



Layered Living: Bushehr's Dense Urban Fabric

02

#31: A PRIVATE HOOK A Community-Centered Design Approach

AMA Design+build - 2021-2022

My Position: Project Architect

Project Team:

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How This Project Reflects My Strengths:

Community-Oriented Design: Promoting social interaction through shared spaces as a central spine.

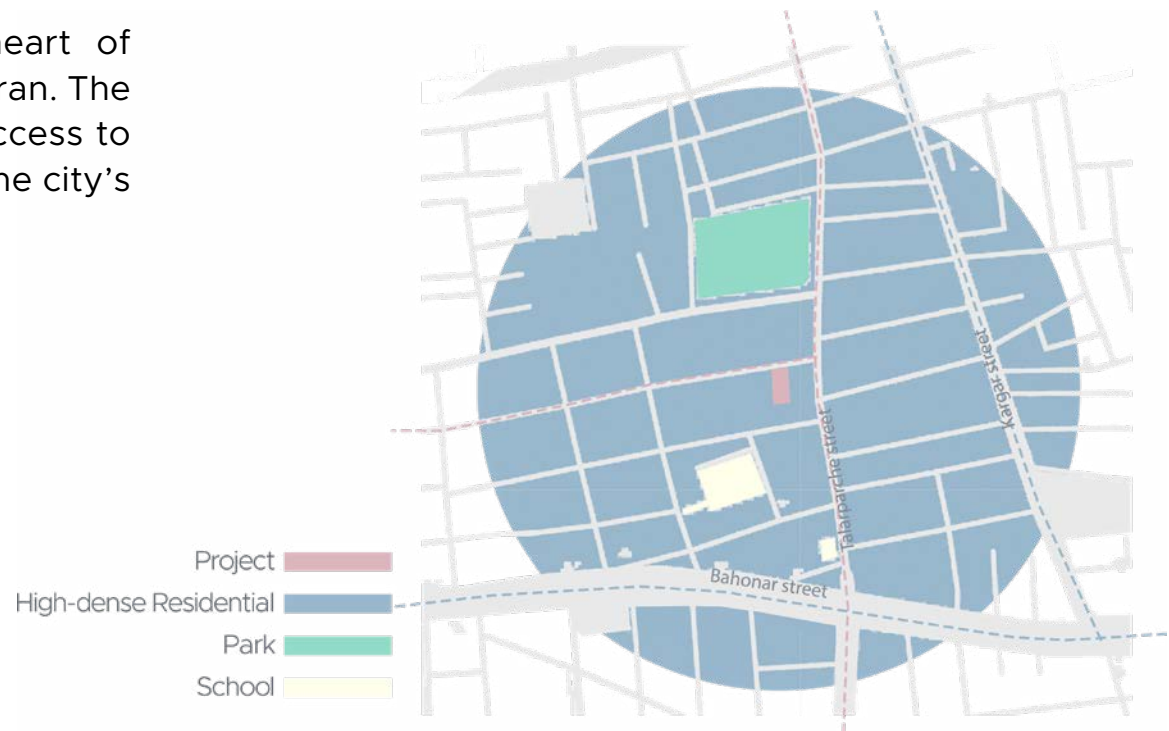
Creating Functional and Harmonious Layouts: Creating seamless transitions between indoor and outdoor spaces.

Designing with Natural Features: Incorporating light, air, and outdoor elements to improve residents' well-being.

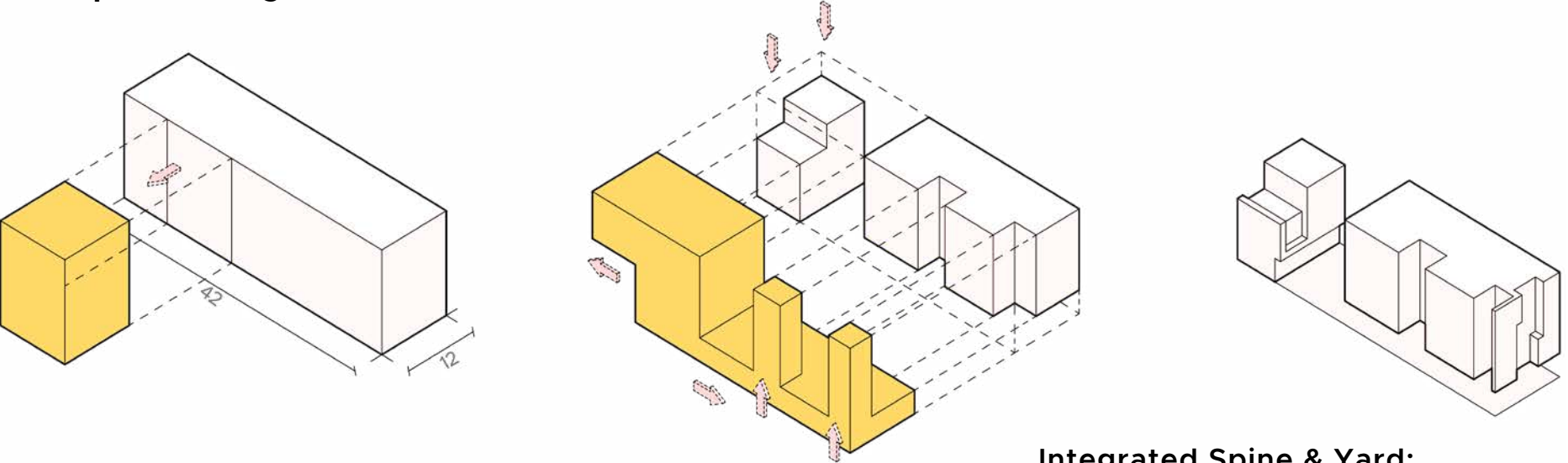
BIM Implementation and Multi-Discipline Review: Creating data-driven workflows for cross-discipline coordination, enabling structured information exchange and supporting informed decision-making throughout the project.

Beyond the Plot Lines

Our site sits amidst the bustling heart of Bushehr, a high-density area in southern Iran. The surrounding urban fabric offers limited access to green spaces, presenting a challenge in the city's hot and humid climate.



A Sculptural Design Process



Carve Open Space:

Introduce voids within the solid block.

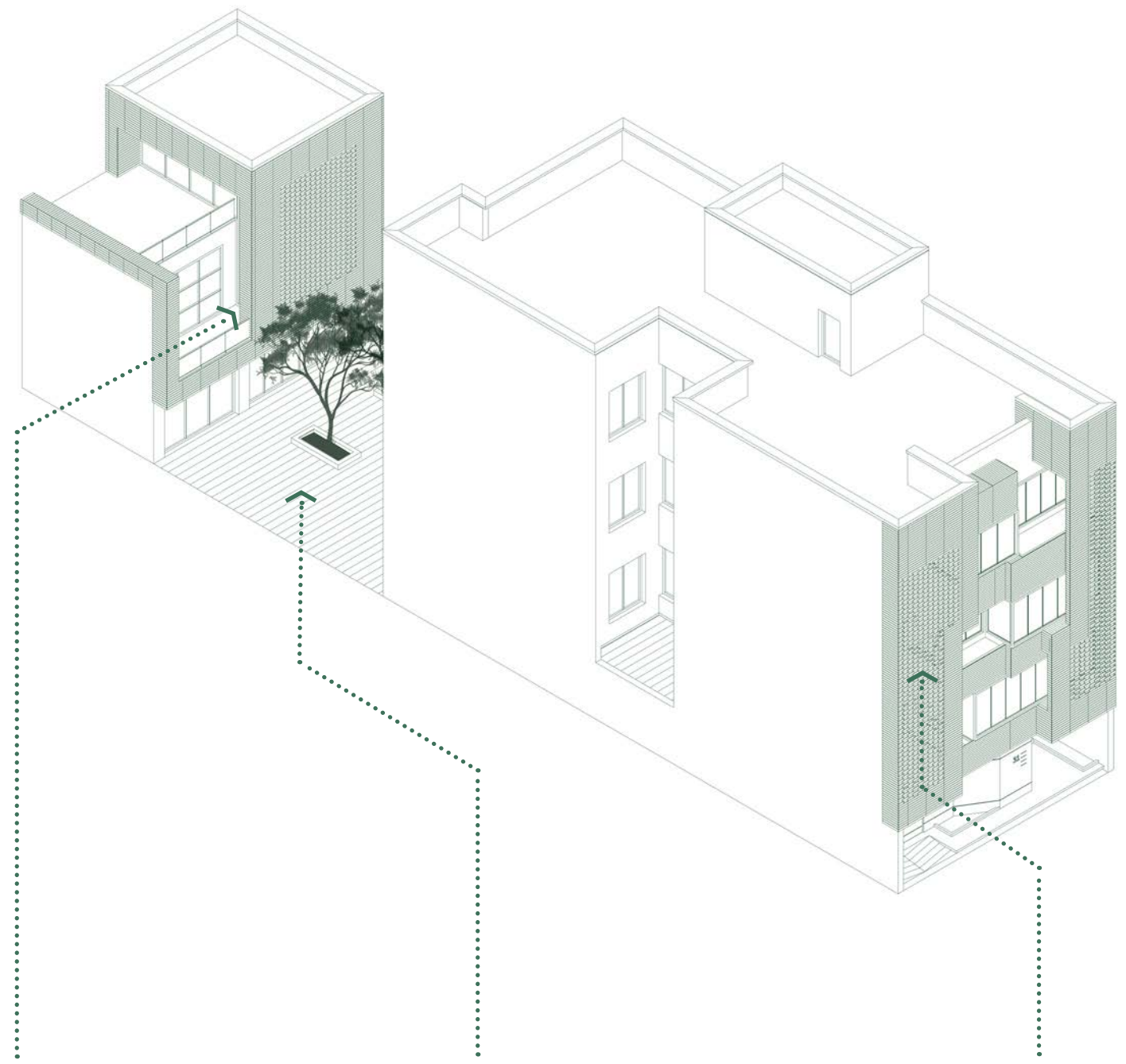
Geometric & Analytic Mix:

Refine geometries based on function (space, flow), light (natural penetration, views), and user experience (comfort, connection). This iterative process guides selection for the final typology.

Integrated Spine & Yard:

The final typology emerges, featuring a central open spine that acts as a social and circulatory hub. This spine seamlessly connects private yards, fostering a symbiotic relationship between indoor and outdoor living spaces, blurring the boundaries for a more integrated and nature-connected experience.

Isometric Spatial Strategy



Interactive Edge

The open edges on both sides of the breathing space serve as transitional zones that encourage social interaction while facilitating cross-ventilation within the fabric.

Breathing Space

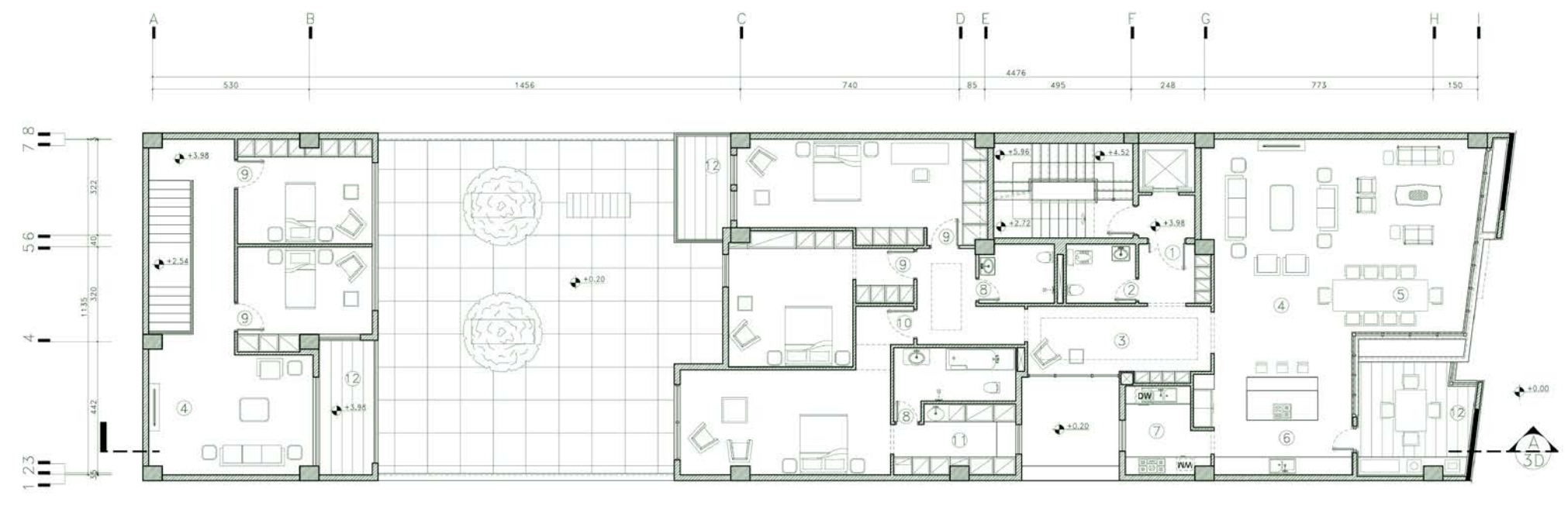
A semi-private green zone nestled between the residential blocks. It provides shade, natural ventilation, and a calming space for residents—a vital pause in the dense urban fabric.

Climatic Façade

The semi-transparent façade, balancing openness with solar protection. It filters harsh sunlight, enhances airflow, and creates a visual and physical connection between interior and exterior spaces, supporting sustainable comfort.

#31: A Private Hook

A Community-Centered Design Approach

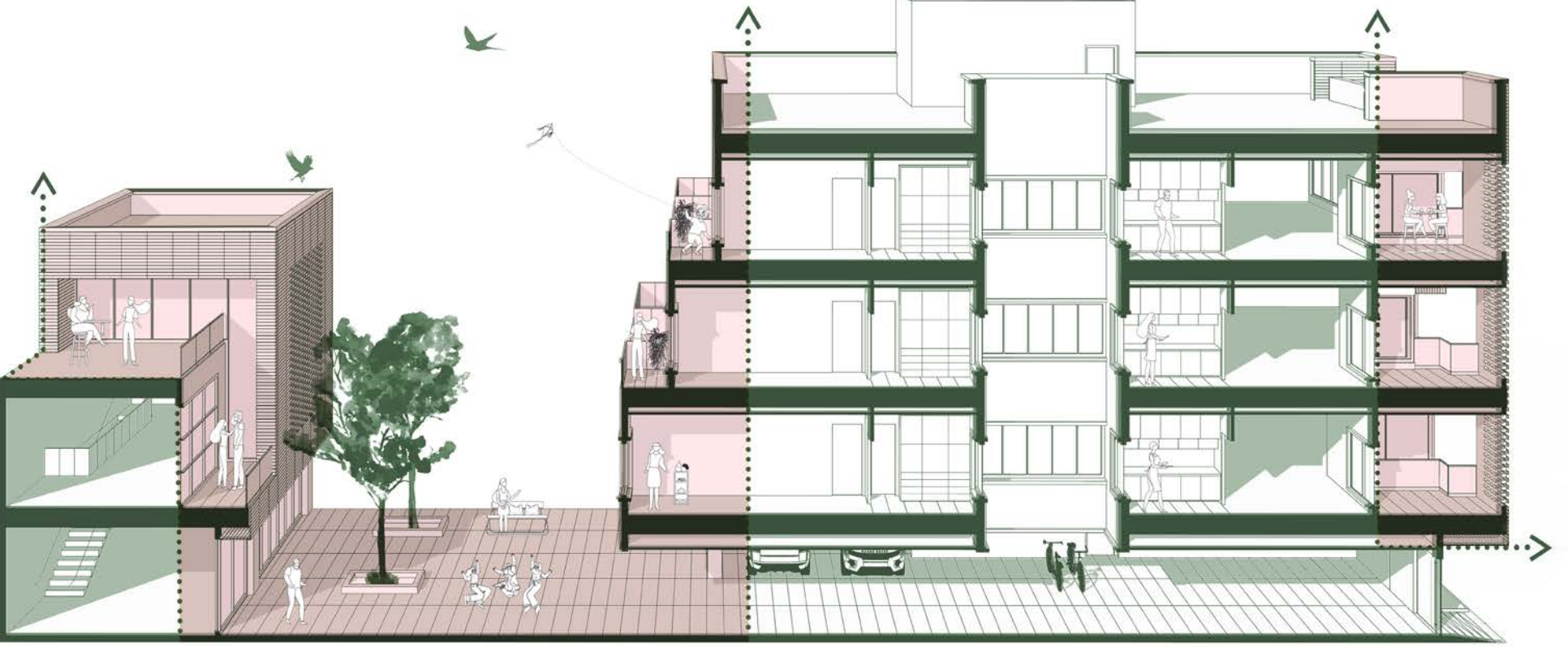


First Floor Plan

LEGEND

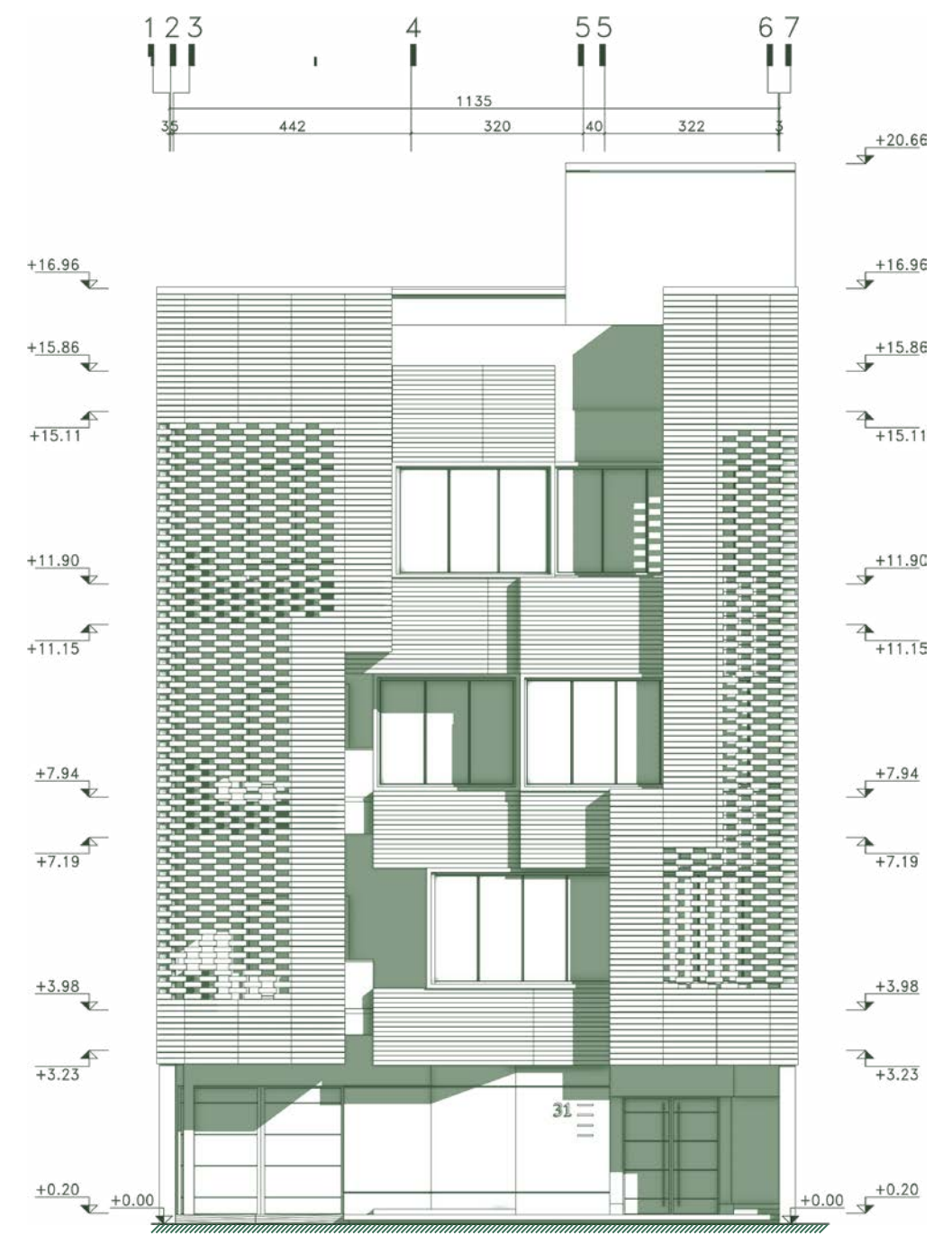
01	Entrance	04	Living room	07	Scullery	10	Parentroom
02	Toilet	05	Dinning room	08	Bathroom	11	Dressing
03	Entrance hall	06	Kitchen	09	Bedroom	12	Terrace

Isometric Section A-A – Social & Climatic Strategies



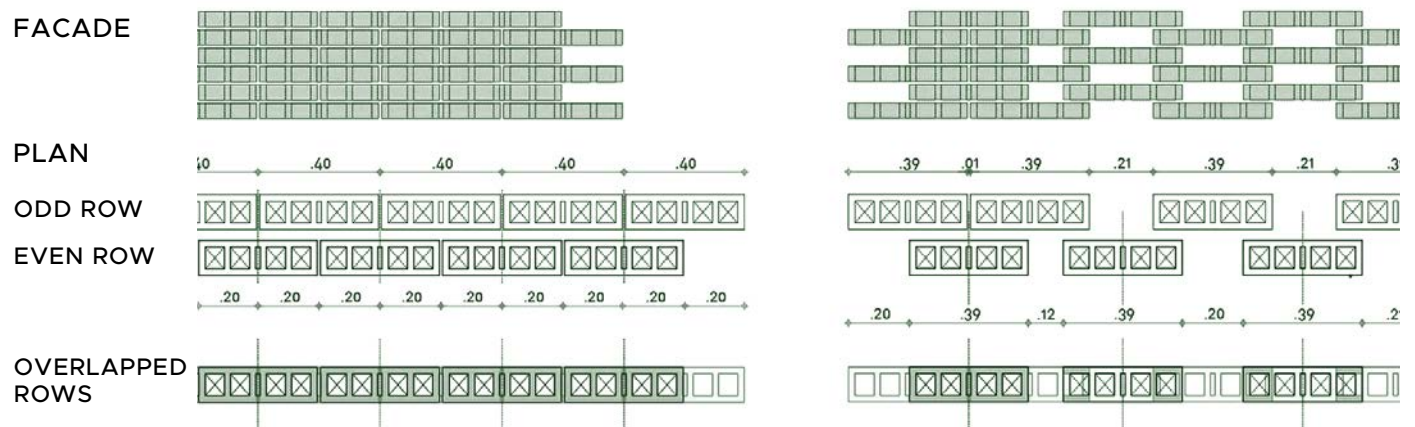
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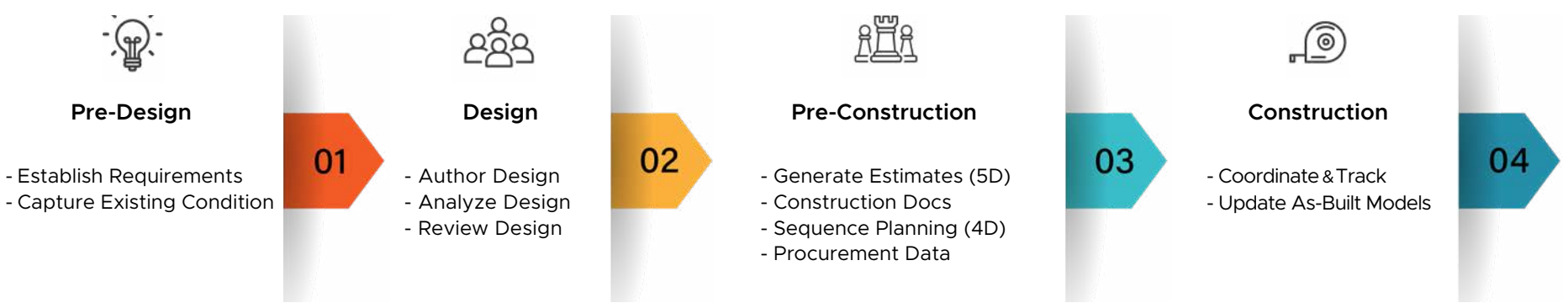
South Elevation

Detail
Normal Overlap Wall
Perforated Wall



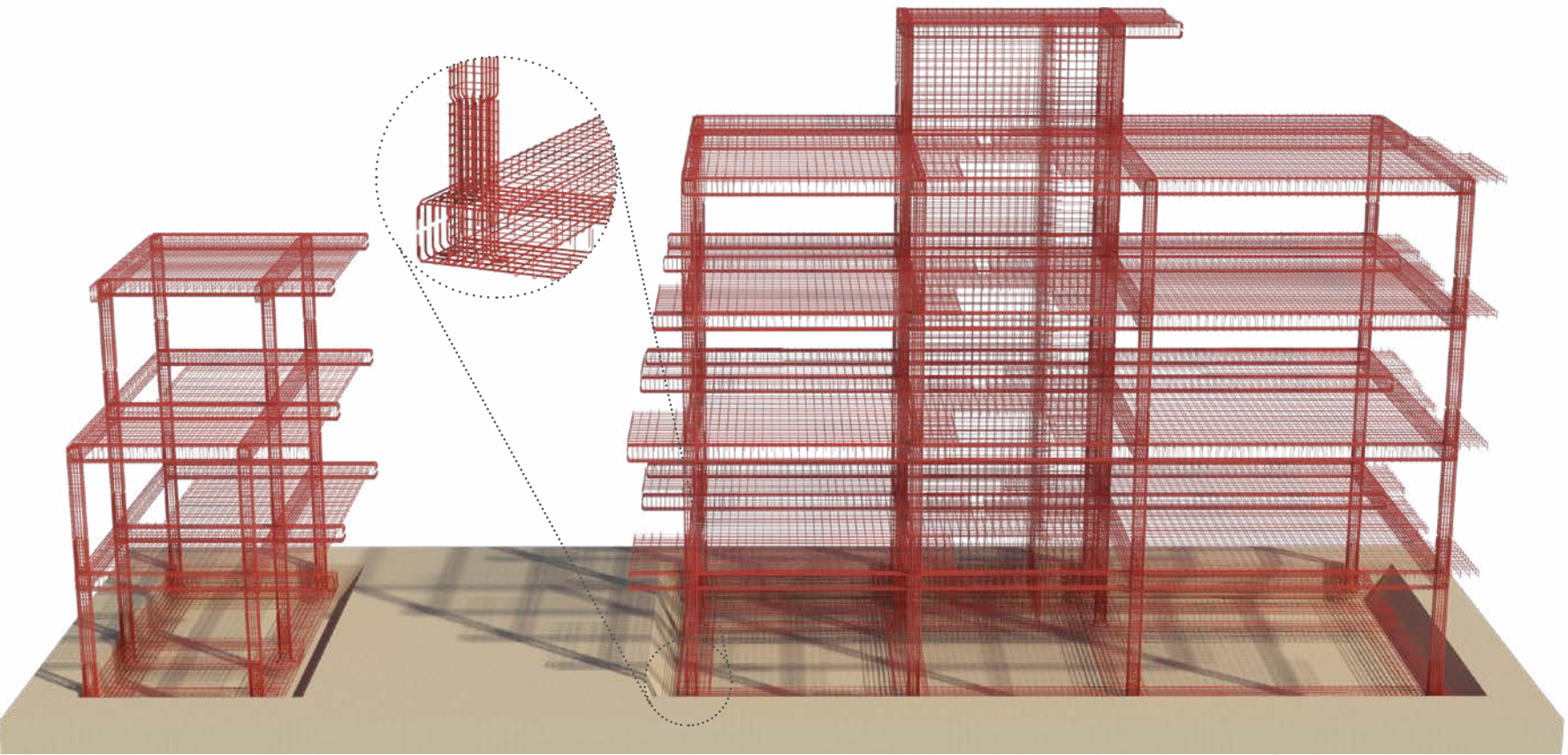
BIM Process Overviews:

The BIM workflow was first mapped through a process diagram, illustrating the key stages from project requirements to as-built delivery. This flowchart highlights how data and tasks move across different phases of the project lifecycle.



Structural Phase Focus:

This section demonstrates how the structural phase (LOD 400) was developed and connected with analytical tools to support decision-making from design through construction. By integrating Revit with Power BI, MS Project, and Dynamo, I explored the connection of timeline, cost, and material data within the BIM process.



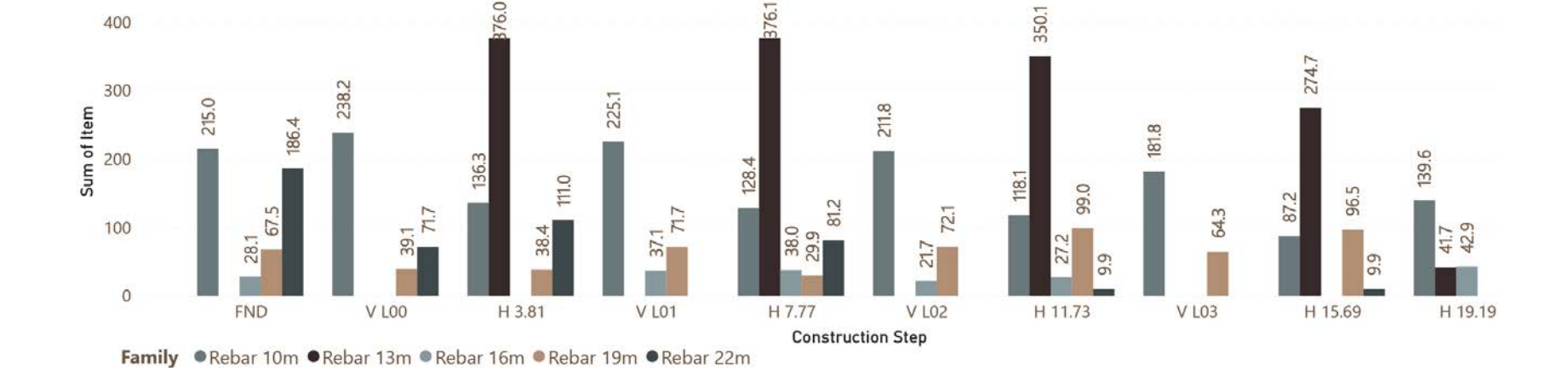
To demonstrate structured information exchange and informed decision-making within the project team, this table provides an overview of the structural phase workload. It consolidates key quantities, material requirements, and associated costs into a clear estimation summary derived from BIM model data.

Disc.	Level	Item	Qty		Item Cost	Labor Cost	Total Cost
STR	L 00	Concrete Plasticizer	864.1	kg	IRR 82M		IRR 82M
STR	L 00	Concrete, Cast-in-Place	172.8	m ³	IRR 380M		IRR 380M
STR	L 00	Gravel	185.5	m ³	IRR 56M		IRR 56M
STR	L 00	Gravel Compacted	118.4	m ³	IRR 36M		IRR 36M
STR	L 00	Lean Concrete, Pour-in-place	20.0	m ³	IRR 44M		IRR 44M
STR	L 00	Rebar	846.0	per bar (12m)	IRR 541M	IRR 542M	IRR 1,084M
STR	L 00	Concrete Pump	2.0	per day		IRR 20M	IRR 20M
STR	L 00	Excavator	1.0	per day		IRR 35M	IRR 35M
STR	L 00	Road Roller	1.0	per day		IRR 60M	IRR 60M
STR	L 00	Wheel Loader	1.0	per day		IRR 15M	IRR 15M
STR	L 01	Concrete Plasticizer	774.8	kg	IRR 74M		IRR 74M
STR	L 01	Concrete, Cast-in-Place	155.0	m ³	IRR 341M		IRR 341M
STR	L 01	Rebar	995.6	per bar (12m)	IRR 513M	IRR 488M	IRR 1,001M
STR	L 01	Concrete Pump	2.0	per day		IRR 20M	IRR 20M
STR	L 02	Concrete Plasticizer	766.7	kg	IRR 73M		IRR 73M
STR	L 02	Concrete, Cast-in-Place	153.4	m ³	IRR 337M		IRR 337M
STR	L 02	Rebar	959.2	per bar (12m)	IRR 479M	IRR 453M	IRR 932M
STR	L 02	Concrete Pump	2.0	per day		IRR 20M	IRR 20M
STR	L 03	Concrete Plasticizer	698.6	kg	IRR 66M		IRR 66M
STR	L 03	Concrete, Cast-in-Place	139.7	m ³	IRR 307M		IRR 307M
STR	L 03	Rebar	850.5	per bar (12m)	IRR 404M	IRR 381M	IRR 786M
STR	L 03	Concrete Pump	2.0	per day		IRR 20M	IRR 20M
STR	L 04	Concrete Plasticizer	600.5	kg	IRR 57M		IRR 57M
STR	L 04	Concrete, Cast-in-Place	120.1	m ³	IRR 264M		IRR 264M
STR	L 04	Rebar	692.5	per bar (12m)	IRR 321M	IRR 300M	IRR 622M
STR	L 04	Concrete Pump	2.0	per day		IRR 24M	IRR 24M
Total					IRR 4,375M	IRR 2,379M	IRR 6,755M

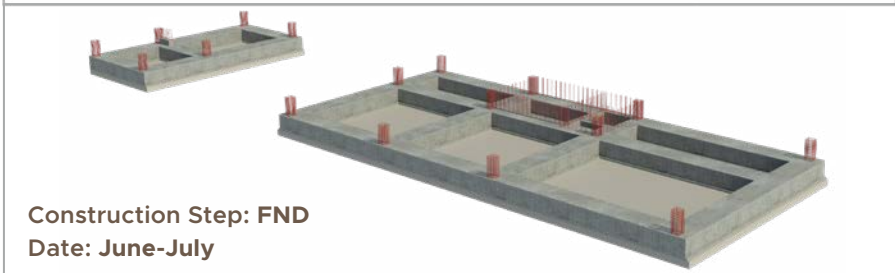
BIM Data Summary – Structural Phase

BIM-Based Structural Sequencing and Procurement Overview:

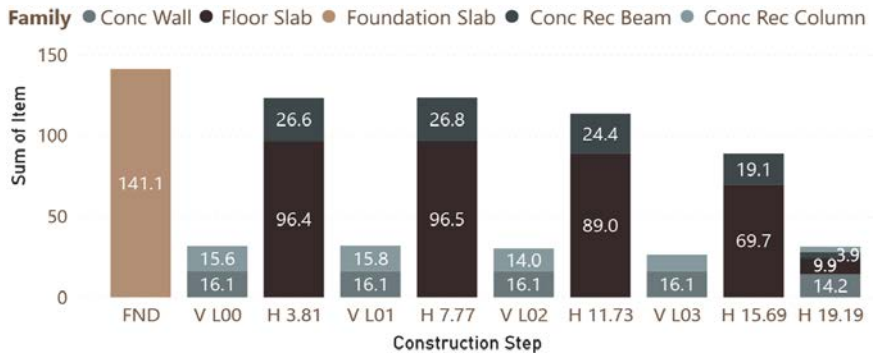
The structural construction phase is divided into ten concrete pouring steps, with procurement details and material requirements scheduled accordingly. BIM data supports the sequencing, procurement planning, and comparative analysis of materials across each step.



Item	Qty	Unit	Date
Excavator	1.0	per day	08-Jun-21
Gravel Fill 30cm	118.4	m³	10-Jun-21
Road Roller	1.0	per day	14-Jun-21
Wheel Loader	1.0	per day	17-Jun-21
Conc Lean 10cm	20.0	m³	18-Jun-21
Rebar 10m	215.0	per bar (12m)	18-Jun-21
Rebar 16m	28.1	per bar (12m)	18-Jun-21
Rebar 19m	67.5	per bar (12m)	18-Jun-21
Rebar 22m	186.4	per bar (12m)	18-Jun-21
Concrete Plasticizer	705.7	kg	29-Jun-21
Conc FND Slab	141.1	m³	30-Jun-21
Concrete Pump	1.0	per day	30-Jun-21
Gravel Fill 90cm	185.5	m³	05-Jul-21



Construction Step: FND
Date: June-July

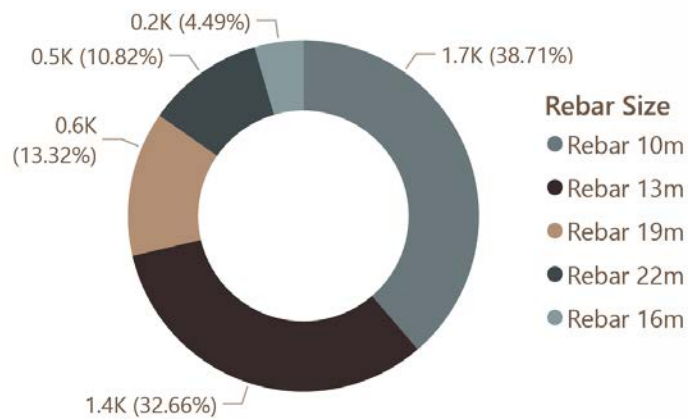


Item	Qty	Unit	Date
Rebar 10m	238.2	per bar (12m)	01-Jul-21
Rebar 19m	39.1	per bar (12m)	01-Jul-21
Rebar 22m	71.7	per bar (12m)	01-Jul-21
Concrete Plasticizer	158.4	kg	14-Jul-21
Conc CL 50x50cm	15.6	m³	15-Jul-21
Conc Wall 20cm	16.1	m³	15-Jul-21
Concrete Pump	1.0	per day	15-Jul-21

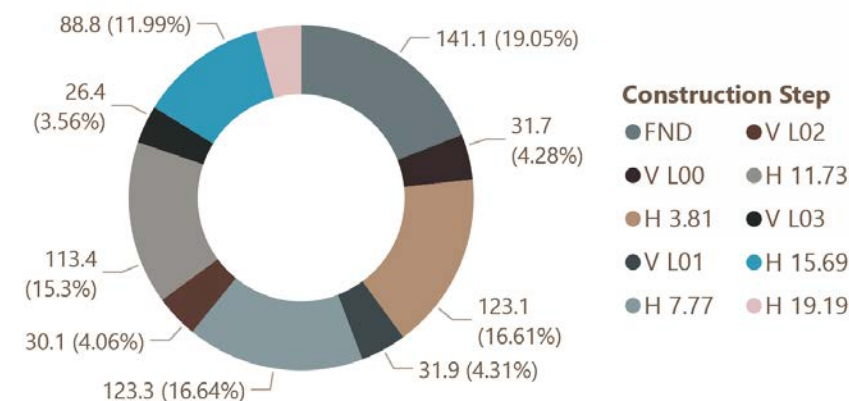


Construction Step: V L00
Date: July

Sum of Rebar by Size (total)



Sum of Concrete by Construction step (total)



Item	Qty	Unit	Date
Rebar 10m	136.3	per bar (12m)	01-Jul-21
Rebar 13m	376.0	per bar (12m)	01-Jul-21
Rebar 19m	38.4	per bar (12m)	01-Jul-21
Rebar 22m	111.0	per bar (12m)	01-Jul-21
Concrete Plasticizer	615.2	kg	03-Aug-21
Conc Beam 35x60cm	1.5	m³	04-Aug-21
Conc Beam 50x60cm	25.1	m³	04-Aug-21
Conc Floor Slab 25cm	96.4	m³	04-Aug-21
Concrete Pump	1.0	per day	04-Aug-21



Construction Step: H 3.81
Date: July - August



740.96

Sum of Concrete (m³)

4.34K

Sum of Rebare (per bar)

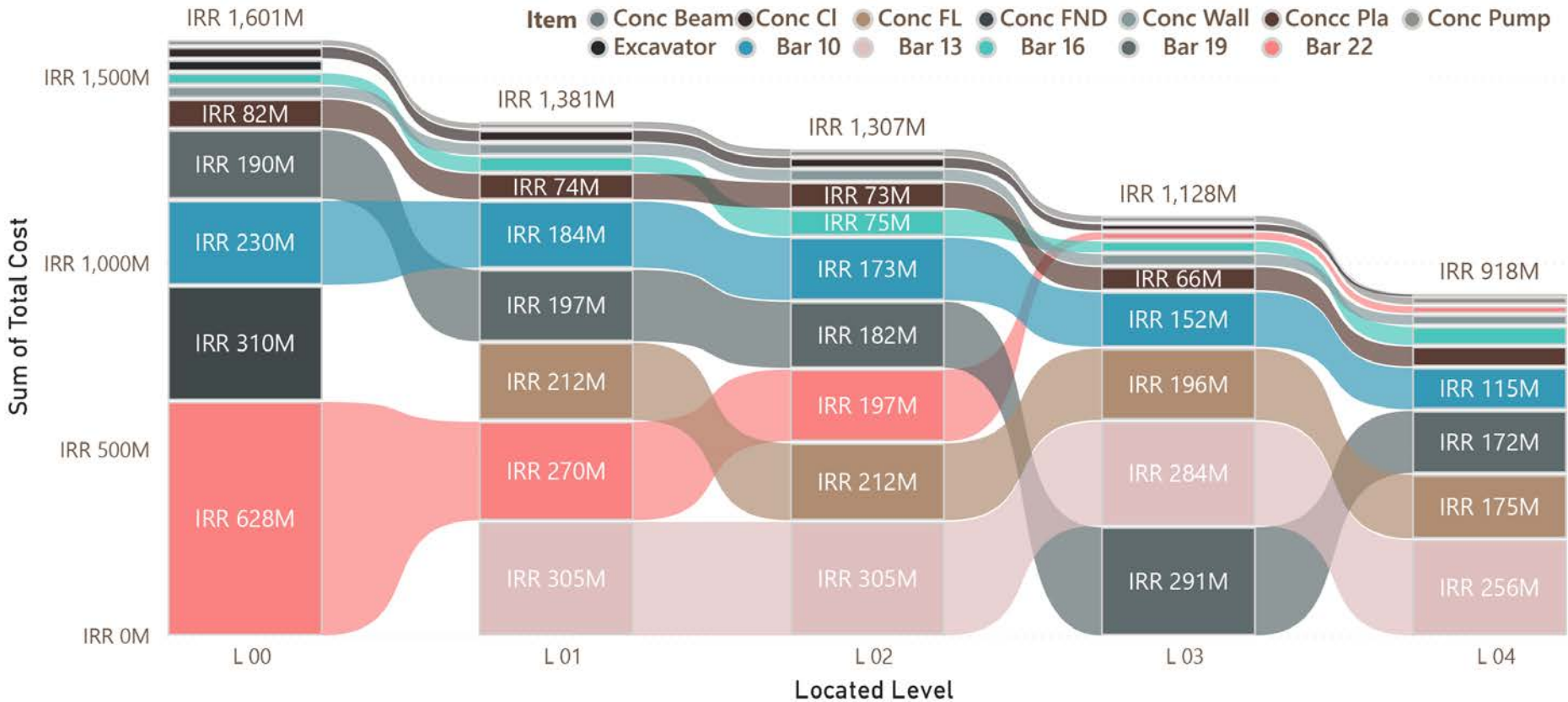
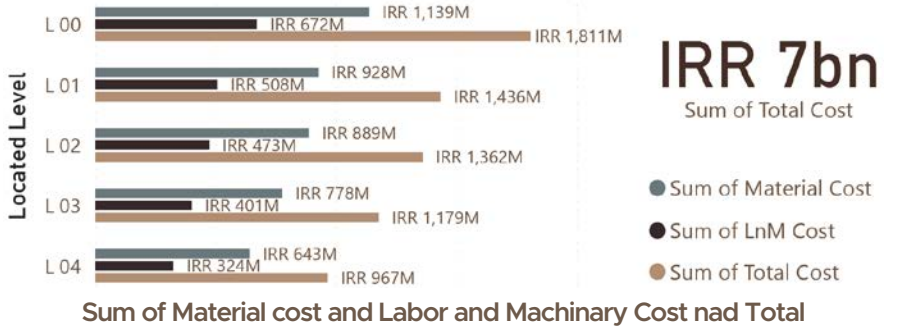
Item	Qty	Unit	Date
Rebar 10m	225.1	per bar (12m)	03-Aug-21
Rebar 16m	37.1	per bar (12m)	03-Aug-21
Rebar 19m	71.7	per bar (12m)	03-Aug-21
Concrete Plasticizer	159.6	kg	15-Aug-21
Conc CL 50x50cm	15.8	m³	16-Aug-21
Conc Wall 20cm	16.1	m³	16-Aug-21
Concrete Pump	1.0	per day	16-Aug-21



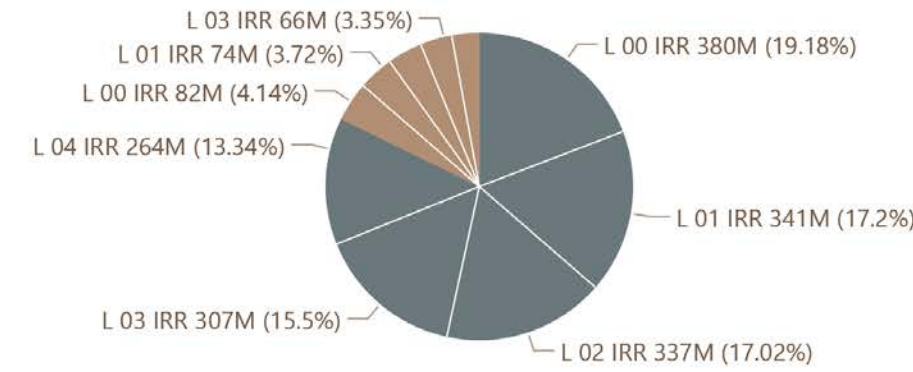
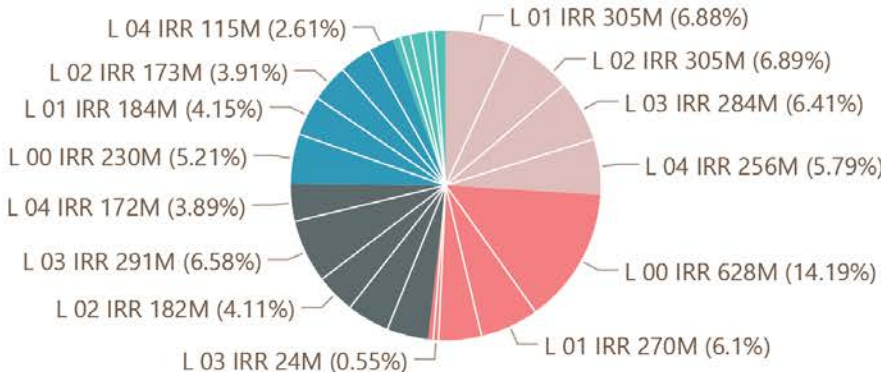
Construction Step: V L01
Date: August

BIM-Based Cost Estimation

This section focuses on cost estimation derived from BIM data, combining detailed quantity take-offs with cost parameters.



Sum of Total Cost By Main Elemets and Located Level

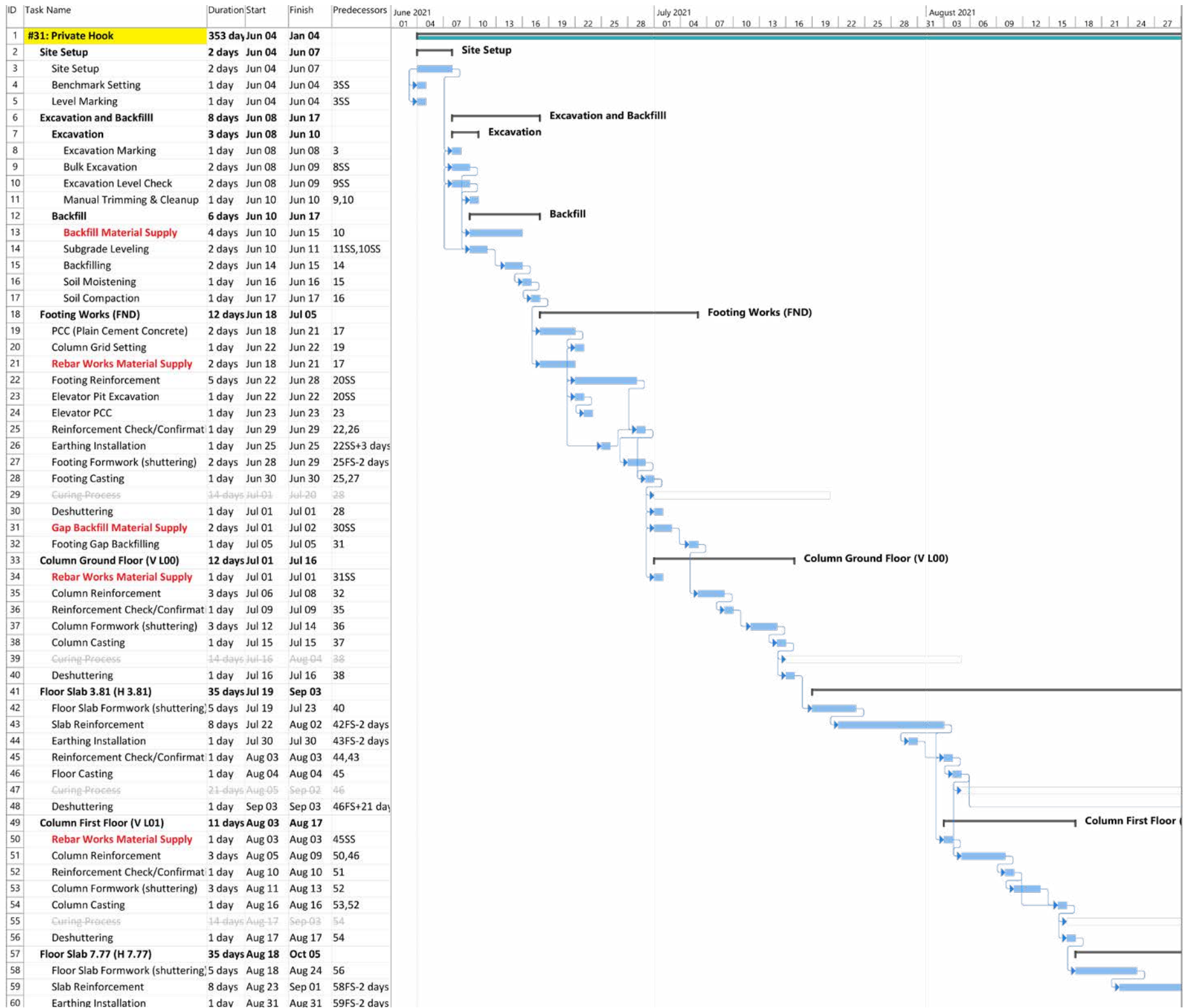


Disc.	Level	Date	Item	Qty	Unit	MCost	Mcost	Unit LnM	LCost	Total Cost
STR	L 00	08-Jun-21	Excavator	1.0	per day			IRR 35,000K	IRR 35M	IRR 35M
STR	L 00	10-Jun-21	Gravel Fill 30cm	118.4	m³	IRR 200K	IRR 36M			IRR 36M
STR	L 00	14-Jun-21	Road Roller	1.0	per day			IRR 60,000K	IRR 60M	IRR 60M
STR	L 00	17-Jun-21	Wheel Loader	1.0	per day			IRR 15,000K	IRR 15M	IRR 15M
STR	L 00	18-Jun-21	Conc Lean 10cm	20.0	m³	IRR 220K	IRR 44M			IRR 44M
STR	L 00	18-Jun-21	Rebar 10m	215.0	per bar (12m)	IRR 39K	IRR 61M	IRR 30K	IRR 48M	IRR 109M
STR	L 00	18-Jun-21	Rebar 16m	28.1	per bar (12m)	IRR 32K	IRR 17M	IRR 35K	IRR 19M	IRR 35M
STR	L 00	18-Jun-21	Rebar 19m	67.5	per bar (12m)	IRR 32K	IRR 57M	IRR 35K	IRR 63M	IRR 120M
STR	L 00	18-Jun-21	Rebar 22m	186.4	per bar (12m)	IRR 33K	IRR 220M	IRR 35K	IRR 233M	IRR 453M
STR	L 00	29-Jun-21	Concrete Plasticizer	705.7	kg	IRR 95K	IRR 67M			IRR 67M
STR	L 00	30-Jun-21	Conc FND Slab	141.1	m³	IRR 220K	IRR 310M			IRR 310M
STR	L 00	30-Jun-21	Concrete Pump	1.0	per day			IRR 12,000K	IRR 12M	IRR 12M
STR	L 00	01-Jul-21	Rebar 10m	238.2	per bar (12m)	IRR 39K	IRR 68M	IRR 30K	IRR 53M	IRR 121M
STR	L 00	01-Jul-21	Rebar 19m	39.1	per bar (12m)	IRR 32K	IRR 33M	IRR 35K	IRR 37M	IRR 70M
STR	L 00	01-Jul-21	Rebar 22m	71.7	per bar (12m)	IRR 33K	IRR 85M	IRR 35K	IRR 90M	IRR 175M
STR	L 01	01-Jul-21	Rebar 10m	136.3	per bar (12m)	IRR 39K	IRR 39M	IRR 30K	IRR 30M	IRR 69M
STR	L 01	01-Jul-21	Rebar 13m	376.0	per bar (12m)	IRR 35K	IRR 163M	IRR 30K	IRR 141M	IRR 305M
STR	L 01	01-Jul-21	Rebar 19m	38.4	per bar (12m)	IRR 32K	IRR 33M	IRR 35K	IRR 36M	IRR 69M
STR	L 01	01-Jul-21	Rebar 22m	111.0	per bar (12m)	IRR 33K	IRR 131M	IRR 35K	IRR 139M	IRR 270M
STR	L 00	05-Jul-21	Gravel Fill 90cm	185.5	m³	IRR 200K	IRR 56M			IRR 56M
STR	L 00	14-Jul-21	Concrete Plasticizer	158.4	kg	IRR 95K	IRR 15M			IRR 15M
STR	L 00	15-Jul-21	Conc CL 50x50cm	15.6	m³	IRR 2,200K	IRR 34M			IRR 34M
STR	L 00	15-Jul-21	Conc Wall 20cm	16.1	m³	IRR 2,200K	IRR 35M			IRR 35M
STR	L 00	15-Jul-21	Concrete Pump	1.0	per day			IRR 8,000K	IRR 8M	IRR 8M
STR	L 01	03-Aug-21	Concrete Plasticizer	615.2	kg	IRR 95K	IRR 58M			IRR 58M
STR	L 01	03-Aug-21	Rebar 10m	225.1	per bar (12m)	IRR 39K	IRR 64M	IRR 30K	IRR 50M	IRR 114M
STR	L 01	03-Aug-21	Rebar 16m	37.1	per bar (12m)	IRR 32K	IRR 22M	IRR 35K	IRR 24M	IRR 47M
STR	L 01	03-Aug-21	Rebar 19m	71.7	per bar (12m)	IRR 32K	IRR 61M	IRR 35K	IRR 67M	IRR 128M
STR	L 01	04-Aug-21	Conc Beam 35x60cm	1.5	m³	IRR 2,200K	IRR 3M			IRR 3M
STR	L 01	04-Aug-21	Conc Beam 50x60cm	25.1	m³	IRR 2,200K	IRR 55M			IRR 55M
STR	L 01	04-Aug-21	Conc Floor Slab 25cm	96.4	m³	IRR 2,200K	IRR 212M			IRR 212M
STR	L 01	04-Aug-21	Concrete Pump	1.0	per day			IRR 12,000K	IRR 12M	IRR 12M
STR	L 01	15-Aug-21	Concrete Plasticizer	159.6	kg	IRR 95K	IRR 15M			IRR 15M
STR	L 01	16-Aug-21	Conc CL 50x50cm	15.8	m³	IRR 2,200K	IRR 35M			IRR 35M
STR	L 01	16-Aug-21	Conc Wall 20cm	16.1	m³	IRR 2,200K	IRR 35M			IRR 35M
STR	L 01	16-Aug-21	Concrete Pump	1.0	per day			IRR 8,000K	IRR 8M	IRR 8M
Total						IRR 2,066M		IRR 1,180M		IRR 3,247M

* LnM Cost: Labor or Machinery Cost

Construction Phase Planning and Scheduling

The construction sequence is organized and visualized in MS Project through a detailed Gantt chart and timeline. This schedule integrates with BIM data to align activities, resources, and milestones, supporting accurate planning and efficient project delivery.



Dynamo-Enhanced Model Data Scheduling

By leveraging Dynamo, Revit's functionality is extended to automatically select all model elements and generate comprehensive schedules across categories.

