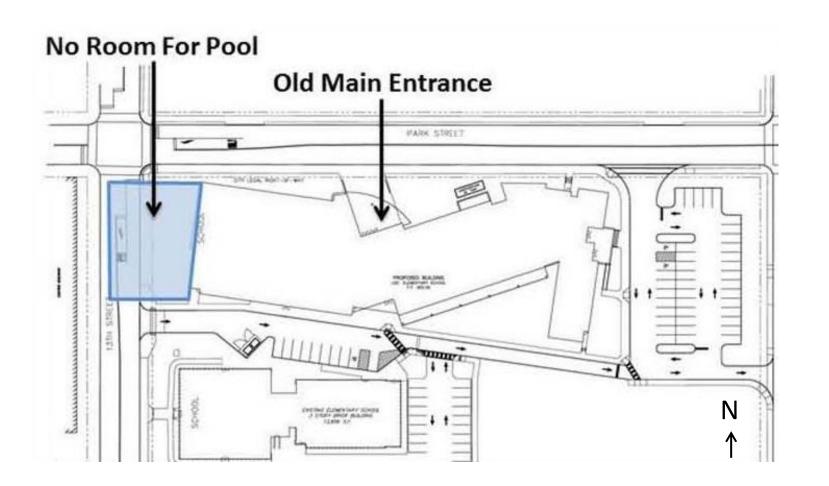
Sustainability Analysis

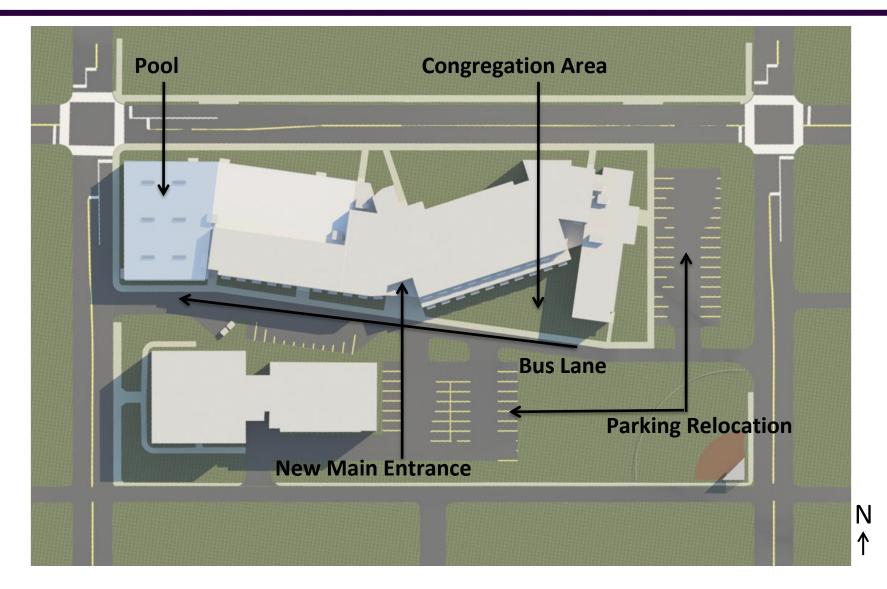
Conclusion











Goals

BIM Execution Plan

Site Plan

Building Analysis

Site Plan



Site Logistics

Schedule

Cost Estimate

Sustainability Analysis

Conclusion







First Floor Plan

Project Background

Goals

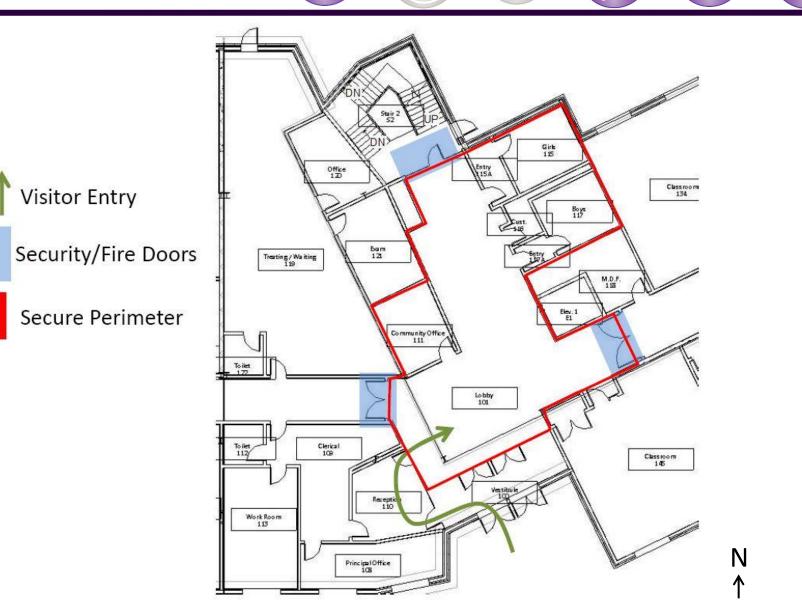
BIM Execution Plan

Site Plan

Building Analysis

Main Entrance





Site Logistics

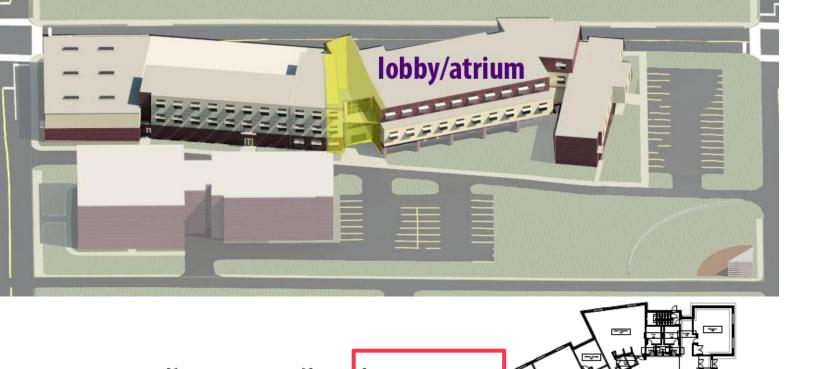
Schedule

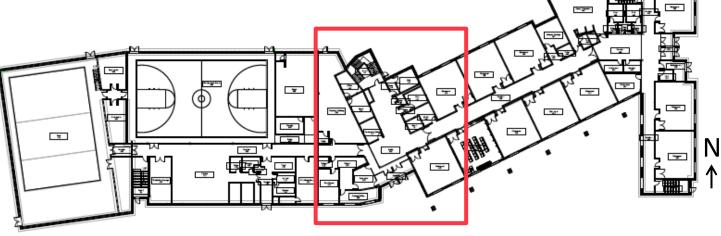
Cost Estimate

Sustainability Analysis

Conclusion







First Floor Plan

Project Background

Goals

BIM Execution Plan

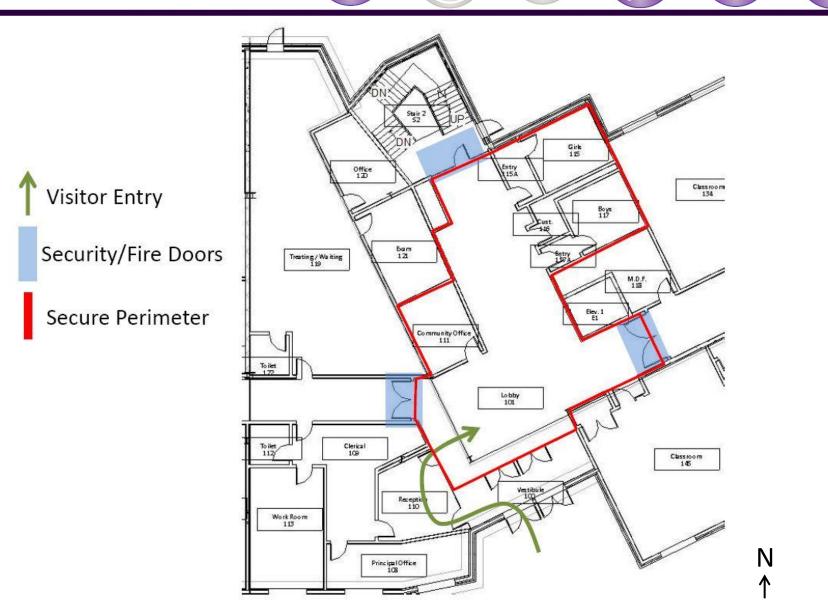
Site Plan

Building Analysis

Entry Walkthrough







Conclusion

Site Logistics

Schedule

Cost Estimate

Sustainability Analysis





Second Floor Plan

Project Background

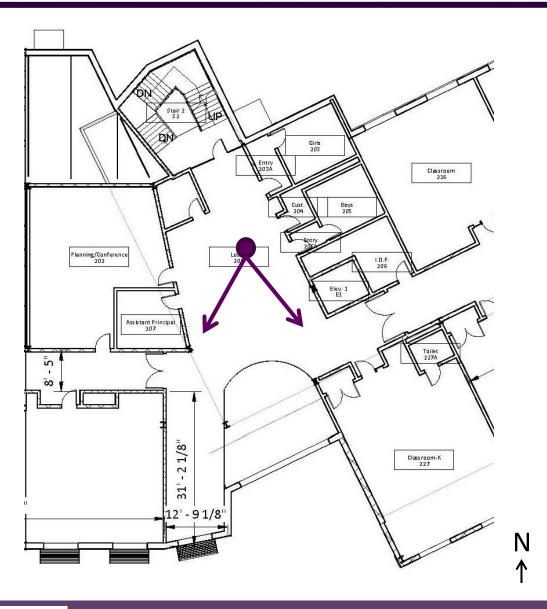
Goals

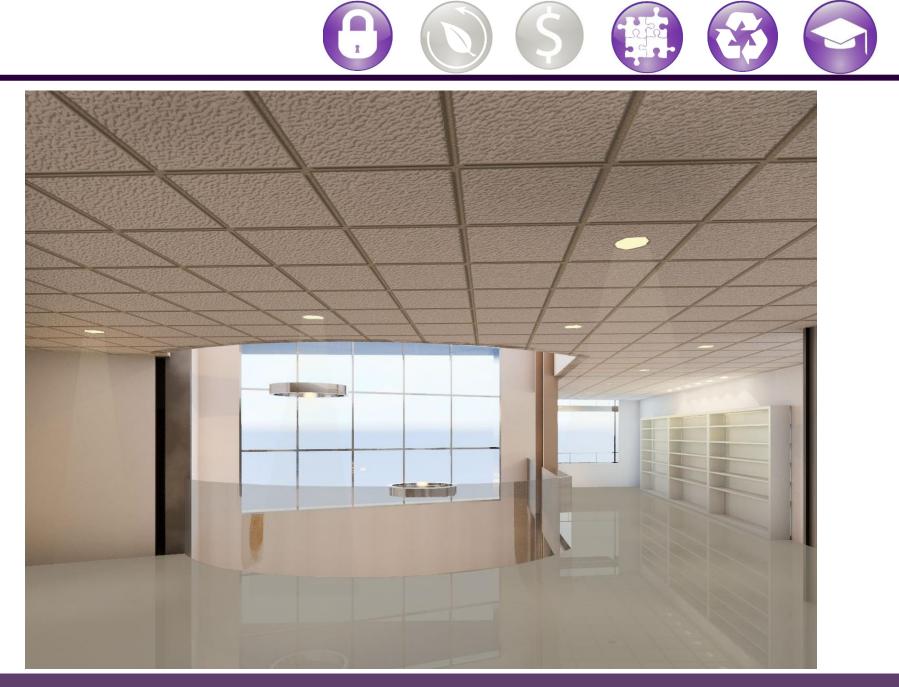
BIM Execution Plan

Site Plan

Building Analysis

Second Floor Lobby





Site Logistics

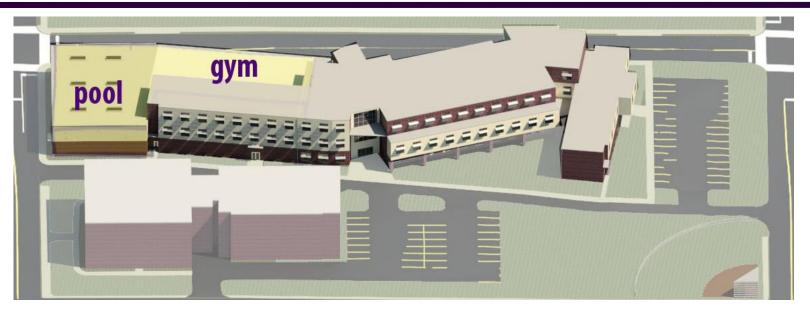
Schedule

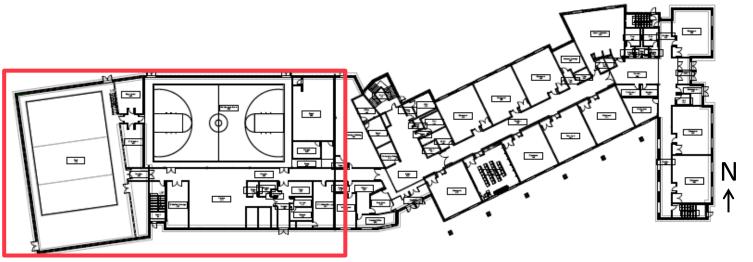
Cost Estimate

Sustainability Analysis

Conclusion









First Floor Plan

Project Background

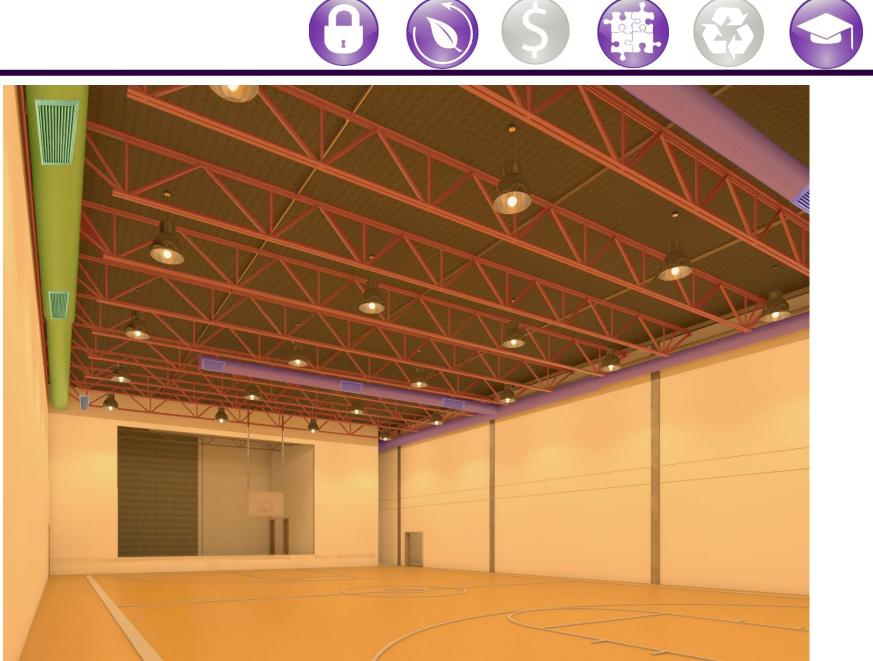
Goals

BIM Execution Plan

Site Plan

Building Analysis

Multipurpose Room





Site Logistics

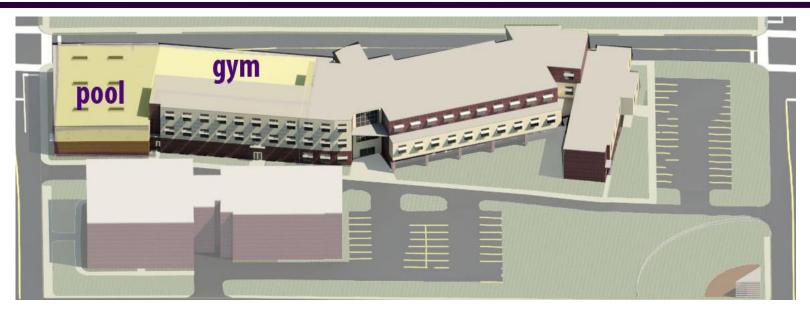
Schedule

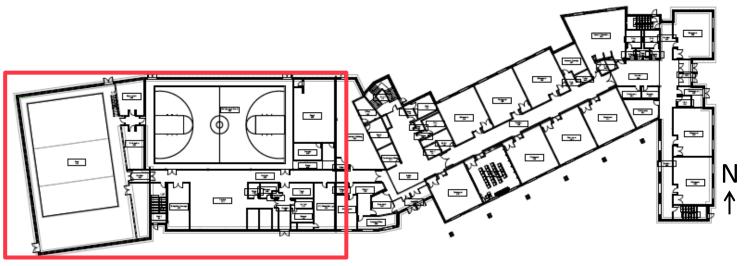
Cost Estimate

Sustainability Analysis

Conclusion







First Floor Plan

Project Background

Goals

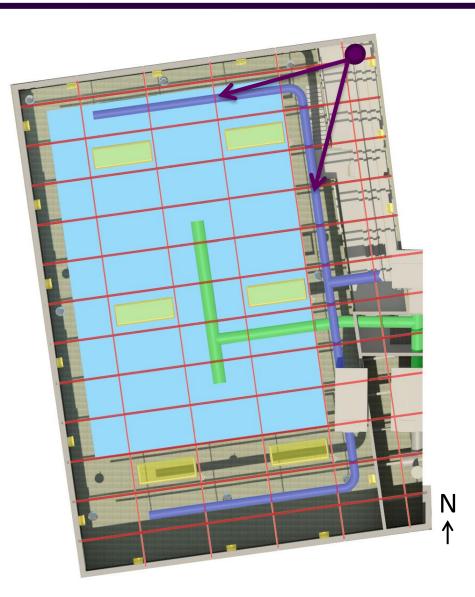
BIM Execution Plan

Site Plan

Building Analysis

Pool







Site Logistics

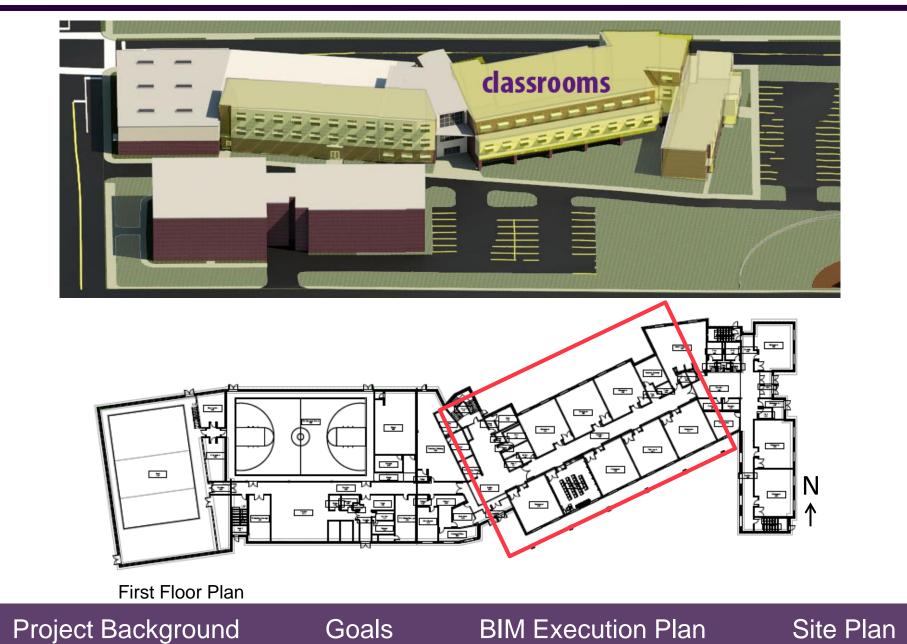
Schedule

Cost Estimate

Sustainability Analysis

Conclusion





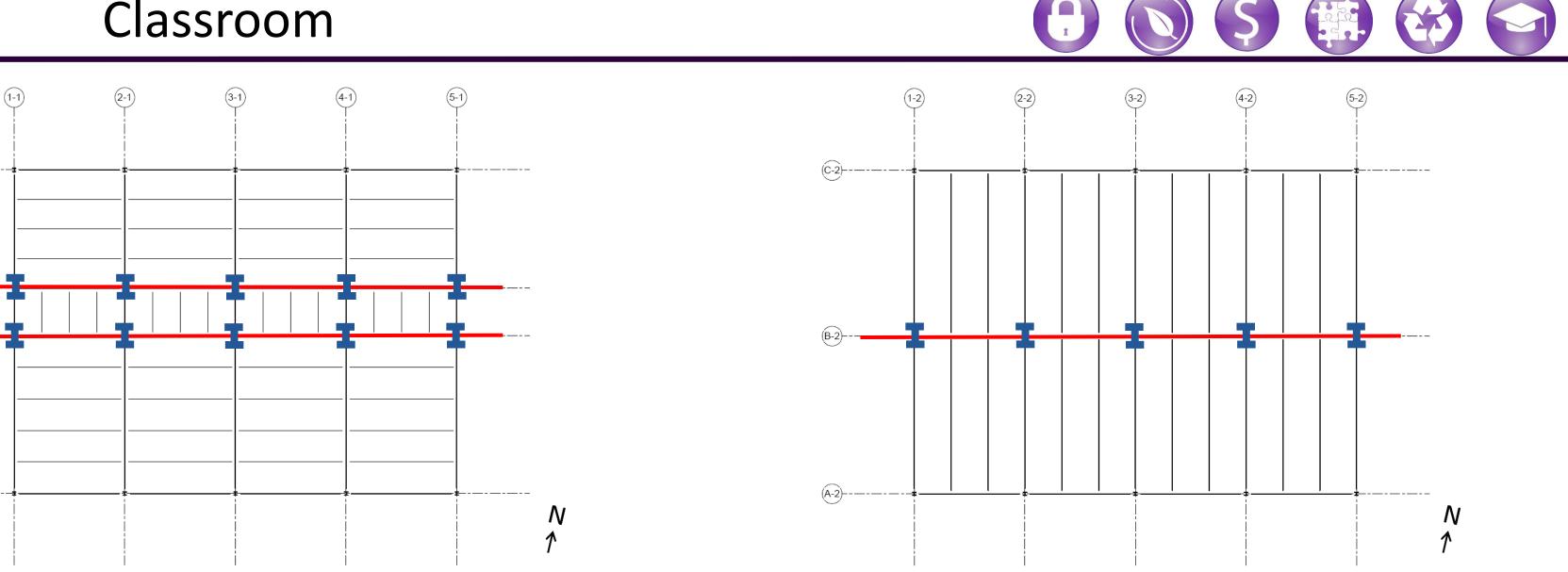
Building Analysis

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(A-1)---

Classroom





Site Logistics

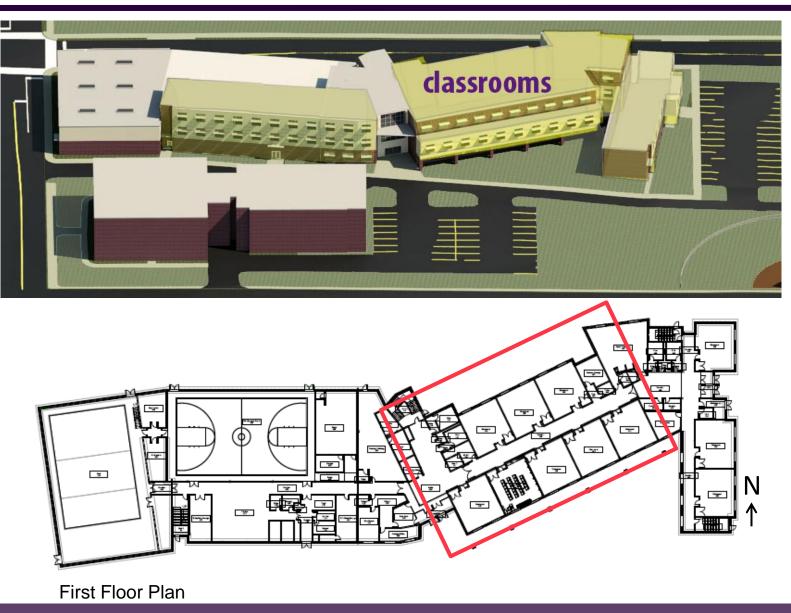
Schedule

Cost Estimate

Sustainability Analysis

Conclusion





Goals

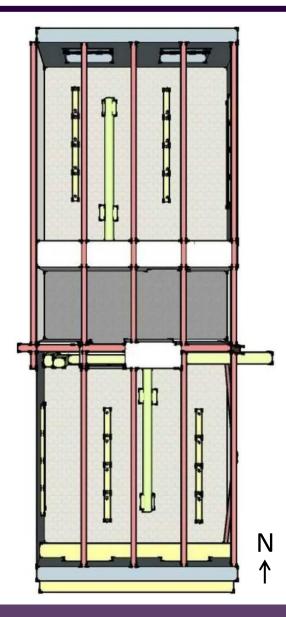
BIM Execution Plan

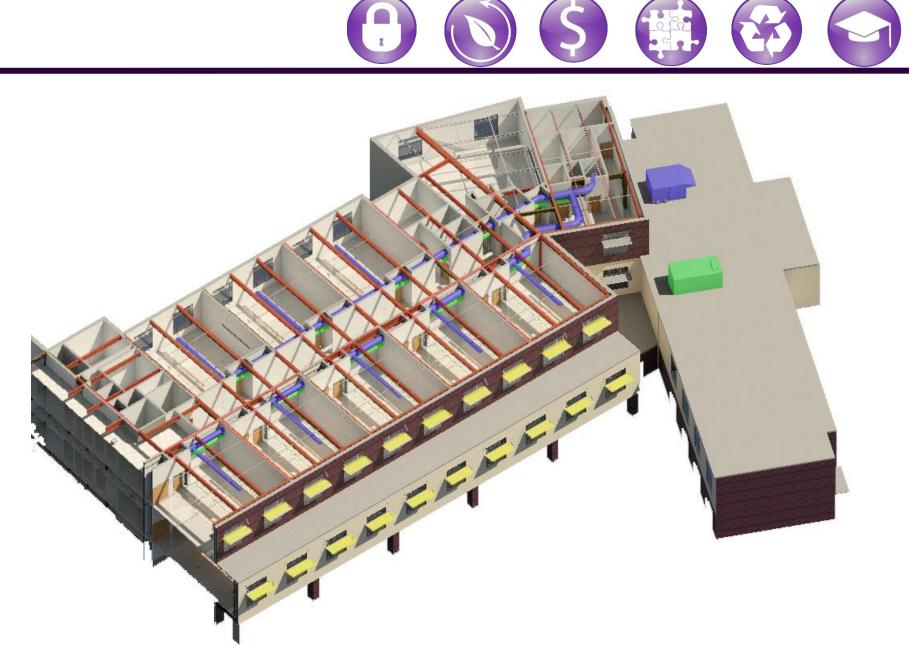
Site Plan

Building Analysis

Classroom







Site Logistics

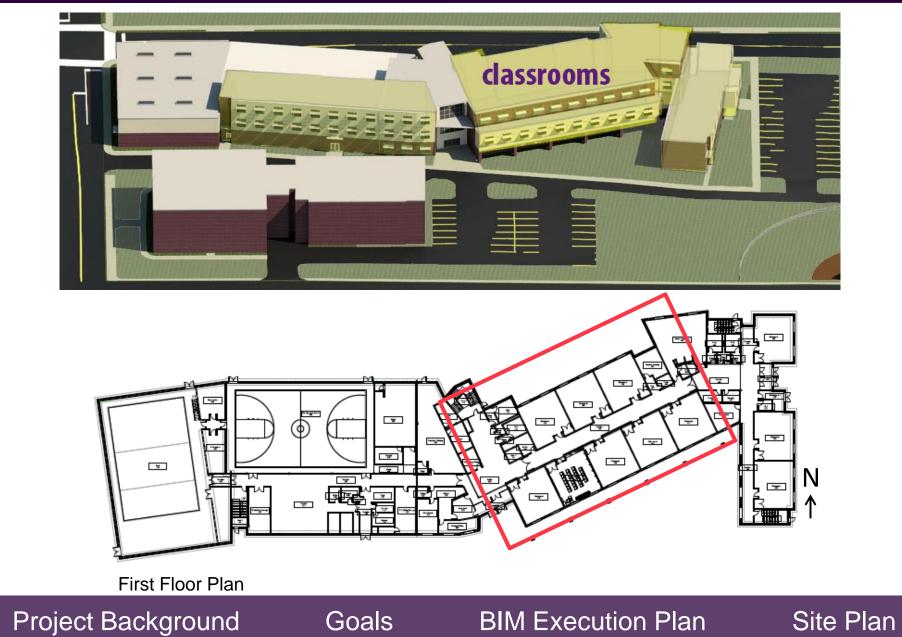
Schedule

Cost Estimate

Sustainability Analysis

Conclusion



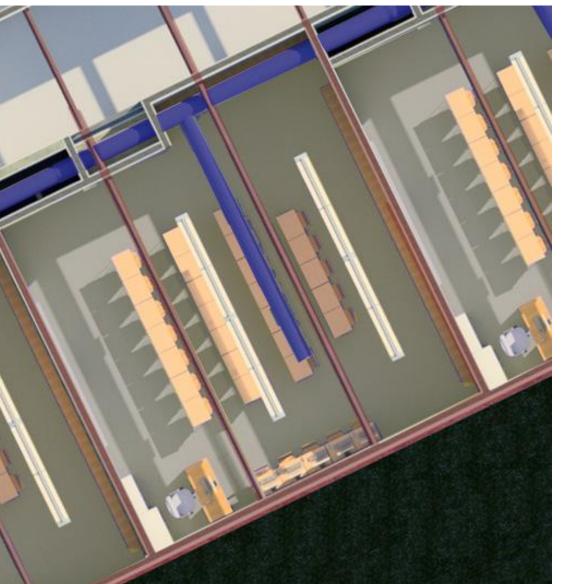


Goals

Site Plan

Building Analysis

Classroom



Site Logistics



Schedule

Cost Estimate

Sustainability Analysis

Conclusion





Structural Steel Members							
Member	(ft)	(lbs)	Туре				
60DLH18	84	1512	Pool roof truss				
40LH15	60	900	Gym roof truss				
W18X46	42	1932	Typical floor beam				
W24x68	42	2856	Largest girder				
W18X35	35	1225	Typical east wing floor beam				
W18X40	42	1680	Typical roof beam				
W12X87	42	3654	Typical column				
HSS6X6X1/2	20.5	718	Typical brace member				

Goals

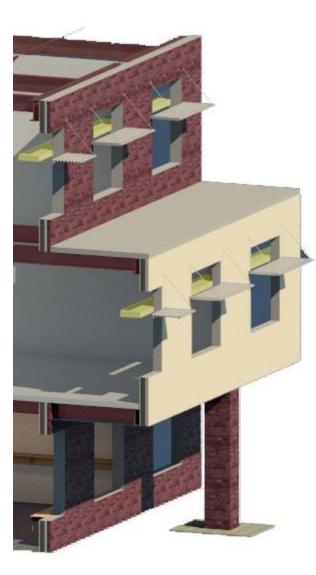
BIM Execution Plan

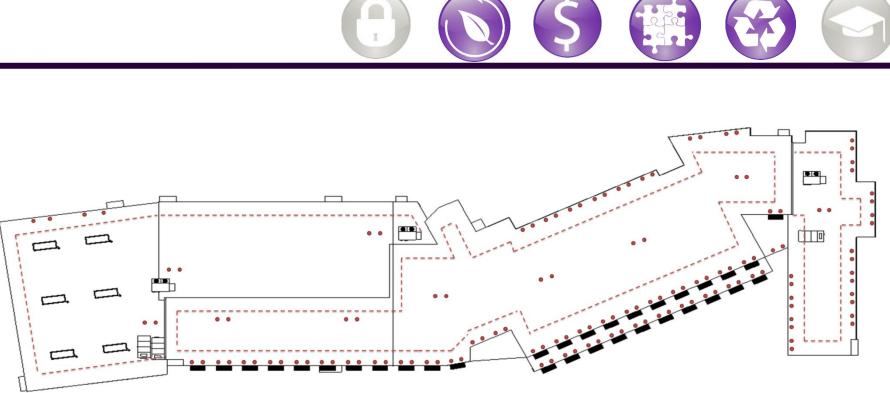
Site Plan

Building Analysis

Constructability







Site Logistics

Schedule

Cost Estimate

Sustainability Analysis

Conclusion





Level of Integration	Significant	Acceptable
Secure Main Entrance	V	
Safe Main Entrance	V	
Parking Lot Balusters		V
Public Address System	V	
Security Alarms	V	
Intrusion Detection System	V	
Lockdown Security Doors	V	
Manual Window Shades		V
Video Surveillance	V	
First Floor Bullet-Resistant Glass	V	

Goals

BIM Execution Plan

Site Plan

N

Building Analysis

Safety

I	



- Site Logistics

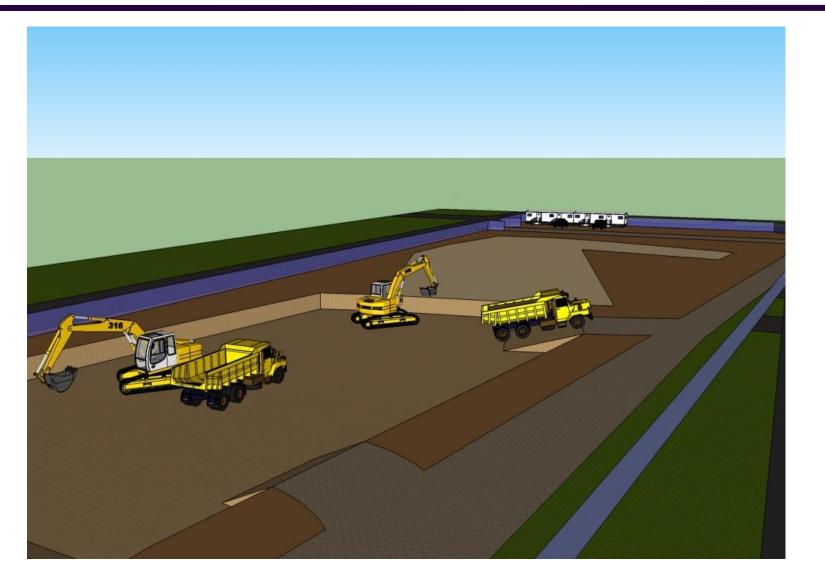
Schedule

Cost Estimate

Sustainability Analysis

Conclusion





Pool 13th Street



Project Background

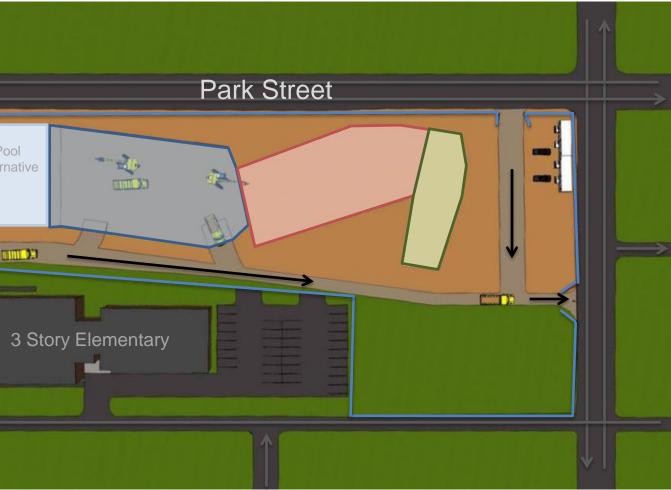
Goals

BIM Execution Plan

Site Plan

Building Analysis

Site Logistics





Excavation - 6/16/14 to 7/18/14



Site Logistics

Schedule

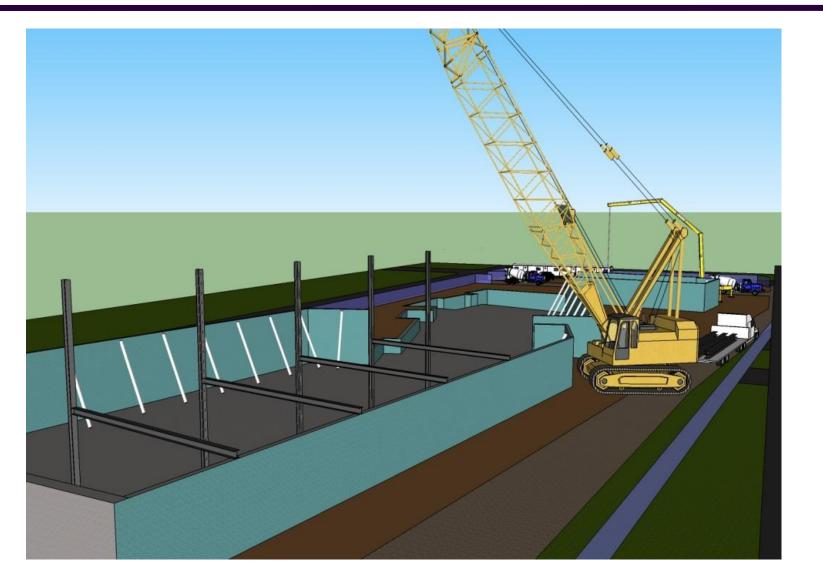
Cost Estimate

Sustainability Analysis

Conclusion









Goals

BIM Execution Plan

Site Plan

Building Analysis

Site Logistics



Site Logistics

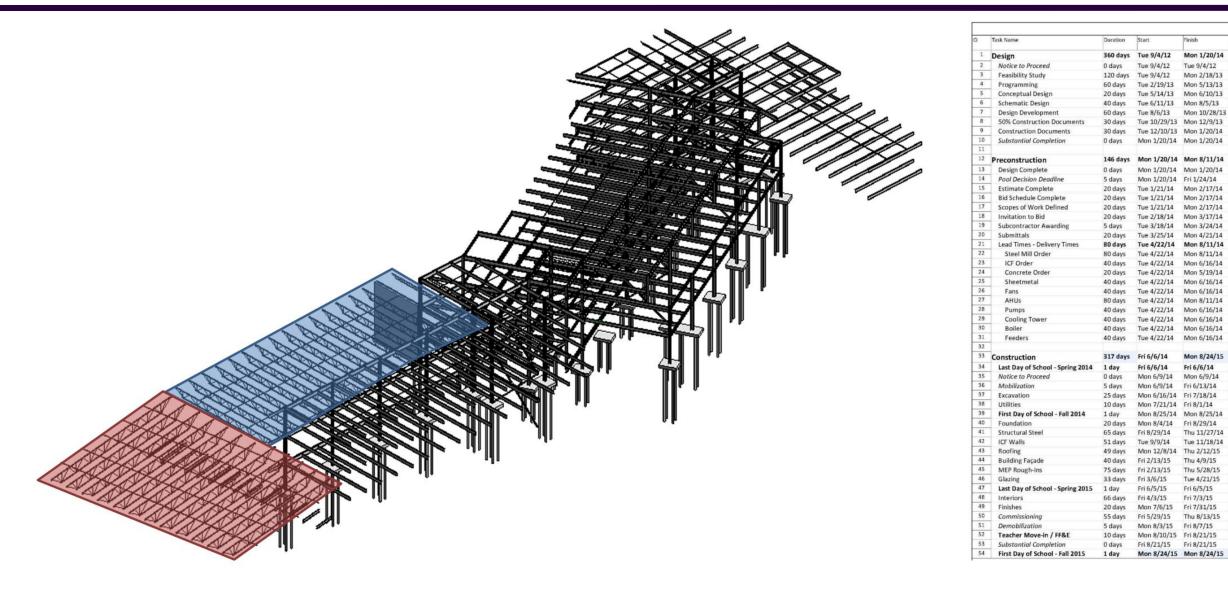
Schedule

Cost Estimate

Sustainability Analysis

Conclusion





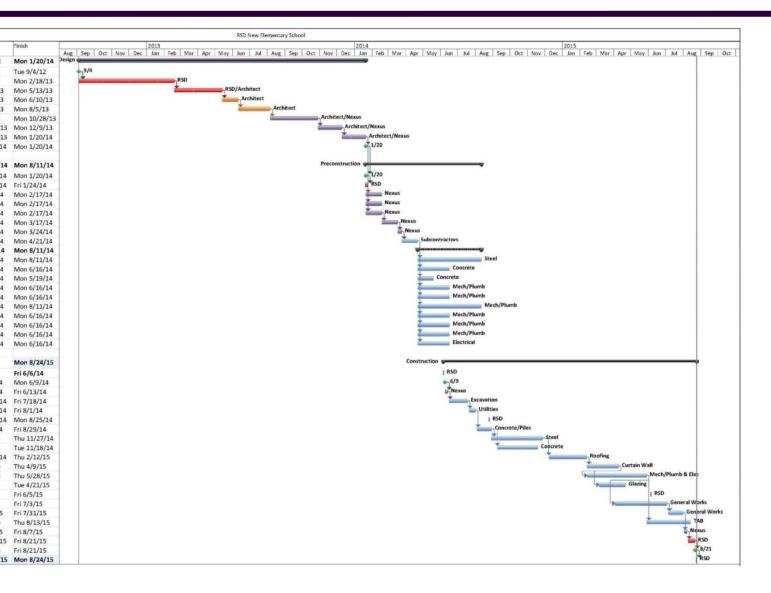
Goals

BIM Execution Plan

Site Plan

Building Analysis

Schedule





Site Logistics

Schedule

Cost Estimate

Sustainability Analysis

Conclusion





RSD - New Elementary School											
Task Name	Duration	Start	Finish	Half 2, 201	2	Half 1, 201	3	Half 2, 201	3	Half 1, 201	.4
				Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
Design	360 days	Tue 9/4/12	Mon 1/20/14								
Notice to Proceed	0 days	Tue 9/4/12	Tue 9/4/12	م 9)	/4						
Feasibility Study	120 days	Tue 9/4/12	Mon 2/18/13		and the second	RSD					
Programming	60 days	Tue 2/19/13	Mon 5/13/13				RSD	/Architect			
Conceptual Design	20 days	Tue 5/14/13	Mon 6/10/13				1	Architect			
Schematic Design	40 days	Tue 6/11/13	Mon 8/5/13				2	Archit	tect		
Design Development	60 days	Tue 8/6/13	Mon 10/28/13					Ť	Archi	tect/Nexus	
50% Construction Documents	30 days	Tue 10/29/13	Mon 12/9/13						1	Architect/Ne	exus
Construction Documents	30 days	Tue 12/10/13	Mon 1/20/14							Archite	ct/Nexus
Substantial Completion	0 days	Mon 1/20/14	Mon 1/20/14							* 1/20	

			RSD - New Eleme	ntary School
Task Name	Duration	Start	Finish	Half 1, 2014 Half 2, 2014 N D J F M A M J J A S
Preconstruction	146 days	Mon 1/20/14	Mon 8/11/14	Preconstruction
Design Complete	0 days	Mon 1/20/14	Mon 1/20/14	<>√1/20
Pool Decision Deadline	5 days	Mon 1/20/14	Fri 1/24/14	a T R S D
Estimate Complete	20 days	Mon 1/20/14	Fri 2/14/14	Nexus
Bid Schedule Complete	20 days	Mon 1/20/14	Fri 2/14/14	Nexus
Scopes of Work Defined	20 days	Mon 1/20/14	Fri 2/14/14	Nexus
Invitation to Bid	20 days	Mon 2/17/14	Fri 3/14/14	Nexus
Subcontractor Awarding	5 days	Mon 3/17/14	Fri 3/21/14	Nexus
Submittals	20 days	Mon 3/24/14	Fri 4/18/14	Subcontractors
Lead Times - Delivery Times	80 days	Mon 4/21/14	Fri 8/8/14	· · · · · · · · · · · · · · · · · · ·
Steel Mill Order	80 days	Mon 4/21/14	Fri 8/8/14	Steel
ICF Order	40 days	Mon 4/21/14	Fri 6/13/14	Concrete
Concrete Order	20 days	Mon 4/21/14	Fri 5/16/14	Concrete
Sheetmetal	40 days	Mon 4/21/14	Fri 6/13/14	Mech/Plumb
Fans	40 days	Mon 4/21/14	Fri 6/13/14	Mech/Plumb
AHUs	80 days	Mon 4/21/14	Fri 8/8/14	Mech/Plum
Pumps	40 days	Mon 4/21/14	Fri 6/13/14	Mech/Plumb
Cooling Tower	40 days	Mon 4/21/14	Fri 6/13/14	Mech/Plumb
Boiler	40 days	Mon 4/21/14	Fri 6/13/14	Mech/Plumb
Feeders	40 days	Mon 4/21/14	Fri 6/13/14	Electrical

Goals

BIM Execution Plan

Site Plan

Building Analysis

Schedule

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	1		Elementary S	
Task Name	Duration	Start	Finish	
Construction	317 days	Fri 6/6/14	Mon 8/2	
Last Day of School - Spring 2014	1 day	Fri 6/6/14	Fri 6/6/1	
Notice to Proceed	0 days	Mon 6/9/14	Mon 6/9	
Mobilization	5 days	Mon 6/9/14	Fri 6/13/	
Excavation	25 days	Mon 6/16/14	Fri 7/18/	
Utilities	10 days	Mon 7/21/14	Fri 8/1/1	
First Day of School - Fall 2014	1 day	Mon 8/25/14	Mon 8/2	
Foundation	20 days	Mon 8/4/14	Fri 8/29/	
Structural Steel	65 days	Fri 8/29/14	Thu 11/2	
ICF Walls	51 days	Tue 9/9/14	Tue 11/1	
Roofing	49 days	Mon 12/8/14	Thu 2/12	
Building Façade	40 days	Fri 2/13/15	Thu 4/9/	
MEP Rough-Ins	75 days	Fri 2/13/15	Thu 5/28	
Glazing	33 days	Fri 3/6/15	Tue 4/21	
Last Day of School - Spring 2015	1 day	Fri 6/5/15	Fri 6/5/1	
Interiors	66 days	Fri 4/3/15	Fri 7/3/1	
Finishes	20 days	Mon 7/6/15	Fri 7/31/	
Commissioning	55 days	Fri 5/29/15	Thu 8/13	
Demobilization	5 days	Mon 8/3/15	Fri 8/7/1	
Teacher Move-in / FF&E	10 days	Mon 8/10/15	Fri 8/21/	
Substantial Completion	0 days	Fri 8/21/15	Fri 8/21/	
First Day of School - Fall 2015	1 day	Mon 8/24/15	Mon 8/2	

Site Logistics

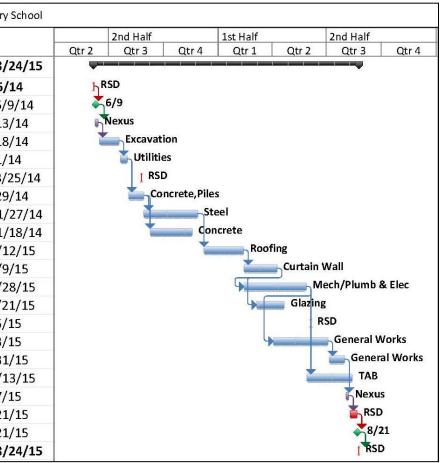
Schedule

Cost Estimate

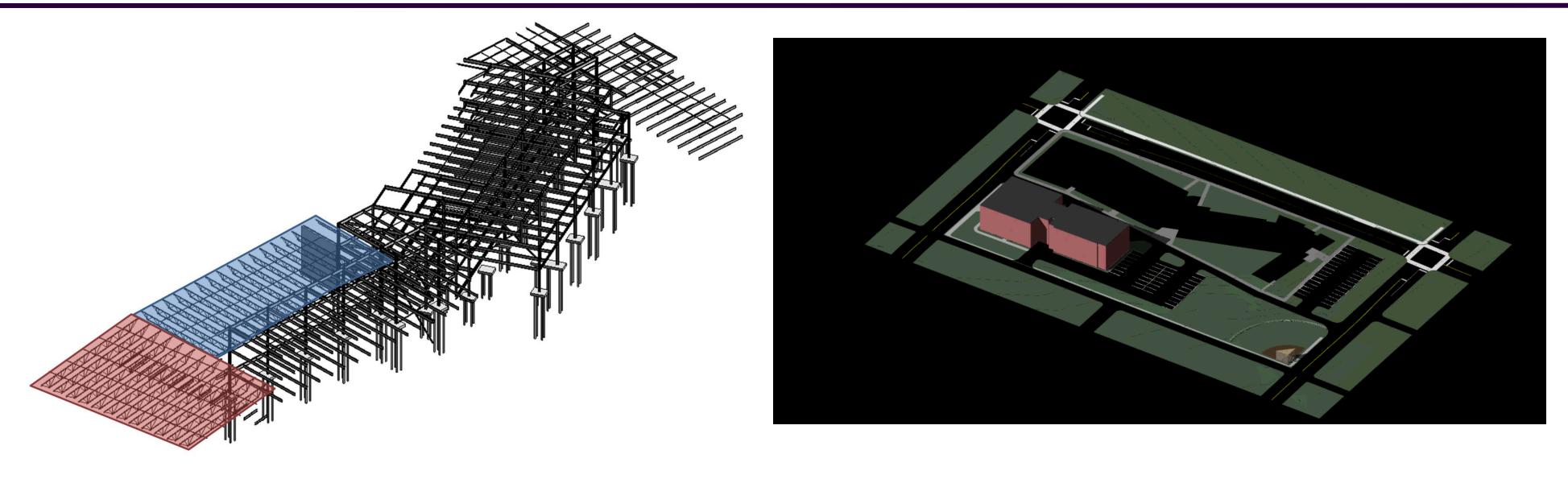
Sustainability Analysis

Conclusion









Goals

BIM Execution Plan

Site Plan

Building Analysis

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		RSD - New I	Elementary S
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Site Logistics

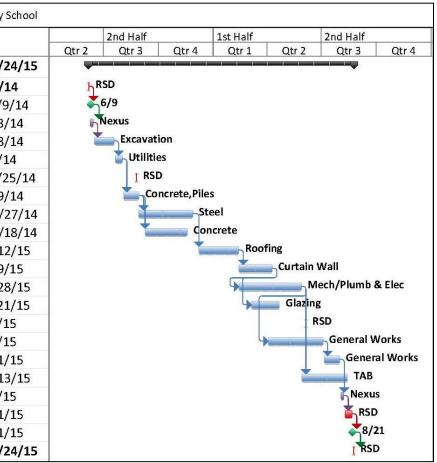
Schedule

Cost Estimate

Sustainability Analysis

Conclusion







Cost Estimate					
	Total Cost	\$ / SF	% of Cost		
A. Substructure	\$ 713,750) \$ 8.02	4%		
B. Shell	\$ 6,516,250) \$ 73.22	37%		
C. Interiors	\$ 1,970,000) \$ 22.13	11%		
D. Services	\$ 6,475,000) \$ 72.75	37%		
E. Equipment & Furnishings	\$ 300,000) \$ 3.37	2%		
F. Special Construction & Demolition	\$ -	\$ -	0%		
G. Building Sitework	\$ 475,000) \$ 5.34	3%		
Z. General Conditions	\$ 997,650) \$ 11.21	6%		
*Uniformat Categories (A-G, Z)	\$ 17,447,650	\$196.04	89,000 SF		

E. Equipment & Furnishings 2%

D. Services 37%

Project Background

Goals

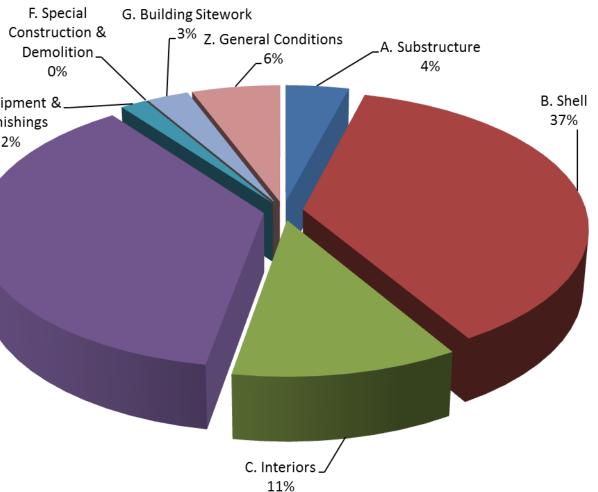
BIM Execution Plan

Site Plan

Building Analysis

Cost Estimate





Schedule

Site Logistics

• General Works - \$1,800,000

metal stud interior partitions; gypsum wallboard; casework; finishes; painting; exterior and interior doors; retractable wall systems in gymnasium and stage

• Concrete - \$2,425,000

footers; pile caps / column piers; insulated concrete forms; cast-in-place concrete walls; slab-on-decks; slab-on-grades

Mechanical and Plumbing - \$4,120,000

mechanical equipment and units; sheetmetal; piping; domestic and sanitary piping; diffusers, registers, grilles

• Electrical - \$1.575.000

electrical equipment; transformers; switchgear; utility connections; conduit; wiring; fixtures; luminaires

• Data - \$350,000

cable trays; data and telecommunication wiring; data and telecommunication devices

• Excavation - \$400,000

soil excavation; hauling offsite; disposal of contaminated soil

• Utilities - \$125,000 underground utility runs and connections

Sustainability Analysis

- Piles \$200.000 steel-driven piles
- Elevator \$175,000 elevator

Cost Estimate



• Structural Steel - \$1,275,000

structural steel members (HSS columns and lateral bracing); wide-flange girders and beams; joists; trusses; truss braces; metal decking; shear studs

• Roofing - \$700,000

built-up white membrane roofing

• Curtain Wall - \$300,000

curtain wall elements in classroom spaces; aluminum panel exterior cladding

• Masonry - \$1,400,000

concrete masonry unit infill walls; face-brick exterior cladding

- Glazing \$850,000 glazing elements
- Carpet \$200,000

carpet tiles in the classroom spaces

• Flooring - \$300,000

Conclusion

finished concrete flooring in corridors and auxiliary spaces; gymnasium hardwood floor; stage floor

- Fire Protection \$175,000 sprinkler piping and heads
- Testing, Adjusting, Balancing \$80,000 mechanical, plumbing, electrical, and fire protection system commissioning



Cost Estimate						
	Т	otal Cost	Ş	5 / SF	% of Cost	
A. Substructure	\$	713,750	\$	8.02	4%	
B. Shell	\$	6,516,250	\$	73.22	37%	
C. Interiors	\$	1,970,000	\$	22.13	11%	
D. Services	\$	6,475,000	\$	72.75	37%	
E. Equipment & Furnishings	\$	300,000	\$	3.37	2%	
F. Special Construction & Demolition	\$	-	\$	-	0%	
G. Building Sitework	\$	475,000	\$	5.34	3%	
Z. General Conditions	\$	997,650	\$	11.21	6%	
*Uniformat Categories (A-G, Z)	\$	17,447,650	\$2	196.04	89,000 SF	

Goals

BIM Execution Plan

Site Plan

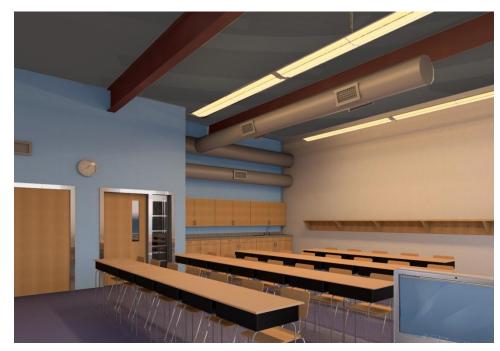
Building Analysis

Cost Estimate

1	

PlanCon Calculation	
Full time equivalent capacity	875 students
Conversion factor	1.3205
Rated Pupil Capacity	1155 students
Elementary legislated per pupil amount	\$4,700
\$4,700 x 1155 =	
Reimbursable Amount	\$5,428,500
Additional Funding for LEED Silver Certification	\$470
\$470 x 1155 =	
Total Additional Funding for LEED Silver Certification	\$542,850
\$5,428,500 + \$542,850 =	
Total Reimbursable Project Cost	\$5,971,350
\$5,428,500 / \$17,500,000 =	
Reimbursable Percent	34.12%
Minus 0.5% reduction until final project accounting	33.62%
Reading School District - Market Value Aid Ratio	0.9003
\$17,500,000 * 0.3362 * 0.9003 =	
State of Pennsylvania Contribution	\$5,296,915.05

Value Engir	nee
Concrete with Epoxy Finish	2
VCT	2
Acoustic Ceiling Tile	5.
Total Savin	gs



Site Logistics

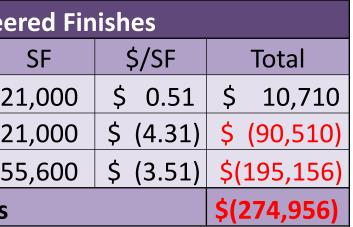
Schedule

Cost Estimate

Sustainability Analysis

Conclusion







Project	t Checklist							Dat
ALL AND A	nable Sites	Possible Points:	24			als and Resources, Continued		
7 N Prorog 1	Construction Activity Pollution Prevention			Y Y I	Credit 2	Materials Reuse		1 to 2
Frereq 2	Environmental Site Assessment				Credit 4	Recycled Content		1 to 2
Crecit 1	Site Selection		1	Y	Credit 5	Regional Materials		1 to 2
N Creat 2	Development Density and Community Con	nectivity	4	Y	Credit é	Rapidly Renewable Materials		1
N Crecit 3	Brownfield Redevelopment	(indepinity)	1	Y	Credit 7	Certified Wood		1
	Alternative Transportation—Public Transp	ortation Access			- Creater			10
	Alternative Transportation-Bicycle Storag		1		Indoor	Environmental Quality	Possible Points:	19
	Alternative Transportation-Low-Emitting				Indoor	Entri officiat Quality	ossible Fornes.	1.4
	Alternative Transportation—Low-Emitting Alternative Transportation—Parking Capac		, <u>,</u>	Y	Prereg 1	Minimum Indoor Air Quality Performance		
	Site Development-Protect or Restore Hab		4	Y	Prereg 1 Proreg 2	Environmental Tobacco Smoke (ETS) Control		
	Site Development-Maximize Open Space	i ca c	1	Y	Prereg 3	Minimum Acoustical Performance		
				Y	Credit 1	Outdoor Air Delivery Monitoring		4
	Stormwater Design—Quantity Control Stormwater Design—Quality Control			Y	Credit 7	Increased Ventilation		-
				Y	Credit 3.1	Construction IAQ Management Plan-During Const	textion	1
	Heat Island Effect—Non-roof Heat Island Effect—Roof			and the second s		Construction IAQ Management Plan-Before Occu		
				Y	Credit 4	Low-Emitting Materials	paricy	
Creat 8	Light Pollution Reduction		1	Y	and the second se	Indoor Chemical and Pollutant Source Control		1 to 4
Crecit S	Site Master Plan				Credit 5			
Crecit 10	Joint Use of Facilities		1		Credi. 6.	, , , , ,		1
Mahar	F40 si su si s	D. IN. D. ist		learning and and	Credit 6.2	Controllability of Systems—Thermal Comfort		
water	Efficiency	Possible Points:	11	Y	Credit 7.1	Thermal Comfort—Design		1
Constant (C)				Y		Thermal Comfort—Verification		1
Prerog 1	Water Use Reduction-20% Reduction			Y	Credit 8.1	Daylight and Views—Daylight		1 to 3
Crecit 1	Water Efficient Landscaping		2 to 4	Y	Credit 6.2	Daylight and Views—Views		1
Crecit 2	Innovative Wastewater Technologies		2	Υ	Credi. 9	Enhanced Acoustical Performance		1
Crocit 2	Water Use Reduction		2 to 4	Y	Cradit 10	Mold Prevention		1
Crecit S	Process Water Use Reduction		1		Innova	tion and Design Process	Possible Points:	6
Energy	and Atmosphere	Possible Points:	33			icion and besign Process	Possible Points.	0
				1	Credit 1.1	Innovation in Design: Specific Title		1
Prereq 1	Fundamental Commissioning of Building E	nergy Systems			Credi. 1.2	Innovation in Design: Specific Title		1
Proreq 2	Minimum Energy Performance			1	Credit 1.3	Innovation in Design: Specific Title		1
Prereg 2	Fundamental Refrigerant Management			I I	Credit 1.4	Innovation in Design: Specific Title		1
Crec L 1	Optimize Energy Performance		1 to 19	Y	Credi. 2	LEED Accredited Professional		1
N Crecit 2	On-Site Renewable Energy		1 to 7	Y	Credit 3	The School as a Teaching Tool		1
Crecit 3	Enhanced Commissioning		2		-			
Crec t 4	Enhanced Refrigerant Management		1		Region	al Priority Credits	Possible Points:	4
Crecit 5	Measurement and Verification		2				Caller States and a state of the states	
N Crecit è	Green Power		2		Credit 1.1	Regional Priority: Specific Credit		1
						Regional Priority: Specific Credit		1
Materi	als and Resources	Possible Points:	13		and a second sec	Regional Priority: Specific Credit		1
A. A			110.10		and a second	Regional Priority: Specific Credit		1
Prereq 1	Storage and Collection of Recyclables					an an 1 <u>44</u> mart an an ann ann an Anna a' ann a' a' ann a'		
	Building Reuse-Maintain Existing Walls, F	loors and Boof	1 to 2	55	Total		Possible Points:	110

Goals

Sustainable Site	13
Water Efficiency	7
Energy and Atmosphere	14
Materials and Resources	4
Indoor Environmental Quality	15
Innovation and Design Process	2
Regional Priority Credits	0
Total	55

Project Background

BIM Execution Plan

Site Plan

Building Analysis

Sustainability Analysis



LEED 2009 for Schools



https://www.google.com/imghp?hl=en&tab=wi



Schedule

Cost Estimate

Sustainability Analysis



Conclusion







Goals

BIM Execution Plan

Site Plan

Building Analysis

Conclusion



Safety & Security



Lifecycle & Maintenance



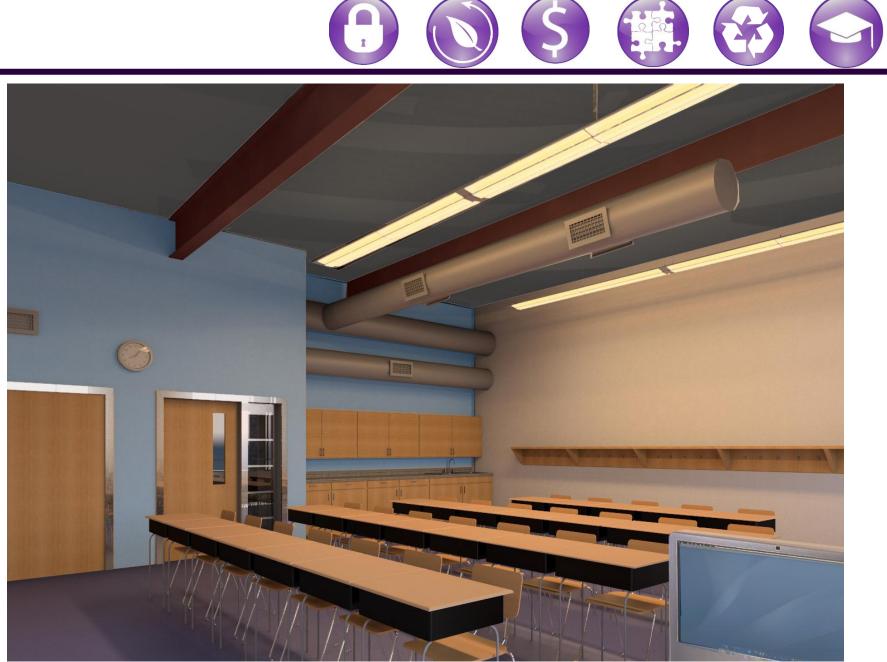


Integration



Reduce, Reuse, Recover

Learning Tool



Schedule

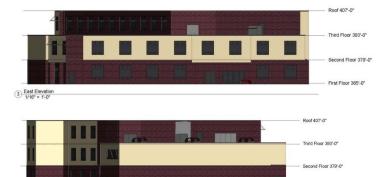
Cost Estimate

Sustainability Analysis

Conclusion









4) West Elevation

Project Background

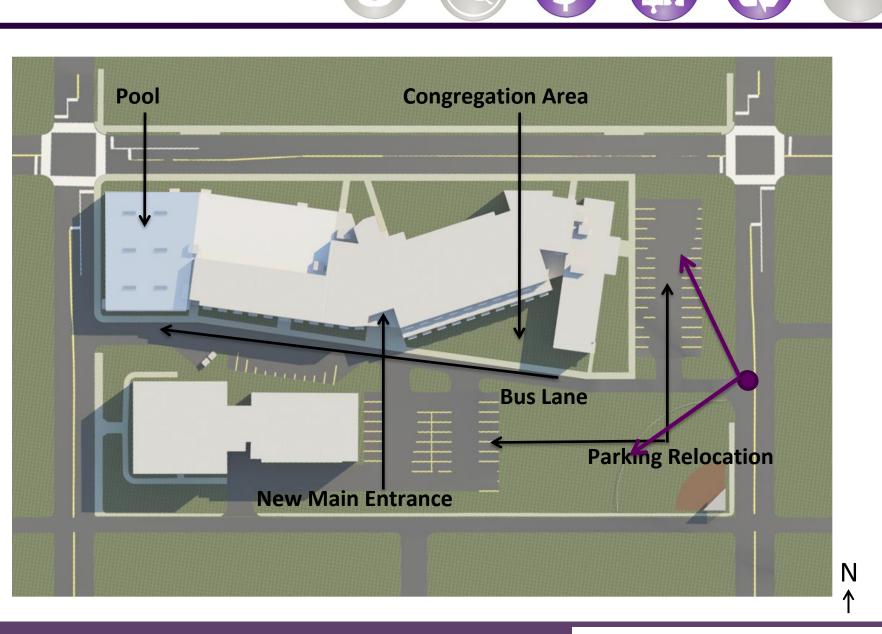
Goals

BIM Execution Plan

Site Plan

Building Analysis

Building Views



Site Logistics

Schedule

Cost Estimate

Sustainability Analysis

Conclusion



		Uniformat Cost Esti			
Substructure	\$ 713,750	A10 Foundations		A1010 Standard Foundations	\$ 138,500
				A1020 Special Foundations	\$ 200,000
				A1030 Slab on Grade	\$ 121,250
		A20 Basement Construction	\$ 254,000	A2010 Basement Excavation	\$ 150,000
		ALCO DESEMBLE CONSCIOLED	2 204,000	A2020 Basement Walls	\$ 104,000
Shell	\$ 6,390,250	B10 Superstructure	\$ 1,777,250	B1010 Floor Construction	\$ 1,381,000
nell	\$ 6,390,250	B10 Superstructure	\$ 1,///,250		
				B1020 Roof Construction	\$ 396,250
	1	B20 Exterior Enclosures	\$ 3,908,000	B2010 Exterior Walls	\$ 3,239,00
	1			B2020 Exterior Windows	\$ 629,000
				B2030 Exterior Doors	\$ 40,00
		B30 Roofing	\$ 705,000	B3010 Roof Coverings	\$ 700,000
		boo nooning	4 100,000	B3020 Roof Openings	\$ 5,000
Value 100			A 000 000		
nteriors	\$ 1,970,000	C10 Interior Construction	\$ 965,000	C1010 Partitions	\$ 830,000
				C1020 Interior Doors	\$ 75,000
				C1030 Fittings	\$ 60,000
		C20 Stairs	\$ 110,000	C2010 Stair Construction	\$ 103,000
				C2020 Stair Finishes	\$ 7,00
		C30 Interior Finishes	\$ 895,000	C3010 Wall Finishes	\$ 180,00
		Coo interior misites	\$ 050,000		
				C3020 Floor Finishes	\$ 500,000
				C3030 Ceiling Finishes	\$ 215,000
ervices	\$ 6,475,000	D10 Conveying	\$ 175,000	D1010 Elevators & Lifts	\$ 175,000
	1			D1020 Escalators & Moving Walks	\$ -
				D1090 Other Conveying Systems	\$ -
		D20 Plumbing	\$ 1,400,000	D2010 Plumbing Fixtures	\$ 100,000
		or o control B	\$ 1,400,000		
				D2020 Domestic Water Distribution	\$ 300,000
	8 8			D2030 Sanitary Waste	\$ 240,000
		V		D2040 Rain Water Drainage	\$ 74,00
				D2090 Other Plumbing Systems	\$ 686,000
		D30 HVAC	\$ 2,800,000	D3010 Energy Supply	\$ -
			2,000,000	D3020 Heat Generating Systems	\$ 140,000
			-	D2020 Configuration Stateme	
				D3030 Cooling Generating Systems	
				D3040 Distribution Systems	\$ 520,00
				D3050 Terminal & Package Units	\$ 840,00
		(in		D3060 Controls & Instrumentation	\$ 350,000
				D3070 Systems Testing & Balancing	\$ 200,000
				D3090 Other HVAC Systems & Equipment	\$ 460,000
		D 40 5 D 1 1	\$ 175,000		\$ 105,000
		D40 Fire Protection	\$ 175,000		
				D4020 Standpipes	\$ 62,000
	1		1	D4030 Fire Protection Specialties	\$ 8,000
				D4090 Other Fire Protection Systems	\$ -
		D50 Electrical	\$ 1,925,000	D5010 Electrical Service & Distribution	\$ 551,250
				D5020 Lighting and Branch Wiring	\$ 1.023.750
				D5030 Communications & Security	\$ 350,000
				D5090 Other Electrical Systems	\$ 330,000
quipment & Furnishings	\$ 300,000	E10 Equipment	\$ -	E1010 Commercial Equipment	\$ -
				E1020 Institutional Equipment	ş -
				E1030 Vehicular Equipment	\$ -
				E1090 Other Equipment	S -
		E20 Furnishings	\$ 300,000	E2010 Fixed Furnishings	\$ 200.000
		czo Purnishings	\$ 500,000		
				E2020 Movable Furnishings	
ecial Construction & Demolition	\$.	F10 Special Construction	\$ -	F1010 Special Structures	\$ -
			30	F1020 Integrated Construction	\$ -
	1			F1030 Special Construction Systems	S -
				F1040 Special Facilities	\$ -
	0			F1050 Special Controls and Instrumentation	\$ -
		F20 Selective Building Demolition	\$ -	F2010 Building Elements Demolition	\$ -
				F2020 Hazardous Components Abatement	\$ -
uilding Sitework	\$ 601,000	G10 Site Preparation	\$ 175,000	G1010 Site Clearing	\$ -
				G1020 Site Demolition and Relocations	\$ -
				G1030 Site Earthwork	\$ 125,000
	0. (A		-		
				G1040 Hazardous Waste Remediation	\$ 50,000
				G2010 Roadways	\$ 127,500
		G20 Site Improvements	\$ 301,000	OZOTO ROBOWSYS	
		G20 Site Improvements	\$ 301,000	G2020 Parking Lots	\$ 133,50
		G20 Site Improvements	\$ 301,000	G2020 Parking Lots G2030 Pedestrian Paving	\$ 133,50
		G20 Site Improvements	\$ 301,000	G2020 Parking Lots G2030 Pedestrian Paving	\$ 133,50 \$ 15,00
		G20 Site Improvements	\$ 301,000	G2020 Parking Lots G2030 Pedestrian Paving G2040 Site Development	\$ 133,50 \$ 15,00 \$ -
				G2020 Parking Lots G2030 Pedestrian Paving G2040 Site Development G2050 Landscaping	\$ 133,50 \$ 15,00 \$ - \$ 25,00
		G2D Site Improvements G3D Site Mechanical Utilities	\$ 301,000	S2020 Parking Lots G2030 Pedestrian Paving G2040 Site Development G2050 Landscaping G3010 Water Supply	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00
				2020 Parking Lots 2030 Pedestrian Paving 2040 Site Development 2050 Landscaping 33010 Water Supply 33020 Sankary Sewer	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00
				32020 Parking Lots 32030 Perdest rian Paving 32040 Site Development 32050 Landscaping 33010 Water Supply 33020 Santary Sewer 33030 Storm Sewer	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00
				32020 Parking Lots 32030 Perdest rian Paving 32040 Site Development 32050 Landscaping 33010 Water Supply 33020 Santary Sewer 33030 Storm Sewer	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00
				32020 Parking Lots 32030 Pedestrian Paving 32040 Site Development 32050 Landscaping 33010 Water Supply 33020 Santary Sewer 33040 Heating Distribution	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00 \$ 12,00
				32020 Parking Lots 32030 Pedestrum Parking 32040 Silts Davelopment 52040 Silts Davelopment 53010 Water Supply 33020 Santary Sever 33040 Heating Distribution 33040 Enterbinution	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00 \$ 12,00 \$ 8,00
				3020 Parking Lots 3030 Packets and Paving 3040 Site Development 3050 Landscaping 33010 Water Supply 33020 Santary Sever 33030 Shorm Sever 33030 Hosting Distribution 33040 Hesting Distribution 33050 Cooling Distribution	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00 \$ 16,00 \$ 12,00 \$ 12,00 \$ 12,00 \$ 11,00
		G30 Site Mechanical Utilities	\$ 75,000	32020 Parking Lots 32030 Parking Lots 32040 Site Davelogment 32040 Site Davelogment 32050 Landscaping 32020 Santara Sever 33040 Kesting Distribution 33040 Kesting Distribution 33060 Costing Distribution 33060 Costing Distribution 33060 Ches Distribution	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 15,00 \$ 16,00 \$ 16,00 \$ 12,00 \$ 12,00 \$ 12,00 \$ 3,00 \$ 12,00 \$ 1,00 \$ 1,000 \$ 1,00
				3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landscaping 3050 Landscaping 3050 Storm Sever 3030 Storm Sever 3030 Storm Sever 3030 Horking Distribution 3056 O Locking Distribution 30560 Fuel Distribution 30500 Cher Site Mechanica Utilities 4010 Electrical Distribution	\$ 133,500 \$ 15,000 \$ 25,000 \$ 25,000 \$ 13,000 \$ 13,000 \$ 16,000 \$ 16,000 \$ 12,000 \$ 12,000 \$ 12,000 \$ 13,000 \$ 2,000 \$ 10,000 \$ 10,0
		G30 Site Mechanical Utilities	\$ 75,000	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landscaping 3050 Landscaping 3050 Storm Sever 3030 Storm Sever 3030 Storm Sever 3030 Horking Distribution 3056 O Locking Distribution 30560 Fuel Distribution 30500 Cher Site Mechanica Utilities 4010 Electrical Distribution	\$ 133,500 \$ 15,000 \$ 25,000 \$ 25,000 \$ 13,000 \$ 13,000 \$ 16,000 \$ 16,000 \$ 12,000 \$ 12,000 \$ 12,000 \$ 13,000 \$ 2,000 \$ 10,000 \$ 10,0
		G30 Site Mechanical Utilities	\$ 75,000	32020 Parking Lots 32040 Parking Lots 32040 Site Development 32040 Site Development 32040 Site Development 32050 Landsey Sever 33050 Sond Sever 33040 Heating Distribution 33040 Charling Distribution 33040 Charl Distribution 33040 Charl Distribution 34400 Electrical Distribution 44020 Site Light Mechanical Utilities	\$ 133,50 \$ 15,00 \$ 25,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 12,00 \$ 12,00 \$ 11,00 \$ 10,00 \$ - \$ 10,00 \$ 25,00
		G30 Site Mechanical Utilities	\$ 75,000	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landscaping 3050 Landscaping 3050 Santas Yeever 3030 Shorm Sever 3030 Shorm Sever 3030 Shorm Jostribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cooling Distribution 4040 Site Lighting 4040 Site Lighting 4040 Site Lighting	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 16,00 \$ 12,00 \$ 11,00 \$ - \$ 10,000 \$ 25,00 \$ 15,00
		G30 Site Mechanical Utilities G40 Site Electrical Utilities	\$ 75,000	3020 Parking Lots 3020 Parking Lots 30240 Site Development 30240 Site Development 30250 Landscaping 3020 Sion Sever 3020 Sion Sever 30240 Heating Datribution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 34200 Site Light Mechanical Utilities 3420 Site Communications & Security 34200 Charl Site Communications & Security 34200 Charl Site Communications & Security	\$ 133,50 \$ 15,00 \$ 25,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 12,00 \$ 12,00 \$ 12,00 \$ 10,00 \$ 10,00 \$ 10,00 \$ 15,00 \$ 15,00 \$ 10,00 \$ 15,00 \$ 15,00
		G30 Site Mechanical Utilities	\$ 75,000	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landscaping 3050 Landscaping 3050 Landscaping 3050 Site Development 3050 Site Sterik 3050 Packing Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cober Site Lighting 5400 Electrical Distribution 5400 Site Lighting 5400 Site Lighting	\$ 133,50 \$ 15,00 \$ 25,00 \$ 25,00 \$ 13,00 \$ 15,00 \$ 15,00 \$ 16,00 \$ 12,00 \$ 10,00 \$ 10,00 \$ 10,00 \$ 25,00 \$ 15,00 \$ 15,00
		G30 Site Mechanical Utilities G40 Site Electrical Utilities	\$ 75,000	3020 Parking Lots 3020 Parking Lots 30240 Site Development 30240 Site Development 30250 Landscaping 3020 Sion Sever 3020 Sion Sever 30240 Heating Datribution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 30240 Charl Buthbution 34200 Site Light Mechanical Utilities 3420 Site Communications & Security 34200 Charl Site Communications & Security 34200 Charl Site Communications & Security	\$ 133,50 \$ 15,00 \$ 25,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 12,00 \$ 12,00 \$ 12,00 \$ 10,00 \$ 10,00 \$ 10,00 \$ 15,00 \$ 15,00 \$ 10,00 \$ 15,00 \$ 15,00
rreral Conditions	\$ 997,650	G30 Site Mechanical Utilities G40 Site Electrical Utilities G90 Other Site Construction	\$ 75,000	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landscaping 3050 Landscaping 3050 Landscaping 3050 Site Development 3050 Site Sterik 3050 Packing Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cober Site Lighting 5400 Electrical Distribution 5400 Site Lighting 5400 Site Lighting	\$ 133,50 \$ 15,000 \$ - \$ 25,000 \$ 13,000 \$ 15,000 \$ 16,000 \$ 16,000 \$ 12,000 \$ 10,000 \$ 10,000 \$ 25,000 \$ 15,000 \$ 15,000
neral Conditions	5 997,650	G30 Site Mechanical Utilities G40 Site Electrical Utilities G40 Site Electrical Utilities G90 Other Site Construction Z10 Design Allowance	\$ 75,000 \$ 50,000 \$ \$ \$	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landschapting 3050 Landschapting 3050 Landschapting 3050 Shorm Sever 3030 Shorm Sever 3030 Shorm Sever 3030 Hesting Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cher Site Lighting 5400 S	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00 \$ 12,00 \$ 11,00 \$ - \$ 10,00 \$ 25,00 \$ 15,00 \$ 10,00 \$ 25,00 \$ - \$ - \$ -
neral Conditions	\$ 997,650	G30 Site Mechanical Utilities G40 Site Electrical Utilities G90 Other Site Construction	\$ 75,000	32020 Parking Lots 32040 Parking Lots 32040 Site Development 32040 Site Development 32050 Landscaping 32050 Landscaping 32050 Santary Seret 32020 Santary Seret 32040 Site Composition 32060 Criter Site Mechanical Utilities Geologic Site Communications & Security Geologic State State Electrical Utilities Geologic State Sta	\$ 133,50 \$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 15,00 \$ 12,00 \$ 12,00 \$ 25,00 \$ 25,00 \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -
eneral Conditions	\$ 997,650	G30 Site Mechanical Utilities G40 Site Electrical Utilities G40 Site Electrical Utilities G90 Other Site Construction Z10 Design Allowance	\$ 75,000 \$ 50,000 \$ \$ \$	3020 Parking Lots 3030 Packet: an Paving 3040 Site Development 3050 Landschapting 3050 Landschapting 3050 Landschapting 3050 Shorm Sever 3030 Shorm Sever 3030 Shorm Sever 3030 Hesting Distribution 3050 Cooling Distribution 3050 Cooling Distribution 3050 Cher Site Lighting 5400 S	\$ 133,50 \$ 15,00 \$ - \$ 25,00 \$ 13,00 \$ 13,00 \$ 15,00 \$ 16,00 \$ 12,00 \$ 11,00 \$ - \$ 10,00 \$ 25,00 \$ 15,00 \$ 10,00 \$ 25,00 \$ - \$ - \$ -

Goals

BIM Execution Plan

Site Plan

Building Analysis

Cost Estimate

I	
-	

Personnel	Quantity	Unit	U	Init Price		Total Cost
Project manager	30	Week	\$	2,125.00	\$	63,75
Engineer	30	Week	\$	1,300.00	\$	39,00
Superintendent	60	Week	\$	1,975.00	\$	118,50
Clerk	30	Week	\$	420.00	\$	12,60
					\$	233,85
Facilities	Quantity	Unit	U	Init Price	1	Total Cost
Trailer (32'x8')	15	Month	\$	185.00	\$	2,77
Dumpster (40 CY, 1 dump/wk.)	12	Month	\$	860.00	\$	10,32
Portable toilet	15	Month	\$	180.00	\$	2,70
Storage (40' x 8')	15	Month	\$	385.00	\$	5,77
Office expenses	15	Month	\$	460.00	\$	6,90
Gravel road (8")	500	SY	\$	11.73	\$	5,86
					\$	34,33
Protection	Quantity	Unit	U	Init Price		Total Cost
Site fence (6' tall)	4000	LF	\$	5.16	\$	20,64
Temporary Utilities	Quantity	Unit	U	Init Price		Total Cost
Heat (w/ fuel, 12hrs., /wk.)	2700	CSF * wk.	\$	40.13	\$	108,35
Lighting	900	CSF	\$	14.95	\$	13,45
Power (lighting, 11.8 KWH))	3375	CSF * mn.	\$	1.65	\$	5,56
Power (job)	3375	CSF * mn.	\$	47.00	\$	158,62
Water	15	Month	\$	63.00	\$	94
					\$	286,94
Insurance, Bonds, Taxes	Quantity	Unit	U	nit Price		Total Cost
Builder's risk (0.64%)	0.0064	Job			Ś	105,28
	_				\$	105,28
Mobilization/Demobilization	Quantity	Unit	U	nit Price		Total Cost
Mobilization	6	/equipment	Ś	350.00	\$	2,10
Demobilization	6	/equipment	\$	325.00	\$	1,9
	_	7 - 1 - 1			\$	4,05
Fee	Quantity	Unit	U	Init Price	Ŧ	Total Cost
1.9%	0.019	Job			\$	312,55
General Condi					\$	997,65
Building Direct Cost (n		5	-		\$	16,450,00
Gross Total (builidng direct o			ns)		\$	17,447,65
Adjustment Factors	Quantity	Unit		Init Price		Total Cost
PA Sales Tax (6%)	0.06	Job		inc i ne e	\$	1,046,85
Available work space (-2%)	-0.02	Job			\$	(348,9
Good GC/CM management (-2%)	-0.02	Job			\$	(348,95
Location Factor (0.98)	-0.02	dot	-		\$	(348,9)
	0.02		-		Ś	10-10,0
*all information in this table is refe	renced from PC	Means Building (anst	Tuction Cost		
ou injointation in this toble is reje	incea from ho	mound building C	01151	rateron cost	\$	17,447,65

Site Logistics

Personnel	Quantity	Unit	Unit Price		Total Cost
Project manager	12	Week	\$ 2,125.00	\$	25,5
Engineer	12	Week	\$ 1,300.00	\$	15,6
Superintendent	12	Week	\$ 1,975.00	\$	23,7
				\$	64,8
Facilities	Quantity	Unit	Unit Price		Total Cost
Trailer (32'x8')	3	Month	\$ 185.00	\$	5
Dumpster (40 CY, 1 dump/wk.)	3	Month	\$ 860.00	\$	2,5
Portable toilet	3	Month	\$ 180.00	\$	5
Office expenses	3	Month	\$ 460.00	\$	1,3
Gravel road (8")	100	SY	\$ 11.73	\$	1,1
				\$	6,2
Protection	Quantity	Unit	Unit Price		Total Cost
Site fence (6' tall)	400	LF	\$ 5.16	\$	2,0
Temporary Utilities	Quantity	Unit	Unit Price		Total Cost
Lighting	893	CSF	\$ 14.95	\$	13,3
Power (lighting, 11.8 KWH))	1340	CSF * mn.	\$ 1.65	\$	2,2
Power (job)	670	CSF * mn.	\$ 47.00	\$	31,4
Water	3	Month	\$ 63.00	\$	1
				\$	47,2
Insurance, Bonds, Taxes	Quantity	Unit	Unit Price		Total Cost
Builder's risk (0.64%)	0.0064	Job		\$	15,9
				\$	15,9
Mobilization/Demobilization	Quantity	Unit	Unit Price		Total Cost
Mobilization	6	/equipment	\$ 350.00	\$	2,1
Demobilization	6	/equipment	\$ 325.00	\$	1,9
				\$	4,0
Fee	Quantity	Unit	Unit Price	-	Total Cost
1.9%	0.019	Job		\$	47,4
General Conc	litions Tot	al		\$	187,7
Building Direct Cost	(materials put	t in place)		\$	2,495,8
Gross Total (builidng direct	cost + ger	neral conditi	ions)	\$	2,683,6
Adjustment Factors	Quantity	Unit	Unit Price		Total Cost
PA Sales Tax (6%)	0.06	Job	1 1	\$	161,0
Available work space (-2%)	-0.02	Job		\$	(53,6
Good GC/CM management (-2%)	-0.02	Job		\$	(53,6
Location Factor (0.98)	-0.02	Job		\$	(53,6
				\$	
*all information in this table is refere	nced from RSN	Aeans Building Co	onstruction Cost	Date	2013

Schedule

Cost Estimate

Sustainability Analysis

Conclusion



School Cost Comparison								
	Total Cost	Construction Schedule	Total SF	\$ / SF	# of Students	\$/	Student	SF / Student
Mount Nittany Elementary School	\$15,700,000	16 months	60,000	\$261.67	400	\$	39,250	150
Ferguson Township Elementary School	\$16,500,000	16 months	64,500	\$255.81	400	\$	41,250	161
Nexus' Proposed New RSD Elementary School	\$17,835,545	15 months	89,000	\$200.40	875	\$	20,383	102

Goals

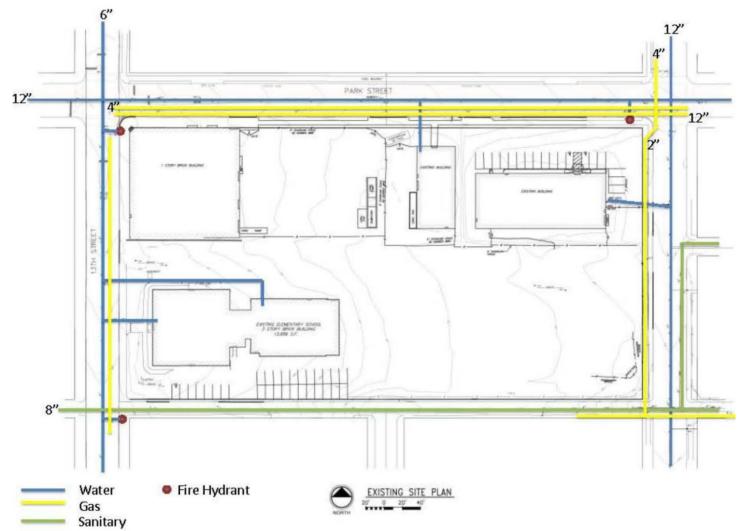
BIM Execution Plan

Site Plan

Building Analysis

	1	
	-	

Pool	Phase 1			
SF	8,925			
\$/SF	\$ 225.50			
Total Cost	\$2,012,588			
Pool	Phase 2			
SF	8,925			
\$ / SF	\$ 300.69			
Total Cost	\$2,683,654			
Variance				
	\$ 671,067			



Site Logistics

Schedule

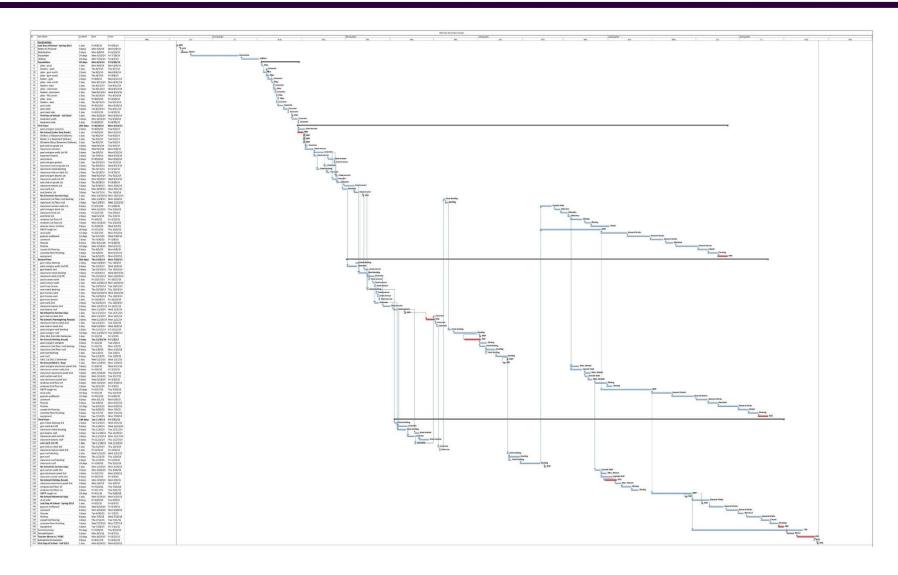
Cost Estimate

Sustainability Analysis

Conclusion









Goals

BIM Execution Plan

Site Plan

Building Analysis

Schedule





Long Lead Items				
Items	Months			
Steel Mill Order	4			
Insulated Concrete Form Order	2			
AHU's	4			
Pumps & Boilers	2			
Switchgear	3			

				-					RSD New E
0	Task Name	Duration	Start	Finish	Aug Sep Oc	t Nov Dec	2013 Jan Feb Mar	Apr May	Jun Jul
1	Design	360 days	Tue 9/4/12	Mon 1/20/14	Design u				
2	Notice to Proceed	0 days	Tue 9/4/12	Tue 9/4/12	9/4				
3	Feasibility Study	120 days	Tue 9/4/12	Mon 2/18/13	-	_	RSD		
4	Programming	60 days	Tue 2/19/13	Mon 5/13/13			<u>*</u>	RSI	D/Architect
5	Conceptual Design	20 days	Tue 5/14/13	Mon 6/10/13				*	Architect
6	Schematic Design	40 days	Tue 6/11/13	Mon 8/5/13					×
7	Design Development	60 days	Tue 8/6/13	Mon 10/28/13					
8	50% Construction Documents	30 days	Tue 10/29/13	Mon 12/9/13					
9	Construction Documents	30 days	Tue 12/10/13	Mon 1/20/14					
10	Substantial Completion	0 days	Mon 1/20/14	Mon 1/20/14					
11									
12	Preconstruction	146 days	Mon 1/20/14	Mon 8/11/14					
13	Design Complete	0 days	Mon 1/20/14	Mon 1/20/14					
14	Pool Decision Deadline	5 days	Mon 1/20/14	Fri 1/24/14					
15	Estimate Complete	20 days	Tue 1/21/14	Mon 2/17/14					
16	Bid Schedule Complete	20 days	Tue 1/21/14	Mon 2/17/14					
17	Scopes of Work Defined	20 days	Tue 1/21/14	Mon 2/17/14					
18	Invitation to Bid	20 days	Tue 2/18/14	Mon 3/17/14					
19	Subcontractor Awarding	5 days	Tue 3/18/14	Mon 3/24/14					
20	Submittals	20 days	Tue 3/25/14	Mon 4/21/14					
21	Lead Times - Delivery Times	80 days	Tue 4/22/14	Mon 8/11/14					
22	Steel Mill Order	80 days	Tue 4/22/14	Mon 8/11/14					
23	ICF Order	40 days	Tue 4/22/14	Mon 6/16/14					
24	Concrete Order	20 days	Tue 4/22/14	Mon 5/19/14					
25	Sheetmetal	40 days	Tue 4/22/14	Mon 6/16/14					
26	Fans	40 days	Tue 4/22/14	Mon 6/16/14					
27	AHUS	80 days	Tue 4/22/14	Mon 8/11/14					
28	Pumps	40 days	Tue 4/22/14	Mon 6/16/14					
29	Cooling Tower	40 days	Tue 4/22/14	Mon 6/16/14					
30	Boiler	40 days	Tue 4/22/14	Mon 6/16/14					
31	Feeders	40 days	Tue 4/22/14	Mon 6/16/14					
32									
33	Construction	317 days	Fri 6/6/14	Mon 8/24/15					
34	Last Day of School - Spring 2014	1 day	Fri 6/6/14	Fri 6/6/14					
35	Notice to Proceed	0 days	Mon 6/9/14	Mon 6/9/14					
36	Mobilization	5 days	Mon 6/9/14	Fri 6/13/14					
37	Excavation	25 days	Mon 6/16/14	Fri 7/18/14					
38	Utilities	10 days	Mon 7/21/14	Fri 8/1/14					
39	First Day of School - Fall 2014	1 day	Mon 8/25/14	Mon 8/25/14					
40	Foundation	20 days	Mon 8/4/14	Fri 8/29/14					
41	Structural Steel	65 days	Fri 8/29/14	Thu 11/27/14					
42	ICF Walls	51 days	Tue 9/9/14	Tue 11/18/14					
43	Roofing	49 days	Mon 12/8/14	Thu 2/12/15					
44	Building Façade	40 days	Fri 2/13/15	Thu 4/9/15					
45	MEP Rough-Ins	75 days	Fri 2/13/15	Thu 5/28/15					
46	Glazing	33 days	Fri 3/6/15	Tue 4/21/15					
47	Last Day of School - Spring 2015	1 day	Fri 6/5/15	Fri 6/5/15					
48	Interiors	66 days	Fri 4/3/15	Fri 7/3/15					
49	Finishes	20 days	Mon 7/6/15	Fri 7/31/15					
50	Commissioning	55 days	Fri 5/29/15	Thu 8/13/15					
51	Demobilization	5 days	Mon 8/3/15	Fri 8/7/15					
52	Teacher Move-in / FF&E	10 days	Mon 8/10/15	Fri 8/21/15					
53	Substantial Completion	0 days	Fri 8/21/15	Fri 8/21/15					
54	First Day of School - Fall 2015	1 day	Mon 8/24/15	Mon 8/24/15					

Site Logistics

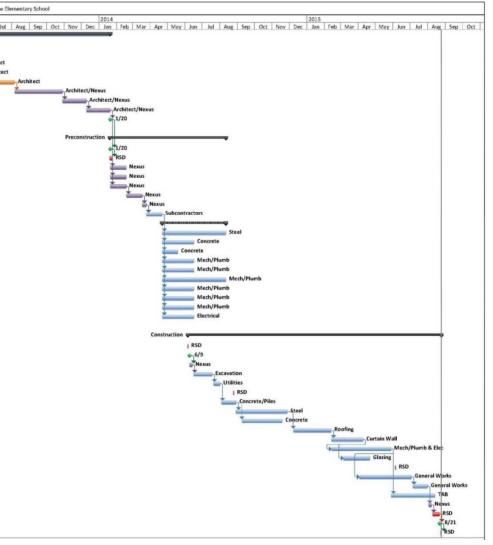
Schedule

Cost Estimate

Sustainability Analysis

Conclusion







								RSD New I	Elementary School											
Task Name	Duration	Start	Finish			3rd Quarter	- 12222.00	T	4th Quarter	10000	to catter for	1st Quarter	1 mainte	1	2nd Quarter		1 10.51	3rd Quarter	1	-
1 Construction	_			May	Jun	Jul	DIA	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jur	ادر	Aig	Se
2 Last Day of School - Spring 2014	A	Fri 6/6/14	Fri 6/6/14		RSD															
Notice to Proceed	1 day 0 days	Non 6/9/14	Mon 5/9/14		6/9															
4 Mobilization			the same but an easy of the work that the same		Nexus															
5 Excavation	5 days	Non 6/9/14	Fii 6/13/14		T. San Transition	Even	vation													
t Utilities	24 days	Non 6/16/14					Utilities													
7 Foundation	10 days	Non 7/21/14				-	Gunder	10												
	20 days	Mon 8/4/14	Fri 8/29/14				Piles													
8 piles - pool 5 topters - pool	1 day	Mon 8/4/14	Mon 8/4/14				Concrete													
	1 day	Thu 8/7/14	Thu 8/7/14				Files													
10 piles - gym north	2 days	Tue 8/5/14	Wed 8/6/14				Piles													
11 piles - gym south	2 days	Thu 8/7/14	Fri 8/8/14				Concret													
12 tooter - gym	Z days	Fri 8/8/14	Mon 8/11/14				Piles	-												
13 piles - stair north	1 day	Mon 8/11/14																		
14 footers -stair	1 day		Tue 8/12/14				Concre	(e												
13 piles - classroom	2 days	Tue 8/12/14	Wed 8/13/14				Piles													
15 footers -classroom	1 day						Concre	TP.												
17 piles - NE correr	1 day	Thu 8/14/14	and a set of the second s				Piles													
18 piles - east	1 day	Fri 8/15/14	Fri 8/15/14				Files													
19 footers - east	1 day	Thu 8/14/14	Thu 8/14/14				Concr													
20 poo walls	2 days	Fri 8/15/14	Mon 8/18/14					crete												
21 DOD Slabs	3 days	Tue 8/19/14	Thu 8/21/14					ncrete												
22 poo deckslab	1 day	Fri 8/22/14	Fri 8/22/14					oncrete												
23 First Day of School - Fall 2014	1 day	Non 8/25/14	Mon 8/25/14				TI	RSD												
24 basement walls	4 days	Mon 8/25/14	Thu 8/28/14				1	Concrete												
25 basement slab	1 day	Fri 8/29/14	Fri 8/25/14					Concrete												
25 First Floor	205 days	Fri 8/29/14	Mon 6/22/15														~			
27 poor and gym columns	2 days	Fri 8/29/14	Tue 9/2/14					Steel erect	or											
23 No School (Labor Day Break)	1 day	Fri 8/29/14	Mon 9/1/14					RSD												
29 Chillers 1-3 Basement Delivery	1 day	Tue 9/2/14	Tue 9/2/14					MEP												
30 Boilers 1-2 Basement Delivery	1 day	Tue 9/2/14	Tue 9/2/14					MEP												
31 Ethylene-Glycol Basement Delivery		Tue 9/2/14	Tue 9/2/14					MEP												
32 gym slab on grade 1st	2 days	Wed 9/3/14	Thu 9/4/14					Contrete												
33 classroom columns	4 days	Wed 9/3/14	Mon 9/8/14					Steel er	ector											
34 Doo and gym walls 1st lift	5 days	Tue 9/9/14	Mon 9/15/14					Con	crete											
33 Dasement beams	2 days	Tue 9/9/14	Wed 9/10/14					Steele	rector											
36 poo beams	2 days	Fri 9/19/14	Mon 9/22/14						iteel erertor											
37 poo and gym girders	1 day	Tue 9/23/14	Tue 9/23/14						Steel erector											
33 classroom slab on grade 1st	Z days	Tue 9/16/14	Wed 9/17/14						norete											
39 classroom metal decking	2 days		Fri 9/12/14						decking											
40 classroom slab on deck 1st	2 days		Fri 9/19/14						oncrete											
41 poo and gym beams 1st	2 days	Wed 9/24/14							Steel erector											
			THE REPORT OF A DESCRIPTION OF A						Concrete											
	3 days	Non 9/22/14							Concrete											
	2 days	Thu 9/25/14	and the second						Steel erector											
44 classroom beams 1st 45 east wails 1st	5 days	Tue 9/30/14	Mon 1C/6/14						Concrete											
	3 days	Non 9/29/14	Construction of the second						Steel erecto											
45 east beams 1st	3 days	Tue 10/7/14							FSD FSD											
47 No School (In-Service Day)	1 day		Mon 1C/13/14						FSD		- Canal 2 - 2									
48 classroom 1st floor roof decking	1 day	Mon 12/8/14								2	Steel ded	cing								
49 classroom 1st floor roof	2 days		Wed 12/10/14								Roofing									
50 classroom curtain walls 1st	6 days	Fri 2/13/15	Fri 2/20/15											Curtain Wall						
51 poo and gym brick 1st	1 days	Non 2/23/15	Thu 2/26/15											Masonry						1

D	Task Name	Duration	Start
52	classroom brick 1st	5 days	Fr12/27/15
53	east brick 1st	2 days	Wed 3/4/15
54	windows 1st floor icf	6 days	Fri 3/6/15
55	windows 1st floor ow	∠ days	Mon 3/16/15
56	exterior doors 1st floor	9 days	Fri 3/20/15
57	METP rough-ins	oU days	Fri 2/13/15
58	stuc walls	12 days	Fri 3/27/15
59	gypsum wallboard	12 days	Tue 4/14/15
€O	casework	7 days	Thu 4/30/15
61	fixtures	5 days	Mon 5/11/15
¢2	finishes	10 days	Mon 5/18/15
63	carpet tile flooring	5 days	Tue 6/2/15
64	concrete floor finishing	5 days	Tue 6/9/15
€5	equipment	5 days	Tue 6/16/15
66	Second Floor	202 days	Thu 10/2/14
67	gym metal decking	2 days	Wed 10/8/14
68	pool and gym walls 2nd lift	5 days	Thu 10/2/14
69	gym beams 2nd	3 days	Tue 10/14/14
70	classroom metal decking	4 days	Fri 10/10/14
71	classroom walls 2nd lift	3 days	Thu 10/16/14
72	pool trusses north	1 day	Fri 10/17/14
73	pool trusses south	1 day	Mon 10/20/14
74	pool truss braces	1 day	Tue 10/21/14
75	east metal decking	1 day	Thu 10/16/14
76	gym trusses west	1 day	Wed 10/22/14
77	gym trusses east	1 day	Thu 10/23/14
78	gym truss braces	1 day	Fri 10/24/14
19	east wails 2nd	3 days	Tue 10/21/14
80	classroom beams 2nd	5 days	Mon 10/27/14
81	east beams roof	3 days	Mon 11/3/14
82	No School (In-Service Day)	1 day	Tue 11/11/14
83	gym slab on deck 2nd	1 day	Mon 12/1/14
84	No School (Thanksgiving Recess)	3 days	Wed 11/26/14
85	classroom slab on deck 2nd	1 day	Tue 12/2/14
86	east siah on deck 2nd	1 day	Wed 17/3/14
87	pool and gym rcof decking	2 days	Thu 12/11/14
58	pool and gym rcof	10 days	Mon 12/15/14
89	OAU 2&3, EAU 2&3 Deliveries	1 day	Fri 1/2/15
SO	No School (Holiday Break)	5 days	Tue 12/23/14
\$1	pool and gym skylights	3 days	Fri 1/2/15
52	classroom 2nd floor roof decking	2 days	Frl 1/2/15
63	classroom 2nd floor roof	5 days	Tue 1/6/15
54	east roof decking	1 dav	Tue 1/6/15
55	east roof	6 days	Tue 1/13/15
56	OAU 1 & EAU 1 Deliveries	1 dav	Wed 1/21/15
\$7	No School (MLK Jr. Day]	1 dav	Mon 1/19/15
58	pool and gym aluminum panel 2nd	2 days	Fri 3/6/15
59	classroom curtain wals 2nd	6 days	Fri 3/6/15
100	classroom aluminum panel 2nd	∠ days	Mon 3/16/15
101	east curtain wall 2nd	2 days	Mon 3/16/15
102	east aluminum panel 2nd	3 days	Wed 3/18/15

Goals

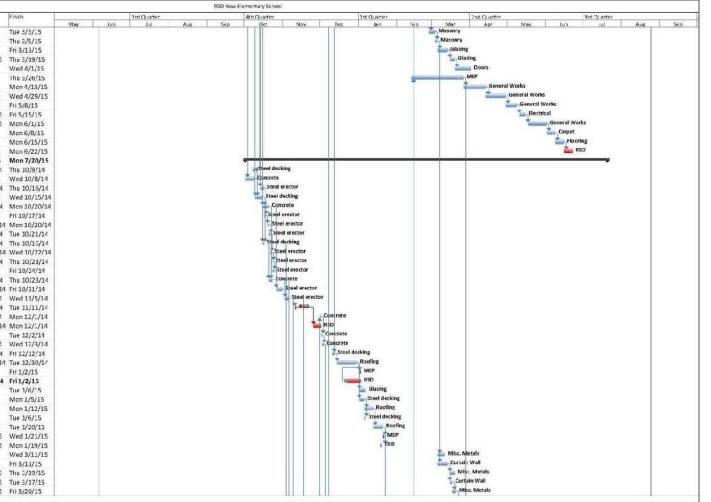
BIM Execution Plan

Site Plan

Building Analysis

Schedule





)	Task Name	Duration	Start	Finish			3rd Quarter			4
-		Jura.ioit			May	Jun	Ju	Aug	Sec	1
103	windows 2nd floor icf	6 days	Mon 3/23/15	Non 3/30/15	Concern de la		2 47 4 2 a	CANAL ST		
104	windows 2nd floor cw	4 days	Tue 3/31/15	Fri 4/3/15						
105	MEFP rough-ins	25 days	Fri 3/27/15	Thu 4/30/15						
106	stud walls	10 days	Fri 5/1/15	Thu 5/14/15						
107	gypsum wallboard	10 days	Fri 5/15/15	Fri 5/29/15						
108	casework	6 days	Mon 6/1/15	Non 6/8/15						
109	fixtures	5 days	Tue 6/9/15	Mon 6/15/15						
110	fnishes	10 days	Tue 6/15/15	Mon 6/29/15						
111	carpet tile flooring	5 days	Tue 6/30/15	Non 7/6/15						
112	concrete floor finishing	5 days	Tue 7/7/15	Non 7/13/15						
113	equipment	5 days	Tue 7/11/15	Non 7/20/15						
114	Third Floor	188 days	Tue 11/4/14	Fri 7/31/15						
115	gym metal decking 3rd	2 days	Tue 11/4/14	Wed 11/5/14						
116	gym walls 3rd lift	5 days	Thu 11/6/14	Wed 11/12/14						
117	dassroom metal decking	4 days	Thu 11/6/14	Tue 11/11/14						
118	gym beams roof	3 days	Tue 11/18/14	Thu 11/20/14						
119	dassroom walls 3rd lift	3 days		Non 11/17/14						
120	dassroom beams roof	5 days	Fri 11/21/14	Thu 11/27/14						
121	cast walk 3rd lift	1 day	and the second se	Tue 11/18/14						
122	evm slab on deck 3rd	1 day	Thu 12/4/14	Thu 12/4/14						
123	dassroom slab on deck 3rd	1 day	Fri 12/5/14	Fri 12/5/14						
124	gym roof decking	1 day		Wed 1/21/15						
125	gym roof	6 days	Thu 1/22/15	Thu 1/29/15						
126	dassroom rcof decking	2 days	Thu 1/22/15	Fri 1/23/15						
127	dassroom roof	10 days	Fri 1/30/15	Thu 2/12/15						
128	No School (In-Service Dav)	1 day	Mon 2/16/15	and the second						
129	gym curtain walls 3rd	4 days	Mon 3/23/15							
130	gym aluminum panel 3rd	2 days	Fri 3/27/15	Non 3/30/15						
151	dasroom curtain walls 3rd	6 days	Fri 3/27/15	Fri 4/3/15						
132	No School (Holiday Break)	6 days	Mon 3/3C/15							
133	dassroom aluminum panel 3rd	4 days	Mon 4/6/15	Thu 4/9/15						
134	windows are floor icf	5 days	Fri 4/10/15	Thu 4/16/15						
135	windows 3rc floor cw	3 days	Fri 4/17/15	Tue 4/21/15						
136	MEFP rough-ins	19 days	Fri 5/1/15	Thu 5/28/15						
137	No School (Memorial Day)	1 day	Mon 5/25/15							
138	stud walls	8 days	Fri 5/29/15	Tue 6/5/15						
139	Last Day of School - Spring 2015	1 day	Fri 6/5/15	Fri 6/5/15						
340	gypsum wallboard	8 days	Wed 6/1C/15	and the second state of the local states and						
141	casework	6 days		Non 6/29/15						
142	fixtures	4 days	Tue 6/30/15	Fri 7/3/15						
143	fnishes	8 days	Mon 7/6/15	Wed 7/15/15						
144	carpet tile flooring	ouaγs 4 days	Thu 7/16/15	Tue 7/21/15						
145	concrete floor finishing	4 days	Wed 7/22/15	11111010101010101010000000000000000000						
146		10 10 10 10 10 10 10 10 10 10 10 10 10 1	and the second second second second	 Determine the second s second second sec second second sec						
147	equipment Commissioning	4 days	Tue 7/28/15	Fil 7/31/15						
148	- 2212 (2010) 221 (2010)	55 days	Fri 5/29/15	Thu 8/13/15						
148	Demobilization	5 days	Mon 8/3/15	Fn 8/7/15						
149	Teacher Move-In / FF&E	10 days	Mon 8/10/15	the same provide the second se						
114116/16/14	Substantial Completion	0 days	Fri 8/21/15	Fri 8/21/15						
151	First Day of School - Fall 2015	1 day	Mon 8/24/15	Non 8/24/15						

Site Logistics

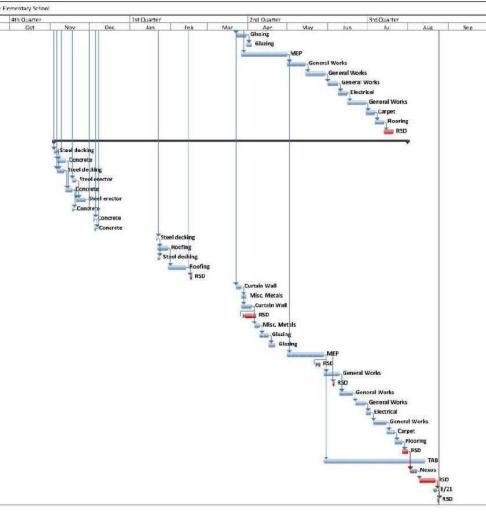
Schedule

Cost Estimate

Sustainability Analysis

Conclusion











Goals

BIM Execution Plan

Site Plan

Building Analysis

Conclusion



Safety & Security



Lifecycle & Maintenance



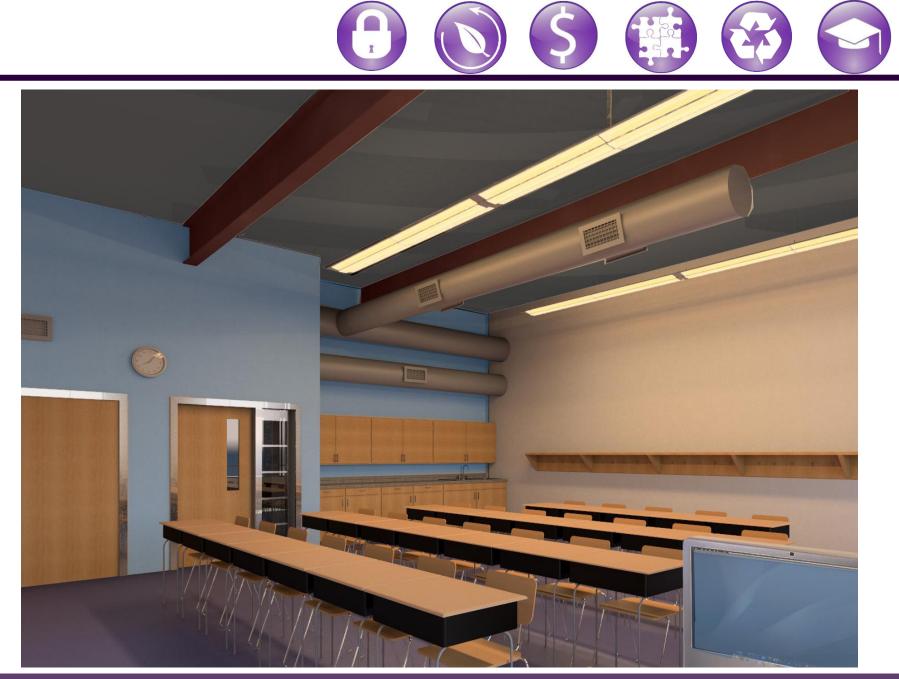


Integration



Reduce, Reuse, Recover

Learning Tool



Schedule

Cost Estimate

Sustainability Analysis

