**To:** Professor Messner, October 29th, 2007

**Concerning:** Liberty Walk at East Gate
Mt. Laurel Township, New Jersey

# Technical Report 1

## Construction Project Management

330 Fellowship Road

A Liberty Property Group Project

J. Springer Wahl

5th Year Construction Management Student

**J. Springer Wahl**, AE Construction Management October 29th, 2007

**To:** Professor Messner

**Concerning:** Liberty Walk at East Gate
Mt. Laurel Township, New Jersey

**Executive Summary**

In the following report you will find many different sections to summarize some of the basics of the 330 Fellowship Road project. There will be a brief key Systems Schedule describing some of the basic start and finish dates for the different construction activities. Next will be a brief Systems Summary containing information describing what is entailed for those systems. Then there will be a Project Cost evaluation showing actual costs and estimated costs. After that will be a Site Plan of Existing Conditions, and a description of the regional conditions. There currently is no client leasing any of the spaces, however I will describe what kind of client Liberty Property Trust is looking for. Then the Project Delivery System will be described, as well as a Staffing Plan for both the GC and the Owner. The demolition of the two buildings on 330 Fellowship Road's Site began at the beginning of spring, 2006.

Next, the Building Summary shows firstly that demolition of the two buildings on the lot was a very big deal. With many LEED points to be gained, Liberty Property Trust instilled in the workers a pride in getting either a Silver or Gold rating. 330 Fellowship Road's Structure is mainly a steel frame with concrete deck. It does not have a basement, and has a very shallow foundation. It has some brick work, however the majority of the exterior is glass. There is a separate AHU system for each floor, to attempt to customize the space as much as possible for the tenants. None of the tenant space is finished, which leaves the option of customization.

A project estimate was completed through both a systems square foot estimate, and a gross square foot estimate. The gross estimate came in at $17,331,000. The system estimate came in at $10,011,000. This disparity can be shown by the assumptions made about the project. Firstly, the gross square foot estimate could be inaccurate due to how 330 Fellowship Road building didn't neatly fit into the descriptions given by R.S. Means 2007. This may have even affected the systems estimate. The systems estimate does take into account that very little of the floor plan (roughly 25-30%) is actually finished.

My site plans show the basic layout. It also describes how because of the way the building will be built, that there was a very little chance of encountering anything unexpected. As of now, there isn't really any client information. Liberty Property has yet to lease out any of the tenant space. The project delivery system is a Design – Bid – Build system. The key players are Liberty Property Trust being the owner, Meyers Associates the Architect, and Penntex Construction the General Contractor.

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# Project Schedule

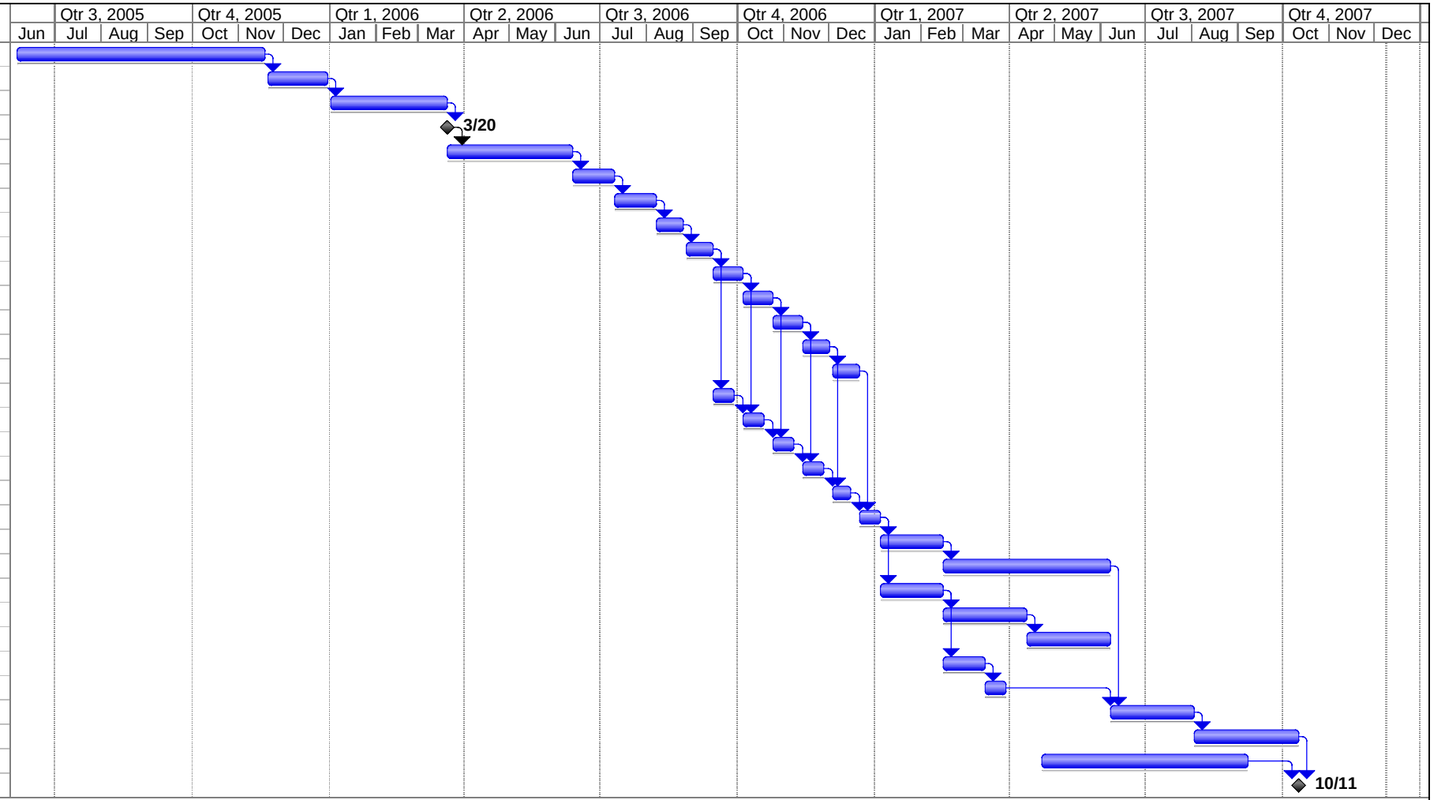
The schedule is arranged to take most advantage of how the building is naturally split into 3 different bays. First thing to be completed is the demolition of the old NFL Films building on the site. Because of strict adherence to recycling and LEED guidelines, this isn't just a smash and toss job. The project leaders emphasized how important it is to the environment to do this.

After the demolition is finished, the excavation begins. Since the building has a rather shallow foundation, this isn't too difficult. For the same reasoning, the concrete foundation is easy to place as well.

Because of restrictions on steel construction, of how a steel worker may only work at a maximum of 2 stories above a closed floor or finished floor, the steel is erected in the first bay only up to below the third floor. After this is finished, the steel workers move onto the second bay, and do the same thing as before. However, the concrete contractor will begin to chase the steel construction through the building, as he starts the first bay just as the steel is being started in the second. The steel erection will finish in the second and move onto the third. The concrete will then move into the second bay.

The schedule had to be adjusted to compensate for how long construction of the glass curtainwall was actually taking. The building was supposed to be ready for tenant fit out by the end of September. However, the glass curtainwall system is just being finished now, with the interior finishes being ready soon, as well.

| ID | Task Name | Duration | Start | Finish | Predecessors | Resource Names |
|---|---|---|---|---|---|---|
| 1 | Design | 120 days | Mon 6/6/05 | Fri 11/18/05 | | |
| 2 | Request for Proposal | 30 days | Mon 11/21/05 | Fri 12/30/05 | 1 | |
| 3 | Subcontractor Bids | 56 days | Mon 1/2/06 | Mon 3/20/06 | 2 | |
| 4 | N.T.P. | 0 days | Mon 3/20/06 | Mon 3/20/06 | 3 | |
| 5 | Demolition | 60 days | Tue 3/21/06 | Mon 6/12/06 | 4 | |
| 6 | Excavation | 20 days | Tue 6/13/06 | Mon 7/10/06 | 5 | |
| 7 | Foundation Footings | 20 days | Tue 7/11/06 | Mon 8/7/06 | 6 | |
| 8 | Slab on Grade | 14 days | Tue 8/8/06 | Fri 8/25/06 | 7 | |
| 9 | Bay 1, Floors 1-2 Steel | 14 days | Mon 8/28/06 | Thu 9/14/06 | 8 | |
| 10 | Bay 2, Floors 1-2 Steel | 14 days | Fri 9/15/06 | Wed 10/4/06 | 9 | |
| 11 | Bay 3, Floors 1-2 Steel | 14 days | Thu 10/5/06 | Tue 10/24/06 | 10 | |
| 12 | Bay 1, Floors 3-4 Steel | 14 days | Wed 10/25/06 | Mon 11/13/06 | 11 | |
| 13 | Bay 2, Floors 3-4 Steel | 14 days | Tue 11/14/06 | Fri 12/1/06 | 12 | |
| 14 | Bay 3, Floors 3-4 Steel | 14 days | Mon 12/4/06 | Thu 12/21/06 | 13 | |
| 15 | Bay1, Floor 2 Concrete | 10 days | Fri 9/15/06 | Thu 9/28/06 | 9 | |
| 16 | Bay2, Floor 2 Concrete | 10 days | Thu 10/5/06 | Wed 10/18/06 | 10,15 | |
| 17 | Bay3, Floor 2 Concrete | 10 days | Wed 10/25/06 | Tue 11/7/06 | 11,16 | |
| 18 | Bay 1, Floor 3-4 Concrete | 10 days | Tue 11/14/06 | Mon 11/27/06 | 12,17 | |
| 19 | Bay 2, Floor 3-4 Concrete | 10 days | Mon 12/4/06 | Fri 12/15/06 | 13,18 | |
| 20 | Bay 3, Floor 3-4 Concrete | 10 days | Fri 12/22/06 | Thu 1/4/07 | 14,19 | |
| 21 | Exterior Curtainwall | 30 days | Fri 1/5/07 | Thu 2/15/07 | 20 | |
| 22 | Curtainwall Glass | 80 days | Fri 2/16/07 | Thu 6/7/07 | 21 | |
| 23 | Roof Curtainwall | 30 days | Fri 1/5/07 | Thu 2/15/07 | 20 | |
| 24 | Mechanical Rough In | 40 days | Fri 2/16/07 | Thu 4/12/07 | 23 | |
| 25 | Mechanical Finish | 40 days | Fri 4/13/07 | Thu 6/7/07 | 24 | |
| 26 | Electrical Rough In | 20 days | Fri 2/16/07 | Thu 3/15/07 | 23 | |
| 27 | Electrical Finishes | 10 days | Fri 3/16/07 | Thu 3/29/07 | 26 | |
| 28 | Interior Rough in | 40 days | Fri 6/8/07 | Thu 8/2/07 | 22,27 | |
| 29 | Interior Finishes | 50 days | Fri 8/3/07 | Thu 10/11/07 | 28 | |
| 30 | Site Work | 100 days | Mon 4/23/07 | Fri 9/7/07 | | |
| 31 | Ready for Tenant Fit Out | 0 days | Thu 10/11/07 | Thu 10/11/07 | 30,29 | |




Project: Schedule
Date: Sun 12/9/07

Task — Progress — Summary — External Tasks — Deadline
Split — Milestone — Project Summary — External Milestone

# Building Systems Summary

When Liberty Property Trust purchased the two lot section of land, it had two buildings on it. The footprint of 330 Fellowship Road was to be smaller and almost entirely inside the building which would precede it. The building it was replacing was rather famous, being the NFL Films main building. NFL Films location in Mt. Laurel NJ was finished and occupied in 1985. The building became vacant in 2002 as a much larger facility and studio was finished. This building needed to be demolished before work on 330 Fellowship Road could be started.

Given that the NFL Films building wasn't built too long ago, there weren't too many concerns for any hazardous materials coming out of it. However, this proved to be a great opportunity to earn LEED points both for using a prebuilt lot, and for massive amounts of recycling. From what I can ascertain by the site layout and civil engineering drawings, it was just a CMU exterior building with an single floor steel truss system.

330 Fellowship Road Office Building does contain a structural steel frame. Steel Columns were used throughout the building. The second, third, and fourth floors all rest on steel decking and wide flanged steel beams and girders. There are structural steel cross bracings in the building. For the interior bays of the roof, wide flanged steel beams and girders are also used. For the exterior bays of the roof, steel joists are used. The steel joists do need careful bracing, but nothing beyond the ordinary. I currently have no information on the crane type, sizing and locations. But I would expect one mobile crane, possibly two.

Cast in place concrete is used for on grade structural systems. All footings are minimum 3' deep edge beams. Below the interior columns are square footings. On top of all of that is a 4" deep WWF reinforced concrete slab on grade. There is no basement besides the below datum space the elevator has to operate. All of the floors except for the roof will receive CIP concrete on top of metal decking for a composite slab system.

There is no precast concrete in this building.

Masonry is used to put forth a minimal effort to mirror the architectural style of the surrounding buildings. It is mainly being used in the center of each face, up to the third floor. The sections of brick are pre engineered and put up with a steel channel as a backer. There is also a single course of 12" CMU block around the base of the building under the brick sections, as well as 3 courses of 6" CMU backing the bottom brick sections only.

There is a specific Air Handling Unit per floor, with the ducts running down the chases to each floor directly down from each AHU. Because the tenant space isn't leased, the final diffusers or finished ducts aren't in place yet. The tenant will place these when it leases the space. The cooling operation runs off of electricity, while the heating coils run off of a gas line in from the street.

The electrical system is a standard 277 volt / 480Y volt building. The entire building is on a 2000 Amp Service. The Air Handling Units run off of the 480 volt service. Because the tenant space is designed to be self furnished and finished, the electricity service is not finished. There is a 250 KW generator Life Safety Standby in an exterior weather proof casing on the west side of the building.

The largest majority of the face curtainwall system is comprised of glass. These windows are a very complex and expensive triple pane system, with 3 different variations based off of the architectural use. They all have a U Value of 0.57 or less. The rest of the curtainwall system has a brick face. The brick panels have an inch air gap behind them. Behind that is a vapor barrier with a structural steel backer. The interior of the building will be insulated underneath the finishes.

I currently have no information about how the excavation was supported. There is no required de-watering system, as the building is not as deep as the water table.

# Project Estimates

I currently do not have any of the actual costs of the building. So I've completed a Square Foot Estimate from R.S. Means 2007. However, the values may be a little skewed, or more expensive than they actually are. The 330 Fellowship Road Office Building didn't fit in ideally with either of the optimum office buildings that Means provided. It had more square feet then the smaller building, but fewer floors then the larger. So I used the larger, given that the square feet options were in the range of this current building. However, the base square foot cost adjustments may be wrong from having to adjust so much to get the building to fit. For example, the base square foot cost for 100,000 square foot office building with similar fascia was $130.65, however the height and perimeter adjustments were $36.48 together. This summed up to a square foot cost of $167.13. When you multiply this by the square footage of 103,700, you get an estimate of $17,331,000.

The following is the systems square foot estimate from the same R.S. Means 2007 estimate.

| | | | | |
|---|---|---|---|---|
| **A. Substructure** | | SF Footprint | Footprint | |
| | Foundation | $11.04 | 27,246 | $300,795.84 |
| | SOG | $4.45 | 27,246 | $121,244.70 |
| | Excavation | $0.24 | 27,246 | $6,539.04 |
| | | LF Perim | Perim | |
| | Footing | $69.00 | 706 | $48,714.00 |
| **B. Shell** | | Per SF | Floor | |
| **Super** | Floors | $19.93 | 81,738 | $1,629,038.34 |
| | Roof | $5.84 | 27,246 | $159,116.64 |
| | | Per SF Wall | SF Wall | |
| **Ext Encl.** | Walls | $35.00 | 34,453 | $1,205,848.00 |
| | | Each | Number | |
| | Windows | $503.00 | 614 | $308,842.00 |
| | | Each | Number | |
| | Doors | $3,298.00 | 4 | $13,192.00 |
| | | SF Roof | SF | |
| | Roofing | $4.96 | 27,246 | $135,140.16 |
| **C. Interior** | | | | |
| | | Per L.F. Wall | L.F. Wall | |
| | Partitions | $75.33 | 1,196 | $90,094.68 |
| | | Each | Number | |
| | Doors | $815.00 | 46 | $37,490.00 |
| | | Per Flight | Flights | |

| | | | | |
|---|---|---|---|---|
| | Stairs | $11,500.00 | 8 | $92,000.00 |
| | | Per SF Wall | SF Wall | |
| | Int Wall Finish | $1.26 | 10,764 | $13,562.64 |
| | | Per SF Floor | SF Floor | |
| | Floor Finish | $6.81 | 7,036 | $47,915.16 |
| | | Per SF Ceil | SF Ceil | |
| | Ceiling | $4.71 | 7,036 | $33,139.56 |
| **D. Services** | | Each | Number | |
| | Elevator | $198,200.00 | 2 | $396,400.00 |
| | | Per 1370SF | Number | |
| | Plumbing | $2,329.00 | 76 | $177,004.00 |
| | | Per SF Floor | SF Floor | |
| | Waterheater | $0.24 | 103,700 | $24,888.00 |
| | Roof Drain | $1.12 | 27,246 | $30,515.52 |
| | | Per SF Floor | SF Floor | |
| | HVAC | $15.65 | 103,700 | $1,622,905.00 |
| | | Per Sf Floor | SF Floor | |
| | Fire Protection | $0.24 | 103,700 | $24,888.00 |
| | | Per Sf Floor | SF Floor | |
| | Electrical (2000) | $2.02 | 103,700 | $209,474.00 |
| | Lighting | $10.23 | 7,036 | $71,978.28 |
| | Wiring | $4.49 | 7,036 | $31,591.64 |
| | Gen (250Kw) | $2.35 | 103,700 | $243,695.00 |
| **Sums** | | | | $7,076,012.20 |
| | General Requirements | | 10% | $707,601.22 |
| | Overhead | | 5% | $353,800.61 |
| | Profit | | 10% | $707,601.22 |
| | Architect Fees | | 6% | $424,560.73 |
| | Subtotal | | | $9,269,575.98 |
| | Location Adjustment 08054 | | 8% | $741,566.08 |
| **Total** | | | | $10,011,142 |

The first thing you should notice would be the complete disparity between the systems square foot estimate, and the general square foot estimate. This can easily be explained by how the building is being finished. The general estimate assumes that the entire building will be finished by the GC. In actuality, only about 20-25% of the floor space is being finished. Provided the costliest sections of the estimate like the core, structure and curtain wall are entailed, the tedious schedule driven sections like the electrical and telecommunications work, as well as finishes are not being done at all.

However, both sections may be driven up or down by using the wrong assumptions out of Means from the wrong building type. The general estimate may be high from running numbers of a 4 story building, into numbers for an 8 story building. The systems estimate may be low due to using the 8 story values, into an easier building to complete.

The next page will highlight the D4Cost estimate. This estimate is very similar to the square foot systems estimate, due to having no actual costs at hand. I used the Woodlands 2 Office building in D4Cost as a base. It is a 4 story building with 120,000 square feet.

| Code | Division Name | % | Sq. Cost | Projected |
|---|---|---|---|---|
| 00 | Bidding Requirements | 21.40 | 21.30 | 2,193,564 |
| | General Conditions | 21.40 | 21.30 | 2193563.78 |
| 01 | General Requirements | 0.73 | 0.73 | 75,084 |
| | Miscellaneous | 0.73 | 0.73 | 75084.42 |
| 03 | Concrete | 20.48 | 20.39 | 2,099,793 |
| | Concrete | 20.48 | 20.39 | 2099792.88 |
| 04 | Masonry | 1.01 | 1.01 | 103,924 |
| | Masonry | 1.01 | 1.01 | 103924.43 |
| 05 | Metals | 6.80 | 6.77 | 697,311 |
| | Metals | 6.80 | 6.77 | 697310.86 |
| 06 | Wood & Plastics | 0.69 | 0.69 | 71,082 |
| | Wood & Plastics | 0.69 | 0.69 | 71082.02 |
| 07 | Thermal & Moisture Protection | 16.10 | 16.02 | 1,649,830 |
| | Thermal & Moisutre Protection | 16.10 | 16.02 | 1649830.16 |
| 08 | Doors & Windows | 3.51 | 3.49 | 359,524 |
| | Doors & Windows | 3.51 | 3.49 | 359524.00 |
| 09 | Finishes | 0.92 | 0.92 | 94,617 |
| | Finishes | 0.92 | 0.92 | 94617.36 |
| 10 | Specialties | 0.47 | 0.47 | 48,003 |
| | Specialties | 0.47 | 0.47 | 48003.15 |
| 12 | Furnishings | 0.24 | 0.24 | 24,460 |
| | Furnishings | 0.24 | 0.24 | 24459.93 |
| 14 | Conveying Systems | 3.87 | 3.85 | 396,400 |
| | Conveying Systems | 3.87 | 3.85 | 396400.00 |
| 15 | Mechanical | 18.34 | 18.25 | 1,880,201 |
| | Mechanical | 18.34 | 18.25 | 1880200.52 |
| 16 | Electrical | 5.43 | 5.41 | 556,739 |
| | Electrical | 5.43 | 5.41 | 556738.92 |
| | Total Building Costs | 100.00 | 99.52 | 10,250,532 |

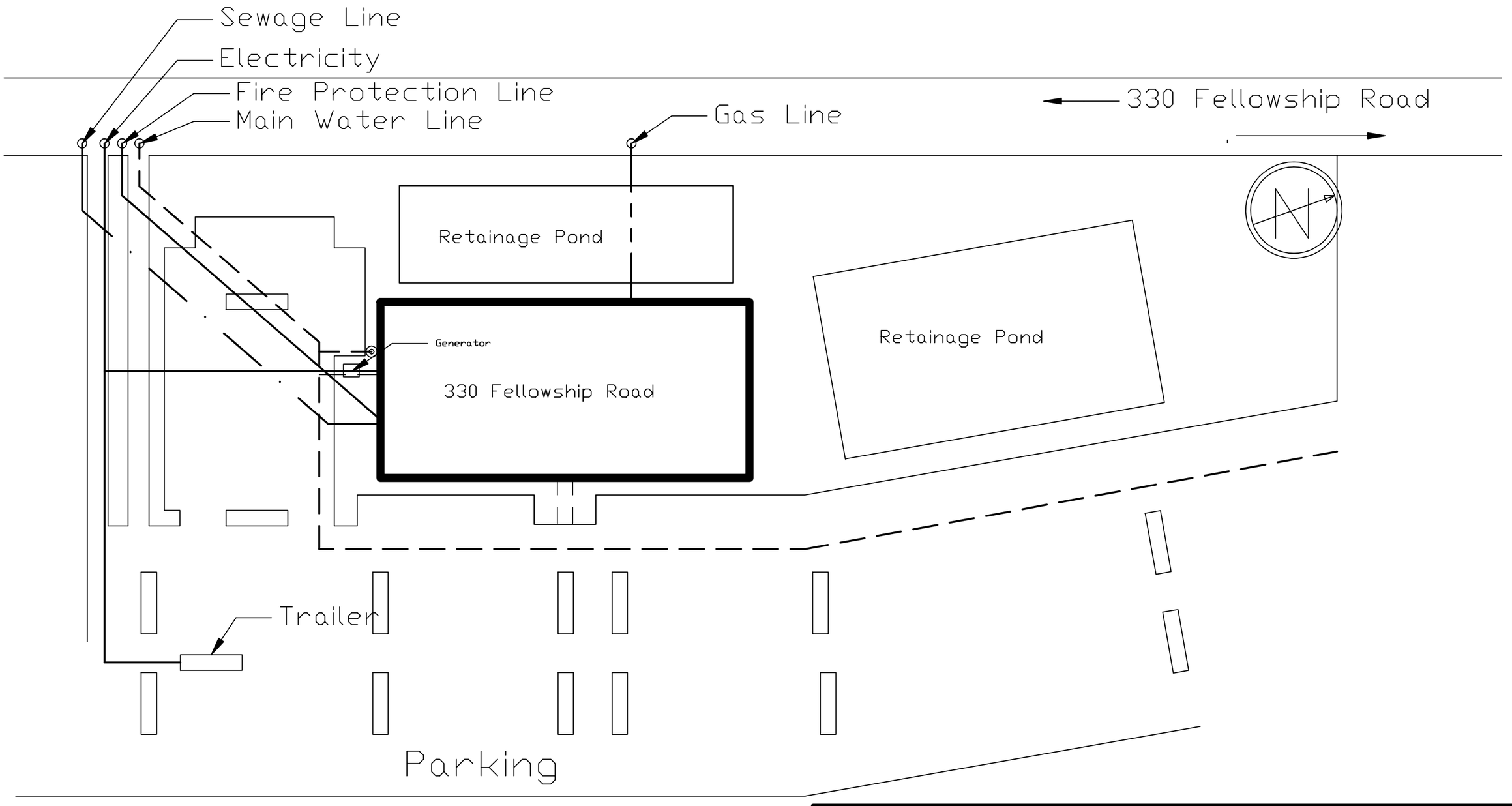
## Site Plan

The following 3 pages will show the basic site plan for 330 Fellowship Road. The only places that have some straight lines are the Roads, the face of the building, and the edges of the parking lots.

For the first plan, it shows the basic utilities into the building, including two sets of water main lines, a sewer line, electricity and gas lines.

The second plan shows the general regions of the site, including sidewalks and developed landscape, retainage ponds, parking lots and streets. The developed landscape was designed to try to maximize Leed Points. When completed, the several building complex belonging to Liberty Property Trust will have several miles of Public Available sidewalks. Aesthetics are a huge factor for the retainage ponds. They will be landscaped, and have several fountains and agitators in them.

The third plan shows an isometric view of 330 Fellowship Road site, as well as the immediately adjacent site of 350 Fellowship Road. It also shows the relative heights of the two buildings. 350 Fellowship Road has twice the footprint of 330, but only a single floor.



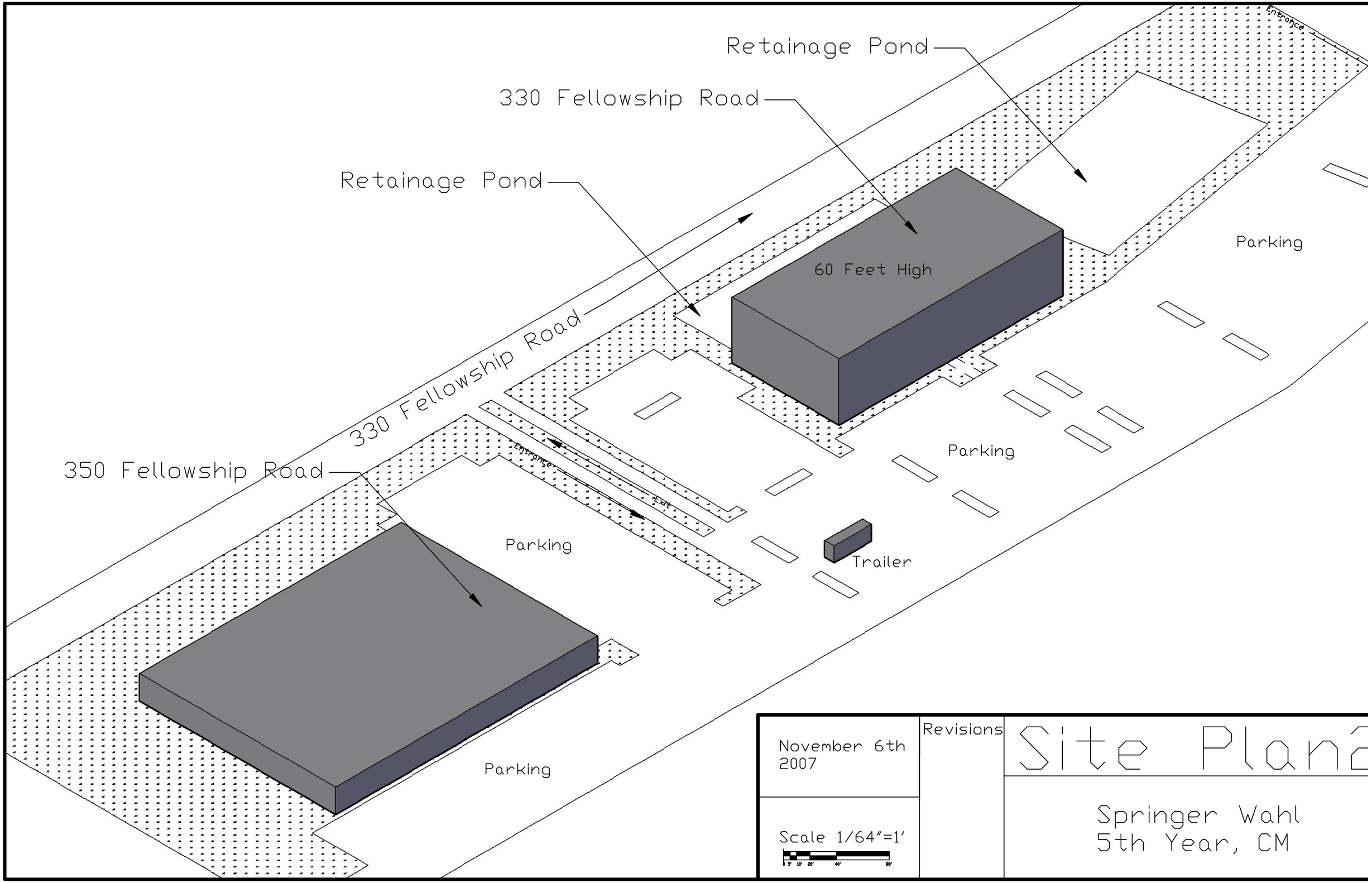

November 6th
2007

Scale 1/64"=1'

Revisions

# Site Plan1

Springer Wahl
5th Year, CM




November 6th
2007

Revisions

# Site Plan

Scale 1/64"=1'

Springer Wahl
5th Year, CM

# Local Conditions

With the soil generally being of a decently high bearing capacity, there aren't any special construction techniques needed. The standard foundation type is a shallow foundation with edge beams and a slab on grade, unless the building needs a basement for some sort of use. 330 Fellowship Road has no basement. If this is the case, then the only worry is a relatively shallow water table, due to New Jersey practically being an island.

All the standard construction methods can be used. However, on this block, Liberty Property Trust tried to mimic their direct competition's building by using a steel frame with concrete slabs. Liberty has matched the architecture of their competition's buildings in the bottom center faces with brick and window exterior. But they clearly outperform the other buildings with an attractive glass curtainwall surrounding the brick areas.

# Client Information

The client for this building is Liberty Property Trust. Liberty will take the shell and core building and lease it out to various other clients looking for a new location, an upgrade or to start up a brand new business. A lot of this leasing is done through a third party Realtor; however some will be leased out themselves. As of this moment, Liberty hasn't leased any of the property.

Liberty Property Trust has been in this kind of business for over 30 years. They have corporate offices throughout most of the Mid-Atlantic, through some of the western great lake states and a couple offices in Florida, Texas and Arizona. On top of all of that, they also have a corporate office in the United Kingdom. In all of these regions, Liberty has many more buildings they are leasing out and even more are being designed and built all the time. Liberty does $7.0 billion every year with some 2,100 happy clients. Liberty is also a publicly traded company on the New York Stock Exchange.

# Project Delivery Systems

The project delivery system is shown in this chart:

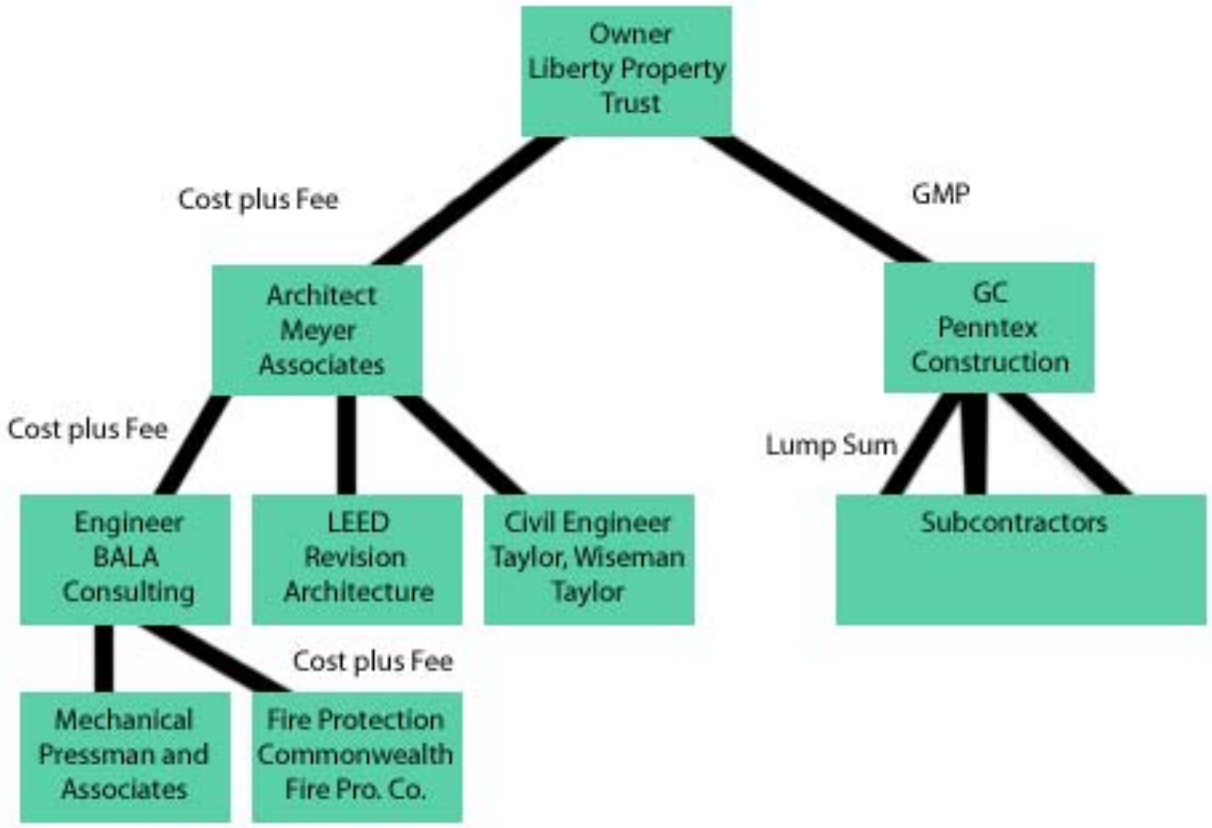



Figure 1: Delivery System

The contract types are basic for a Design Bid Build project delivery system. The Owner has a Cost plus Fee contract with the Architect, Meyer Associates. There is a Cost plus Fee contract type for all of the subcontracts below the Architect.

There was a GMP contract type between Liberty Property Trust and the GC, Penntex Construction. Penntex Construction has all Lump Sum contracts to the subcontractors.

I only have a few contacts within the companies. These contacts are Jim Sunday, the Vice President of Construction for the region; Jenny Schow, his secretary; and Chris Corr, the owner's representative watching over the building.

## Project Staffing Plan

The following chart is a basic layout of the management staff for the 330 Fellowship Road project.

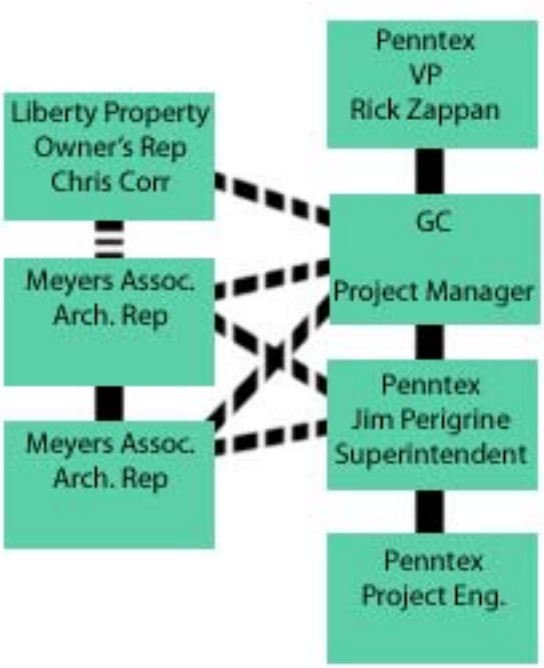



Figure 2: Project Staffing Plan

Jim Sunday follows all the projects being built, being designed or under other stages of development throughout his region. Chris Corr acts as the direct owner representative for this project and for the general development of Liberty Walk at East Gate. He is on site, as well as working to purchase the warehouse directly behind 330 Fellowship Road.

I have not yet met the Project Manager for Penntex Construction. The Superintendent of 330 Fellowship Road is Jim Perigrine.