TECHNICAL ASSIGNMENT 1

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SEPTEMBER 21st, 2012

DR. ROBERT LEICHT

THE URBN CENTER & URBN CENTER ANNEX

PHILADELPHIA, PA

EXECUTIVE SUMMARY

This technical report is produced to give the reader a better understanding of the URBN Center and URBN Center Annex construction project for Drexel University in Philadelphia, PA. The report highlights the project's schedule, cost, major systems, and site as well as the contracting method used to deliver the project. Please note that this is a phased project and the majority of the research conducted was focused on the URBN Center (Phase 1).

The results of this research revealed that the URBN Center project spanned over 246 days, from Monday 10/17/11 to Monday 9/24/12. The project consists of a renovation of the famous design of Robert Venturi on Market St. in Philadelphia. The project was delivered with a lump-sum contract which benefits the owner and puts more risk on the contractor.

PRICE SUMMARY IS OMMITED FROM REPORT FOR PRIVACY PURPOSES

It was also revealed that due to historical importance of Venturi's design, the south façade was preserved and the design team was unable to renovate that side of the building and explore any design alternatives.

The project also has an unusual staffing plan. The URBN Center project does not follow a conventional project staffing chart because the project management and the superintendent position are held by the same person. Therefore, one person is responsible for the field and office operations. More details are listed in the report.

Sincerely,

_____

Ghaith Yacoub

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PROJECT SCHEDULE SUMMARY

The project schedule is split in two phases. The URBN Center being phase 1 and the Annex is phase 2. Since there are two phases for the project, the schedule developed in this assignment is only for the URBN Center since that is where most of this research will be. A schedule summary of the URBN Center is included in Appendix A.

As shown in the schedule summary, the project spanned over 246 days, from Monday 10/17/11 to Monday 9/24/12. The notice to proceed was granted on Monday 10/17/11 and the demolition process begun and spanned about 99 days. The sequence of the project consists of demolition starting from the roof and ending with the ground floor and the construction going from the bottom up to the roof. Most systems construction overlaps in their duration allowing for different systems being worked on different floors at the same time. The summary schedule highlights the dates and durations of the construction of the major systems of the building. The substantial completion was awarded on 8/24/12 during the construction of the interior finishes. The building turnover was on 9/10/12. After turnover, the building is scheduled to be occupied by students on Monday, 9/24/12

BUILDING SYSTEMS SUMMARY

Table 1: Building Systems Summary

Work Scope	Yes	No
Demolition	✓	
Structural Steel Frame	✓	
Cast in Place Concrete	✓	
Precast Concrete		✓
Mechanical System	✓	
Electrical System	✓	
Masonry	✓	
Curtain Wall	✓	
Support of Excavation		✓

Demolition:

The demolition will encompass the ceiling assemblies and their components. Also, the existing floor tiles, carpeting, and other sheet goods over concrete slabs are to be removed. The demolition of structural and MEP systems is also required. As for wall surfaces, the interior surface of the exterior walls are to remain. Also, existing art installation is preserved under the owner's recommendations. Based on the age of the building on the subject property, the painted surfaces within the building are not expected to contain lead. The painted surfaces on the subject property were observed to be in good condition during the property inspection. As for Asbestos, the environmental

report indicates the presence of asbestos in mastic adhesive used for fixing tiles in the Annex which is planned to be contained. As for Façade demolition, the only required demolition is in locations of the curtain wall system.

Structural Steel Frame:

The original design of the URBN Center consisted of 4 levels. However the renovated consists of stepped floor which sums up with a total of 8 levels (2 levels on each story). Therefore, most of the new modification of the framing system took place when constructing the new levels. The new framing consists of cold-formed metal framing. On a typical raised level, a 4SWIB Brace is placed at every other bay for floor support. A detailed of the new floor brace support is shown in figure 1. Also, a 4x4x5/16 Brace @ each vertical channel is used for support of a typical operable partition. Composite slabs are placed on certain sections of the new levels. The composite slab consists of 2 ½" normal weight concrete cover w/ 6x6-W2.0 x W2.0 WWF OVER 2" 18 Ga. (GALV.) COMPOSITE DECK. (4 1/2" TOTAL THICKNESS). Since this project consisted of mostly interior work, a mobile crane is placed on the site, specific details on crane is unavailable.

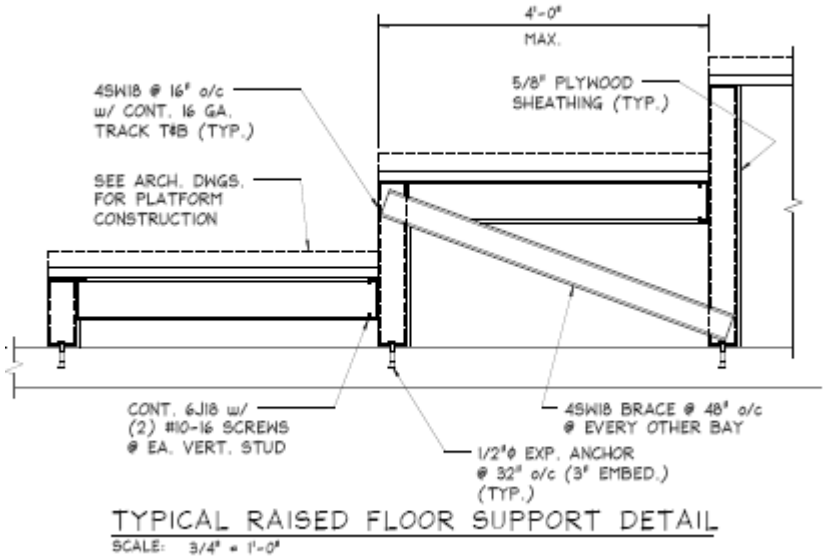


Figure 1: Raised levels support

Mechanical System

The mechanical room of the URBN Center is located on the north-west corner of the first level. The building utilizes an active chilled beam mechanical system. The active chilled beams work as radiators that are cooled by recirculated chilled water. The beam takes warm air that rises to the ceiling and redistributes cool air back to the room[1]. The benefits of an active chilled beam system are less use of energy, less duct work, and being a quiet system compared to a conventional VAV system[1]. Due to the unique distribution of floor levels inside the building, the mechanical load is distributed in vertical quadrants to the Roof top Units rather than distributing the load by floor.

Electrical/Lighting System:

The URBN Center is mainly fed a 13.2KV U.G Utility Feeder which is stepped down with a dry type transformer before being distributed to the building to a 277/480 volt system. The building also has an emergency generator with a 500 KW capacity. As for lighting, the URBN Center utilizes linear T-5 fluorescent light fixtures for the majority of the building. The fluorescent fixtures provide direct/indirect lighting to the building.

Masonry:

Due to historical significant of Venturi's design, the façade on the south side of the building was completely preserved and remained untouched during construction. New masonry units were placed on the other three sides of the building. The existing masonry façade is a brick façade and there were no changes to the existing bricks on the exterior of the building. The only removal of the façade was in the location of the new curtain walls. All other existing masonry bricks remained in place.

Curtain Wall:

Curtain walls are placed along the East and North elevations of the building mainly to provide passive solar lighting into the students' studios and work spaces. The glass that is used on the windows and the curtain walls of the URBN Center is a ½" thick clear tempered glass. The curtain walls are stick built and installed piece by piece on site.

Transportation:

In addition to the mezzanine, an elevator is added in the atrium located in the center of the ground floor that spans along the 4 stories of the URBN Center. The elevator capacity is 2,500 LB and it is a traction drive, machine room-less type. The elevator is enclosed with a point fixed structural glass shaft.

[1]http://www.buildings.com/tabid/3334/ArticleID/6087/Default.aspx

COST ANALYSIS IS OMMITED FROM REPORT FOR PRIVACY PURPOSES

EXISTING CONDITIONS

Since this is a renovation project, it is important to assess the existing structure as well as the existing conditions on the site. Residing in Philadelphia PA, The URBN Center was originally built in 1979 and designed by Philadelphia's own, Robert Venturi. The location of the URBN Center is shown in figure2. The following highlights the conditions of the building and its surrounding:

- Driveways and surface lots: majority are asphalt, lot boundaries are a combination of either concrete or gravel. All in good conditions.
- Planting: trees are located at the south side of the building with a brick wall as rear retainer. Trees are at full maturity age.

A detailed existing conditions plan of the URBN Center is located in Appendix C along with plans of the following phases of construction: Demolition, Building enclosure, and finishes/interiors.

Each plan is explained below.

Existing conditions plan: As shown on the plan, the main entrance to the project site is from the south side where construction vehicles enter the site from Market St. Since the majority of the renovation work is performed on the interiors of the building, there is no permanent construction fence around the URBN Center. Notice, no fence is placed along the North side of the parking lot because Filbert St. divides the URBN Center and the URBN Center ANNEX. A fence surrounds the Annex because a lot more construction is being performed on the exterior of the Annex (not shown on plans) .Pedestrians are still able to walk on the south side walk since no construction operations are taking place on the exterior of the building. However, the side walk is temporarily closed while operations are taking place on the building envelope (i.e.: windows installation) see the building enclosure plan for more details. Trailers, port-a johns and dumpster are placed in the parking lot of the URBN Center where the majority of material storage and vehicles are located during the construction process. As for safety, hard hats are worn on the site at all times. Also, visitors must speak to the construction team who addresses safety concerns to the visitors while they attend the project site.

Figure 2: URBN Center Location

(Prepared by Bert Hill)

Demolition Plan: The demolished materials will be loaded in trucks from the south east entrance of the building. The trucks will be entering the job site from the south entrance and leaving the site from the north exit. A safety concern to take into account is the traffic that will be disturbed by the construction vehicles' movement. Therefore, a flagger is placed near the entrance and exit which will coordinate the traffic flow between civilian vehicles and construction vehicles to avoid any accidents and maintain the demolition process safely.

Building enclosure: The building enclosure plan shows the material staging located in the east parking lot near the south entrance of the site. A JLG lift is used to install the new window ribbons and curtain walls. Therefore, the south and north side walks are closed while the JLG lift is operating. The sequence of the window installation is beginning from south, to west, north, and finally east. Some safety concerns include falling hazards of people in the JLG lift and keeping pedestrians away from the construction machinery while the installation is taking place.

Finishes/interiors: For the finishes plan, scaffolds are placed along the east, north and west elevations. Notice the south façade was not renewed therefore, no scaffolds are placed on the south side. The north side walk is closed again during construction and falling hazards are a major safety concerns. Therefore, an OSHA certified person is required to inspect the scaffold on daily bases to insure that they comply with the safety requirements.

LOCAL CONDITIONS

The parking for the construction vehicles resides in the parking lot of the existing structure of the URBN Center located east of the building. The parking includes a total of 76 parking spots.

Soil Conditions: The URBN Center existing structures is constructed with a five inch thick concrete slab underlain by six inches of sub-base aggregate. There is no testing date available for the caissons installed and no as-built drawings to confirm the installed depth of the caissons. The geotechnical report prepared by Mr. Joe Campbell included a boring test that was taken at a depth of approximately 51.5 feet below ground surface of the parking lot of the structure. A sample of the boring was taken at a depth of 5 feet and the gradation of the sample was determined to be 0% gravel, 78.9% sand, and 21.1 % fine soil. The geo-tech report also determined that the formation of the subsurface is composed of clayey sands, sands, and gravel. These formations are well bedded and have good surface drainage. Bedrock was encountered at a depth of 51.5 fbgs during the boring test.

Historical Background:

Due to the historical significance of Venturi's original design, there is some preservation of certain aspects of the design that were untouched during the renovation. For example, there was full preservation of the façade along the south side of the building which features a classic mosaic design by Robert Venturi. Also, there are various art designs on several walls of the original design that were preserved due to their historical importance.

Figure 3: South Facade Of the URBN Center

As for the codes that were required for this project in the city of Philadelphia are as follows:

ICC Electrical Code 2006 (utilizes National Electric Code 2005 standards)
International Energy Conservation Code 2006
International Existing Building Code 2006
International Fire Code 2006
International Fuel Gas Code 2006
International Mechanical Code 2006
International Plumbing Code 2006
ICC/ANSI A117.1-2003 Accessible and Usable Buildings and Facilities standard.
International Building Code 2006 (IBC)

Zoning:

The URBN Center falls in the C-4 Commercial District, while the ANNEX is in C-3 commercial District.

CLIENT INFORMATION

The URBN Center and URBN Center Annex are owned by Drexel University. Located in Philadelphia PA, Drexel offers over 23,500 students in an urban environment[1]. Thanks to a private donation, Drexel purchased the famous Robert Venturi Design (to be named the URBN Center) and a neighboring building (URBN Center Annex) which will serve as the new home for the Antoinette Westphal College of media Arts & design. The goal of this project is to consolidate all the students in the Antoinette Westphal College of media Arts & Design under one building rather than being scattered across campus and to expand Drexel's campus into the west bound of Philadelphia. With a state of the art renovated design, Drexel aims to attract students from all across the nation by creating an attractive work environment in the URBN Center. Using an original design by a well-known architect like Venturi will also play a role in attracting new students to the University. Drexel plans to have the URBN Center and URBN Center Annex to be ready for use by the 2012-2013 academic year. This makes the sequencing and schedule of the project to be carefully followed in order to have the students occupying the building at the beginning of their upcoming semester[2]. However, the project is split in two phases. The URBN Center (phase 1) is completed in September 2012 and the Annex (Phase 2) is to be completed in mid-October 2012. This being said, it is very important for this project to be completed within the designated schedule in order for the students to be able to move in the building on time for their upcoming classes.

Figure 4: Drexel University Logo. (Property of Drexel)

PROJECT DELIVERY SYSTEM

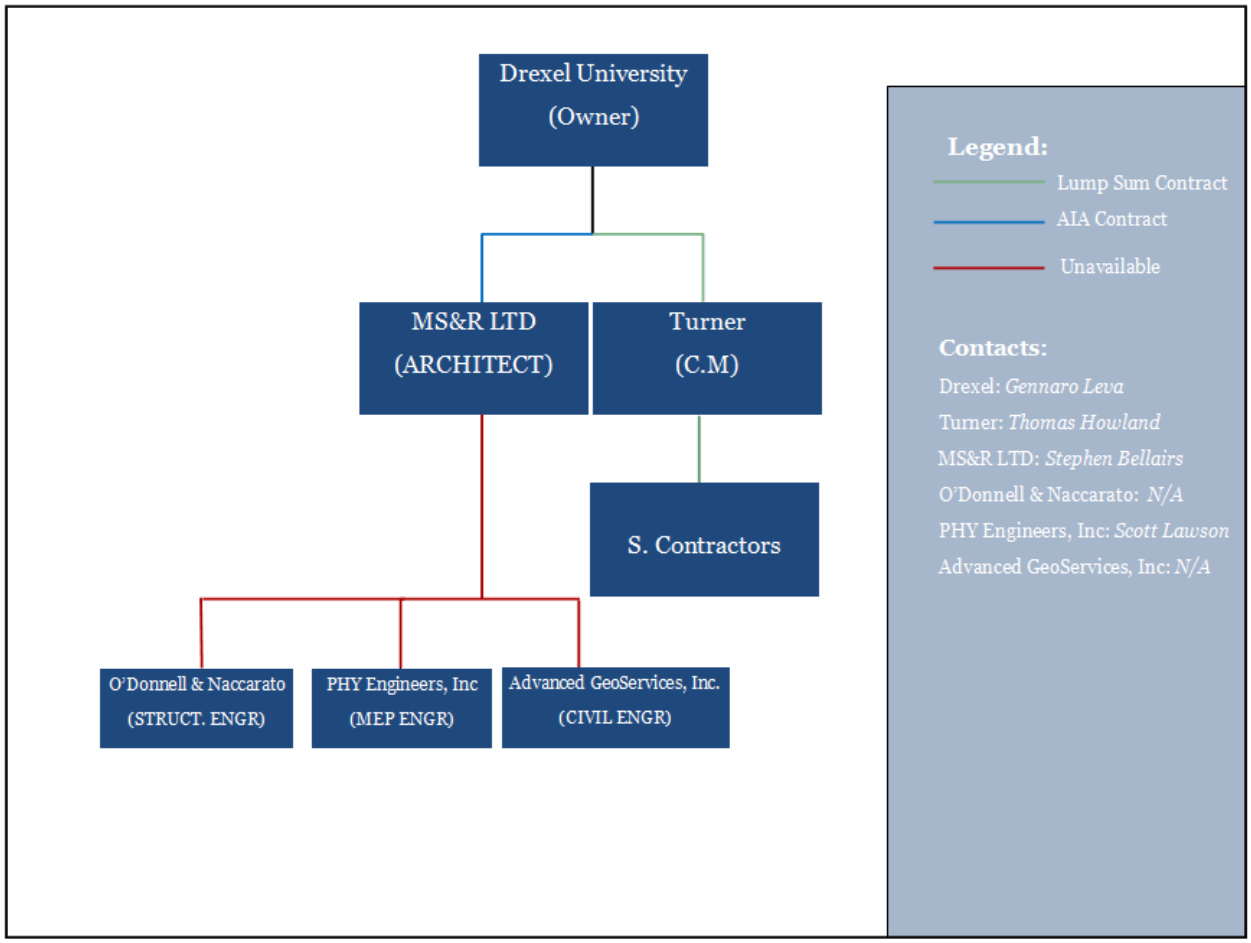


Figure 6: Project Organizational Chart

As shown in the Organizational chart above, there are different types of contracts that are used in this project between the owner, the Contractor, and the designer. The owner has an AIA contract with the Designer and the construction is executed with a lump sum contract. In other words, the design documents were completed by the architect and the contractor used these design documents to propose a fixed over-all cost for the project to the owner. Under a lump sum contract, the contractor is mainly chosen based on the price they are willing to perform the work for. This puts less risk on the owner and more risk on the contractor. However, a lump sum contract gives the contractor the freedom about choosing the means and methods of executing the work. Also, the contractor is responsible for hiring the specialty contractors who will be working directly with the general contractor rather than working for the owner (*specific information about the specialty contractor is unavailable*).

This is a logical contract choice for this project because the work scope is well defined and there are comprehensive site and existing condition assessments to help the general

contractor define the risk they are taking when pursuing the project. However, change orders are critical and undesirable with a lump sum contract because it is very important for the general contractor to finish the project at the agreed upon time which highlights the importance of having a well-defined scope of work once again. Another reason why a lump sum contract is a good choice for the owner for this project is that the owner wants this project to be occupied by students when their new semesters begin which means finishing on time is critical and change orders are less likely to happen. As for the owner-designer relationship, the owner has a standard AIA (American Institute of Architects) contract with the designer. The designer is responsible to hire the consulting/engineering companies.

STAFFING PLAN

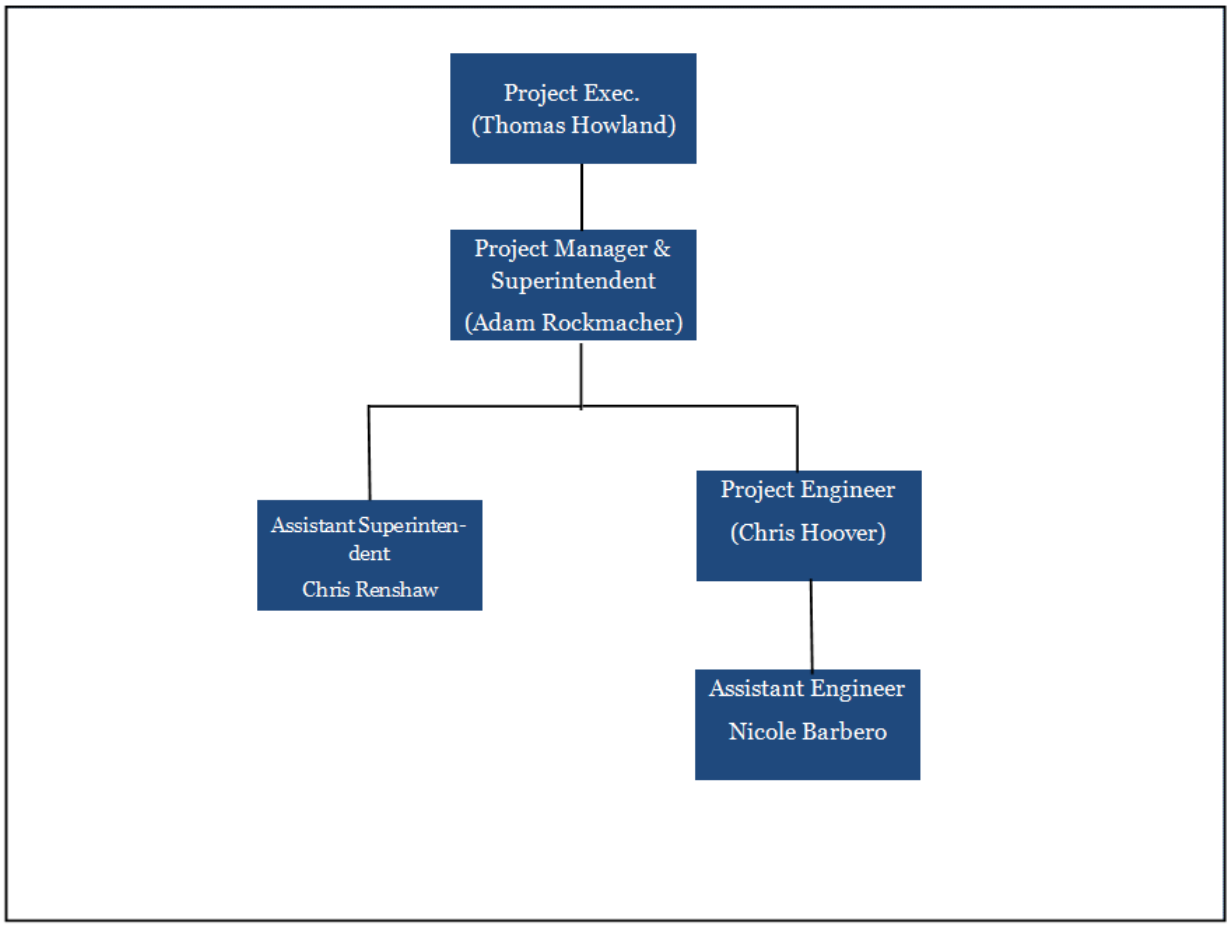


Figure 5: Turner Staffing Chart

The chart above shows the staffing plan used by Turner Construction on the URBN Center project. The staffing plan used on this project is slightly different than the conventional chain of commands used in the construction industry. The chain of commands begins with the project executive (Thomas Howland) who is the head of the

project. Below the project executive is the project manager/superintendent. Adam Rockmacher is the project manager and superintendent for the project. Mr. Rockmacher is responsible for the office operations as well as the field operations on day to day basis. This is unusual because typically there is two different people on the project working as project manager/superintendent. The project engineer (Chris Hoover) also works on the project site on daily basis helping Mr. Rockmacher to run the project with the assistance of the assistant engineer (Nicole Barbero). Also, the assistant superintendent (Chris Renshaw) assists with the field operations.

References:

1 http://www.buildings.com/tabid/3334/ArticleID/6087/Default.aspx

2 *http://drexel.edu/about/glance/*

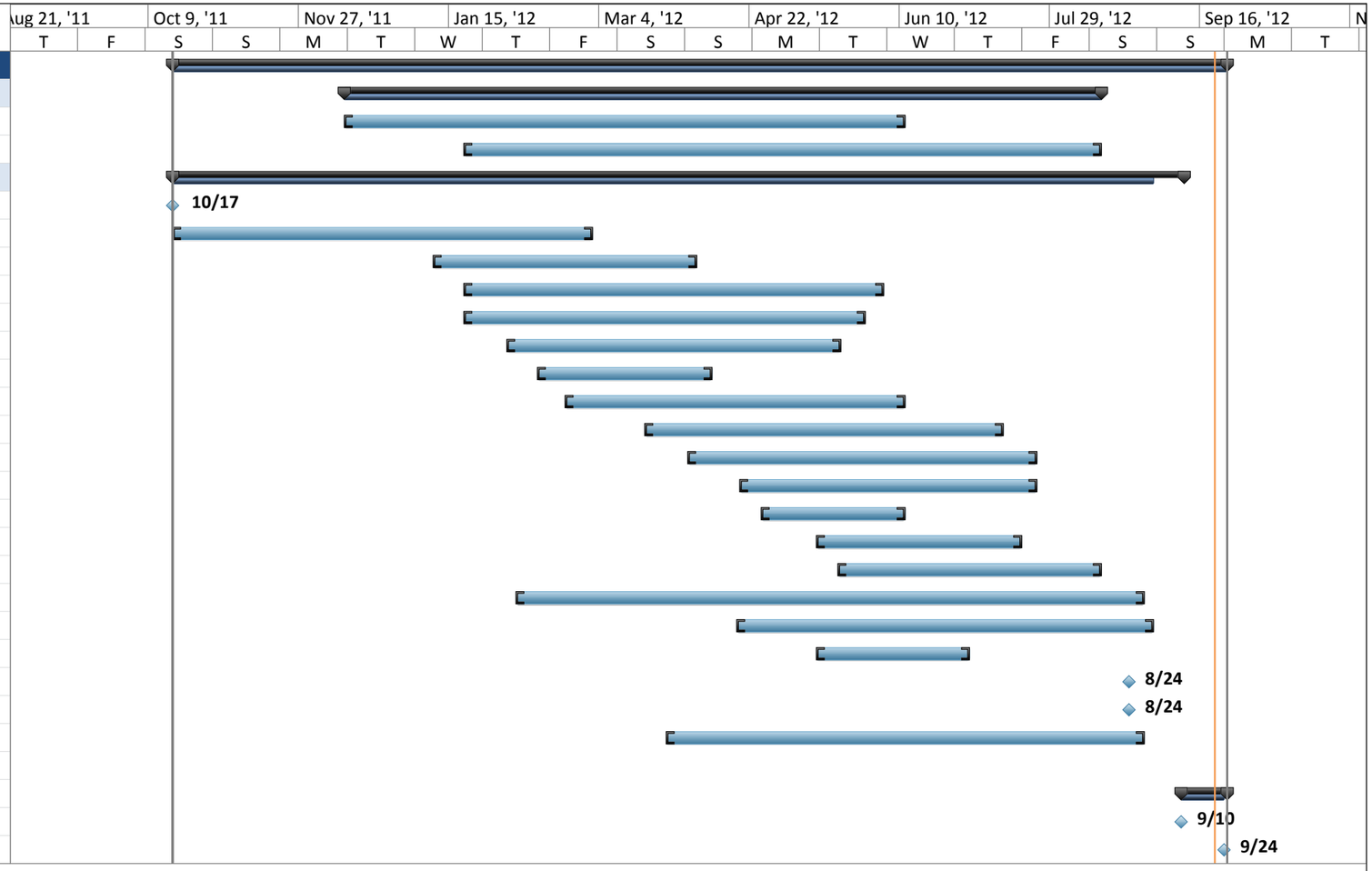
3 http://www.drexel.edu/slas/news/featureStories/URBNCenter/

Information about the building design were obtained from the Drawings/Specs of the project with permission of the owner.

APPENDIX A

SUMMARY SCHEDULE

ID	Task Name	Duration	Start	Finish
1	**URBN CENTER**	**246 days**	**Mon 10/17/11**	**Mon 9/24/12**
2	**ENGINEERING**	**177 days**	**Mon 12/12/11**	**Tue 8/14/12**
3	Submittal review & approval	131 days	Mon 12/12/11	Mon 6/11/12
4	fabrication and Delivery Time	148 days	Fri 1/20/12	Tue 8/14/12
5	**CONSTRUCTION**	**236 days**	**Mon 10/17/11**	**Mon 9/10/12**
6	Notice to Proceed	0 days	Mon 10/17/11	Mon 10/17/11
7	Demolition	99 days	Mon 10/17/11	Thu 3/1/12
8	Structure	62 days	Tue 1/10/12	Wed 4/4/12
9	MEP Rough-In	97 days	Fri 1/20/12	Mon 6/4/12
10	Plumbing	93 days	Fri 1/20/12	Tue 5/29/12
11	HVAC	77 days	Fri 2/3/12	Mon 5/21/12
12	Mezzaine Structure	41 days	Mon 2/13/12	Mon 4/9/12
13	Electrical	79 days	Wed 2/22/12	Mon 6/11/12
14	Building Enclosure	85 days	Mon 3/19/12	Fri 7/13/12
15	Roof	82 days	Mon 4/2/12	Tue 7/24/12
16	Skylight	69 days	Thu 4/19/12	Tue 7/24/12
17	Curtain Walls	33 days	Thu 4/26/12	Mon 6/11/12
18	North Stairwell	49 days	Mon 5/14/12	Thu 7/19/12
19	Sliding & Pivoting Walls	62 days	Mon 5/21/12	Tue 8/14/12
20	Mezzaine Elevator	147 days	Mon 2/6/12	Tue 8/28/12
21	Mezzaine Fit Out	98 days	Wed 4/18/12	Fri 8/31/12
22	Mezzaine Stairs & Rails	36 days	Mon 5/14/12	Mon 7/2/12
23	Final Punchlist	0 days	Fri 8/24/12	Fri 8/24/12
24	Substantial Completion	0 days	Fri 8/24/12	Fri 8/24/12
25	Finishes	112 days	Mon 3/26/12	Tue 8/28/12
26				
27	**POST CONSTRUCTION**	**11 days**	**Mon 9/10/12**	**Mon 9/24/12**
28	Building Turnover	0 days	Mon 9/10/12	Mon 9/10/12
29	Student Occupancy	0 days	Mon 9/24/12	Mon 9/24/12



Project: URBN Center
Date: 9/17/12

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline			
Split	External Tasks	Inactive Summary	Manual Summary	Progress			
Milestone	External Milestone	Manual Task	Start-only				
Summary	Inactive Task	Duration-only	Finish-only				

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APPENDIX B

SQUARE FT ESTIMATE REPORT

COST REPORTS ARE OMMITED FOR PRIVACY PURPOSES

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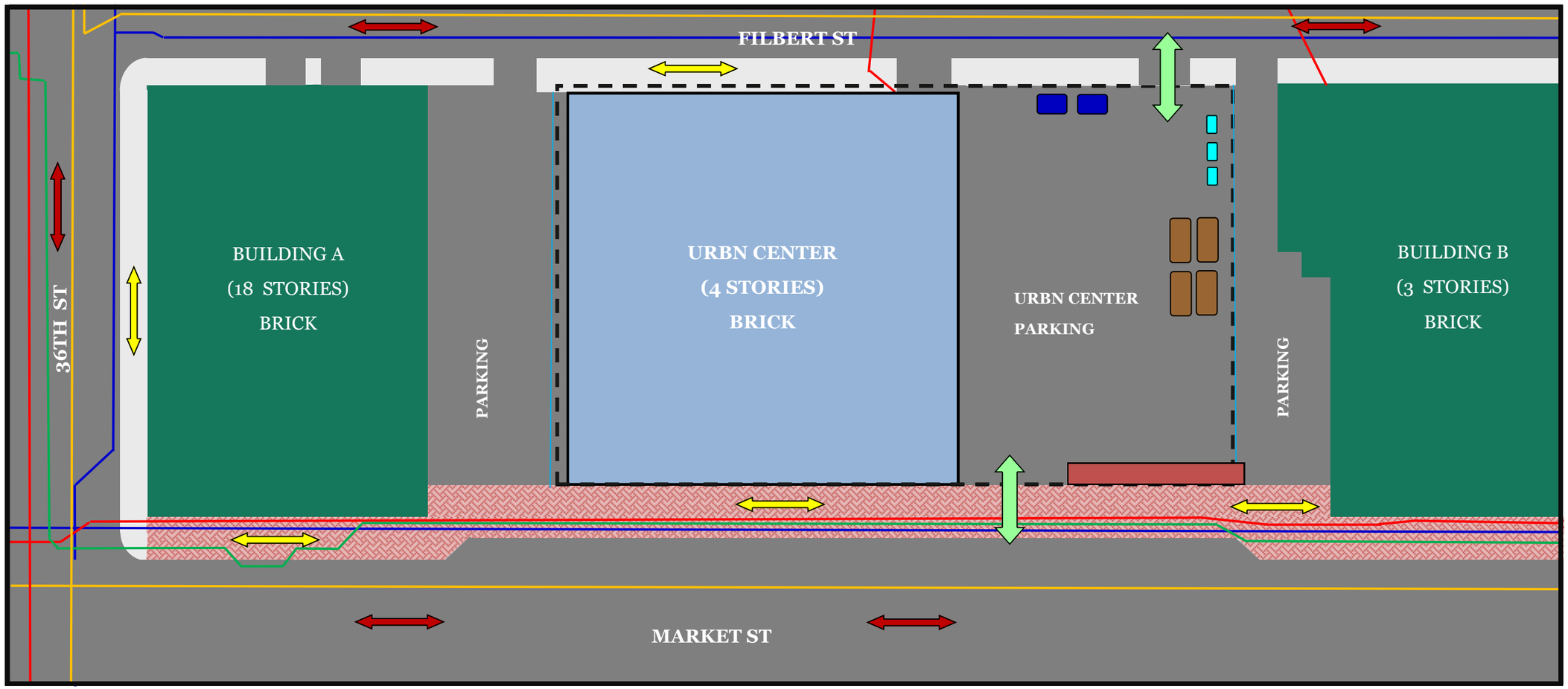
APPENDIX C

EXISTING CONDITIONS PLAN



LEGEND:

- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING WATER
- EXISTING GAS
- EXISTING FENCE
- PROPERTY LINE
- CAR TRAFFIC
- PEDASTRIAN TRAFFIC
- CONSTRUCTION VEHICLES ENTRANCE
- DUMPSTERS
- TRAILERS
- PORT-A-JOHNS
- BRICK WALL

BY: GHAITH YACOUB

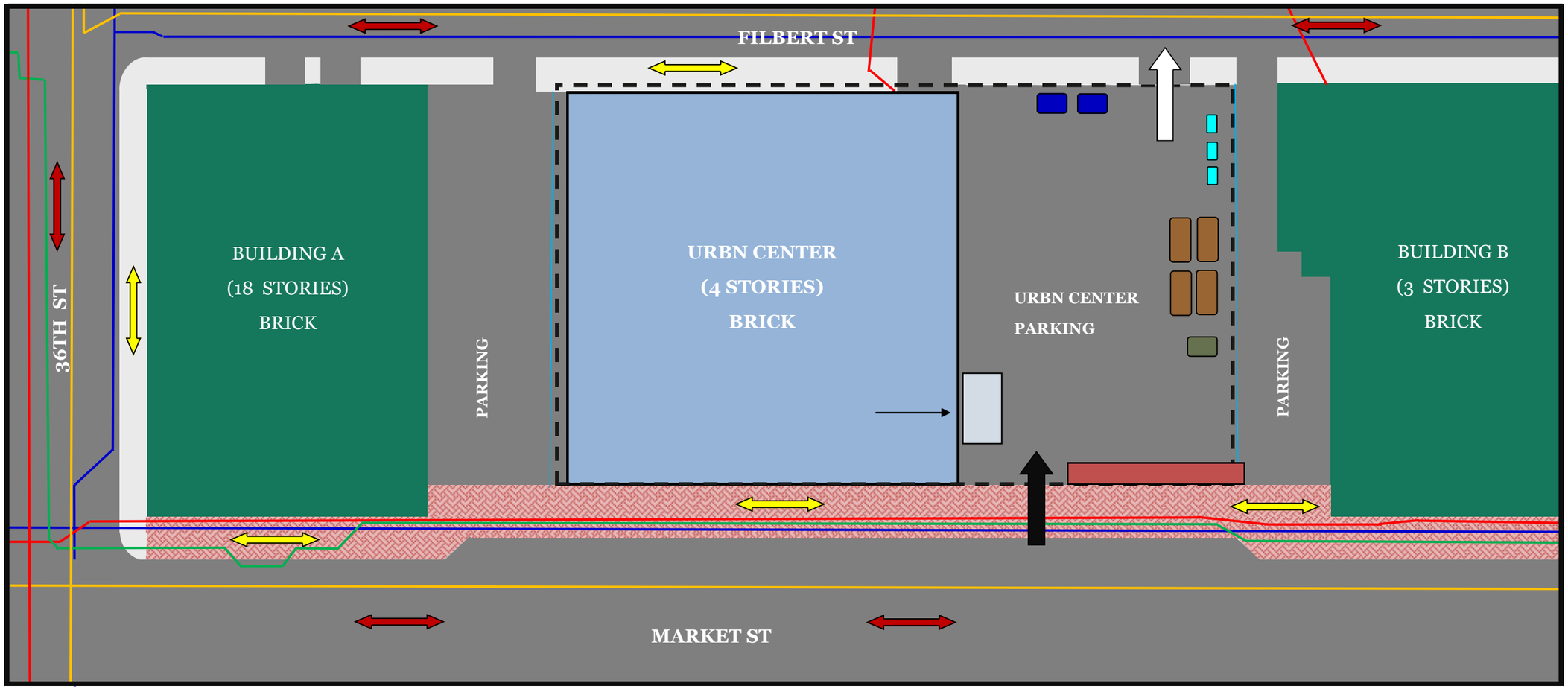
09/16/2012

URBN CENTER

OWNER:
DREXEL UNV.

3501 MARKET ST.
PHILADELPHIA, PA
19104

EXISTING CONDITIONS



LEGEND:

- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING WATER
- EXISTING GAS
- EXISTING FENCE
- PROPERTY LINE
- CAR TRAFFIC
- PEDASTRIAN TRAFFIC
- Trucks Entering Site
- Trucks Leaving Site
- Demolished Materials
- DUMPSTERS
- TRAILERS
- PORT-A-JOHNS
- BRICK WALL
- TEMP. GENERATOR

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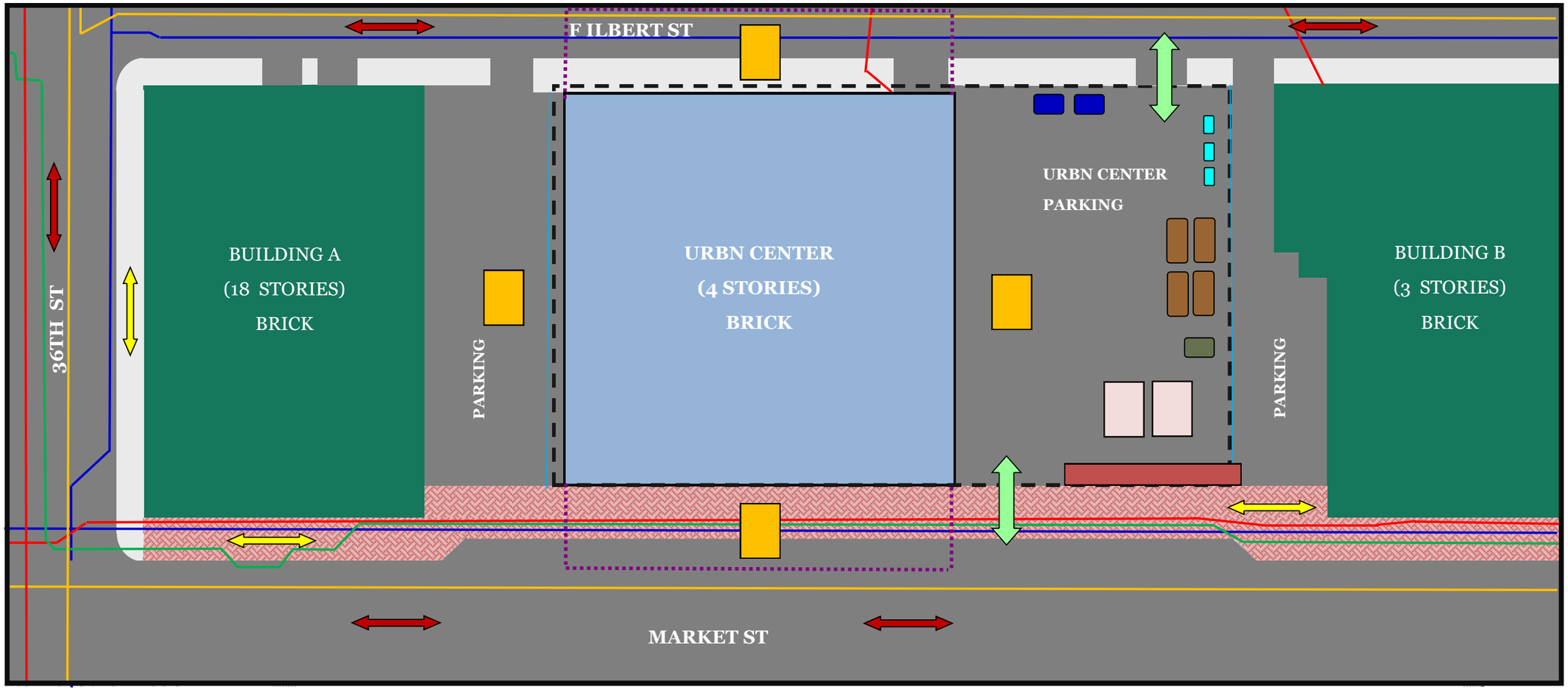
DEMOLITION PLAN



LEGEND:

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- EXISTING ELECTRIC
- EXISTING WATER
- EXISTING GAS
- EXISTING FENCE
- PROPERTY LINE
- CAR TRAFFIC
- PEDASTRIAN TRAFFIC
- CONSTRUCTION VEHICLES ENTRANCE
- TEMP. GENERATOR
- DUMPSTERS
- TRAILERS
- PORT-A-JOHNS
- BRICK WALL
- JLG Lift
- MATERIAL. STAGING
- TEMP. ROAD CLOSED

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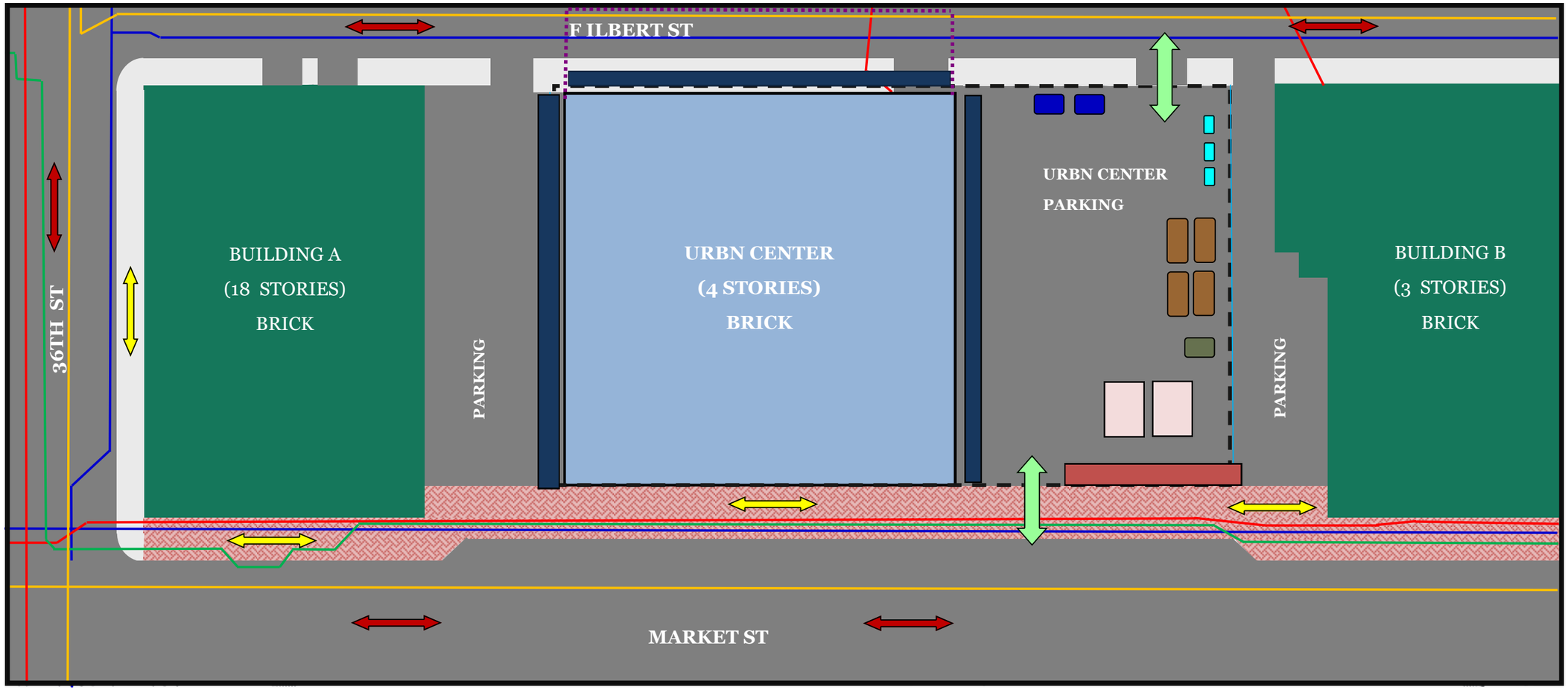
BUILDING ENCLOSURE



LEGEND:

- EXISTING SEWER
- EXISTING ELECTRIC
- EXISTING WATER
- EXISTING GAS
- EXISTING FENCE
- PROPERTY LINE
- CAR TRAFFIC
- PEDASTRIAN TRAFFIC
- CONSTRUCTION VEHICLES ENTRANCE
- TEMP. GENERATOR
- DUMPSTERS
- TRAILERS
- PORT-A-JOHNS
- BRICK WALL
- SCAFFOLDS
- JLG Lift
- MATERIAL. STAGING
- TEMP. ROAD CLOSED

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FINISHES PLAN/ INTERIORS