

College of DuPage

Project Introduction

Our proposed project approach for the final project will include visualization and design & construction conflicts coordination. 27,500 square foot Train Station Project We will utilize the following platforms to help execute our approach :

- Navisworks
- Microsoft Project
- Microsoft Excel
- Revit

Methodology

Our approach allows us to effectively showcase specific BIM related strategies and how they are beneficial to the project at hand.

- Clash Detection
- Scheduling
- 4D Phasing
- Estimating using Naviswork and excel

Objectives

1. Import and combine architectural, structural, and MEP Navisworks models into a single, integrated model. 2. Create selection sets of the various building components **3.** Run clash detection between the above-referenced models to identify and note clashes between the various systems and components



Clash Detection



Clash between wall and HVAC



Clash between Ceiling and HVAC



Clash between Plumbing and HVAC



Clash between Plumbing and Electrical

In our project, our primary emphasis was on pinpointing critical clashes between the structural elements of the Train Station and its MEP systems. Through this identification process, we can precisely relocate the MEP systems that are causing conflicts. Simply adjusting a pipe or duct will rectify the issue. Leveraging BIM, we obtain precise guidance on how and where to reconfigure the specific clash areas. By undertaking this proactive approach at the project outset, we can potentially save subcontractors and GCs significant costs, amounting to thousands of dollars.

ID	Task	Task Name	Duration	Start	Finish	Predecessors	Half 2, 2024 Half 1, 2025
1	Mode 	Preconstruction	25 days	Wed 5/1/24	Tue 6/4/24		Preconstruction
2	-4	Award Project GC	0 days	Wed 5/1/24	Wed 5/1/24		5/1 0/4
3	-4	Finalize Owner/GC Contract	10 days	Wed 5/1/24	Tue 5/14/24	2	Finalize Dwner/GC Contract
4	-4	Release Long Lead Items	15 days	Wed 5/15/24	Tue 6/4/24	3	3/1 20 3/14 Release Long Lead Items
5	-	Release Subcontracts	10 days	Wed 5/15/24	Tue 5/28/24	3	Release Subcontracts
6	-,	Notice to Proceed Constrution	0 days	Tue 5/28/24	Tue 5/28/24	5	5/13 5/20
7	-4	Phase I: Site Construction	178 days	Wed 5/29/24	Fri 1/31/25		Phase I: Site Construction
8	-4	Mobilization	5 days	Wed 5/29/24	Tue 6/4/24	6	S/29 1/31 Mobilization
9	-,	SWPPP Installation	3 days	Wed 6/5/24	Fri 6/7/24	8	5/29 6/4 SWPPP Installation
10	-,	Strip Topsoil	10 days	Mon 6/10/24	Fri 6/21/24	9	6/5 6/7 Strip Topsoil
11	-	Pour footings	10 days	Mon 6/24/24	Fri 7/5/24	10	6/10 6/21 Pour tootings
12	-,	Construct Pad's	20 days	Mon 7/8/24	Fri 8/2/24	11	6/24 Y 7/5 Construct Pad's
13	-,	Construct Site Subgrade	40 days	Mon 7/8/24	Fri 8/30/24	12SS	7/8 8/2 Construct Site Subgrade
14	-,	Install Site Utilities	30 days	Mon 7/8/24	Fri 8/16/24	1255	7/8 8/30
15	-,	Final Grade Site	5 days	Mon 9/2/24	Fri 9/6/24	13	7/8 8/16 Final Grade Site
16	-,	Install Pavement Stone	15 days	Mon 9/9/24	Fri 9/27/24	15	9/2 9/6 Install Pavement Stone
17	-,	Install Curbs/Site Concrete	20 days	Thu 9/19/24	Wed 10/16/24	16FS-7 days	9/9 27 Install Curbs/Site Concrete
18	-,	Backfill Curbs	10 days	Thu 10/10/24	Wed 10/23/24	17FS-5 days	9/19 10/16 Backfill Curbs
19	-	Install Binder Course Asphalt	9 days	Tue 10/15/24	Fri 10/25/24	18FS-7 days	10/10 10/23 Install Binder Course Asphalt
20	-	Install Site Lighting	8 days	Wed 10/23/24	Fri 11/1/24	19FS-3 days	10/15 10/25 Install Site Lighting
21	-4	Start Landscaping/Walls	15 days	Mon 11/25/24	Fri 12/13/24	19FS+20 days	10/23 11/1 Start Landscaping/Walls
22		Complete Landscaping	20 days	Mon 12/16/24	Fri 1/10/25	21	Complete Landscaping
23	-	Headwall	15 days	Wed 12/25/24	Tue 1/14/25	22SS+7 days	Headwall
24	-,	Finish Curb	5 days	Wed 1/1/25	Tue 1/7/25	23FS-10 days	12/25 1/14 Finish Curb
25	-4	Install Surface Course Asphalt	10 days	Mon 1/13/25	Fri 1/24/25	22,24	1/1 == 1/7 Install Surface Course Asphalt
26		Install Striping/Signage	5 days	Mon 1/27/25	Fri 1/31/25	25	1/13 Tan 1/24 Install Striping/Signage
27	-	Phase II Office Construction	235 days	Mon 9/2/24	Fri 7/25/25		1/27 1/31 Phase II Office Construction
28		Stone Building Pad	5 davs	Mon 9/2/24	Fri 9/6/24	13	9/2
29		Install Trench Foundations	4 days	Mon 9/9/24	Thu 9/12/24	28	9/2 9/6
30		Install Column Piers	3 days	Fri 9/13/24	Tue 9/17/24	29	9/9 9/12
31		Install Structural Steel	15 days	Wed 9/18/24	Tue 10/8/24	30	9/13 9/17 Install Structural Steel
32		Caulk Precast Panels	9 days	Wed 10/9/24	Mon 10/21/24	31	9/18 10/8
22	*	Construct second floor	7 days	Tue 10/22/24	Wed 10/20/24	22	
24	-	Construct second noor	7 days	The 10/22/24	Wed 10/30/24	32	
25	-	Construct Unite Floor	7 days	Map 11/11/24	Tue 11/10/24	24	
35	-	Construct Fourth Floor	7 days	Wion 11/11/24	Tue 11/19/24	34	Construct Fourth Floor 11/11 1/19
36	*	Erect Precast / pour exterior walls	20 days	Wed 11/20/24	Tue 12/17/24	35	Erect Precast / pour exterior walls 11/20 12/17
37	->	Install Roof Deck	12 days	Wed 12/18/24	Thu 1/2/25	36	Install Roof Deck 12/18 1/2
38		Install Roofing	18 days	Tue 12/31/24	Thu 1/23/25	37FS-3 days	Install Roofing 12/3
39	-	Install Exterior glazing mural	15 days	Wed 12/18/24	Tue 1/7/25	36	Install Exterior glazing mural 12/18 1/7
40	-	Paint exterior Precast Panels	12 days	Wed 1/8/25	Thu 1/23/25	39	Paint exterior Precast Panels 1/8 1/23
41	->	Pearado Stopo Paro	12 days	Tue 2/4/25	Mon 2/10/25	30F3-3 Udys	Install Understab MEPPPS 1/17 2/3
46	->	Install Overhead MEPEPr	10 days	Tuo 2/11/25	Mon 2/24/25	41 42	2/4 2/10
45	_÷	Install MEPEP Equipment	10 days	Tue 2/25/25	Mon 3/10/25	41,42	2/11 2/2/4
45	7	Over head MEPS	10 days	Tue 3/11/25	Mon 3/24/25	45	2/25 3/10 Over brad MEPS
46		Frame office walls	15 days	Wed 3/12/25	Tue 4/1/25	45\$\$+1 day	3/11 3/24 Frame office walls
47		Drywall and tape office walls	20 days	Tue 4/1/25	Mon 4/28/25	46FS-1 day	3/12 4/1 Drowall and tape office walls
48		Electrical and Plumbing wall rough in	8 days	Tue 4/29/25	Thu 5/8/25	47	4/1 4/28 Electrical and Riumbing wall rou
49	- -	Rough Inspection	4 days	Fri 5/9/25	Wed 5/14/25	48	4/29 5/8
50		Hang and tane drowall	15 days	Thu 5/8/25	Wed 5/28/25	4955-1 day	Kougn inspection 5/9_¥ 5/14
51	-	Prime and paint walls	20 days	Tue 5/27/25	Mon 6/22/25	50FS-2 days	Hang and tape drywa 5/8
52		Ceiling grid	15 days	Fri 5/30/25	Thu 6/19/25	51SS+3 dave	Prime and paint 5/27
53	- -	MEPs ceiling trim	15 days	Tue 6/3/25	Mon 6/23/25	52SS+2 days	5/30 6/
54		Above ceiling inspection	1 dav	Tue 6/24/25	Tue 6/24/25	53	6/3
55		Install ceiling tiles	10 days	Wed 6/25/25	Tue 7/8/25	54	
56		Flooring	10 days	Thu 7/3/25	Wed 7/16/25	55FS-4 days	6/25
57	- -	Install doors & Hardware	10 days	Fri 7/4/25	Thu 7/17/25	56SS+1 day	Fio 7/3
58	-	Install Interior Glazing	10 days	Wed 6/25/25	Tue 7/8/25	5555	install door 7/4
59	- -	Cabinets	3 days	Tue 7/15/25	Thu 7/17/25	56FS-2 days	6/25
60		MEPS trim	6 days	Fri 7/18/25	Fri 7/25/25	5655+5 days.59	7/15
61		Phase III Train Platform Construction	115 days	Mon 9/9/24	Fri 2/14/25		M 7/1 Phase III Train Platform Construction
62	-	Install Trench Foundations	10 days	Mon 9/9/24	Fri 9/20/24	28	9/9 2/14
63	-	Stone Train Platform Pad	10 days	Mon 9/23/24	Fri 10/4/24	62	9/9 5 9/20 Stone Train Platform Pad
64	-	Install Column Piers	15 days	Mon 10/7/24	Fri 10/25/24	63	9/23 🖕 10/4 Install Column Piers
65	-	Install Structural Steel	40 days	Mon 10/28/24	Fri 12/20/24	64	10/7 👝 10/25
66	-	Concrete pour platform Pad	15 days	Mon 12/23/24	Fri 1/10/25	65	10/28 12/20
67	-	Install Roof Panels	20 days	Mon 12/23/24	Fri 1/17/25	65	12/23 1/10
68	7	Paint Structural steel	20 days	Mon 12/22/24	Fri 1/17/25	65	12/23 1/17
69		Install Panel Glazing	20 days	Mon 1/20/25	Fri 2/14/25	68	
70	-	Project Closeout	23 dave	Mon 7/28/25	Wed 8/27/25		
71	-	Final Cleaning	20 days	Mon 7/28/25	Fri 8/22/25	60.69	7/
72	-	Final Testing	3 days	Mon 8/25/25	Wed 8/27/25	71	7,
73	-	Punch List	15 days	Mon 7/28/25	Fri 8/15/25	60	
74	-	Final Inspections	5 days	Mon 8/18/25	Fri 8/22/25	73	7,
75	-	TCO/Substantial Completion	1 dav	Mon 8/25/25	Mon 8/25/25	74	TO
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Train Station Jesus and Patrick

BIM Management - Revit Supervisor: Dr. Zaki Mallasi, Spring 2023

Scheduling





4D Phasing based off Schedule Phase I





Phase II



Nilenten Bashin

Week: 21-24 Level 1 & 2 Structural Steel Erected for Train station

Week: 25-29 Level 3 & 4 Structural Steel Erected for Train station

Week: 30-35 Precast Concrete Stand up

Week: 36-41 Concrete Walls poured MEP installed



Week: 41-54 **Train Station** Complete: Glazing and siding finished



Week: 24-26 Steel Erection begins

Week: 27-28 Steel Erection Trusses

Week: 29-30 Steel Trusses connected

Week: 31-32 Additional Steel reinforcing + **Retaining Walls** Poured

Week: 64 Project Complete

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Concrete Subtrotal Concrete Shell Bidg Total Cost Concrete Shell Bidg Total Cost Concrete Shell Bidg Total Cost Concrete Subtrotal Example of the Concrete Estimate. Footing covers all concrete on grade. Wall Panels Misc. Concrete Subtrotal Example of the Concrete Estimate. Footing covers all concrete on grade. Wall Panels and poured concrete needed for the station cation: Chicago, IL Ermits and Fees te Construction Costs Concrete Structural Steel Woods & Plastics Thermal & Moisture Barrier Doors & Windows Finishes Specialties Signage Special Construction Mechanical Electrical TOTAL B Energi Conditions Contract	Items	WBS 03	Status	WBS/RBS Name 03.1.1.2.1.1 300mm Diameter
Torver	- D Concrete Round	03.3		
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Train Station Jesus and Patrick BIM Management - Revit Supervisor: Dr. Zaki Mallasi, Spring 2023

🖉 💥 📑 Change Analysis 🗸 🔞 U Count PrimaryQuantity Weight 0.000 kg 38.000 ea 16.318 m³ **Building Construction Costs** with RSMeans data

vere able to find total volume ns data book to find pricing. One er to yards for total volume

Building costs taken from RSMeans data and adjusted for Inflation

G@RDIAN

			\$ 2,890,265.00
Quantities	UN	UN Cost	
3,531.80	Volume in M	\$245.00	\$ 865,291.00
3,567.86	Volume in M	\$245.00	\$ 874,125.70
2,677.50	Volume in M	\$245.00	\$ 655,987.50
2,019.84	Volume in M	\$245.00	\$ 494,860.80
			\$ 2,890,265.00

gs & Foundations include platform and station. Concrete slab are precast panels and tilt up. Misc. Concrete is any structural To find subtotal multiply Quantity by UN Cost

	Contact	PJ Brocious	
			<u>.</u>
			Cost
Subtotal			\$ 15,000.00
Subtotal			\$ 4,282,163.93
			\$ 2,820,028.00
			\$ 1,609,100.00
			\$ 12,255.00
			\$ 1,077,534.00
			\$ 290,027.00
			\$ 152,739.64
			\$ 2,250.00
			\$ 20,000.00
			\$ 426,720.00
			\$ 278,650.00
			\$ 356,500.00
UILDING SHELL COSTS:			\$ 7,243,403.64
Subtotal			\$ 812,416.76
or Const. Grand Total			\$ 12,352,984.32