

# Garden Within

A renovation proposal for the  
Children's Institute of Pittsburgh  
in Squirrel Hill North

Sean McGadden  
2021



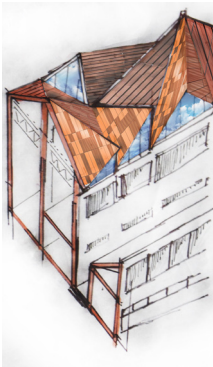
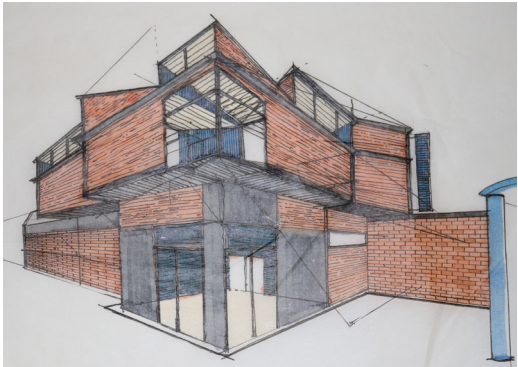
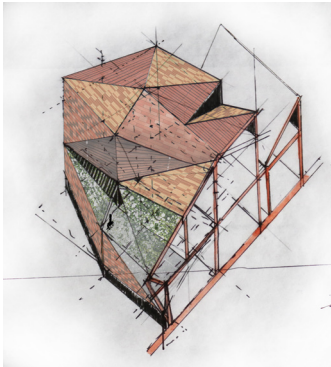
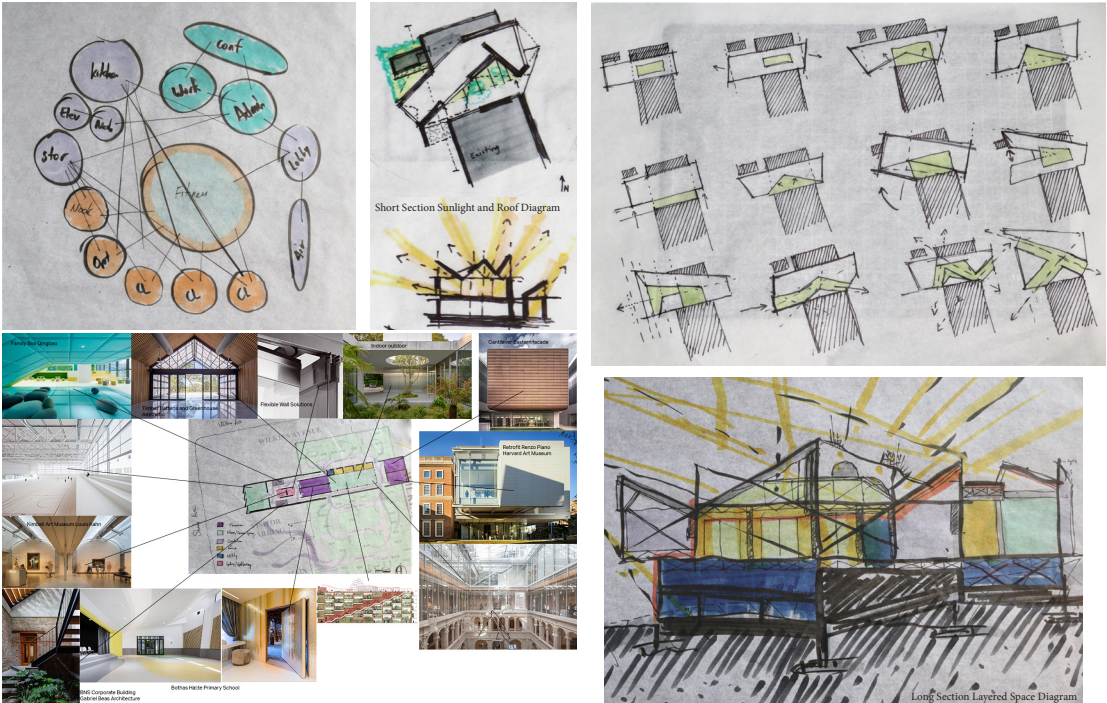
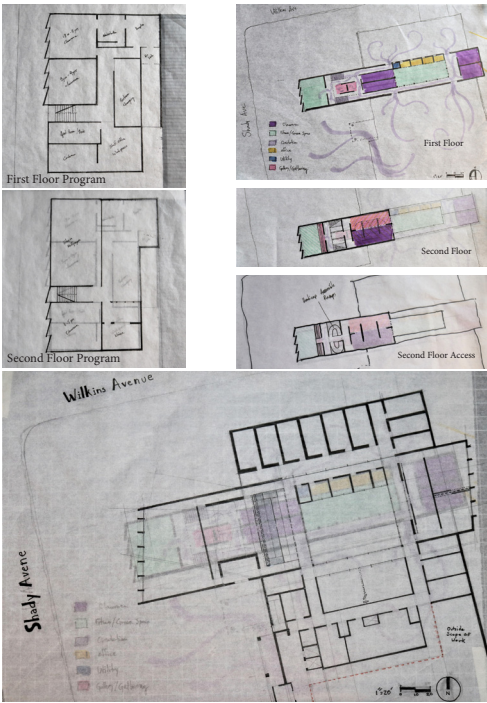


# Motivations, Intentions and Design Concepts

Who are those most oppressed daily? How do we consider an architecture that brings those who occupy the fringes of our society into the womb of a community in order to more openly embrace the difference that create the human conditions?

The pedagogical methods of any educational institution are, without a doubt, essential to the architecture that will eventually contain these methods. Without a proper understanding of the spiritual, functional and holistic approaches to education, an architecture of education would lack the soul of its very spaces. The conception of these three idealistic educational movements yield an informative and profound version of what education can be. It seems that these schools, although somewhat antiquated in their founding, were based on optimism, rather than a systematic repression of what a child can be. These schools give more intellectual credit to the child and offer the child agency in designing and experiencing their respective educational adventures. It seems, the relevance of these slightly different approaches lie in the very idea of designing an educational experience. All three of these schools have shifted from desperate attempts to elevate society out of repression, anger, violence and a pessimism of the world. Despite the global tragedies that surrounded these schools at their founding, they have grown and changed to more effectively serve the temporal and spatial populations that exist within reach.

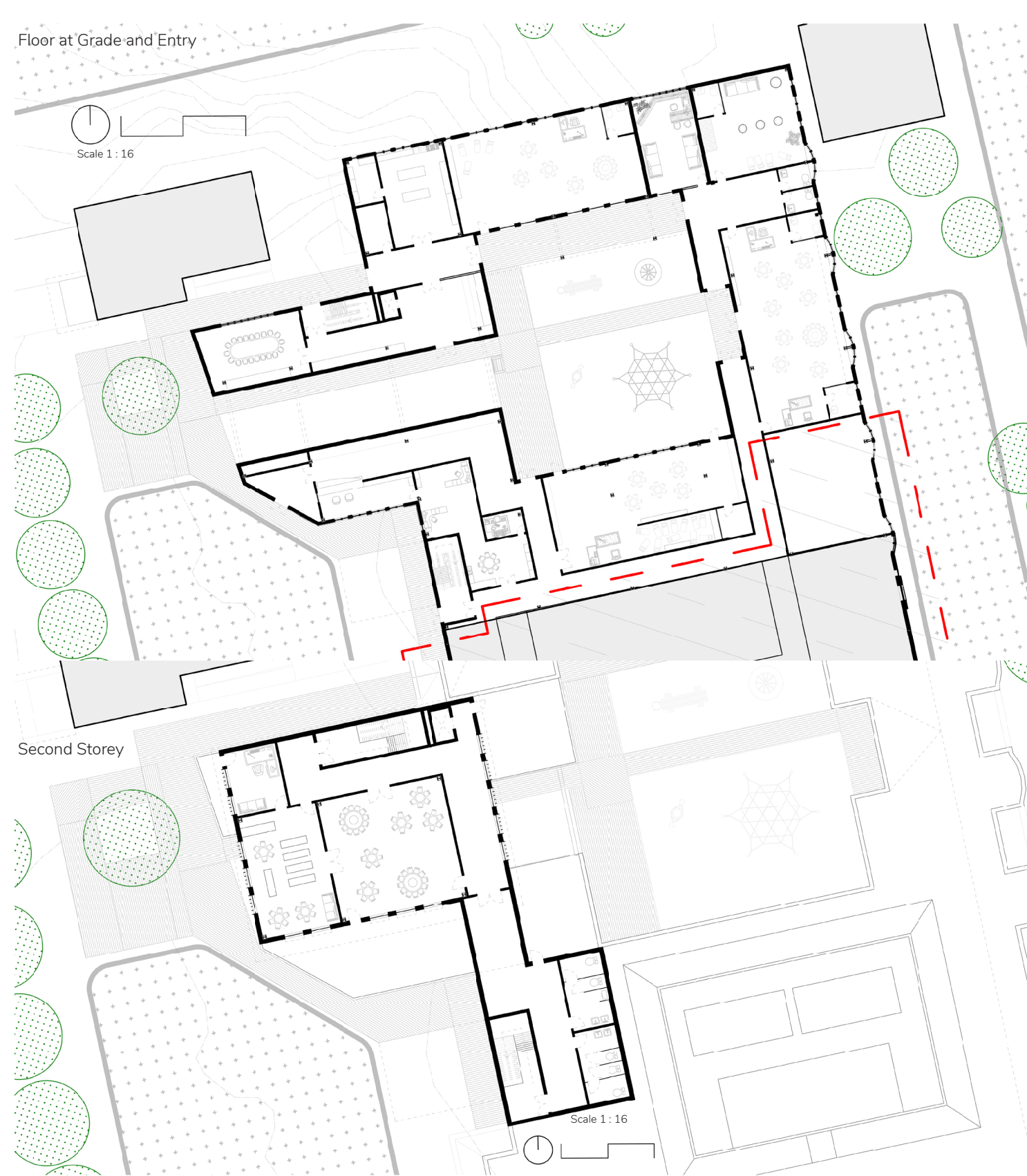
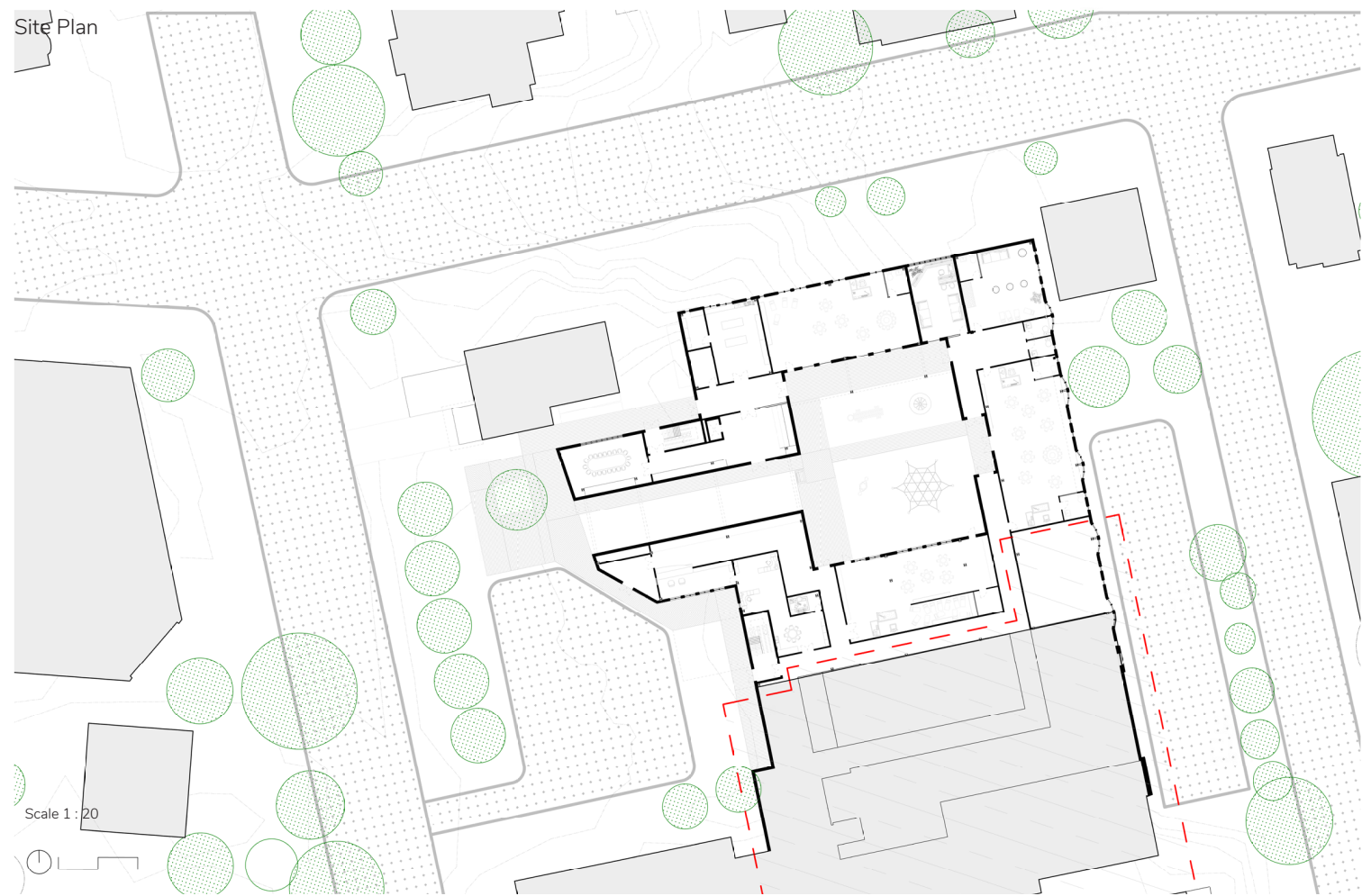
It seems that the grandeur and popularity of these schools rests not only in their effectiveness, but also their long standing opposition to traditional schooling. Parents will always want the best for their children and as such these schools help in offering a more individualized and child focused learning program that promotes creative and fantasical ways of thinking. Additionally, in reading the theory, approach and teaching styles of these three schools of thought, it becomes clear all of the ways that educational curriculum can expand within the setting of contemporary society. There exists a strong gap, still, in the ways students are taught to interact and take advantage of the technology that can be found at every corner. There are so many opportunities to engage with the teaching curriculum in tandem with the architectural design process. Notably, the ways students will interact with functional aspects of spaces but also the leadership of their teachers. These changes can occur throughout the year but there is great opportunity in leaving space within the physical building to expand and reincorporate the architecture in new and progressive ways as our conceptions of education change. Ultimately, the design problem becomes one focused on use, sequence of the day and curriculum. This means that in designing an effective teaching plan, one might also discover new and exciting spaces that can more seamlessly engage and promote its users experiences on a daily basis.



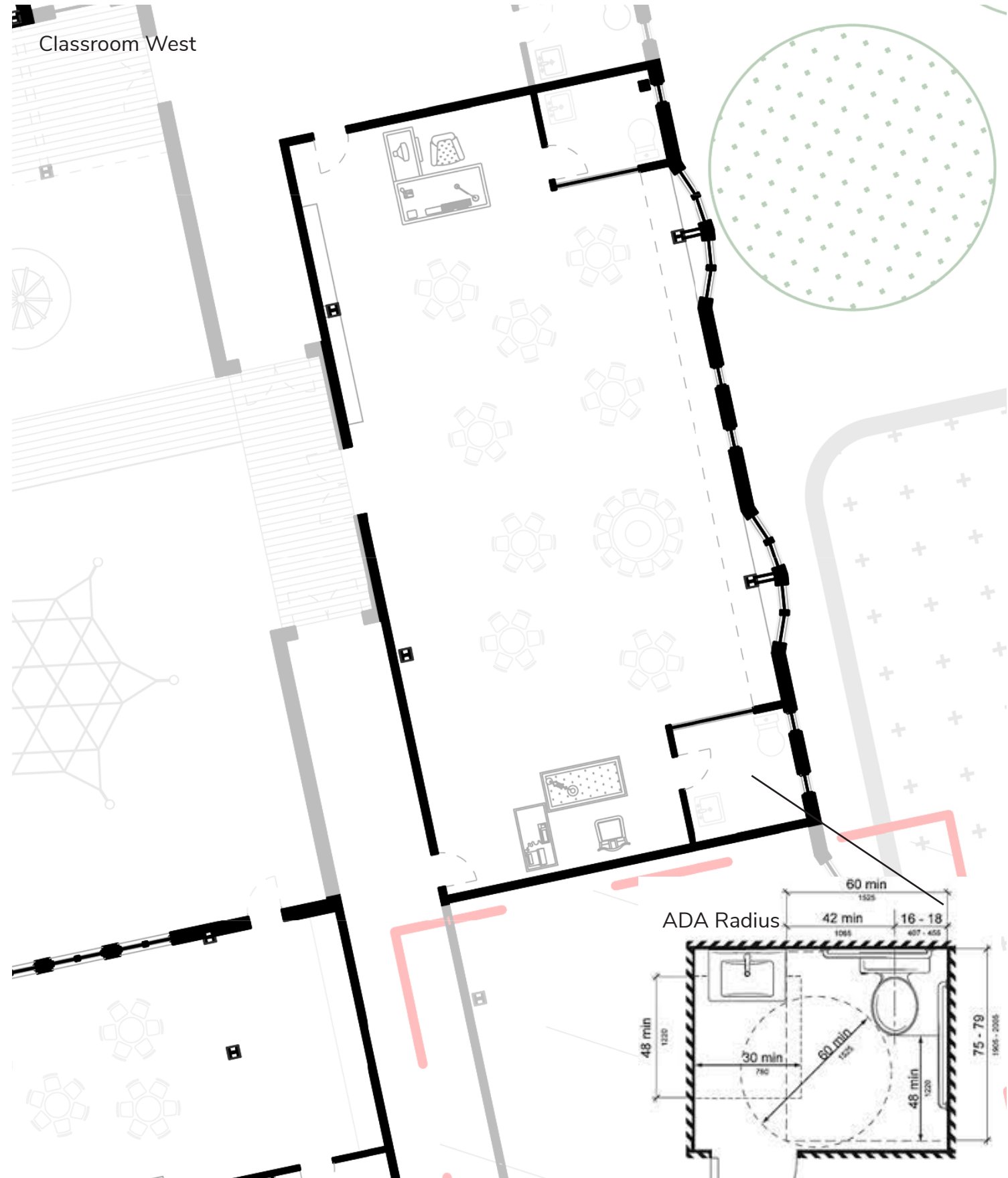
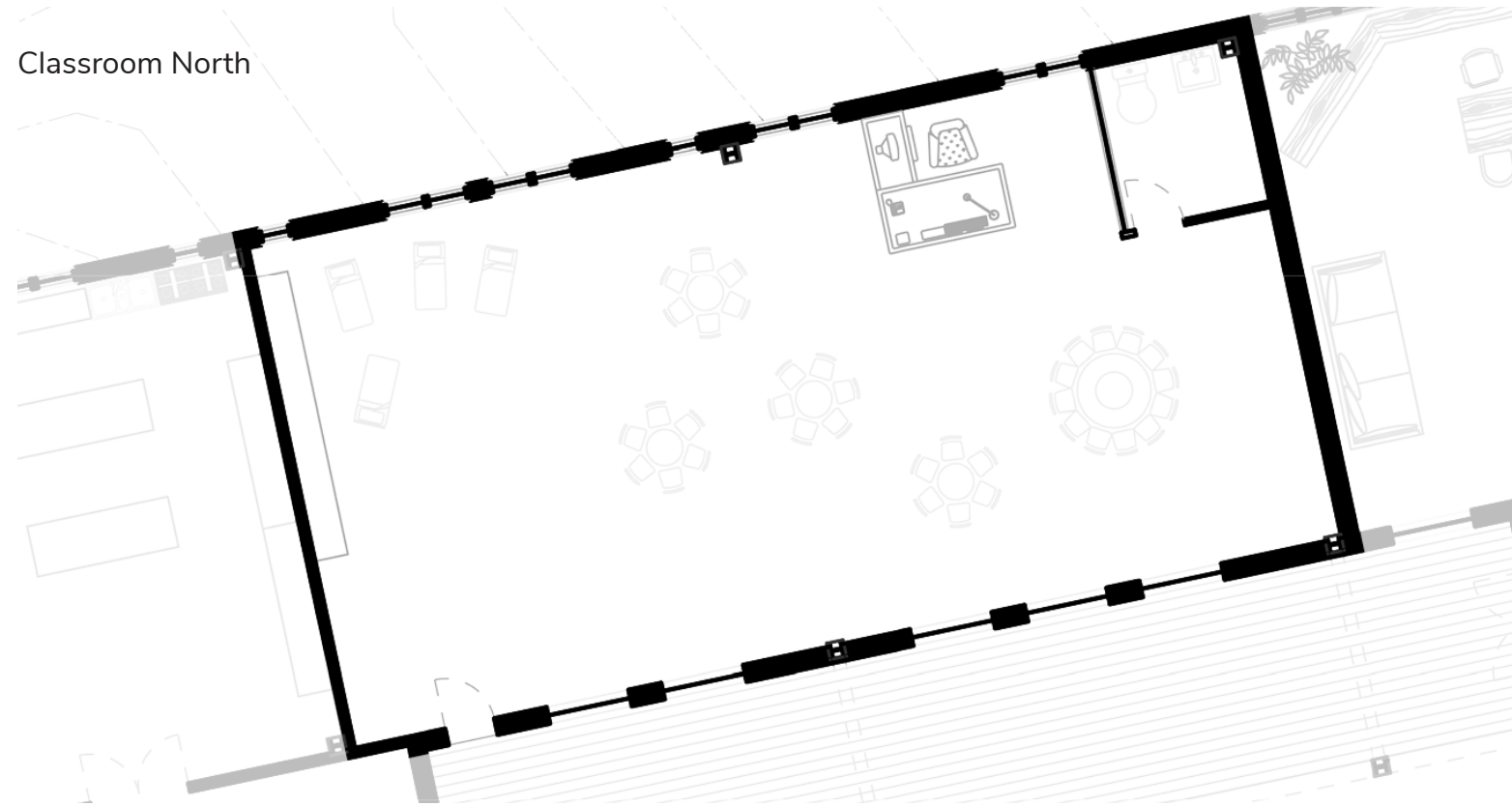
The final design intention for this project is to renovate the obsolete insititutional space on the third story of the Children's Insititue north wing which sits at grade with the street and parking lot on the west. This renovation not only gives new life to dead and unused space, but it also repurposes the building as a public green space which seeks to engage the surrouding communities with direct circulation from the street being thrust within to provide adjacency and interaction with the classroom spaces of children and other individuals who are often overlooked or ignored by society.



# Horizontal Organization



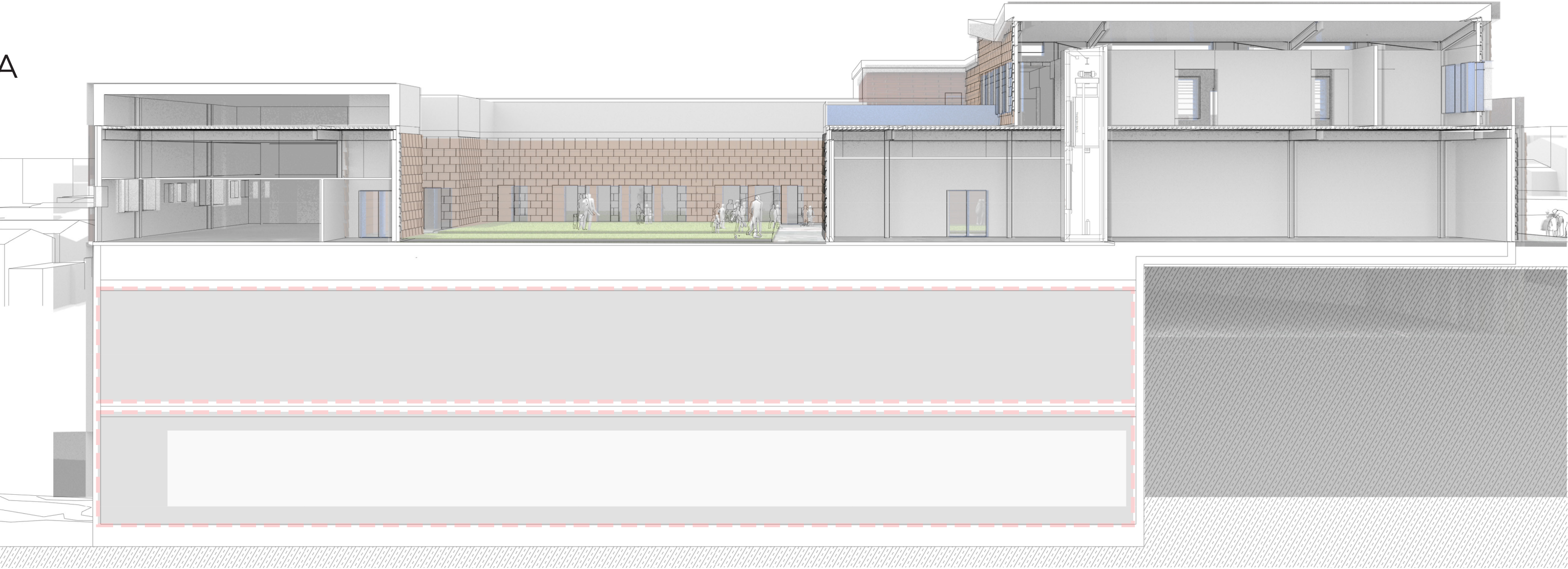
Enlarged Plans 1:8



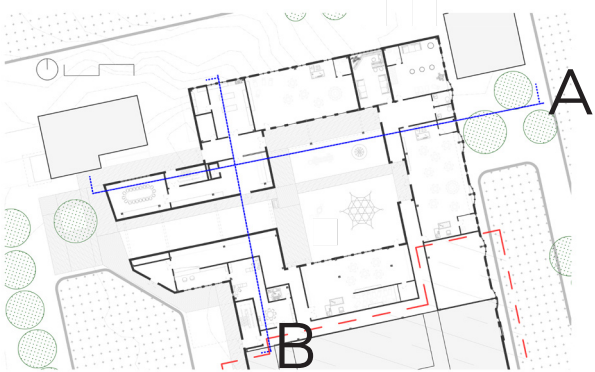
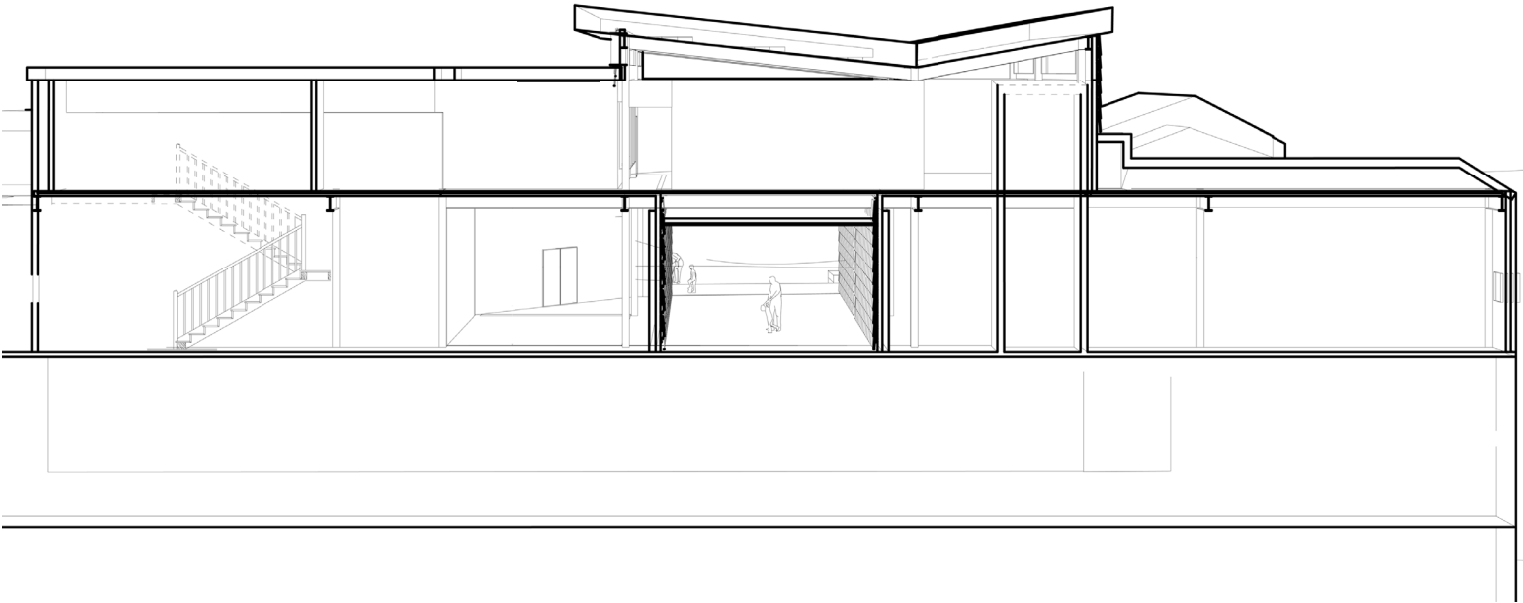


Section

A

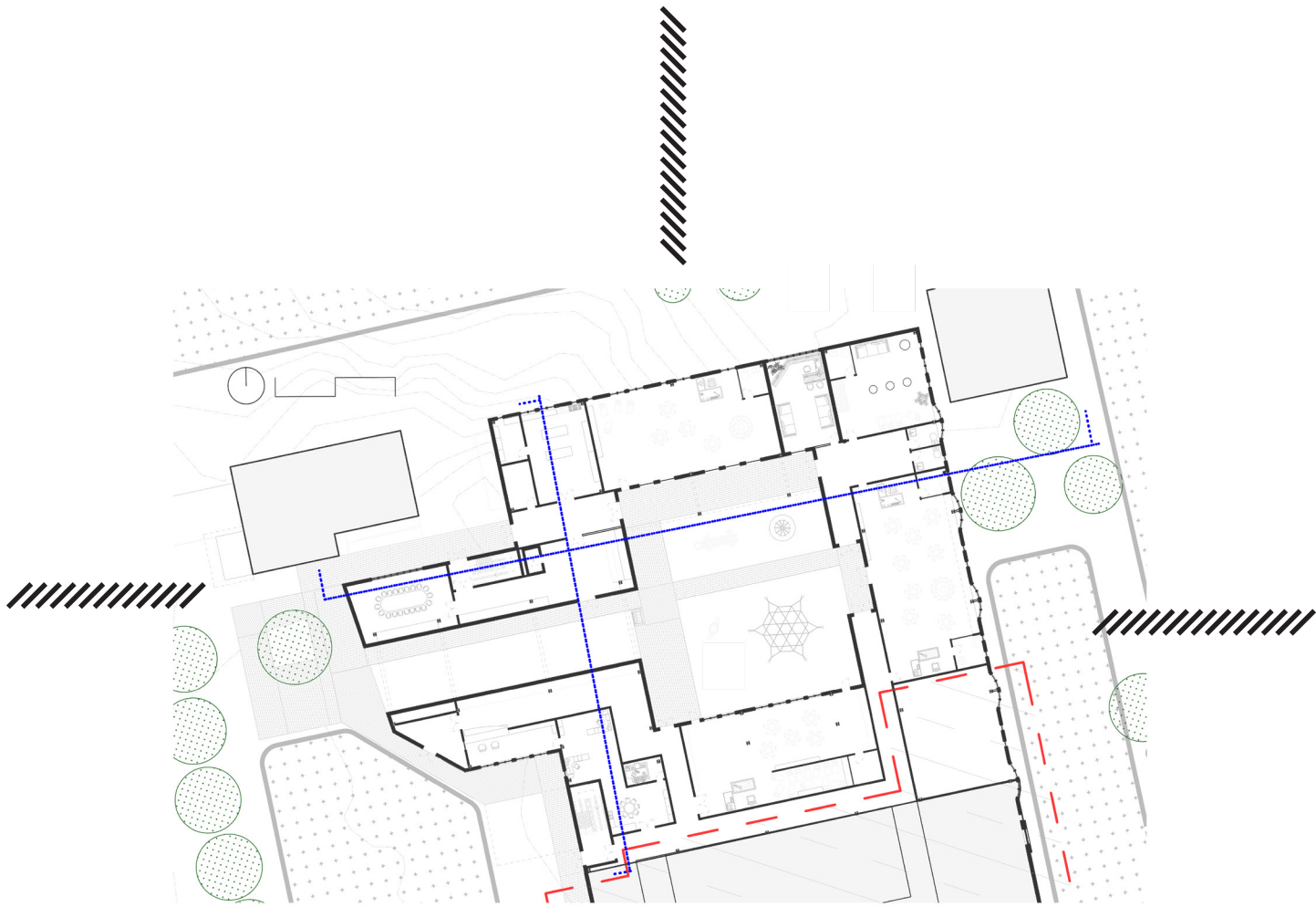


B

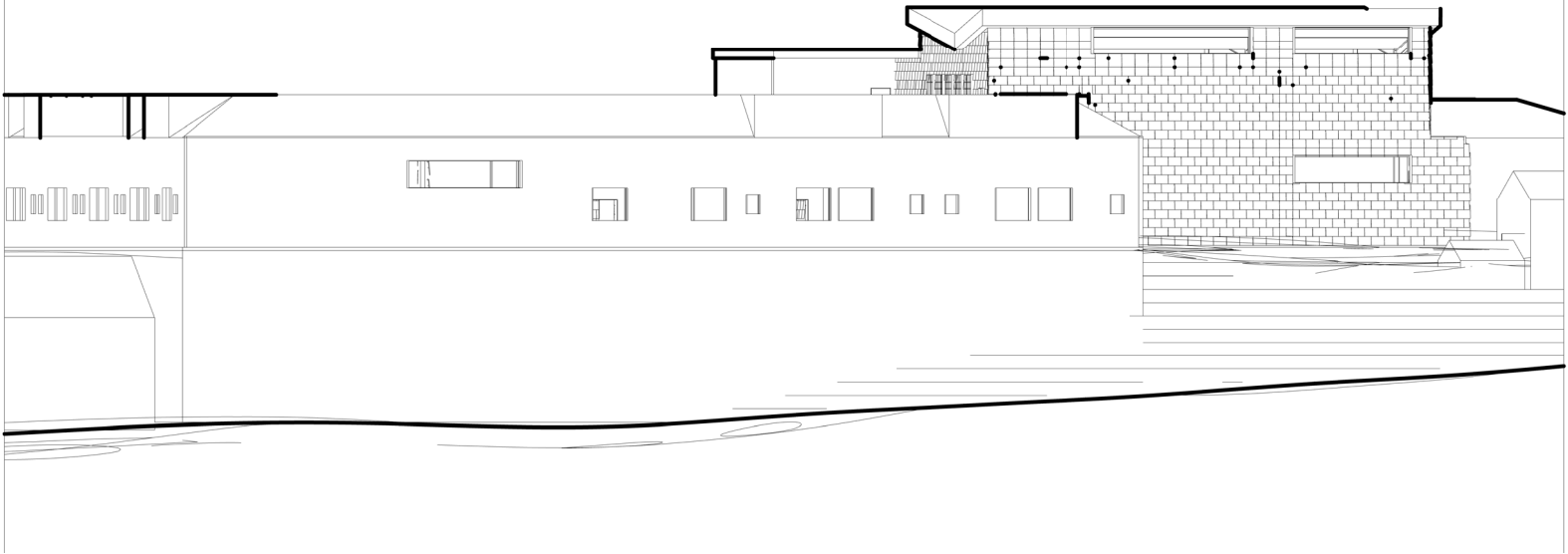




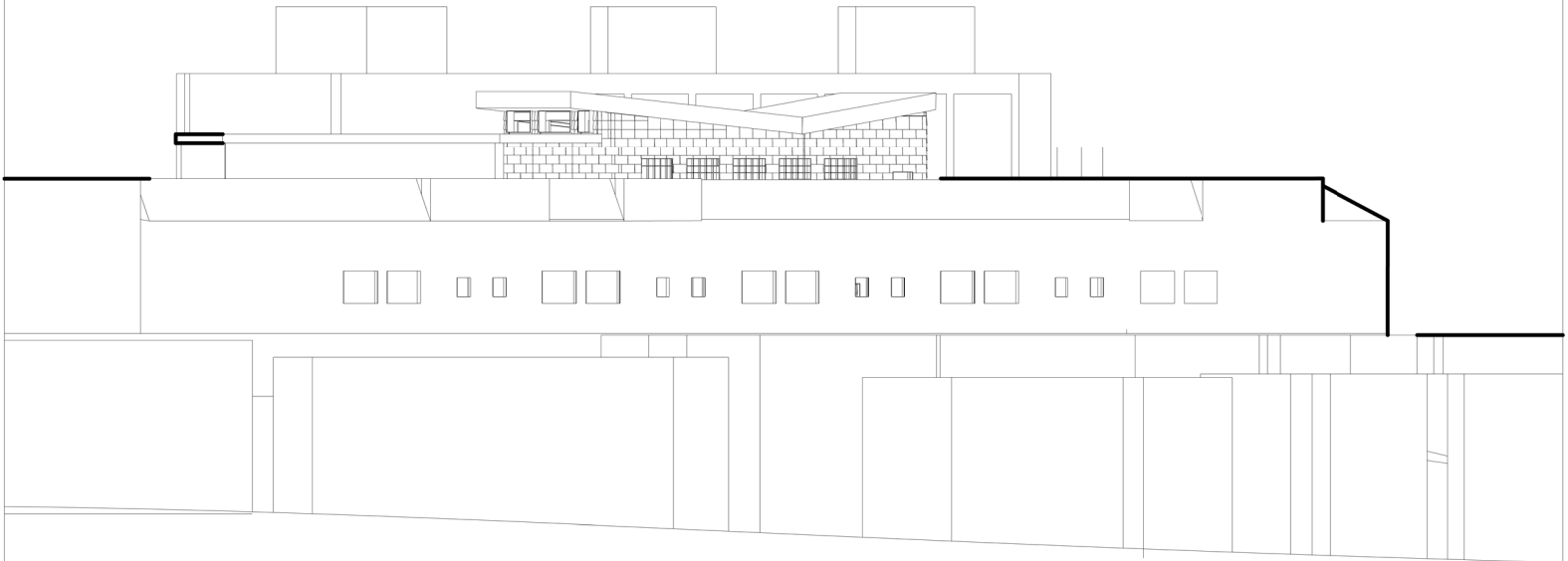
# Elevations



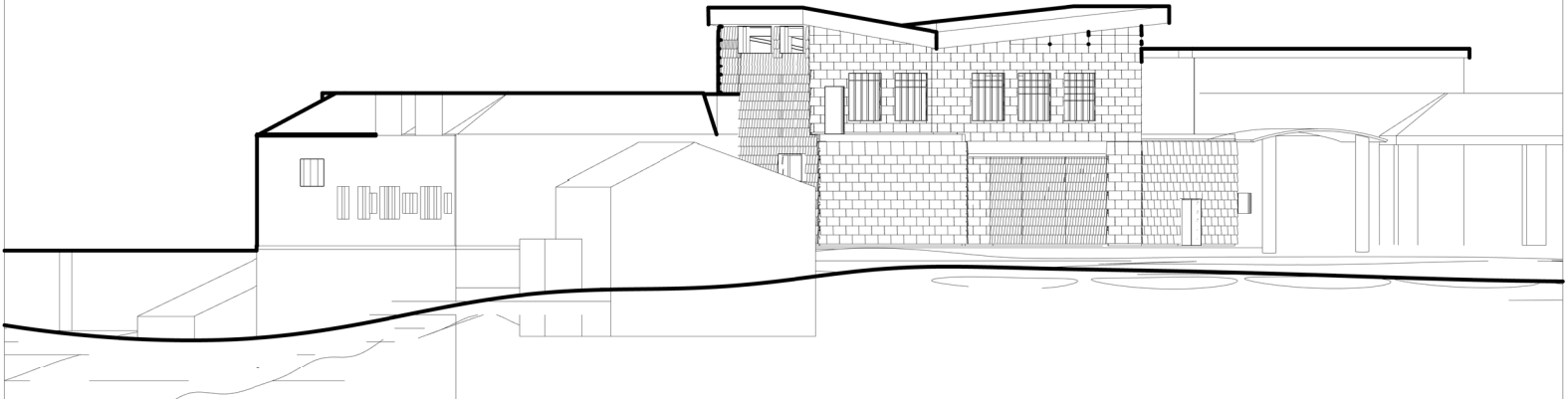
Northern Elevation



Western Elevation



Eastern Elevation



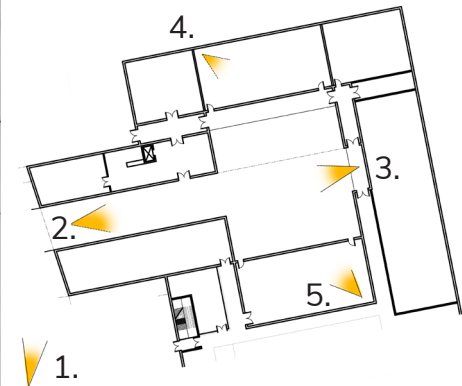


# Exterior Perspectives

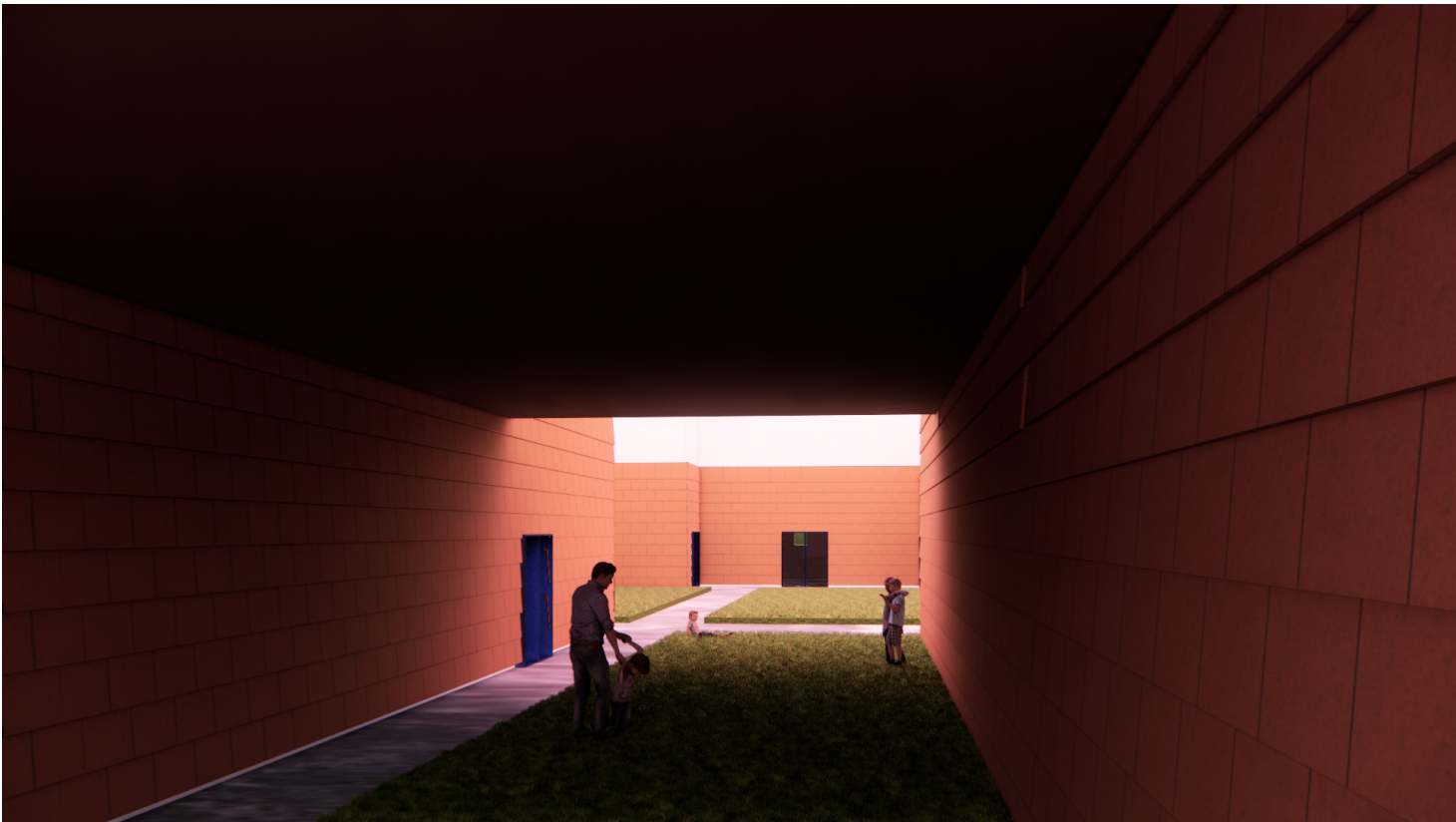
1.



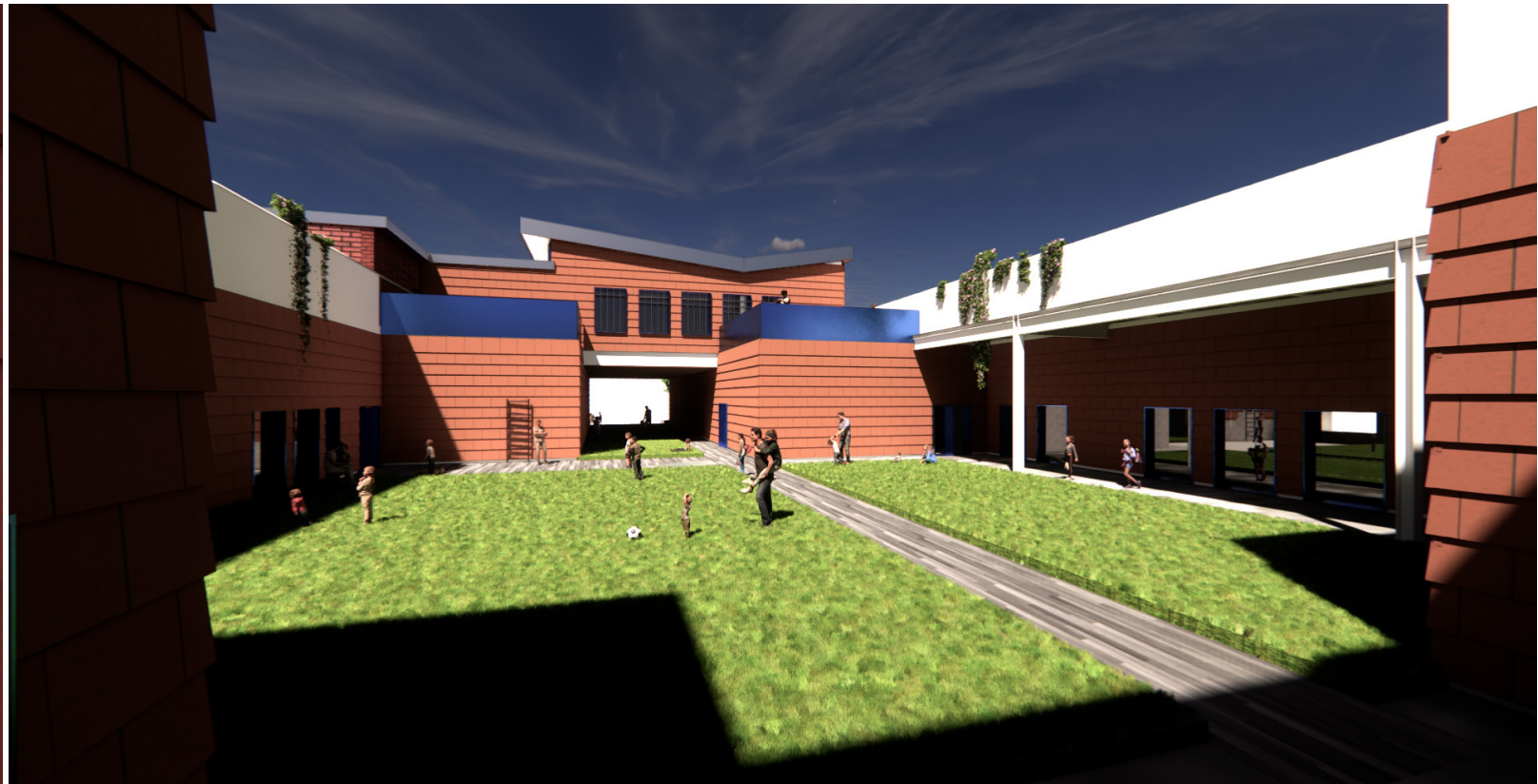
3.



2.



3.





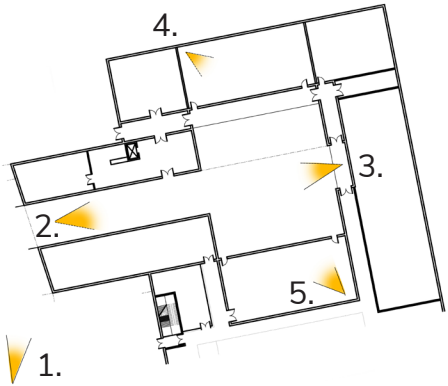
# Interior Perspectives

Interior material renders of both classrooms

4.

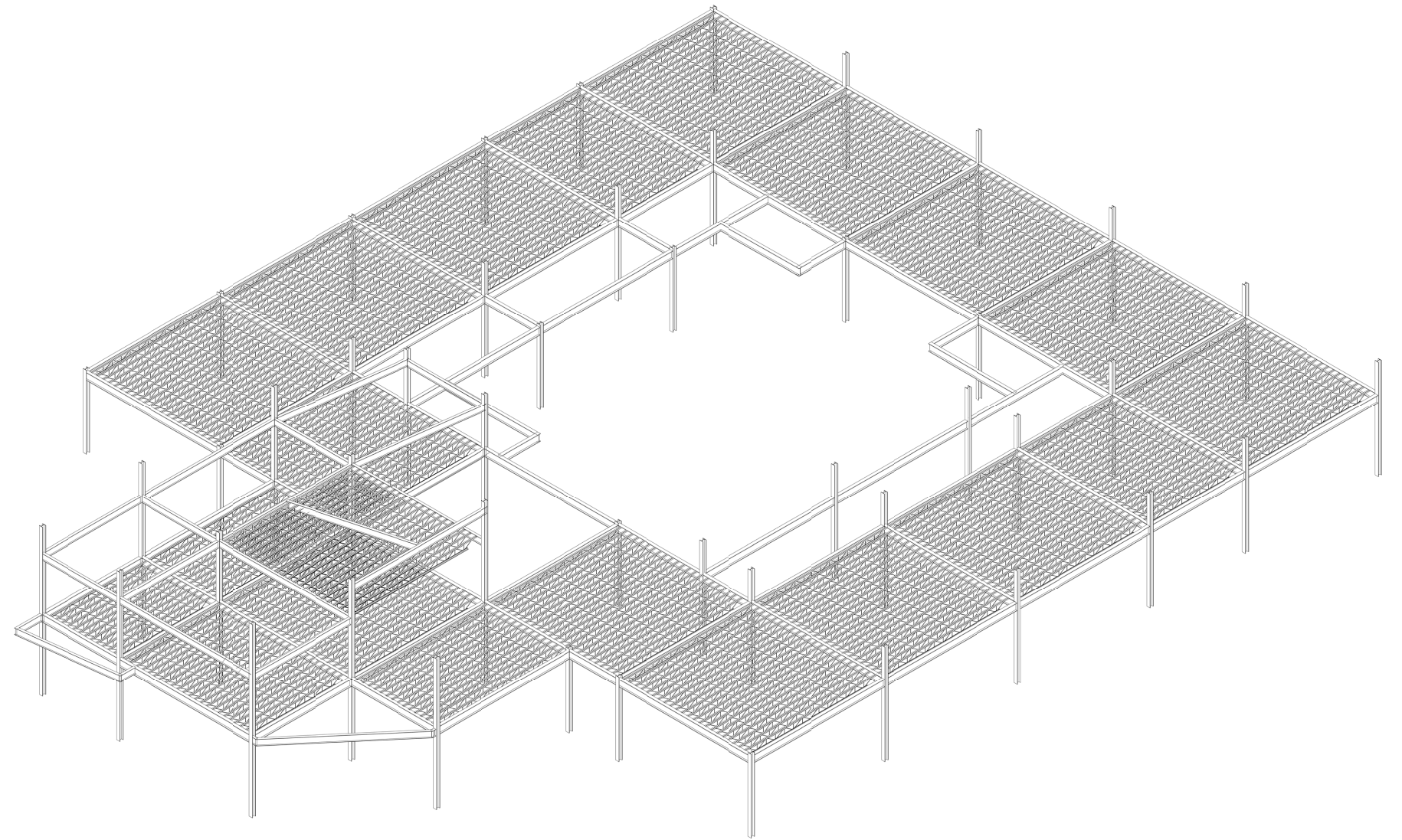
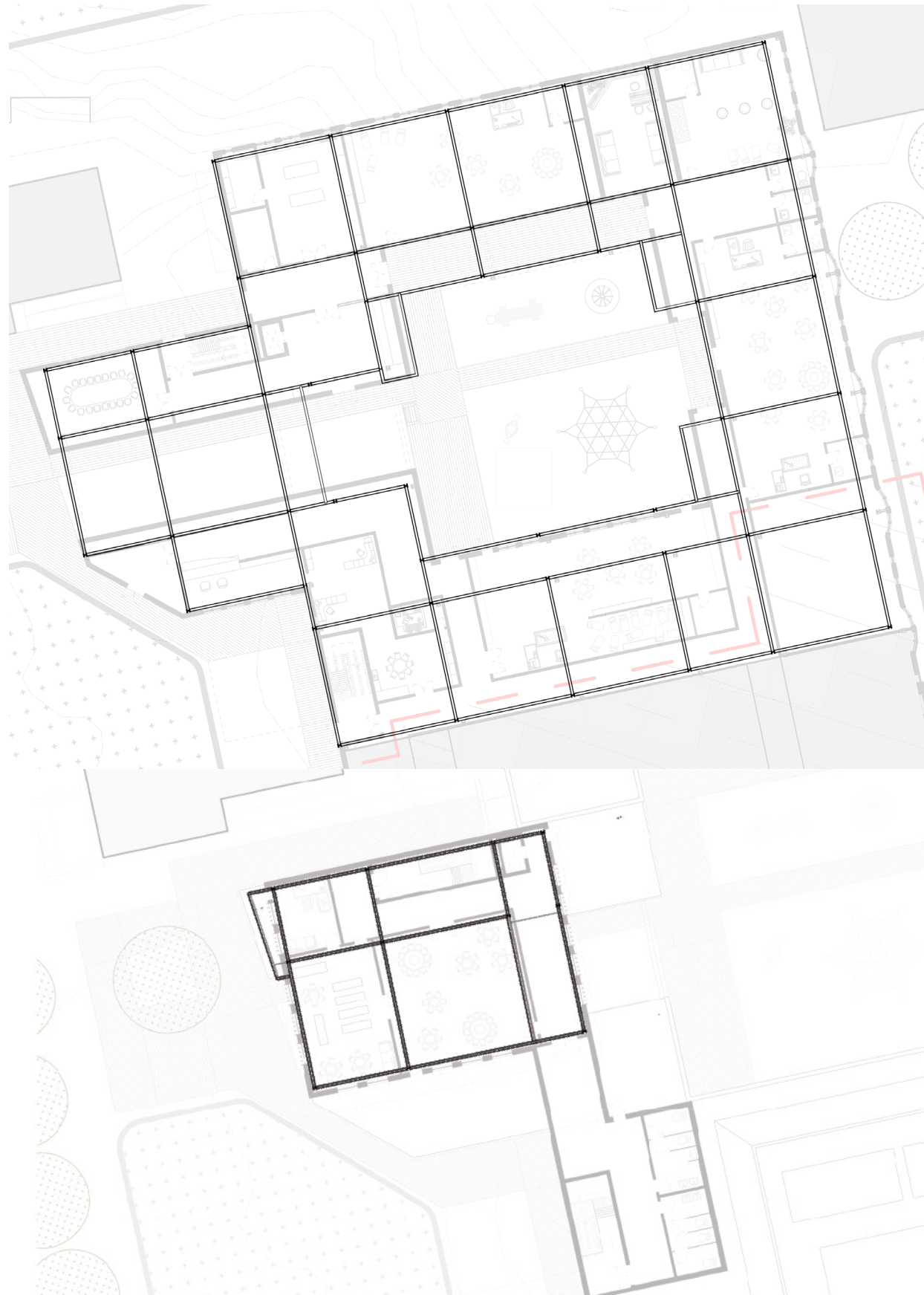


5.





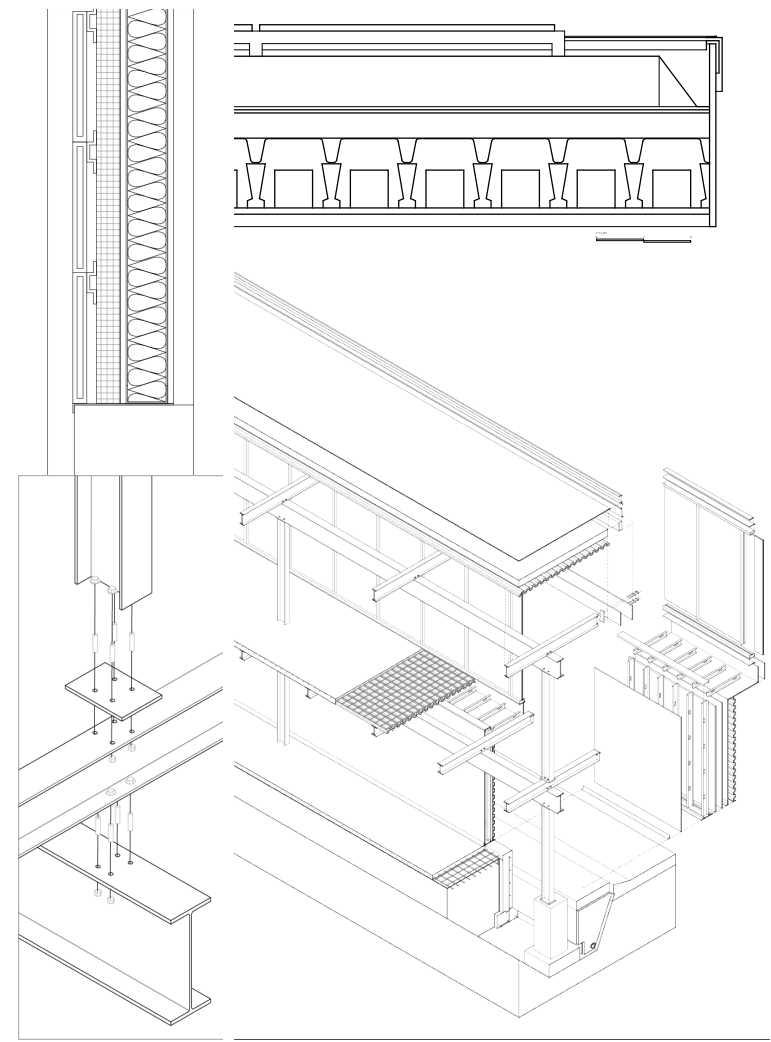
# Structural Diagrams



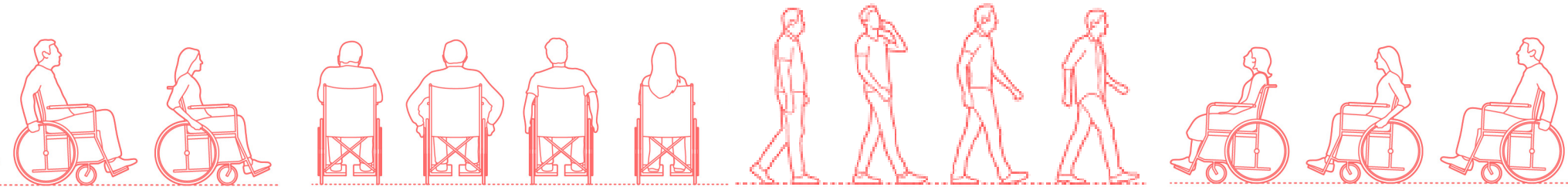
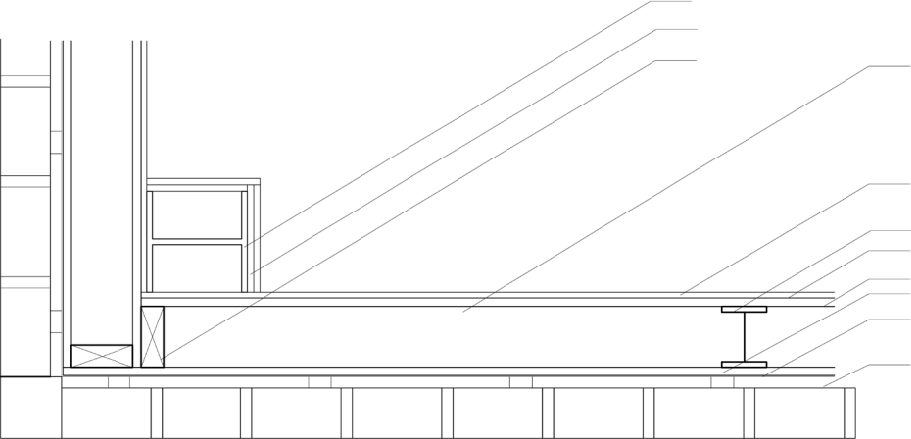
This structural system incorporates a Steel I Beam and K joist system extruded and reused from existing Structural grid found in the CI third story north wing. This system specifies a W10 x 48 columnar I beam grid set at 30' OC. The Primary beams are W18 x 71 to carry the loads of a 30 foot span and the secondary beams found mostly on the second storey are specifec as W16x26 due to the 30' OC grid once again



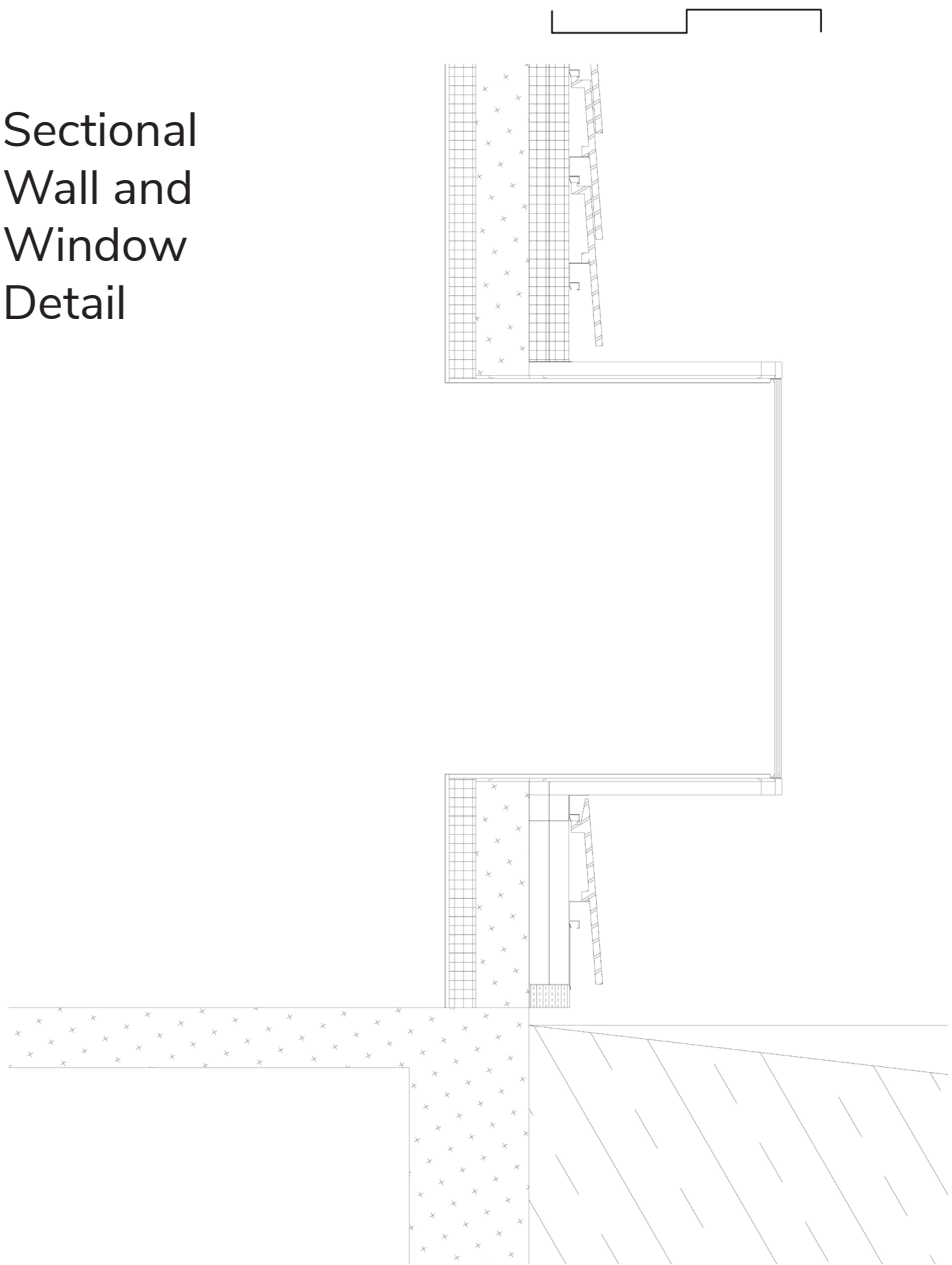
Wall Assembly Axonometric



Plan Detail



Sectional Wall and Window Detail

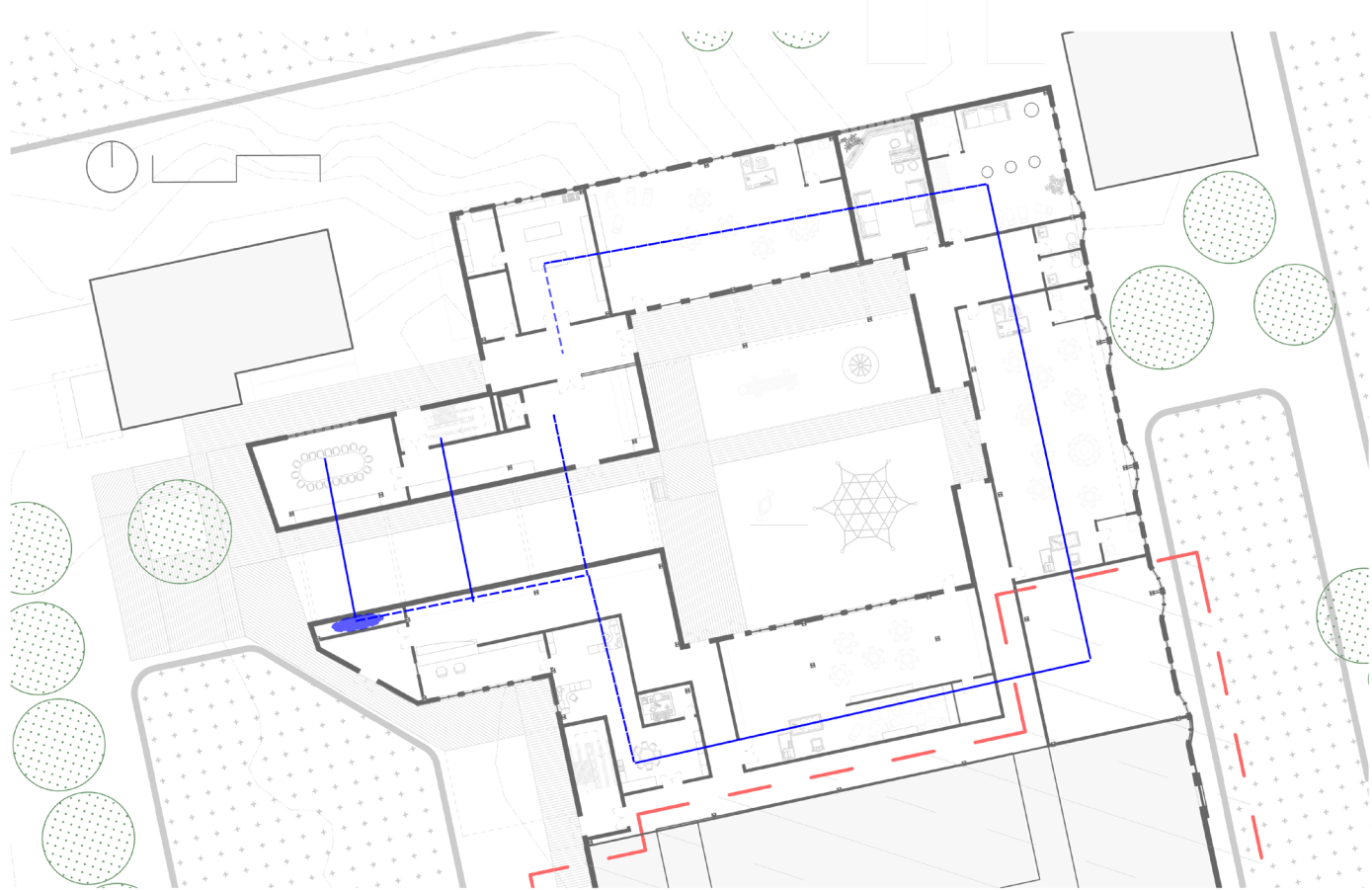
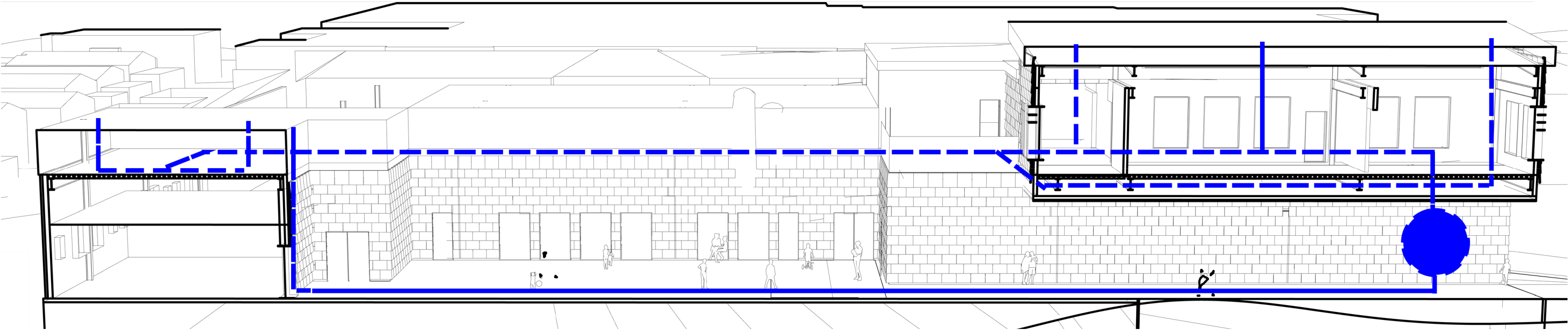


- MATERIAL KEY:
- 1. STEEL SECONDARY BEAMS W10X19 @ 12'-0" CENTERS
  - 2. EPDM ROOFING
  - 3. RIGID INSULATION
  - 4. STEEL DECKING
  - 5. TREATED WOOD BLOCKING
  - 6. STAINLESS FLASHING
  - 7. STAINLESS DRIP FLASHING
  - 8. 3/4" THICK ANODIZED ALUMIMUM FASCIA
  - 9. POLISHED CONCRETE SLAB
  - 10. STEEL PRIMARY BEAM W16X45
  - 11. KAWNEER WINDOW 451T SPACED 4'-0" O.C.
  - 12. 3/4" DIA. ASTM 325 BOLTS
  - 13. STEEL COLUMN W8X24 @ 24'-0" O.C.
  - 14. STEEL SECONDARY BEAMS W8X21 @ 12'-0" CENTERS
  - 15. STEEL DECKING
  - 16. WELDED WIRE MESH
  - 17. POLISHED CONCRETE SLAB
  - 18. 3/4" THICK ANODIZED ALUMIMUM FASCIA
  - 19. 1/2" TK. FIBER CEMENT PANEL
  - 20. COLD ROLLED METAL FRAMING @ 16" O.C. SPACING
  - 21. CORRUGATED METAL SIDING
  - 22. VAPOR BARRIER
  - 23. RIGID INSULATION
  - 24. 5/8" DENSGLOSS GYPSUM BOARD SHEATHING
  - 25. STAINLESS STEEL FLASHING W/ SILL SEAL
  - 26. VAPOR BARRIER
  - 27. CONCRETE SLAB W/ WELDED WIRE MESH
  - 28. 18" WIDE CONCRETE PIER
  - 29. 1 1/2" TK. RIGID INSULATION
  - 30. 10" TK. CAST IN PLACE CONCRETE FOUNDATION WALL
  - 31. GRAVEL BACKFILL
  - 32. FOUNDATION DRAIN
  - 33. WATERPROOFING
  - 34. REINFORCED CONCRETE FOOTING
  - 35. #4 REINFORCING STEEL (VERTICALLY PLACED AT 6" CENTERS AND HORIZONTALLY AS SHOWN)
  - 36. GRAVEL BACKFILL



# Sustainability Diagrams

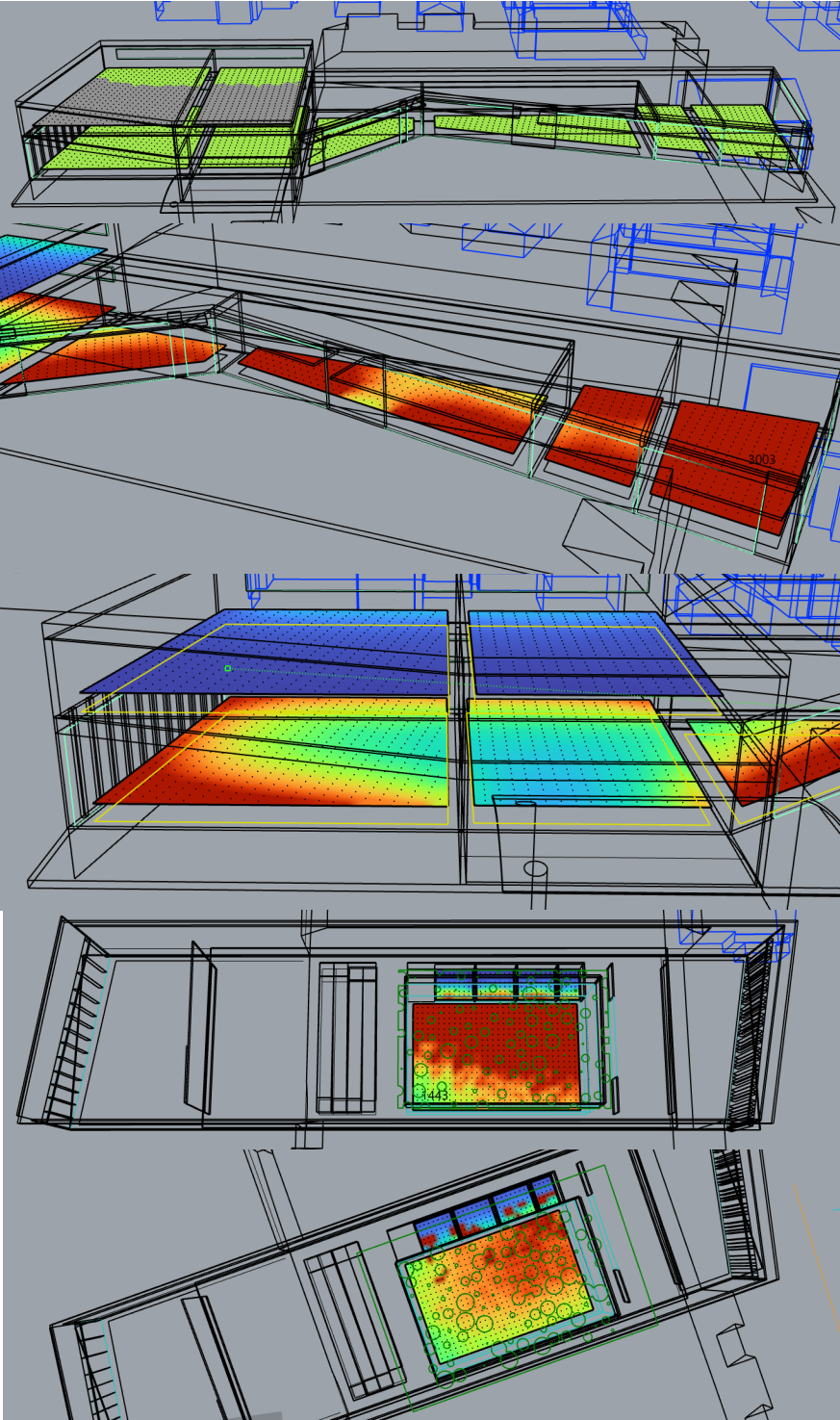
## Drainage Diagram and Water Tank Housing



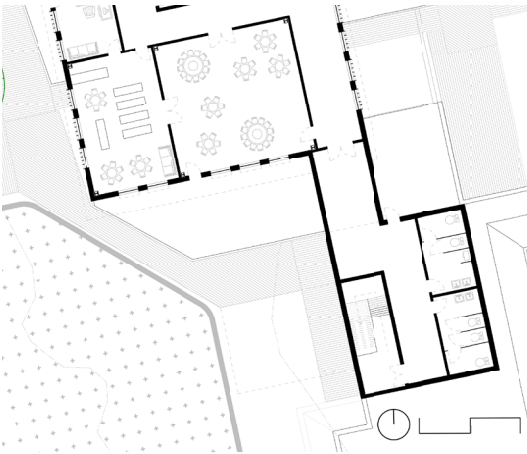
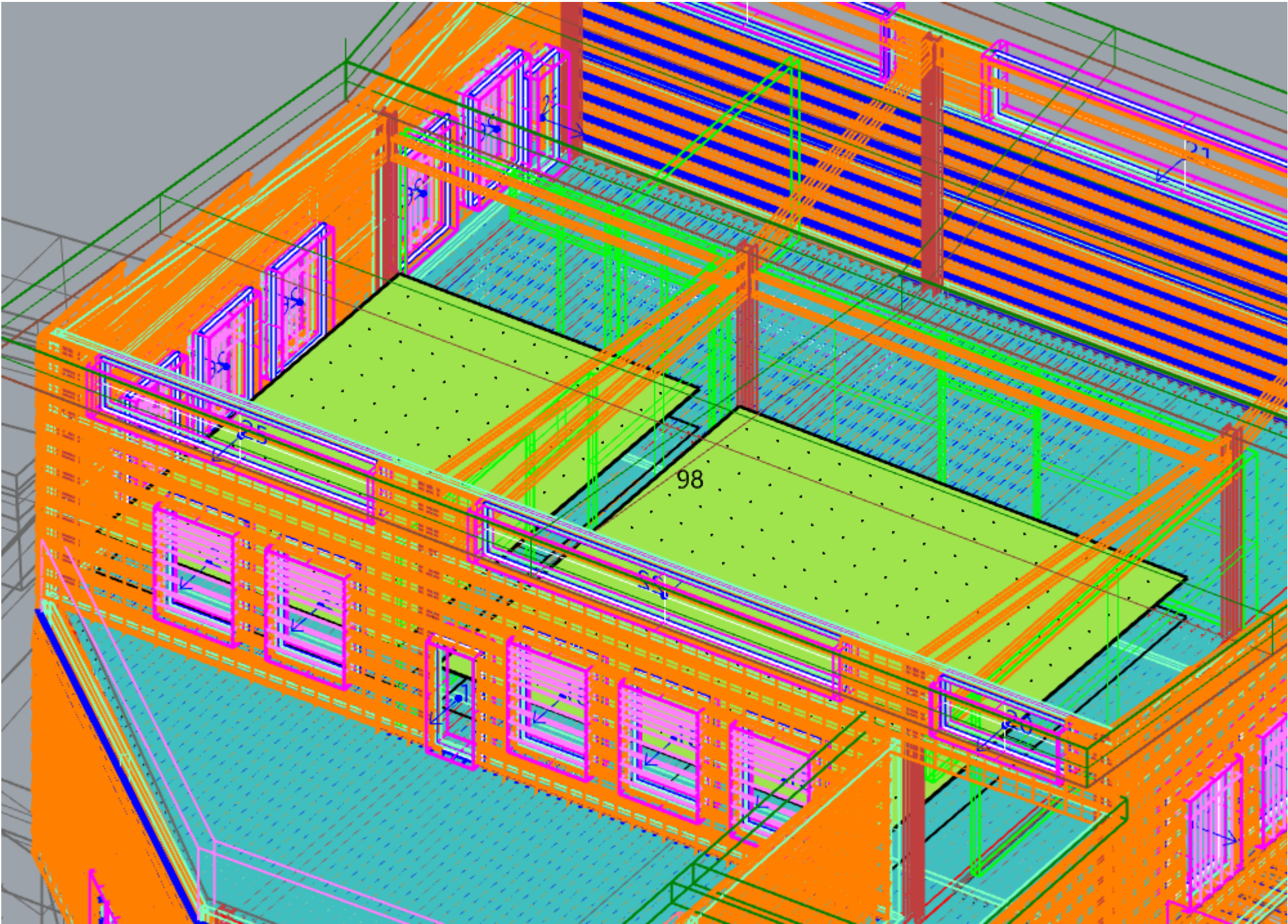
This water drainage system use the previous drainagage of the existintg CI and leverages the larger area of drainage to reuse runoff as grey water solutions to lower pumping energy costs and lower new sewage runoff which is a struggle for Pitts-brugh sewage systems. Additionally this re-piping of drainage plumbing will serve as potential new means for watering a gardne that can be incorporated in the interior green space



# Environmental Simulations



ID	Description	Tags	Sq.ft	Spacing[ft]	sDA	ASE	ASE.blinds	Avg.Lux	Blinds	DynamicGlass	Au
10			738	2.0	100.00%	71.84%	71.84%	6,068	N	N	N
11			1900	2.0	100.00%	47.30%	47.30%	5,989	N	N	N
12			1382	2.0	100.00%	7.83%	7.83%	2,534	N	N	N
13			1382	2.0	31.59%	0.00%	0.00%	332	N	N	N
14			1902	2.0	27.21%	0.00%	0.00%	284	N	N	N
7			1140	2.0	100.00%	42.69%	42.69%	3,550	N	N	N
8			555	2.0	100.00%	14.93%	14.93%	3,397	N	N	N
9			952	2.0	100.00%	54.02%	54.02%	6,624	N	N	N



ID	Description	Tags	Sq.ft	Spacing[ft]	sDA	ASE	ASE.blinds	Avg.Lux	Blinds	DynamicGlass	Automated
1			550	2.0	100.00%	97.78%	91.85%	36,412	Y	N	N
2			820	2.0	100.00%	100.00%	100.00%	42,385	Y	N	N

In early daylighting and thermal modeling simulations I explored directional qualities of space as well as orientation to attempt to lower ASE and increase Available Daylight throughout the daily use of the space. I struggled to refine my model to the point where the models were exactly accurate but these simulations informed the iterations of my design proposal. The above daylight analysis shows the second story gathering spaces with exceptional daylight availability but far too much annual sunlight exposure which I believe is attributed to poor coplanar modeling. I incorporated eastern/western and southern shading devices in order to lower these values.