



Technical Report 2

Cost and Schedule Analysis

This report analyzes all of the significant features of Atrium Medical Corporation's new headquarters facility and determines how they affect this project's execution.

→ [Executive Summary] ←

This report has been compiled to analyze the significant features that affect how the construction of Atrium Medical Corporation's Headquarters facility is executed. The key components examined throughout this project include; detailed project schedule, full detailed estimate of the structural system, assemblies MEP estimate, general conditions estimate and leading industry practice valuation. These features will be discussed throughout the report in greater detail, with their affects to the projects construction.

Atrium Medical Corporation has purchased a 2 Million square foot site that is already developed and inhabited by an existing building. The site was purchased from Fidelity Investments and is intended to act as Atrium Medical's new headquarters facility. Atrium Medical intends on expanding the already two stories, 100,000 square foot building, that exists on site. The expansion will be in the form of a 101,200 square foot, one story multi-use facility, that will be used to house a manufacturing department, warehouse area, R&D office and engineering shops. This \$17.4 Million project has begun construction on May 20th, 2013 and is set for completion on June 4th, 2013.

Within this report you will find an estimate of the general conditions cost, which is compared with the projects actual general conditions cost. The difference between the two values is minimal, at about \$25,000, a little less than 0.5% of the total cost. The error represented here is due to the fact that many of the general conditions items supplied by Hutter Construction were provided with lump sum fees. These tasks, as they do not generally span the entirety of the project, are usually paid for as a lump sum, and since RS Means quantifies items based on specific units, the estimate may be off in some areas. The general conditions items refer to the specific components that help aid Hutter Construction mobilize on site and set forth to begin construction.

This project is divided into two phases of construction that mostly separate the building's erection into foundations & superstructure and building enclosure & interior system. Within this report you will find a detailed estimate of the foundations and superstructure along with an assemblies estimate of the MEP systems. These estimates are then compared with the square foot estimate that was calculated in technical report 1 and the actual project costs. The differences in these values are analyzed to determine any error that may have occurred in the estimation process.

Atrium Medical's new headquarters is designed as a structure that's form is centered around functionality. With that being said, this building is not being designed to achieve any form of a LEED Certification, but is however, gaining appreciable efforts towards a sustainable design. A LEED checklist has been compiled for this building to help visualize areas where sustainability efforts are being implemented. Hutter Construction strives to provide its clients with a high quality product that is designed to last, even though it may not meet LEED certification, the application of sustainable design within this structure is enough to provide Atrium Medicals employees with the comfort they deserve, all the while improving energy efficiency throughout the building.

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→[Project Schedule Summary]←

Atrium Medical Corporation's Headquarters facility was begun on February 11th, 2013 and is intended for completion June 4th, 2014, just under a year and a half duration. This 101,200 square foot, one story addition has a compiled schedule of over 115 tasks that are separated into four phases that span the projects life. These phases include; Design/Engineering/Estimating, Preconstruction, Phase 1 Construction & Phase 2 Construction. The table provided below shows the various durations and start/finish dates of each of the phases listed above.

Detailed Project Schedule Summary

Phases of Construction	Start Date	Finish Date	Dur. (Days)
Design/Engineering/Estimation	11-Feb-13	10-Sep-13	149
Preconstruction	19-Mar-13	17-Oct-13	149
Phase 1 Construction	13-May-13	28-May-14	265
Phase 2 Construction	18-Sep-13	4-Jun-14	182

Table 1: Detailed Project Schedule Summary

Design/Engineering/Estimating:

This phase of construction holds the least amount of time, with 147 days total duration, but stands to be the most crucial component in developing a construction project. The first task to be completed during this phase was the structural system design. This system was designed by Lavallee Brensinger Architects, who worked with Foley Buhl Roberts (structural engineer) to work out logistics. This played a key role in deciding the many various factors around the other system's designs. At this point in the design phase, Hutter Construction is able to evaluate and estimate all of the components involved in the structure, which gives them the ability to determine what types of systems will be implemented within the building, the façade design feasibility and what limitations will be present prior to construction. From here the schedule delves into the bidding process, allowing Hutter to award subcontracts to the most competent contractor. Following the design of the structure is the interior floor plan layout and approval. Also designed by Lavallee Brensinger Architects, the interior layout needed to gain approval from the owner, Atrium Medical Corporation, to ensure that the plan met their specifications and design requirements. Once approved, the full interiors design as well as existing building renovation design is pushed towards completion.

As the building superstructure design is nearing a finish, the mechanical and electrical system designs are proposed. As mentioned in Technical Report 1, Hutter Construction has maintained a working relationship with Gate City Electric and Johnson & Jordan, the electrical and mechanical engineers. Based on this relationship, these two companies are contracted under design-build, and are therefore completely responsible for all design efforts. Based on this, the mechanical and electrical designs during this phase are only rough and are not yet finalized. These designs will only be used to visualize the systems for interpretation and estimation. Also within this phase are the evaluations of bids and establishing a GMP with the owner. Once completed, the notice to proceed is presented and the subcontracts are awarded to conclude this phase of the project.

Preconstruction:

This phase of the project has duration just two days longer than the Design/Engineering/Estimation phase, with 149 days total span. This division of the project begins a little over a month after the start of the Design/Engineering/Estimating phase. During this phase, the primary tasks performed are the development of the shop drawings to be prepared prior to construction. Also the applications for foundation and building permit are to be submitted and approved, which are critical to proceed into construction. Without the necessary permits approved by the town of Merrimack, NH, Hutter Construction does not have the permission to begin construction. Also involved within this phase is the fabrication of all of the necessary building components that require preconstruction preparation. By having the materials for this project prepped prior to construction, their delivery to the site can be easily arranged and provides an adequate flow for the project schedule.

Phase 1 Construction:

This phase of construction stands to be the longest, with duration of 265 days. Construction of this project is set forth to begin in late May of 2013. The primary tasks developed throughout this phase are mobilization, site preparations, excavation, foundation constructions and the construction of the superstructure. During the site preparations, Hutter is required to “demolish” certain components existing on the site, as well as preserving some on-site trees. The only excavation on-site will be for the strip and spread footings since the slab is to be poured on grade. The foundation construction is intended to take just under one month to complete. One unique feature on this project, in relation to the foundation construction, is the reconstruction of a portion of the foundation to the existing building. This part of the existing building used to be the kitchen area that was capped with a precast concrete plank roof system. Hutter decided that the precast planks were not a suitable substructure to the slab that was to be poured above for the manufacturing area in the new addition (Shown in Figure 1 to the right). Hutter decided to remove the planks and pour extra foundation on top of the existing walls as shown in Figure 2 to the right. This extra concrete is used to support the new steel framed deck with metal decking that will act as the substructure to the 4” concrete slab.

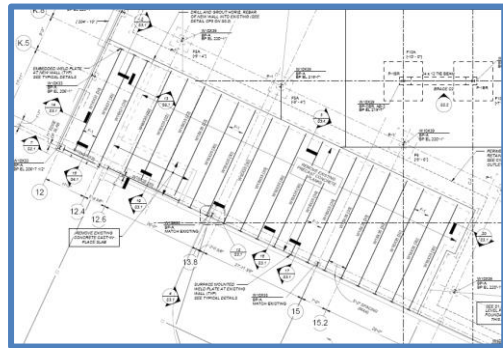


Figure 1: Structural Steel Layout at Kitchen Area of Existing Building

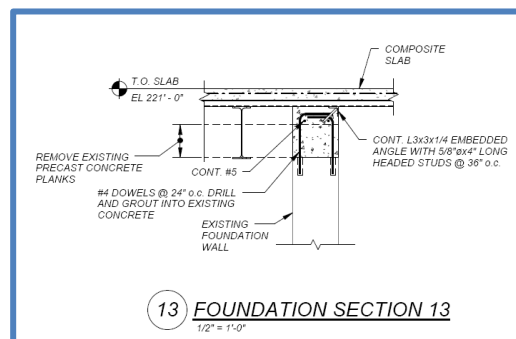



Figure 2: Typical Detail of New Foundation Wall Poured on Top of Existing Foundation

Following the construction of the foundation system, the structural steel is to be erected. The steel will be erected in progression beginning with the steel columns, then onto the lateral and horizontal bracing, then wide flange beams and roof joists. After this, the metal floor and roof



decking will be fastened to the steel which will also help to provide lateral support to the structure. The final tasks for this phase include the prep work and installation of the roof drainage system, and also the final site landscaping and paving. The final landscaping and paving will be done at the same time of the interior building systems installation, that way the site will be prepared for building turnover as soon as possible.

Phase 2 Construction:

This is the final phase of construction with duration of 182 days. During this phase, all of the interior finishes and interior building systems will be furnished. Also the interior utility excavation will be performed and the slab on grade and slab on deck will be set. The plumbing and electrical utilities will be fed under the building and come up through the slab on grade. The interior building systems installation will progress as follows; Sprinkler, Plumbing and Mechanical will begin at the same time and Electrical will begin two weeks after the start of the other systems. The reason these systems would be installed at the same time is to cut back the schedule duration, and it also allows in field coordination between the various systems. Prior to the installation, the mechanical engineer has developed a 3D model and input it into clash detection program to determine the issues that may have appeared had the design been brought to the field. With this technology, they can view the potential conflicts and change them before any physical work is done. After all of the interior systems are installed and finished, final testing is ordered by the owner and substantial completion is awarded.

Please reference Appendix A for the complete detailed project schedule.



→[Detailed & Assemblies Estimate Summary]←

For technical report 1, a square foot cost estimate was compiled for this building. The costs were generated based on the typical usage of this building and its relative size in square footage. The facility being constructed for Atrium Medical is designed to be occupied for multiple uses (i.e. office space, manufacturing, warehouse/storage, common area, research & development, engineering shops). Since RS Means only develops square foot estimates based on one type of building use, the data collected for cost information is meager at best. In the table below you can see the cost differences between the detailed/assemblies' estimates and the square foot cost estimates.

Detailed/Assemblies Estimate vs. Square Foot Estimate				
Type of Estimate	Structural Steel	Concrete	Electrical	Mechanical/Plumbing
Detail Estimate	\$1,654,000.00	\$624,000.00	--	--
Assemblies Estimate	--	--	\$1,456,000.00	\$5,827,000.00
Square Foot Estimate	\$934,500.00	\$708,000.00	\$1,268,000.00	\$2,949,000.00
Difference	\$719,500.00	\$84,000.00	\$188,000.00	\$2,878,000.00

Table 2: Detailed/Assemblies Estimates vs. Square Foot Estimates

It's easy to see that there are extensive differences between a few of the systems estimated values. The structural steel square foot cost is \$719,500 lower than the detailed estimate cost of \$1,654,000. The reason this variation in costs exists is primarily because RS Means square foot estimate criteria, as mentioned before, is based on only one type of occupancy use. For this calculation, the building type was deemed overall as a factory, as the building is divided primarily into manufacturing and warehouse, with manufacturing as the larger portion. Also, the square foot estimation process only takes into consideration structures that are a maximum size of 60,000 SF for this building type, so values had to be linearly interpolated to meet this project size of 101,200 SF.

The mechanical/plumbing estimate shows the greatest difference in cost at \$2,878,000. This cost difference is due to the fact that RS Means doesn't take into consideration all of the intricate components of the actual mechanical system. This project incorporates (8) roof top air handling units and (4) roof top single zone units. This building implements a more elaborate mechanical system than what would typically be assumed for a factory. A square foot estimate for a factory would only provide costs for a generic mechanical system that may only supply a few zones. Since the mechanical system for Atrium Medical Corporations Headquarters is so extensive, the assemblies estimate of \$5,827,000 is a relatively accurate representation to the actual systems cost. The cost comparison of detailed/assemblies' estimates and actual costs can be seen in the table below.

Major Systems Cost Comparison

Type of Estimate	Detailed Estimate Costs		Assemblies Estimate Costs	
	Structural Steel	Concrete	Electrical	Mechanical/Plumbing
Estimated Costs	\$1,654,000.00	\$624,000.00	\$1,456,000.00	\$5,827,000.00
Actual Costs	\$1,332,000.00	\$600,000.00	\$1,685,000.00	\$6,063,000.00
Difference	\$322,000.00	\$24,000.00	\$229,000.00	\$236,000.00

Table 3: Detailed/Assemblies Estimate Costs vs. Actual Costs

As you can see in the table above, the differences between estimated and actual costs don't differ as severely as they did in Table 2 above. The greatest cost difference exists between the structural system costs. The primary reason for this variation in cost of \$322,000 is because the unit costs for structural steel beams are only available for certain types of beams. The steel beams that are located in the building but aren't represented in the RS Means documents specifically had to be generated based on other similar beam types.

The next largest difference in cost is between the mechanical systems estimated and actual values at \$236,000. Based on the total cost of this system, this difference is minimal, but may be due in particular because of the specific components involved in the actual construction. The mechanical system has been estimated using assemblies cost information, which is similar to the square foot estimates, as it is based on only one building occupancy type. Once again the building was estimated as a factory, not taking into consideration the actuality of multiple occupancy types. With the assemblies estimate, the difference in cost is most likely due to the fact that the systems are designed based on the square footage of floor area and don't take into consideration the multiple pieces of equipment involved in the actual system installation.

Finally, the electrical system has been estimated at \$1,456,000, and is only \$229,000 greater than the actual cost. The electrical system cost has been computed using assemblies estimates as well, which doesn't seem to take into consideration some of the electrical system components of the actual systems installation. The system calls for a 3000A breaker that acts as the middle man between the main transformer and the panel boards throughout the building. Breakers are only sized up to 2000A in RS Means, which may account for some of the cost difference. Also, there is also (8) 75kVA transformers located throughout the building that aren't available in RS Means. After doing some research, transformers of this magnitude range anywhere from \$5,000 to \$10,000 and would add a great amount of value to the estimate.

For detailed & assemblies estimate information, please reference Appendix B & C.

→[Site Layout Planning Summary]←

Unlike many construction projects that are divided into various phasing schedules based on the how the building is constructed, the phases of this project change depending primarily on the layout of the site. The site for Atrium Medical Corporation's new facility is divided into three phases: Demolition, Phase 1 Construction and Phase 2 Construction. Each of these phases is depicted on the 3-site layout drawings found in Appendix D.

Demolition:

When the Atrium Medical Corporation had occupied the site, they intended on only developing a fraction of the site and made efforts to preserve some of the features of the existing conditions. Some things from the existing site to be preserved include; trees, irrigation/wetlands, land slopes, paving etc. The demolition involved on the site is minimal such as storm water drainage lines and headwalls, and doesn't require the deconstruction of any large structures. The only structure being removed is the small gazebo located on the plan northeastern side of the existing building. The only reason this small wooden porch is being removed is because it conflicts with the new additions building footprint. Likewise, mostly everything else with the intentions of being demolished or removed from the site lies within the building footprint or area of pervious surface to be constructed (paving, sidewalks, curbs). Much of the paving on site will be left alone, as it would be too costly to repave the entire pavement section and it offers a large array of parking spaces. The new pavement will be laid in such a fashion that it allows for access around the new building to the loading dock area, then provides and exit road out onto Greens Pond Road.

Phase 1 Construction:

During this phase of the project, Hutter Construction will begin with the removal of particular paving sections to begin the development of the building. Some of the components being added to the site at this time include; erosion control measures, silt fences, material storage areas, construction fencing and stabilization matting at construction entrance. This also implies that Hutter Construction will begin mobilization on site, and all the necessary general conditions will be implemented. One trailer will be used on site as the office area, which will be located on the existing concrete helicopter pad. During this phase, the construction of the foundations and superstructure will also commence, but not before Hutter contacts Dig Safe to determine the location of the underground utilities. One mobile crane, Figure 3 to the right, will be utilized on site. The main reason it is not depicted on the site layout plans, is because it is stationary and is free to move about the site as the steel is being erected.



Figure 3: Telescoping Mobile Crane used on site

Phase 2 Construction:

This is the final phase of construction where the enclosure and interior systems of the new addition will be installed. After the erection for the steel structure, the mobile crane will be removed from the site as it is no longer needed. During this phase, the section of pavement that had originally been removed will be re-paved with new boundaries for a different purpose. The new paving will incorporate some additional parking for employees and additional handicap parking. Also some of the paving will be used as an access road around the building for loading and unloading purposes. Alongside mostall of the new pavement and existing pavement, new sidewalks will be constructed for pedestrian access. For the final phase of the project, testing and cleanup will be required and the removal of all the construction fences, temporary toilets, site trailer and other general conditions items. Once the site is cleaned and prepped for turnover, the building will require a final commissioning from an outside party and substantial completion will be awarded.

For site layout drawings, please reference Appendix D.

→[General Conditions Estimate Summary]←

The general conditions for this project were carried out by the CM Firm, Hutter Construction Corporation. Most of these costs were originally determined using lump sum fees, and thus had to be completely estimated using RS Means information. As you can see in the table below, the total general conditions cost in comparison to the estimate is about a \$25,000 difference. The reason this difference presents itself is primarily because the estimation was done using specific units rather than the actual lump sum fees that weren't initially provided. RS Means compiles nationwide averages that may or may not be an accurate representation of the actual costs of the general conditions for this project.

General Conditions Cost Comparison		
	Costs	% Of Project
Actual Cost	\$691,110.00	3.97%
Estimated Cost	\$665,870.00	3.83%
Difference	\$25,240.00	

Table 4: General Conditions Cost Comparison

The total cost of the general conditions, both estimated and actual, for the entire project are roughly 4% of the total projects cost, which is low when compared to the typical job average of 6%. This may be simply due to the face that Hutter Construction has the assets to provide some of the materials or equipment that would normally add to the general conditions cost. The staffing costs for this estimate are determined to be 27% of the total estimated cost. Generally, Staffing costs will range between 20% and 40% of the total general condition's cost. These costs will typically vary based on region and size of construction project. The rest of the general conditions costs are generated from common items such as; testing, insurance, temporary utilities, site trailer, toilets etc.)

For detailed general conditions estimate, please reference Appendix E.

→[Constructability Challenges]←

Challenge #1: Dock Shelters

Description:

The detail at the loading docks, shown below, does not provide a means for fastening and hanging the dock seals/shelters. Therefore, Hutter Construction needed to collaborate with the architect (Lavallee Brensinger Architects) as well as the structural engineer (Foley Buhl Roberts & Assoc. Inc.) in order to develop a system to properly fasten these shelters. Currently in the drawing, the detail at the dock shelters depicts only c-channel metal stud framing, which is used as the support structure around the door. This, while adequate for loading dock door framing, is not a feasible support system for dock seals/shelters.

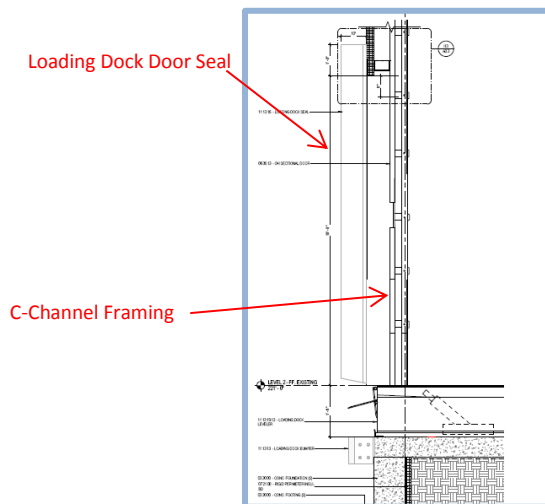


Figure 4: Detail at Loading Dock



Figure 5: Typical Loading Dock Shelter

Solution:

In order for the dock shelters to be properly mounted, they require wood blocking as a mounting surface, which in turn needs to be fastened to the building directly. Hutter Construction met with Lavallee Brensinger and Foley Buhl Roberts and devised a plan in which they take steel angles and physically mount them to the frame of the loading dock doors. The steel angles are to be welded to the frames of each loading dock door. From here the wooden blocks used for mounting the dock shelters are to be bolted to the steel angles. By doing so, this then creates the necessary mounting surface for the dock shelters. This method was ultimately the most efficient system as it was not too costly and took only a minimal amount of time to fully develop this solution. The angles will be welded and attached at the same time the framing for the loading dock doors is erected, which will only add minimal time to the project schedule, if any time at all.

Challenge #2: Insulated Metal Wall Panels

Description:

When developing the design for this building, the detail for how to hang and mount the insulated metal wall panels on the exterior had not been thoroughly developed. Hutter then collaborated with the architect and structural engineer to devise a plan on how to properly hang the insulated metal wall panels around the enclosure of this building. There were a few different options that were proposed to help find the best solution to this issue.

Solution:

The first option proposed was to frame the entire enclosure of the building using c-channel, lightweight metal stud framing. The insulated metal wall panels would then be mounted directly to the metal stud framed wall. When determining the logistics of this plan, Hutter first had to take into consideration every detail of the installation method to accurately develop a cost for this type of system. Not only were the costs of lightweight framing compiled, but also the amount of time and efficiency of this system. The next proposed system would involve adding smaller, intermediate columns in between the existing wide flange structural columns. These would act as the primary structural supports for horizontal HSS beams, which in turn would be used as a mounting surface for the metal panels, offsetting them from the superstructure. This became the preferred and chosen method for mounting the insulated metal wall panels as its benefits ultimately outweigh those of the previous system discussed. The installation time of this system would be significantly lower as it requires less material and can be mostly constructed during the installation of the structural steel.

Another system had been chosen, but was only applicable in the warehouse area. Hutter wanted to look into the cost and efficiency of constructing a CMU wall along the perimeter of the warehouse area. The overall cost of this system choice would ultimately increase the total cost of the chosen mounting method. This system would also not provide much more, if any at all, thermal efficiency for the warehouse. It was apparent that the only positive feature of this system is that the use of CMU construction in the warehouse implies that it is more durable against large machinery related accidents. Using value engineering, Hutter construction determined that the most feasible option was to go with the originally decided system of horizontal HSS mounting, as it was the cheapest method and the benefits seem to outweigh those of the other systems. Since these issues were dealt with during the design phase, the time allotted for construction was predetermined and does not effect the project completion time

Challenge #3: Kitchen Area Precast Roof

Description:

When Atrium Medical Corporation had purchased the site from Fidelity Investments; their intentions were to construct a new addition that would be flush with the existing two-story building. In order to do this, a location needed to be established that would allow for simple deconstruction of part of the existing building, and simple construction of a bridging area that will bind the two structures together. The location most suitable for expansion of the existing building ended up being on the plan northeastern side of the old structure. Beneath the soil, at this point, there exists a portion of foundation where the kitchen used to be for the original building. The roof for this kitchen was made from precast concrete planks. The primary cause for concern here was how to properly cover the old kitchen area with poured concrete slab, that way the kitchen area could still be used and unaffected by the new construction.

Solution:

Hutter took this information into consideration and developed a couple of options to help mitigate this problem. This first proposal was to use the existing concrete planks as a substructure for the soon to be poured slab. This posed a problem because the top of the planks was as a depth greater than the intended pour level of the 4" slab on grade. In order to fix this, some fill material would need to be provided between the bottom of the slab and the top of the planks. Another option was to design and construct a new roof system for the kitchen using wide flange beams and metal decking as a base for concrete topping. This also posed an issue, as the foundation walls were too low to support a steel framed deck. In order to fix this, concrete would need to be formed and poured on top of the existing foundation walls to provide an adequate level that the steel beams could rest on. Between these two options, Hutter decided to go with the steel framed deck. Their reason for choosing this method is because there were no unforeseen conditions that couldn't be managed in the field, and while it was the more costly method, ultimately provides a more consciously safe environment. Also after excavating and pulling up the existing concrete planks, Hutter found that the planks were being supported, building side, by a steel angle that seemed to be on the brink of collapse. Had they chosen the first method the possibility of an accident and lawsuit would have been great.

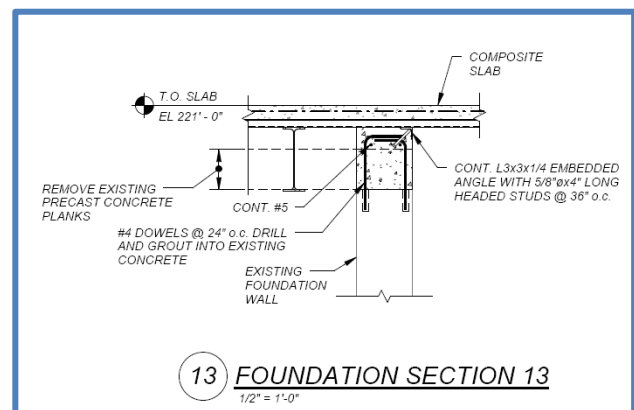


Figure 6: Structural Steel Layout at Kitchen Area of Existing Building

→[Leading Industry Practice Evaluation]←

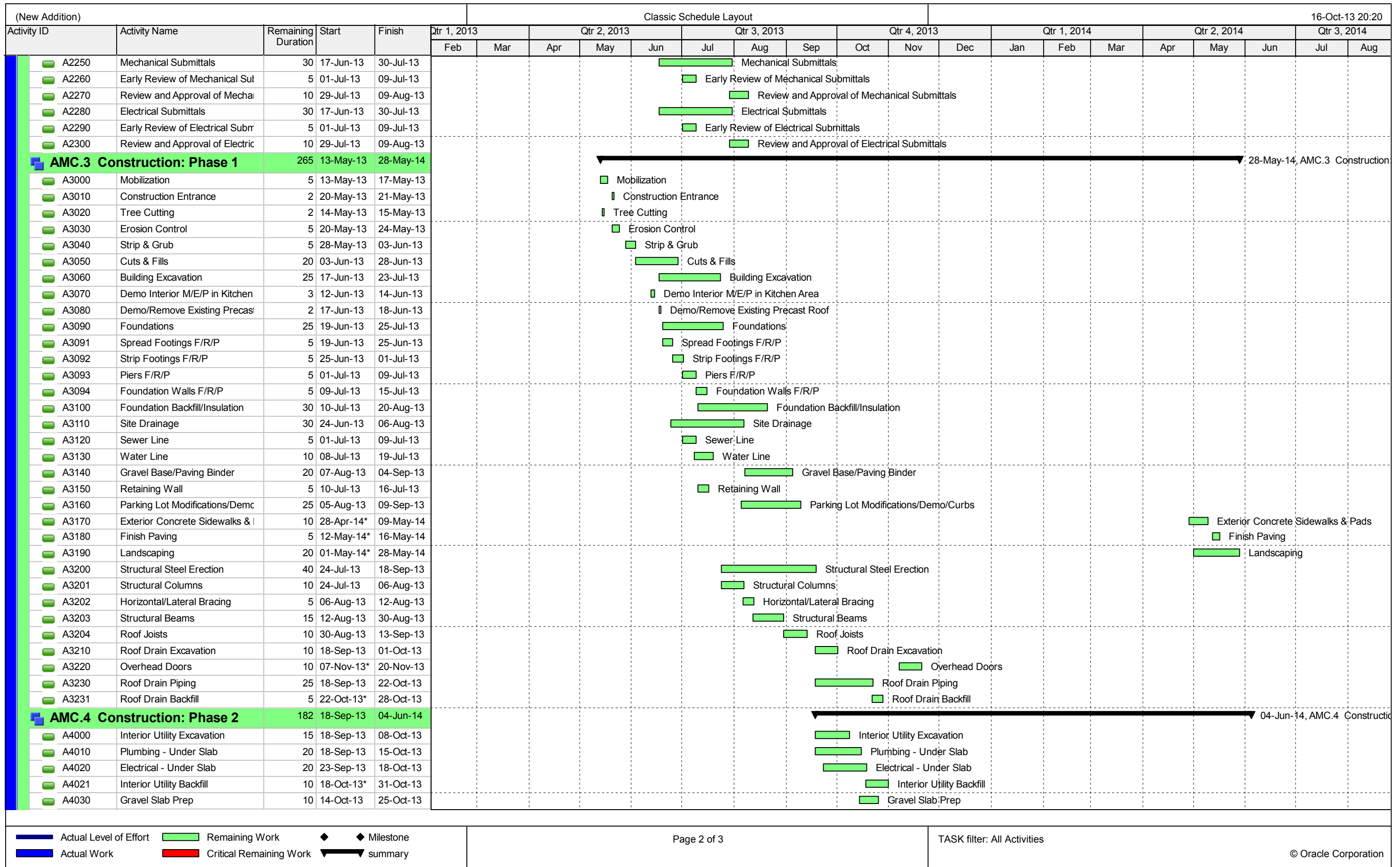
The new addition at 40 Continental Boulevard in Merrimack NH is to be constructed for the design and manufacturing of medical equipment. Atrium Medical Corporation is planning on staging its new headquarters in this location, and hired Hutter Construction as the CM Firm to carry out this project. The design intent for this structure was to develop a building that would house the staggering 700 employees at Atrium Medical. Aside from this, the design is purely based on form follows function, meaning that this structure is intended on being used for multiple purposes. Within this new addition, Atrium plans to house its manufacturing, warehouse/storage, research and development, engineering shops and office space, all under one roof.

This building will be constructed on an already developed site, one that had been purchased from Fidelity Investments. The addition will be tied into an existing structure, which will also be used for office space as well as storage and meeting areas for potential clients. Having all of this in mind, Atrium Medical wanted to develop a facility that met all of these requirements. As for sustainability, Hutter construction proposed incorporating some building elements that would provide Atrium with an energy efficient building. While this building is attempting to achieve efficiency through various means, it is not a LEED Certified building.

After completing the LEED 2009 checklist, I found that only 26 points were met for this structure, which is not enough credits to achieve even a certified rating. The certified rating credit ranges are as follows: Certification 40-49, Silver 50-59, Gold 60-79 and Platinum 80-110. While it is possible for Atrium to obtain a LEED Certified building, the desire to do so was not great. This facility will act primarily as a distribution center, where the products that they develop will be designed, manufactured and shipped to hospitals around the nation. Had this been a public domain where people from outside the company were constantly passing by and seeing this structure, a LEED Certification might have been appropriate. Instead Atrium decided to have Hutter develop a building that would accompany all of the needs of their employees while remaining to have some sustainability, to benefit Atrium throughout their company's lifespan. Some of the sustainable features being implemented into this project include, but are not limited to: Exceeding code required R-Value insulation in the roof, all motors and pumps are to meet the PSNH rebate program, continuous air/vapor barrier from under the footings up through to the roof, elimination of many thermal transfer points throughout the building etc.

For LEED Certification Checklist, please reference Appendix F.

Activity ID	Activity Name	Remaining Duration	Start	Finish	Classic Schedule Layout																		
					Qtr 1, 2013		Qtr 2, 2013			Qtr 3, 2013			Qtr 4, 2013			Qtr 1, 2014			Qtr 2, 2014			Qtr 3, 2014	
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
AMC (New Addition)		335	11-Feb-13	04-Jun-14	▶ 04-Jun-14, AMC (New Addition)																		
AMC.1 Design/Engineering/Esti		147	11-Feb-13	10-Sep-13	▶ 10-Sep-13, AMC.1 Design/Engineering/Estimating																		
A1000	Approval of Floor Plan	1	15-Apr-13	15-Apr-13	I Approval of Floor Plan																		
A1010	Architectural - Complete Shell I	21	06-May-13	04-Jun-13	Architectural - Complete Shell Design																		
A1020	Architectural - Full Design	60	06-May-13	31-Jul-13	Architectural - Full Design																		
A1030	Mechanical Design	50	06-May-13	17-Jul-13	Mechanical Design																		
A1040	Electrical Design	50	06-May-13	17-Jul-13	Electrical Design																		
A1050	Peer Review - 50% Documents	10	10-Jun-13	21-Jun-13	Peer Review - 50% Documents																		
A1060	Peer Review - 90% Documents	5	08-Jul-13	12-Jul-13	Peer Review - 90% Documents																		
A1070	Structural Design Complete	1	11-Feb-13	11-Feb-13	I Structural Design Complete																		
A1080	Solicit Structural/Foundation/Re	15	12-Feb-13	04-Mar-13	Solicit Structural/Foundation/Rebar Bids																		
A1090	Evaluate Struc./Rebar Bids & A	10	05-Mar-13	18-Mar-13	Evaluate Struc./Rebar Bids & Awards																		
A1100	Solicit Bids for Building Shell Co	15	04-Jun-13	24-Jun-13	Solicit Bids for Building Shell Components																		
A1110	Evaluate Bids	3	25-Jun-13	27-Jun-13	Evaluate Bids																		
A1120	Notice to Proceed	4	28-Jun-13	03-Jul-13	Notice to Proceed																		
A1130	Interior Building Estimate	15	29-Jul-13	16-Aug-13	Interior Building Estimate																		
A1140	Evaluate Bids & Establish GMP	5	19-Aug-13	23-Aug-13	Evaluate Bids & Establish GMP																		
A1150	Notice to Proceed	5	26-Aug-13	30-Aug-13	Notice to Proceed																		
A1160	Award Subcontracts	5	03-Sep-13	10-Sep-13	Award Subcontracts																		
AMC.2 Preconstruction		149	19-Mar-13	17-Oct-13	▶ 17-Oct-13, AMC.2 Preconstruction																		
A2000	Foundation Permit Application/F	21	21-Mar-13	18-Apr-13	Foundation Permit Application/Review																		
A2010	Submit for Building Permit Appli	1	08-Jul-13	08-Jul-13	I Submit for Building Permit Application Review																		
A2020	Embed Shop Drawings	10	19-Mar-13	01-Apr-13	Embed Shop Drawings																		
A2030	Fabricate & Deliver Embeds	10	16-Apr-13	29-Apr-13	Fabricate & Deliver Embeds																		
A2040	Structural Steel Shop Drawings	20	02-Apr-13	29-Apr-13	Structural Steel Shop Drawings																		
A2050	Joist & Deck Shop Drawings	10	19-Mar-13	01-Apr-13	Joist & Deck Shop Drawings																		
A2060	Review and Approval Structural	15	02-Apr-13	22-Apr-13	Review and Approval Structural Shop DWGs																		
A2070	Structural Steel Fabrication	25	07-May-13	11-Jun-13	Structural Steel Fabrication																		
A2080	Reinforcing Steel Shop Drawing	15	26-Mar-13	15-Apr-13	Reinforcing Steel Shop Drawings																		
A2090	Rebar Shop Drawing Review/A	15	16-Apr-13	06-May-13	Rebar Shop Drawing Review/Approval																		
A2100	Fabricate & Deliver Rebar	10	14-May-13	28-May-13	Fabricate & Deliver Rebar																		
A2110	Composite Panel Shop Drawing	20	08-Jul-13	02-Aug-13	Composite Panel Shop Drawings																		
A2120	Review and Approval of Shop I	10	01-Aug-13	14-Aug-13	Review and Approval of Shop Drawings																		
A2130	Manufacture & Deliver Panels	20	15-Aug-13	12-Sep-13	Manufacture & Deliver Panels																		
A2140	Cold-Form Metal Stud Shop Dr	20	08-Jul-13	02-Aug-13	Cold-Form Metal Stud Shop Drawings																		
A2150	Review and Approval of Cold-F	15	01-Aug-13	21-Aug-13	Review and Approval of Cold-Form DWGs																		
A2160	Order Cold-Form Material	10	22-Aug-13	05-Sep-13	Order Cold-Form Material																		
A2170	Aluminum/Glazing Shop Drawir	25	08-Jul-13	09-Aug-13	Aluminum/Glazing Shop Drawings																		
A2180	Review and Approval of Alum./C	15	08-Aug-13	28-Aug-13	Review and Approval of Alum./Glazing DWGs																		
A2190	Fabricate Windows & Entrance	35	29-Aug-13	17-Oct-13	Fabricate Windows & Entrances																		
A2200	Fire Protection - Shop Drawing	20	08-Jul-13	02-Aug-13	Fire Protection - Shop Drawings/Submittals																		
A2210	Review and Approval of Fire Pr	10	01-Aug-13	14-Aug-13	Review and Approval of Fire Protection Submittals																		
A2220	Fabricate Sprinkler Piping	20	15-Aug-13	12-Sep-13	Fabricate Sprinkler Piping																		
A2230	Roof Drainage Submittals	10	08-Jul-13	19-Jul-13	Roof Drainage Submittals																		
A2240	Review and Approval - Roof Dr	10	18-Jul-13	31-Jul-13	Review and Approval - Roof Drainage Submittals																		



(New Addition)					Classic Schedule Layout																	16-Oct-13 20:20		
Activity ID	Activity Name	Remaining Duration	Start	Finish	Qtr 1, 2013			Qtr 2, 2013			Qtr 3, 2013			Qtr 4, 2013			Qtr 1, 2014			Qtr 2, 2014			Qtr 3, 2014	
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
A4031	Installation of Insulated Metal P.	10	14-Oct-13	25-Oct-13																				
A4040	Install Dock Leveler Pits	5	07-Oct-13	11-Oct-13																				
A4050	Interior Concrete Slab on Grade	10	14-Oct-13	25-Oct-13																				
A4060	Interior Concrete Slab on Deck	2	23-Oct-13*	24-Oct-13																				
A4070	Hollow Metal Frames	20	05-Dec-13*	03-Jan-14																				
A4080	Dock Equipment	16	31-Oct-13*	21-Nov-13																				
A4090	Light Gauge Metal Framing	20	05-Dec-13*	03-Jan-14																				
A4091	Interior Insulation	20	30-Dec-13*	24-Jan-14																				
A4092	Gypsum Wall Board	20	24-Jan-14*	20-Feb-14																				
A4100	Painting	35	30-Jan-14*	19-Mar-14																				
A4110	Acoustical Ceiling Grid	25	06-Feb-14*	12-Mar-14																				
A4120	Acoustical Ceiling Tile	25	13-Mar-14*	16-Apr-14																				
A4130	Flooring	40	13-Feb-14*	09-Apr-14																				
A4140	Interior Doors and Hardware	15	27-Mar-14*	16-Apr-14																				
A4150	Casework	10	20-Feb-14*	05-Mar-14																				
A4160	Specialties	15	20-Feb-14*	12-Mar-14																				
A4170	Furnishing/Fixtures/Equipment	30	27-Mar-14*	07-May-14																				
A4180	Sprinkler - Rough	45	28-Oct-13*	02-Jan-14																				
A4190	Sprinkler - Finish	30	06-Feb-14*	19-Mar-14																				
A4200	Plumbing - Rough	75	28-Oct-13*	13-Feb-14																				
A4210	Plumbing - Finish	30	06-Mar-14*	16-Apr-14																				
A4220	Mechanical - Rough	70	28-Oct-13*	06-Feb-14																				
A4230	Mechanical - Finish	45	20-Feb-14*	23-Apr-14																				
A4240	Electrical Rough	65	13-Nov-13*	17-Feb-14																				
A4250	Electrical - Finish	45	20-Feb-14*	23-Apr-14																				
A4260	Commissioning	20	10-Apr-14*	07-May-14																				
A4270	Inspections	10	24-Apr-14*	07-May-14																				
A4280	Final Cleaning	20	08-May-14*	04-Jun-14																				
A4290	Substantial Completion	1	04-Jun-14*	04-Jun-14																				

Actual Level of Effort
 Remaining Work
 Milestone
 Actual Work
 Critical Remaining Work
 summary

→[Concrete Cost Estimations]←

Slabs - Concrete

Type	Area (SF)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
4" S.O.G.	59,886.89	SF	\$1.29	\$0.80	\$0.01	\$125,762.47
6" S.O.G.	36,884.96	SF	\$2.01	\$0.89	\$0.01	\$107,335.23
4" Mezzanine Deck	3,386.26	SF	\$1.39	\$0.87	\$0.27	\$8,567.24
4" Conc. On 1.5" Metal Deck	3149.13	SF	\$1.39	\$0.87	\$0.27	\$7,967.30
Total						\$249,632.24

Foundation Wall - Concrete

Location	Length	Volume (CY)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
Plan North	363.10	32.77	CY	\$152.00	\$199.00	\$16.25	\$12,034.78
Plan South	330.66	35.03	CY	\$152.00	\$199.00	\$16.25	\$12,864.77
Plan East	252.33	22.81	CY	\$152.00	\$199.00	\$16.25	\$8,376.97
Plan West	179.42	42.42	CY	\$152.00	\$199.00	\$16.25	\$15,578.75
Total							\$48,855.27

Piers - Concrete

Type	Quantity	Length (ft)	Width (ft)	Depth (ft)	Volume (CF)	Volume (CY)
P-1	4	2.00	2.00	7.17	114.68	4.25
P-1BR	1	3.00	2.00	2.50	15.00	0.56
P-1BR	1	3.00	2.00	5.50	33.00	1.22
P-2	1	2.00	1.33	13.00	34.58	1.28
P-2	24	2.00	1.33	2.92	186.20	6.90
P-2	8	2.00	1.33	4.38	93.13	3.45
P-2	1	2.00	1.33	10.50	27.93	1.03
P-2A	2	3.50	1.33	2.92	27.15	1.01
P-2BR1	1	4.00	2.33	2.92	27.18	1.01
P-2BR2	1	3.00	1.33	7.00	27.93	1.03
P-2BR2	14	3.00	1.33	2.92	162.92	6.03
P-3	3	1.33	1.33	2.92	15.48	0.57
Tie Beam	1	14.00	2.00	1.00	28.00	1.04
Tie Beam	1	8.00	2.00	1.00	16.00	0.59

Piers - Concrete

Type	Volume (CY)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
P-1	4.25	CY	\$238.00	\$390.00	\$31.50	\$2,801.17
P-1BR	0.56	CY	\$238.00	\$390.00	\$31.50	\$366.39
P-1BR	1.22	CY	\$238.00	\$390.00	\$31.50	\$806.06
P-2	1.28	CY	\$238.00	\$390.00	\$31.50	\$844.65
P-2	6.90	CY	\$238.00	\$390.00	\$31.50	\$4,548.00
P-2	3.45	CY	\$238.00	\$390.00	\$31.50	\$2,274.68
P-2	1.03	CY	\$238.00	\$390.00	\$31.50	\$682.22
P-2A	1.01	CY	\$238.00	\$390.00	\$31.50	\$663.25
P-2BR1	1.01	CY	\$238.00	\$390.00	\$31.50	\$663.96
P-2BR2	1.03	CY	\$238.00	\$390.00	\$31.50	\$682.22
P-2BR2	6.03	CY	\$238.00	\$390.00	\$31.50	\$3,979.50
P-3	0.57	CY	\$238.00	\$390.00	\$31.50	\$378.05
Tie Beam	1.04	CY	\$238.00	\$390.00	\$31.50	\$683.93
Tie Beam	0.59	CY	\$238.00	\$390.00	\$31.50	\$390.81
Total						\$19,764.88

Spread Footings - Concrete

Type	Quantity	Length (ft)	Width (ft)	Height (ft)	Volume (CF)	Volume (CY)
F4	28	4.00	4.00	1.00	448.00	16.59
F5A	31	5.00	5.00	1.17	904.17	33.49
F6	34	6.00	6.00	1.33	1632.00	60.44
F7	2	7.00	7.00	2.00	196.00	7.26
F8	5	8.00	8.00	2.00	640.00	23.70
F9	1	9.00	9.00	2.00	162.00	6.00
F10	3	10.00	10.00	2.00	600.00	22.22
F10A	10	10.00	10.00	3.00	3000.00	111.11

Spread Footings - Concrete

Type	Quantity	Unit	Labor \$/Unit	Mat'l \$/Unit	Equip. \$/Unit	Total Cost
F4	16.59	CY	\$180.00	\$65.50	\$0.43	\$4,090.50
F5A	33.49	CY	\$180.00	\$65.50	\$0.43	\$8,255.14
F6	60.44	CY	\$180.00	\$65.50	\$0.43	\$14,899.99
F7	7.26	CY	\$180.00	\$65.50	\$0.43	\$1,789.84
F8	23.70	CY	\$180.00	\$65.50	\$0.43	\$5,843.39
F9	6.00	CY	\$180.00	\$65.50	\$0.43	\$1,479.43
F10	22.22	CY	\$180.00	\$65.50	\$0.43	\$5,478.21
F10A	111.11	CY	\$180.00	\$65.50	\$0.43	\$27,389.32
Total						\$69,225.81

Strip Footings - Concrete

Location	Length (ft)	Width (ft)	Depth (ft)	Volume (CF)	Volume (CY)
Plan North	363.28	2.00	1.00	726.56	26.91
Plan South	328.01	2.00	1.00	656.01	24.30
Plan East	251.67	2.00	1.00	503.34	18.64
Plan West	13.55	2.00	1.00	27.10	1.00
	165.25	6.00	1.00	991.50	36.72

Strip Footings - Concrete

Location	Volume (CY)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
Plan North	26.91	CY	\$136.00	\$102.00	\$0.68	\$6,422.81
Plan South	24.30	CY	\$136.00	\$102.00	\$0.68	\$5,799.14
Plan East	18.64	CY	\$136.00	\$102.00	\$0.68	\$4,449.53
Plan West	1.00	CY	\$136.00	\$102.00	\$0.68	\$239.54
	36.72	CY	\$136.00	\$102.00	\$0.68	\$8,764.89
Total						\$25,675.92

Concrete Cost Summary

Slabs	\$249,632.24
Foundation Wall	\$48,855.27
Piers	\$19,764.88
Spread Footings	\$69,225.81
Strip Footings	\$25,675.92
Total Cost of Concrete	\$413,154.12

→[Reinforcing Cost Estimation]←

Slabs - Reinforcing (Rebar)

Type	Rebar Type	Length	Width	Total Length	Weight (lb/ft)	Weight (Tons)
6" S.O.G.	#4 @ 16" E.W. Top	386.11	96.00	55,599.84	0.67	18.57

Slabs - Reinforcing (Rebar)

Type	Weight (Tons)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
#4 Rebar	18.57	Ton	\$1,000.00	\$705.00	--	\$31,661.85

Slabs - Reinforcing (WWF)

Type	WWF Description	Area	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
4" S.O.G.	6x6 - W2.0xW2.0 W.W.F.	59,886.89	SF	\$0.22	\$0.26	--	\$28,146.84

Strip Footings - Rebar

Location	Type	Quantity	Width	Total Length	Weight (lb/ft)	Weight (Tons)
Plan North	#5 Rebar (Cont.)	3	2	1089.84	1.043	0.57
Plan South	#5 Rebar (Cont.)	3	2	984.03	1.043	0.51
Plan East	#5 Rebar (Cont.)	3	2	755.01	1.043	0.39
Plan West	#5 Rebar (Cont.)	3	2	40.65	1.043	0.02
	#4 Rebar (Cont.) T/B	12	6	1983.00	0.668	0.66
	#5 Rebar @ 12" T.	--	6	950.19	1.043	0.50
	#4 Rebar @ 12" B.	--	6	950.19	0.668	0.32

Strip Footings - Rebar

Location	Type	Weight (Tons)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
Plan North	#5 Rebar (Cont.)	0.57	Tons	1000	770	--	\$1,008.90
Plan South	#5 Rebar (Cont.)	0.51	Tons	1000	770	--	\$902.70
Plan East	#5 Rebar (Cont.)	0.39	Tons	1000	770	--	\$690.30
Plan West	#5 Rebar (Cont.)	0.02	Tons	1000	770	--	\$35.40
	#4 Rebar (Cont.)	0.66	Tons	1000	770	--	\$1,168.20
	T/B						
	#5 Rebar @ 12" T.	0.50	Tons	1000	770	--	\$885.00
	#4 Rebar @ 12" B.	0.32	Tons	1000	770	--	\$566.40
Total							\$5,256.90

Spread Footings - Reinforcing

Type	Quantity	# Rebar/Pier	Length (ft) - 3" cvt	Length of Rebar	Weight (lb/ft)	Weight (Tons)
F4 (#4 Rebar)	28	14	3.75	1470.00	0.668	0.49
F5A (#4 Rebar)	31	16	4.75	2356.00	0.668	0.79
F6 (#5 Rebar)	34	14	5.75	2737.00	1.043	1.43
F7 (#5 Rebar)	2	36	6.75	486.00	1.043	0.25
F8 (#6 Rebar)	5	36	7.75	1395.00	1.502	1.05
F9 (#6 Rebar)	1	40	8.75	350.00	1.502	0.26
F10 (#6 Rebar)	3	48	9.75	1404.00	1.502	1.05
F10A (#8 Rebar)	10	48	9.75	4680.00	2.67	6.25

Spread Footings - Reinforcing

Type	Weight (Tons)	Unit	Labor \$/Unit	Mat'l \$/Unit	Equip. \$/Unit	Total Cost
F4 (#4 Rebar)	0.49	Tons	\$1,000.00	\$770.00	--	\$867.30
F5A (#4 Rebar)	0.79	Tons	\$1,000.00	\$770.00	--	\$1,398.30
F6 (#5 Rebar)	1.43	Tons	\$1,000.00	\$770.00	--	\$2,531.10
F7 (#5 Rebar)	0.25	Tons	\$1,000.00	\$770.00	--	\$442.50
F8 (#6 Rebar)	1.05	Tons	\$1,000.00	\$770.00	--	\$1,858.50
F9 (#6 Rebar)	0.26	Tons	\$1,000.00	\$770.00	--	\$460.20
F10 (#6 Rebar)	1.05	Tons	\$1,000.00	\$770.00	--	\$1,858.50
F10A (#8 Rebar)	6.25	Tons	\$1,000.00	\$450.00	--	\$9,062.50
Total						\$18,478.90

Foundation Wall - Reinforcing

Location	Rebar Type	Quantity	Length (ft)	Total Length (ft)	Weight (lb/ft)	Weight (Tons)
Plan North	#4 @ 16" Horiz.	4	363.10	1452.40	0.67	0.49
	#4 @ 16" Vert.	273	2.92	797.16	0.67	0.27
Plan South	#4 @ 16" Horiz.	4	330.66	1322.64	0.67	0.44
	#4 @ 16" Vert.	248	2.92	724.16	0.67	0.24
Plan East	#4 @ 16" Horiz.	4	266.08	1064.32	0.67	0.36
	#4 @ 16" Vert.	200	2.92	582.72	0.67	0.19
Plan West (HGT 1)	#4 @ 16" Horiz.	4	30.75	115.31	0.67	0.04
HGT 1 = 15.00 ft	#4 @ 12" V.O.F.	31	15.00	461.25	0.67	0.15
	#5 @ 12" V.I.F.	31	15.00	461.25	1.04	0.24
Plan West (HGT 2)	#4 @ 16" Horiz.	5	116.32	588.87	0.67	0.20
HGT 2 = 6.75	#4 @ 12" V.O.F.	116	6.75	785.16	0.67	0.26
	#5 @ 12" V.I.F.	116	6.75	785.16	1.04	0.41
Plan West (HGT 3)	#4 @ 16" Horiz.	4	49.35	185.06	0.67	0.06
HGT 3 = 5.00 ft	#4 @ 12" V.O.F.	49	5.00	246.75	0.67	0.08
	#5 @ 12" V.I.F.	49	5.00	246.75	1.04	0.13

Foundation Wall - Reinforcing

Rebar Type	Unit	Weight (Tons)	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
#4 @ 16" Horiz.	Tons	0.49	\$1,000.00	\$540.00	--	\$754.60
#4 @ 16" Vert.	Tons	0.27	\$1,000.00	\$540.00	--	\$415.80
#4 @ 16" Horiz.	Tons	0.44	\$1,000.00	\$540.00	--	\$677.60
#4 @ 16" Vert.	Tons	0.24	\$1,000.00	\$540.00	--	\$369.60
#4 @ 16" Horiz.	Tons	0.36	\$1,000.00	\$540.00	--	\$554.40
#4 @ 16" Vert.	Tons	0.19	\$1,000.00	\$540.00	--	\$292.60
#4 @ 16" Horiz.	Tons	0.04	\$1,000.00	\$540.00	--	\$61.60
#4 @ 12" V.O.F.	Tons	0.15	\$1,000.00	\$540.00	--	\$231.00
#5 @ 12" V.I.F.	Tons	0.24	\$1,000.00	\$540.00	--	\$369.60
#4 @ 16" Horiz.	Tons	0.20	\$1,000.00	\$540.00	--	\$308.00
#4 @ 12" V.O.F.	Tons	0.26	\$1,000.00	\$540.00	--	\$400.40
#5 @ 12" V.I.F.	Tons	0.41	\$1,000.00	\$540.00	--	\$631.40
#4 @ 16" Horiz.	Tons	0.06	\$1,000.00	\$540.00	--	\$92.40
#4 @ 12" V.O.F.	Tons	0.08	\$1,000.00	\$540.00	--	\$123.20
#5 @ 12" V.I.F.	Tons	0.13	\$1,000.00	\$540.00	--	\$200.20
Total						\$5,482.40

Piers - Reinforcing (Stirrups)

Type	Quantity	Length	Width	Depth	Stirrups	Stirrup Lengths (ft)	Total Length	Weight (lb/ft)	Weight (Tons)
P-1	4	2.00	2.00	7.17	#4 Ties	10.67	203.63	0.67	0.07
P-1BR	1	3.00	2.00	2.50	#4 Ties	10.67	26.68	0.67	0.01
P-1BR	1	3.00	2.00	5.50	#4 Ties	10.67	58.69	0.67	0.02
P-2	1	2.00	1.33	13.00	#4 Ties	6	78.00	0.67	0.03
P-2	24	2.00	1.33	2.92	#4 Ties	6	420.48	0.67	0.14
P-2	8	2.00	1.33	4.38	#4 Ties	6	210.24	0.67	0.07
P-2	1	2.00	1.33	10.50	#4 Ties	6	63.00	0.67	0.02
P-2A	2	3.50	1.33	2.92	#4 Ties	13	75.92	0.67	0.03
P-2BR1	1	4.00	2.33	2.92	#4 Ties	16.87	49.26	0.67	0.02
P-2BR2	1	3.00	1.33	7.00	#4 Ties	13	91.00	0.67	0.03
P-2BR2	14	3.00	1.33	2.92	#4 Ties	13	531.44	0.67	0.18
P-3	3	1.33	1.33	2.92	#4 Ties	4.61	40.38	0.67	0.01

Piers - Reinforcing (Stirrups)

Type	Stirrups	Weight (Tons)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
P-1	#4 Ties	0.07	Tons	\$1,000.00	\$1,075.00	--	\$145.25
P-1BR	#4 Ties	0.01	Tons	\$1,000.00	\$1,075.00	--	\$20.75
P-1BR	#4 Ties	0.02	Tons	\$1,000.00	\$1,075.00	--	\$41.50
P-2	#4 Ties	0.03	Tons	\$1,000.00	\$1,075.00	--	\$62.25
P-2	#4 Ties	0.14	Tons	\$1,000.00	\$1,075.00	--	\$290.50
P-2	#4 Ties	0.07	Tons	\$1,000.00	\$1,075.00	--	\$145.25
P-2	#4 Ties	0.02	Tons	\$1,000.00	\$1,075.00	--	\$41.50
P-2A	#4 Ties	0.03	Tons	\$1,000.00	\$1,075.00	--	\$62.25
P-2BR1	#4 Ties	0.02	Tons	\$1,000.00	\$1,075.00	--	\$41.50
P-2BR2	#4 Ties	0.03	Tons	\$1,000.00	\$1,075.00	--	\$62.25
P-2BR2	#4 Ties	0.18	Tons	\$1,000.00	\$1,075.00	--	\$373.50
P-3	#4 Ties	0.01	Tons	\$1,000.00	\$1,075.00	--	\$20.75
Total							\$1,307.25

Piers - Reinforcing (Rebar)

Type	Quantity	Length	Width	Depth	Rebar Type	Quantity	Total Length	Weight (lb/ft)	Weight (Tons)
P-1	4	2.00	2.00	7.17	#8 Vertical	4	114.72	2.67	0.15
P-1BR	1	3.00	2.00	2.50	#8 Vertical	6	15	2.67	0.02
P-1BR	1	3.00	2.00	5.50	#8 Vertical	6	33	2.67	0.04
P-2	1	2.00	1.33	13.00	#8 Vertical	4	52	2.67	0.07
P-2	24	2.00	1.33	2.92	#8 Vertical	4	280.32	2.67	0.37
P-2	8	2.00	1.33	4.38	#8 Vertical	4	140.16	2.67	0.19
P-2	1	2.00	1.33	10.50	#8 Vertical	4	42	2.67	0.06
P-2A	2	3.50	1.33	2.92	#8 Vertical	8	46.72	2.67	0.06
P-2BR1	1	4.00	2.33	2.92	#8 Vertical	10	29.2	2.67	0.04
P-2BR2	1	3.00	1.33	7.00	#8 Vertical	8	56	2.67	0.07
P-2BR2	14	3.00	1.33	2.92	#8 Vertical	8	327.04	2.67	0.44
P-3	3	1.33	1.33	2.92	#8 Vertical	4	35.04	2.67	0.05

Piers - Reinforcing (Rebar)

Type	Rebar Type	Weight (Tons)	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
P-1	#8 Vertical	0.15	Tons	\$1,000.00	\$705.00	--	\$255.75
P-1BR	#8 Vertical	0.02	Tons	\$1,000.00	\$705.00	--	\$34.10
P-1BR	#8 Vertical	0.04	Tons	\$1,000.00	\$705.00	--	\$68.20
P-2	#8 Vertical	0.07	Tons	\$1,000.00	\$705.00	--	\$119.35
P-2	#8 Vertical	0.37	Tons	\$1,000.00	\$705.00	--	\$630.85
P-2	#8 Vertical	0.19	Tons	\$1,000.00	\$705.00	--	\$323.95
P-2	#8 Vertical	0.06	Tons	\$1,000.00	\$705.00	--	\$102.30
P-2A	#8 Vertical	0.06	Tons	\$1,000.00	\$705.00	--	\$102.30
P-2BR1	#8 Vertical	0.04	Tons	\$1,000.00	\$705.00	--	\$68.20
P-2BR2	#8 Vertical	0.07	Tons	\$1,000.00	\$705.00	--	\$119.35
P-2BR2	#8 Vertical	0.44	Tons	\$1,000.00	\$705.00	--	\$750.20
P-3	#8 Vertical	0.05	Tons	\$1,000.00	\$705.00	--	\$85.25
Total							\$2,659.80

Cost Summary

Type	Cost
Slabs (Rebar)	\$31,661.85
Slabs (WWF)	\$28,146.84
Strip Footings	\$5,256.90
Spread Footings	\$18,478.90
Foundation Walls	\$5,482.40
Piers (Stirrups)	\$1,307.25
Piers (Rebar)	\$2,659.80
Total Cost	\$92,993.94

→[Formwork Cost Estimating]←

Strip Footings: Formwork

Type	Surface Area	Multiplier	Total SF	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
Plan North	363.28	2.00	726.56	SFCA	\$3.42	\$3.17	--	\$4,788.03
Plan South	328.01	2.00	656.02	SFCA	\$3.42	\$3.17	--	\$4,323.17
Plan East	251.67	2.00	503.34	SFCA	\$3.42	\$3.17	--	\$3,317.01
Plan West	13.55	2.00	27.10	SFCA	\$3.42	\$3.17	--	\$178.59
	165.25	2.00	330.50	SFCA	\$3.42	\$3.17	--	\$2,178.00
Total								\$14,784.80

Spread Footings: Formwork

Type	Quantity	Surface Area	Total SF	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
F4	28	16.00	448.00	SFCA	\$1.11	\$3.76	--	\$2,181.76
F5A	31	23.40	725.40	SFCA	\$1.11	\$3.76	--	\$3,532.70
F6	34	31.92	1085.28	SFCA	\$1.11	\$3.76	--	\$5,285.31
F7	2	56.00	112.00	SFCA	\$1.11	\$3.76	--	\$545.44
F8	5	64.00	320.00	SFCA	\$1.11	\$3.76	--	\$1,558.40
F9	1	72.00	72.00	SFCA	\$1.11	\$3.76	--	\$350.64
F10	3	80.00	240.00	SFCA	\$1.11	\$3.76	--	\$1,168.80
F10A	10	120.00	1200.00	SFCA	\$1.11	\$3.76	--	\$5,844.00
Total								\$20,467.05

Foundation Walls: Formwork

Location	Surface Area	Multiplier	Total SF	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
Plan North	1416.19	2	2832.38	SFCA	\$1.67	\$4.93	--	\$18,693.71
Plan South	1507.48	2	3014.96	SFCA	\$1.67	\$4.93	--	\$19,898.74
Plan East	984.25	2	1968.50	SFCA	\$1.67	\$4.93	--	\$12,992.10
Plan West	1212.74	2	2425.48	SFCA	\$1.67	\$4.93	--	\$16,008.17
Total								\$67,592.71

Piers: Formwork

Type	Quantity	Surface Area	Total SF	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
P-1	4	57.36	229.44	SFCA	\$1.58	\$6.45	--	\$1,842.40
P-1BR	1	25.00	25.00	SFCA	\$1.58	\$6.45	--	\$200.75
P-1BR	1	55.00	55.00	SFCA	\$1.58	\$6.45	--	\$441.65
P-2	1	86.58	86.58	SFCA	\$1.58	\$6.45	--	\$695.24
P-2	24	19.45	466.73	SFCA	\$1.58	\$6.45	--	\$3,747.86
P-2	8	29.17	233.37	SFCA	\$1.58	\$6.45	--	\$1,873.93
P-2	1	69.93	69.93	SFCA	\$1.58	\$6.45	--	\$561.54
P-2A	2	28.21	56.41	SFCA	\$1.58	\$6.45	--	\$453.01
P-2BR1	1	36.97	36.97	SFCA	\$1.58	\$6.45	--	\$296.85
P-2BR2	1	60.62	60.62	SFCA	\$1.58	\$6.45	--	\$486.78
P-2BR2	14	25.29	354.02	SFCA	\$1.58	\$6.45	--	\$2,842.79
P-3	3	15.53	46.60	SFCA	\$1.58	\$6.45	--	\$374.22
Tie Beam	1	32.00	32.00	SFCA	\$1.58	\$6.45	--	\$256.96
Tie Beam	1	20.00	20.00	SFCA	\$1.58	\$6.45	--	\$160.60
Total								\$14,234.58

Cost Summary

Type	Cost
Strip Footings	\$14,784.80
Spread Footings	\$20,467.05
Foundation Walls	\$67,592.71
Piers	\$14,234.58
Total Cost	\$117,079.14

→[Metal Deck Cost Estimation]←

Metal Deck QTO

Type	Area	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
1 1/2" Metal Roof Deck	98427.35	SF	\$1.97	\$0.37	\$0.03	\$233,272.82
1 1/2" Metal Floor Deck	6535.39	SF	\$2.68	\$0.45	\$0.04	\$20,717.19
Total						\$253,990.01

→[Structural Steel Columns Cost Estimation]←

Structural Steel Columns

Type	Length (ft)	Quantity	Weight (lb/ft)	Weight (lb)	Weight (Tons)	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
C10x15.3	10	1	15.3	153.00	0.08	LF	25	9.15	0.79	\$349.40
	10.25	11	15.3	1725.08	0.86	LF	25	9.15	0.79	\$358.14
C6x13	6.5	1	13	84.50	0.04	LF	19.1	7.35	0.63	\$176.02
	6.75	7	13	614.25	0.31	LF	19.1	7.35	0.63	\$1,279.53
	7.17	2	13	186.42	0.09	LF	19.1	7.35	0.63	\$388.33
	8.83	8	13	918.32	0.46	LF	19.1	7.35	0.63	\$1,912.93
	9	8	13	936.00	0.47	LF	19.1	7.35	0.63	\$1,949.76
	10.17	2	13	264.42	0.13	LF	19.1	7.35	0.63	\$550.81
	10.25	2	13	266.50	0.13	LF	19.1	7.35	0.63	\$555.14
HSS 5x5x5/16	6	1	19	114.00	0.06	LB	1.33	0.09	0.05	\$167.58
	8.67	1	19	164.73	0.08	LB	1.33	0.09	0.05	\$242.15
	8.92	1	19	169.48	0.08	LB	1.33	0.09	0.05	\$249.14
	9	1	19	171.00	0.09	LB	1.33	0.09	0.05	\$251.37
	9.08	5	19	862.60	0.43	LB	1.33	0.09	0.05	\$1,268.02
HSS 6x4x1/4	7.75	12	15.6	1450.80	0.73	LB	1.33	0.09	0.05	\$2,132.68
	8.83	12	15.6	1652.98	0.83	LB	1.33	0.09	0.05	\$2,429.87
W10x33	2.92	2	33	192.72	0.10	LF	48	2.65	1.44	\$304.21
	13.5	1	33	445.50	0.22	LF	48	2.65	1.44	\$703.22
	15	5	33	2475.00	1.24	LF	48	2.65	1.44	\$3,906.75
	15.67	1	33	517.11	0.26	LF	48	2.65	1.44	\$816.25
	15.92	1	33	525.36	0.26	LF	48	2.65	1.44	\$829.27

	16	1	33	528.00	0.26	LF	48	2.65	1.44	\$833.44
	17.67	1	33	583.11	0.29	LF	48	2.65	1.44	\$920.43
	18	14	33	8316.00	4.16	LF	48	2.65	1.44	\$13,126.68
	28.58	2	33	1886.28	0.94	LF	48	2.65	1.44	\$2,977.46
	29	1	33	957.00	0.48	LF	48	2.65	1.44	\$1,510.61
W10x39	13	1	39	507.00	0.25	LF	56.76	2.68	1.46	\$791.70
	16	1	39	624.00	0.31	LF	56.76	2.68	1.46	\$974.40
	16.5	1	39	643.50	0.32	LF	56.76	2.68	1.46	\$1,004.85
	17.67	7	39	4823.91	2.41	LF	56.76	2.68	1.46	\$7,532.72
	18	19	39	13338.00	6.67	LF	56.76	2.68	1.46	\$20,827.80
	18.5	4	39	2886.00	1.44	LF	56.76	2.68	1.46	\$4,506.60
	28.58	2	39	2229.24	1.11	LF	56.76	2.68	1.46	\$3,481.04
W10x45	18	6	45	4860.00	2.43	LF	65.5	2.72	1.48	\$7,527.60
	28.58	4	45	5144.40	2.57	LF	65.5	2.72	1.48	\$7,968.10
W10x49	16	2	49	1568.00	0.78	LF	71.32	2.74	1.49	\$2,417.60
	17.67	3	49	2597.49	1.30	LF	71.32	2.74	1.49	\$4,004.91
	18	5	49	4410.00	2.21	LF	71.32	2.74	1.49	\$6,799.50
	28.08	2	49	2751.84	1.38	LF	71.32	2.74	1.49	\$4,242.89
	28.25	2	49	2768.50	1.38	LF	71.32	2.74	1.49	\$4,268.58
	28.58	9	49	12603.78	6.30	LF	71.32	2.74	1.49	\$19,432.97
	29.08	2	49	2849.84	1.42	LF	71.32	2.74	1.49	\$4,393.99
W10x60	28.25	6	60	10170.00	5.09	LF	87.35	2.81	1.53	\$15,541.46
	28.58	4	60	6859.20	3.43	LF	87.35	2.81	1.53	\$10,482.00
W12x40	26.5	2	40	2120.00	1.06	LF	58.41	2.68	1.41	\$3,312.50
	28.58	27	40	30866.40	15.43	LF	58.41	2.68	1.41	\$48,228.75

W12x45	28.58	3	45	3858.30	1.93	LF	65.7	2.7	1.47	\$5,990.65
W12x53	29.08	2	53	3082.48	1.54	LF	77.38	2.73	1.49	\$4,745.86
Total									\$228,665.64	

→[Structural Steel Beam Cost Estimation]←

Designation	Length (ft)	Quantity	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
W8x10	2.25	1	LF	\$14.60	\$4.68	\$2.55	\$49.12
	5.08	1	LF	\$14.60	\$4.68	\$2.55	\$110.90
	6.00	1	LF	\$14.60	\$4.68	\$2.55	\$130.98
W10x12	2.25	1	LF	\$17.50	\$4.68	\$2.55	\$55.64
	3.5	1	LF	\$17.50	\$4.68	\$2.55	\$86.56
	9.33	1	LF	\$17.50	\$4.68	\$2.55	\$230.73
	10.50	1	LF	\$17.50	\$4.68	\$2.55	\$259.67
W12x14	1.00	1	LF	\$23.50	\$3.19	\$1.74	\$28.43
	4.17	1	LF	\$23.50	\$3.19	\$1.74	\$118.55
	4.50	1	LF	\$23.50	\$3.19	\$1.74	\$127.94
	6.00	12	LF	\$23.50	\$3.19	\$1.74	\$2,046.96
	6.17	1	LF	\$23.50	\$3.19	\$1.74	\$175.41
	6.50	1	LF	\$23.50	\$3.19	\$1.74	\$184.80
	6.67	25	LF	\$23.50	\$3.19	\$1.74	\$4,740.70
	7.25	1	LF	\$23.50	\$3.19	\$1.74	\$206.12
	7.50	1	LF	\$23.50	\$3.19	\$1.74	\$213.23
	8.25	1	LF	\$23.50	\$3.19	\$1.74	\$234.55
	8.67	2	LF	\$23.50	\$3.19	\$1.74	\$492.98
	9.00	7	LF	\$23.50	\$3.19	\$1.74	\$1,791.09
	9.50	1	LF	\$23.50	\$3.19	\$1.74	\$270.09
	10.00	6	LF	\$23.50	\$3.19	\$1.74	\$1,705.80
	10.50	3	LF	\$23.50	\$3.19	\$1.74	\$895.55
10.67	1	LF	\$23.50	\$3.19	\$1.74	\$303.35	
11.50	2	LF	\$23.50	\$3.19	\$1.74	\$653.89	

	12.33	2	LF	\$23.50	\$3.19	\$1.74	\$701.08
	13.67	1	LF	\$23.50	\$3.19	\$1.74	\$388.64
	15.25	2	LF	\$23.50	\$3.19	\$1.74	\$867.12
	19.67	1	LF	\$23.50	\$3.19	\$1.74	\$559.22
	20.50	4	LF	\$23.50	\$3.19	\$1.74	\$2,331.26
W12x16	2.00	2	LF	\$23.50	\$3.19	\$1.74	\$113.72
	4.50	1	LF	\$23.50	\$3.19	\$1.74	\$127.94
	14.75	1	LF	\$23.50	\$3.19	\$1.74	\$419.34
	15.25	9	LF	\$23.50	\$3.19	\$1.74	\$3,902.02
	20.50	2	LF	\$23.50	\$3.19	\$1.74	\$1,165.63
	23.25	1	LF	\$23.50	\$3.19	\$1.74	\$661.00
W14x22	9.83	1	LF	\$38.00	\$2.84	\$1.54	\$416.74
	11.00	1	LF	\$38.00	\$2.84	\$1.54	\$466.18
	15.83	1	LF	\$38.00	\$2.84	\$1.54	\$670.88
	20.00	2	LF	\$38.00	\$2.84	\$1.54	\$1,695.20
	20.50	2	LF	\$38.00	\$2.84	\$1.54	\$1,737.58
	30.75	1	LF	\$38.00	\$2.84	\$1.54	\$1,303.19
	31.00	1	LF	\$38.00	\$2.84	\$1.54	\$1,313.78
	32.00	3	LF	\$38.00	\$2.84	\$1.54	\$4,068.48
W14x34	24.42	1	LF	\$49.50	\$3.47	\$1.89	\$1,339.50
W16x26	18.00	2	LF	\$38.00	\$2.81	\$1.53	\$1,524.24
	20.00	25	LF	\$38.00	\$2.81	\$1.53	\$21,170.00
	20.50	3	LF	\$38.00	\$2.81	\$1.53	\$2,603.91
	22.00	1	LF	\$38.00	\$2.81	\$1.53	\$931.48
	32.00	1	LF	\$38.00	\$2.81	\$1.53	\$1,354.88
	37.67	2	LF	\$38.00	\$2.81	\$1.53	\$3,189.90

W16x31	9.00	1	LF	\$45.00	\$3.12	\$1.70	\$448.38
	18.00	1	LF	\$45.00	\$3.12	\$1.70	\$896.76
	24.25	1	LF	\$45.00	\$3.12	\$1.70	\$1,208.14
	29.75	1	LF	\$45.00	\$3.12	\$1.70	\$1,482.15
	30.00	2	LF	\$45.00	\$3.12	\$1.70	\$2,989.20
W16x36	16.00	2	LF	\$45.00	\$3.12	\$1.70	\$1,594.24
	20.00	12	LF	\$45.00	\$3.12	\$1.70	\$11,956.80
W16x67	32.00	3	LF	\$97.50	\$3.70	\$2.01	\$9,908.16
W18x35	19.67	1	LF	\$51.00	\$4.22	\$1.74	\$1,120.40
	21.00	1	LF	\$51.00	\$4.22	\$1.74	\$1,196.16
	25.00	2	LF	\$51.00	\$4.22	\$1.74	\$2,848.00
	28.00	4	LF	\$51.00	\$4.22	\$1.74	\$6,379.52
	29.50	5	LF	\$51.00	\$4.22	\$1.74	\$8,401.60
	30.50	12	LF	\$51.00	\$4.22	\$1.74	\$20,847.36
	33.50	2	LF	\$51.00	\$4.22	\$1.74	\$3,816.32
	37.67	4	LF	\$51.00	\$4.22	\$1.74	\$8,582.73
	40.00	31	LF	\$51.00	\$4.22	\$1.74	\$70,630.40
42.00	4	LF	\$51.00	\$4.22	\$1.74	\$9,569.28	
W18x40	17.33	3	LF	\$58.50	\$4.22	\$1.74	\$3,351.28
	18.00	3	LF	\$58.50	\$4.22	\$1.74	\$3,480.84
	28.00	2	LF	\$58.50	\$4.22	\$1.74	\$3,609.76
	30.00	1	LF	\$58.50	\$4.22	\$1.74	\$1,933.80
	36.50	1	LF	\$58.50	\$4.22	\$1.74	\$2,352.79
	40.00	61	LF	\$58.50	\$4.22	\$1.74	\$157,282.40
W18x55	40.00	2	LF	\$80.00	\$4.44	\$1.83	\$6,901.60

W21x44	16.83	1	LF	\$64.00	\$3.81	\$1.57	\$1,167.67
	20.50	1	LF	\$64.00	\$3.81	\$1.57	\$1,422.29
	22.00	2	LF	\$64.00	\$3.81	\$1.57	\$3,052.72
	31.75	1	LF	\$64.00	\$3.81	\$1.57	\$2,202.82
	32.00	5	LF	\$64.00	\$3.81	\$1.57	\$11,100.80
	33.00	1	LF	\$64.00	\$3.81	\$1.57	\$2,289.54
	35.00	1	LF	\$64.00	\$3.81	\$1.57	\$2,428.30
	36.50	2	LF	\$64.00	\$3.81	\$1.57	\$5,064.74
	37.67	3	LF	\$64.00	\$3.81	\$1.57	\$7,840.63
	40.00	22	LF	\$64.00	\$3.81	\$1.57	\$61,054.40
W21x50	30.00	1	LF	\$73.00	\$3.81	\$1.57	\$2,351.40
	30.67	1	LF	\$73.00	\$3.81	\$1.57	\$2,403.91
	32.00	4	LF	\$73.00	\$3.81	\$1.57	\$10,032.64
	35.00	1	LF	\$73.00	\$3.81	\$1.57	\$2,743.30
	37.67	1	LF	\$73.00	\$3.81	\$1.57	\$2,952.57
	40.00	1	LF	\$73.00	\$3.81	\$1.57	\$3,135.20
W24x55	18.00	1	LF	\$80.00	\$3.65	\$1.51	\$1,532.88
	19.67	3	LF	\$80.00	\$3.65	\$1.51	\$5,025.29
	30.00	1	LF	\$80.00	\$3.65	\$1.51	\$2,554.80
	33.00	1	LF	\$80.00	\$3.65	\$1.51	\$2,810.28
	36.00	1	LF	\$80.00	\$3.65	\$1.51	\$3,065.76
	36.50	2	LF	\$80.00	\$3.65	\$1.51	\$6,216.68
	37.67	1	LF	\$80.00	\$3.65	\$1.51	\$3,207.98
	40.00	14	LF	\$80.00	\$3.65	\$1.51	\$47,689.60
W24x62	32.00	18	LF	\$90.50	\$3.65	\$1.51	\$55,100.16
	36.50	4	LF	\$90.50	\$3.65	\$1.51	\$13,966.36
W24x68	33.00	1	LF	\$99.00	\$3.65	\$1.51	\$3,437.28

	36.50	1	LF	\$99.00	\$3.65	\$1.51	\$3,801.84
	40.00	1	LF	\$99.00	\$3.65	\$1.51	\$4,166.40
W24x76	33.50	1	LF	\$111.00	\$3.65	\$1.51	\$3,891.36
	40.00	2	LF	\$111.00	\$3.65	\$1.51	\$9,292.80
W27x84	20.00	6	LF	\$122.00	\$3.41	\$1.40	\$15,217.20
	20.50	1	LF	\$122.00	\$3.41	\$1.40	\$2,599.61
	32.00	1	LF	\$122.00	\$3.41	\$1.40	\$4,057.92
	36.50	11	LF	\$122.00	\$3.41	\$1.40	\$50,914.22
	40.00	13	LF	\$122.00	\$3.41	\$1.40	\$65,941.20
	43.00	1	LF	\$122.00	\$3.41	\$1.40	\$5,452.83
W27x94	32.00	1	LF	\$137.00	\$3.41	\$1.40	\$4,537.92
W27x102	40.00	5	LF	\$137.00	\$3.41	\$1.40	\$28,362.00
W30x90	40.00	1	LF	\$144.00	\$3.38	\$1.39	\$5,950.80
W30x99	48.00	1	LF	\$144.00	\$3.38	\$1.39	\$7,140.96
Total							\$890,100.99

→[Structural Steel Bracing Cost Estimation]←

Steel Frame Bracing

Type	Length	Quantity	Weight (lb/ft)	Weight (lb)	Weight (Tons)	Unit	Mat'l \$/Unit	Labor \$/Unit	Equip \$/Unit	Total Cost
C6x13	3.00	16	13	624.00	0.31	LF	6.3	22.5	2.58	\$1,506.24
	3.58	3	13	139.62	0.07	LF	6.3	22.5	2.58	\$337.02
	3.92	1	13	50.96	0.03	LF	6.3	22.5	2.58	\$123.01
	5.00	2	13	130.00	0.07	LF	6.3	22.5	2.58	\$313.80
HSS 5x5x1/4	16.58	1	15.6	258.65	0.13	LB	1.33	0.09	0.05	\$380.21
	17.25	1	15.6	269.10	0.13	LB	1.33	0.09	0.05	\$395.58
	23.25	2	15.6	725.40	0.36	LB	1.33	0.09	0.05	\$1,066.34
HSS 5x5x3/8	36.33	4	22.3	3240.64	1.62	LB	1.33	0.09	0.05	\$4,763.73
HSS 6x4x1/4	4.17	1	19	79.23	0.04	LB	1.33	0.09	0.05	\$116.47
	11.67	2	19	443.46	0.22	LB	1.33	0.09	0.05	\$651.89
	14.92	2	19	566.96	0.28	LB	1.33	0.09	0.05	\$833.43
	15.50	1	19	294.50	0.15	LB	1.33	0.09	0.05	\$432.92
	15.67	1	19	297.73	0.15	LB	1.33	0.09	0.05	\$437.66
	15.83	1	19	300.77	0.15	LB	1.33	0.09	0.05	\$442.13
	16.00	11	19	3344.00	1.67	LB	1.33	0.09	0.05	\$4,915.68
	18.00	3	19	1026.00	0.51	LB	1.33	0.09	0.05	\$1,508.22
	18.25	2	19	693.50	0.35	LB	1.33	0.09	0.05	\$1,019.45
	18.50	1	19	351.50	0.18	LB	1.33	0.09	0.05	\$516.71
	20.00	69	19	26220.00	13.11	LB	1.33	0.09	0.05	\$38,543.40
	20.50	5	19	1947.50	0.97	LB	1.33	0.09	0.05	\$2,862.83
	20.83	2	19	791.54	0.40	LB	1.33	0.09	0.05	\$1,163.56
22.50	2	19	855.00	0.43	LB	1.33	0.09	0.05	\$1,256.85	

	22.25	2	19	845.50	0.42	LB	1.33	0.09	0.05	\$1,242.89
HSS 6x4x3/8	17.25	6	19	1966.50	0.98	LB	1.33	0.09	0.05	\$2,890.76
	18.00	6	19	2052.00	1.03	LB	1.33	0.09	0.05	\$3,016.44
	20.67	1	19	392.73	0.20	LB	1.33	0.09	0.05	\$577.31
	22.00	1	19	418.00	0.21	LB	1.33	0.09	0.05	\$614.46
HSS 6x6x1/2	26.50	2	35.1	1860.30	0.93	LB	1.33	0.09	0.05	\$2,734.64
HSS 6x6x1/4	17.75	1	19	337.25	0.17	LB	1.33	0.09	0.05	\$495.76
	19.25	2	19	731.50	0.37	LB	1.33	0.09	0.05	\$1,075.31
	19.50	3	19	1111.50	0.56	LB	1.33	0.09	0.05	\$1,633.91
	19.75	2	19	750.50	0.38	LB	1.33	0.09	0.05	\$1,103.24
	22.75	4	19	1729.00	0.86	LB	1.33	0.09	0.05	\$2,541.63
	23.50	1	19	446.50	0.22	LB	1.33	0.09	0.05	\$656.36
	24.75	3	19	1410.75	0.71	LB	1.33	0.09	0.05	\$2,073.80
	25.17	1	19	478.23	0.24	LB	1.33	0.09	0.05	\$703.00
	26.50	6	19	3021.00	1.51	LB	1.33	0.09	0.05	\$4,440.87
HSS 6x6x3/8	24.00	2	27.4	1315.20	0.66	LB	1.33	0.09	0.05	\$1,933.34
	26.33	8	27.4	5771.54	2.89	LB	1.33	0.09	0.05	\$8,484.16
	32.00	2	27.4	1753.60	0.88	LB	1.33	0.09	0.05	\$2,577.79
	34.33	6	27.4	5643.85	2.82	LB	1.33	0.09	0.05	\$8,296.46
HSS 8x8x1/4	31.75	2	25.8	1638.30	0.82	LB	1.33	0.09	0.05	\$2,408.30
Total										\$113,087.53

→[Roof Joist Cost Estimation]←

Designation	Length (ft)	Quantity	Weight (lb/ft)	Weight (Tons)	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total Cost
10K1	9.67	9	5	0.22	\$1,650.00	\$340.00	\$151.00	\$471.02
14K1	20.5	10	5.2	0.53	\$1,650.00	\$340.00	\$151.00	\$1,134.73
18K3	12.75	1	6.6	0.04	\$1,650.00	\$340.00	\$151.00	\$85.64
	20.50	27	6.6	1.83	\$1,650.00	\$340.00	\$151.00	\$3,918.03
20K4	29.00	9	7.6	0.99	\$1,650.00	\$340.00	\$151.00	\$2,119.59
22K7	32.00	18	9.7	2.79	\$1,625.00	\$238.00	\$107.00	\$5,496.30
26K7	25.50	1	10.9	0.14	\$1,650.00	\$340.00	\$151.00	\$299.74
	36.00	2	10.9	0.39	\$1,625.00	\$238.00	\$107.00	\$768.30
	38.00	8	10.9	1.66	\$1,625.00	\$238.00	\$107.00	\$3,270.20
	38.42	2	10.9	0.42	\$1,625.00	\$238.00	\$107.00	\$827.40
	38.67	5	10.9	1.05	\$1,625.00	\$238.00	\$107.00	\$2,068.50
30K8	25.00	1	13.2	0.17	\$1,650.00	\$340.00	\$151.00	\$363.97
	26.67	1	13.2	0.18	\$1,650.00	\$340.00	\$151.00	\$385.38
	27.17	1	13.2	0.18	\$1,650.00	\$340.00	\$151.00	\$385.38
	29.00	1	13.2	0.19	\$1,650.00	\$340.00	\$151.00	\$406.79
	29.33	1	13.2	0.19	\$1,650.00	\$340.00	\$151.00	\$406.79
	31.33	1	13.2	0.21	\$1,625.00	\$238.00	\$107.00	\$413.70
	31.375	1	13.2	0.21	\$1,625.00	\$238.00	\$107.00	\$413.70
	33.50	1	13.2	0.22	\$1,625.00	\$238.00	\$107.00	\$433.40

	33.67	1	13.2	0.22	\$1,625.00	\$238.00	\$107.00	\$433.40
	36.00	2	13.2	0.48	\$1,625.00	\$238.00	\$107.00	\$945.60
	36.50	9	13.2	2.17	\$1,625.00	\$238.00	\$107.00	\$4,274.90
	40.00	55	13.2	14.52	\$1,625.00	\$238.00	\$107.00	\$28,604.40
30K9	36.50	8	13.4	1.96	\$1,625.00	\$238.00	\$107.00	\$3,861.20
	38.33	1	13.4	0.26	\$1,625.00	\$238.00	\$107.00	\$512.20
	40.00	184	13.4	49.31	\$1,625.00	\$238.00	\$107.00	\$97,140.70
30K10	40.67	1	15	0.31	\$1,625.00	\$238.00	\$107.00	\$610.70
	42.00	13	15	4.10	\$1,625.00	\$238.00	\$107.00	\$8,077.00
Total								\$168,128.66

→[Assemblies Cost Estimation: Electrical System]←

Quantity	Assembly Number	Description	Unit	Mat'l O&P	Install. O&P	Total O&P	Ext. Mat'l O&P	Ext. Install. O&P	Ext. Total O&P
2	D50102504040	Panelboard, 4 wire w/conductor & conduit, NEHB, 277/480 V, 100 A, 1 stories, 25' horizontal		\$3,683.50	\$1,963.20	\$5,646.70	\$7,367.00	\$3,926.40	\$11,293.40
14	D50102502000	Panelboard, 4 wire w/conductor & conduit, NQOD, 120/208 V, 225 A, 1 stories, 25' horizontal		\$3,869.00	\$2,269.95	\$6,138.95	\$54,166.00	\$31,779.30	\$85,945.30
1	D50102506000	Panelboard, 4 wire w/conductor & conduit, NEHB, 277/480 V, 400 A, 1 stories, 25' horizontal		\$9,911.00	\$4,171.80	\$14,082.80	\$9,911.00	\$4,171.80	\$14,082.80
1	D50102505020	Panelboard, 4 wire w/conductor & conduit, NEHB, 277/480 V, 225 A, 1 stories, 25' horizontal		\$6,227.50	\$2,658.50	\$8,886.00	\$6,227.50	\$2,658.50	\$8,886.00
2	D50102506080	Panelboard, 4 wire w/conductor & conduit, NEHB, 277/480 V, 600 A, 1 stories, 25' horizontal		\$15,900.00	\$5,787.35	\$21,687.35	\$31,800.00	\$11,574.70	\$43,374.70
101200	D50201300320	Wall switches, 2.5 per 1000 SF	S.F.	\$0.14	\$0.37	\$0.51	\$14,168.00	\$37,444.00	\$51,612.00
1	D50101301050	Underground service installation, includes excavation, backfill, and compaction, 100' length, 4' depth, 3 phase, 4 wire, 277/480		\$73,140.00	\$18,347.40	\$91,487.40	\$73,140.00	\$18,347.40	\$91,487.40

		volts, 2000 A, groundfault switch							
90	D50102300560	Feeder installation 600 V, including RGS conduit and XHHW wire, 2000 A	L.F.	\$355.10	\$188.14	\$543.24	\$31,959.00	\$16,932.60	\$48,891.60
101200	D50202180400	Fluorescent high bay-4 lamp, 8'-10' above work plane, 1 watt/SF, 59 FC, 4 fixtures per 1000 SF	S.F.	\$1.65	\$1.74	\$3.39	\$166,980.00	\$176,088.00	\$343,068.00
1	D50309100360	Communication and alarm systems, fire detection, non-addressable, 25 detectors, includes outlets, boxes, conduit and wire	Ea.	\$6,121.50	\$9,079.80	\$15,201.30	\$6,121.50	\$9,079.80	\$15,201.30
1	D50309100280	Communication and alarm systems, includes outlets, boxes, conduit and wire, sound systems, 100 outlets	Ea.	\$47,912.00	\$65,440.00	\$113,352.00	\$47,912.00	\$65,440.00	\$113,352.00
4	D50309100459	Fire alarm control panel, 12 zone, excluding wire and conduit	Ea.	\$2,729.50	\$1,533.75	\$4,263.25	\$10,918.00	\$6,135.00	\$17,053.00
101200	D50303101020	Telephone wiring for offices & laboratories, 8 jacks/MSF	S.F.	\$0.47	\$1.42	\$1.89	\$47,564.00	\$143,704.00	\$191,268.00
101200	D50201100360	Receptacles incl plate, box, conduit, wire, 5 per 1000 SF, .6 watts per SF	S.F.	\$0.56	\$1.58	\$2.14	\$56,672.00	\$159,896.00	\$216,568.00

101200	D50201100320	Receptacles incl plate, box, conduit, wire, 4 per 1000 SF, .5 W per SF, with transformer	S.F.	\$0.59	\$1.42	\$2.01	\$59,708.00	\$143,704.00	\$203,412.00
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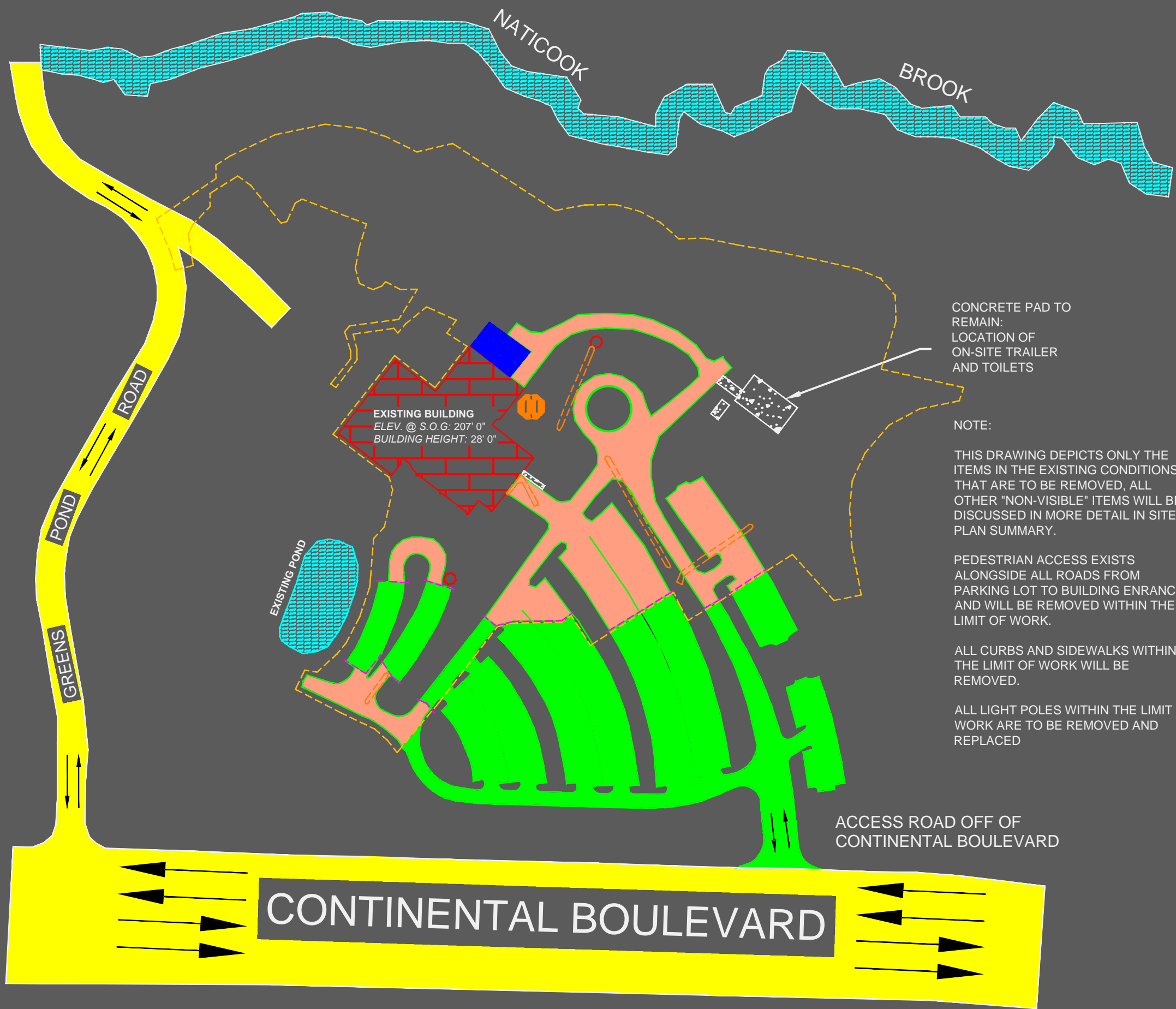
Total \$1,455,495.50

→[Assemblies Cost Estimation: Mechanical System]←

Quantity	Assembly Number	Description	Unit	Mat'l O&P	Install. O&P	Total O&P	Ext. Mat'l O&P	Ext. Install. O&P	Ext. Total O&P	
99200	D30501553880	Rooftop, multizone, air conditioner, offices, 15,000 SF, 47.50 ton	S.F.	\$13.04	\$7.33	\$20.37	\$1,293,568.00	\$727,136.00	\$2,020,704.00	
2000	D30501502920	Rooftop, single zone, air conditioner, factories, 500 SF, 1.67 ton	S.F.	\$8.34	\$6.22	\$14.56	\$16,680.00	\$12,440.00	\$29,120.00	
3	D30201061100	Boiler, gas, cast iron, hot water, 2,000 MBH	Ea.	\$23,090.40	\$9,067.80	\$32,158.20	\$69,271.20	\$27,203.40	\$96,474.60	
101200	D30201103320	Heating systems, CI boiler, gas, fin tube radiation, 544 MBH, 7,250 SF bldg	S.F.	\$7.59	\$7.25	\$14.84	\$768,108.00	\$733,700.00	\$1,501,808.00	
101200	D30301102640	Packaged chiller, air cooled, with fan coil unit, factories, 2,000 SF, 10.00 ton	S.F.	\$11.87	\$8.31	\$20.18	\$1,201,244.00	\$840,972.00	\$2,042,216.00	
Total								\$3,348,871.20	\$2,341,451.40	\$5,690,322.60

→[Assemblies Cost Estimation: Plumbing System]←

Quantity	Assembly Number	Description	Unit	Mat'l O&P	Install. O&P	Total O&P	Ext. Mat'l O&P	Ext. Install. O&P	Ext. Total O&P
4	D20102102000	Urinal, vitreous china, wall hung	Ea.	\$668.13	\$711.20	\$1,379.33	\$2,672.52	\$2,844.80	\$5,517.32
8	D20402102280	Roof drain, DWV PVC, 8" diam, 10' high	Ea.	\$3,153.55	\$1,711.33	\$4,864.88	\$25,228.40	\$13,690.64	\$38,919.04
17	D20402102320	Roof drain, DWV PVC, 8" diam, for each additional foot add	Ea.	\$48.11	\$34.67	\$82.78	\$817.87	\$589.39	\$1,407.26
25	D20103102040	Lavatory w/trim, wall hung, PE on CI, 18" x 15"	Ea.	\$1,031.59	\$702.31	\$1,733.90	\$25,789.75	\$17,557.75	\$43,347.50
17	D20101102080	Water closet, vitreous china, bowl only with flush valve, wall hung	Ea.	\$2,031.10	\$720.09	\$2,751.19	\$34,528.70	\$12,241.53	\$46,770.23
Total							\$89,037.24	\$46,924.11	\$135,961.35



EXISTING BUILDING
ELEV. @ S.O.G: 207' 0"
BUILDING HEIGHT: 28' 0"

CONCRETE PAD TO REMAIN:
LOCATION OF ON-SITE TRAILER AND TOILETS

NOTE:
THIS DRAWING DEPICTS ONLY THE ITEMS IN THE EXISTING CONDITIONS THAT ARE TO BE REMOVED, ALL OTHER "NON-VISIBLE" ITEMS WILL BE DISCUSSED IN MORE DETAIL IN SITE PLAN SUMMARY.

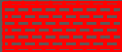







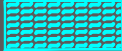



PEDESTRIAN ACCESS EXISTS ALONGSIDE ALL ROADS FROM PARKING LOT TO BUILDING ENTRANCES, AND WILL BE REMOVED WITHIN THE LIMIT OF WORK.

ALL CURBS AND SIDEWALKS WITHIN THE LIMIT OF WORK WILL BE REMOVED.

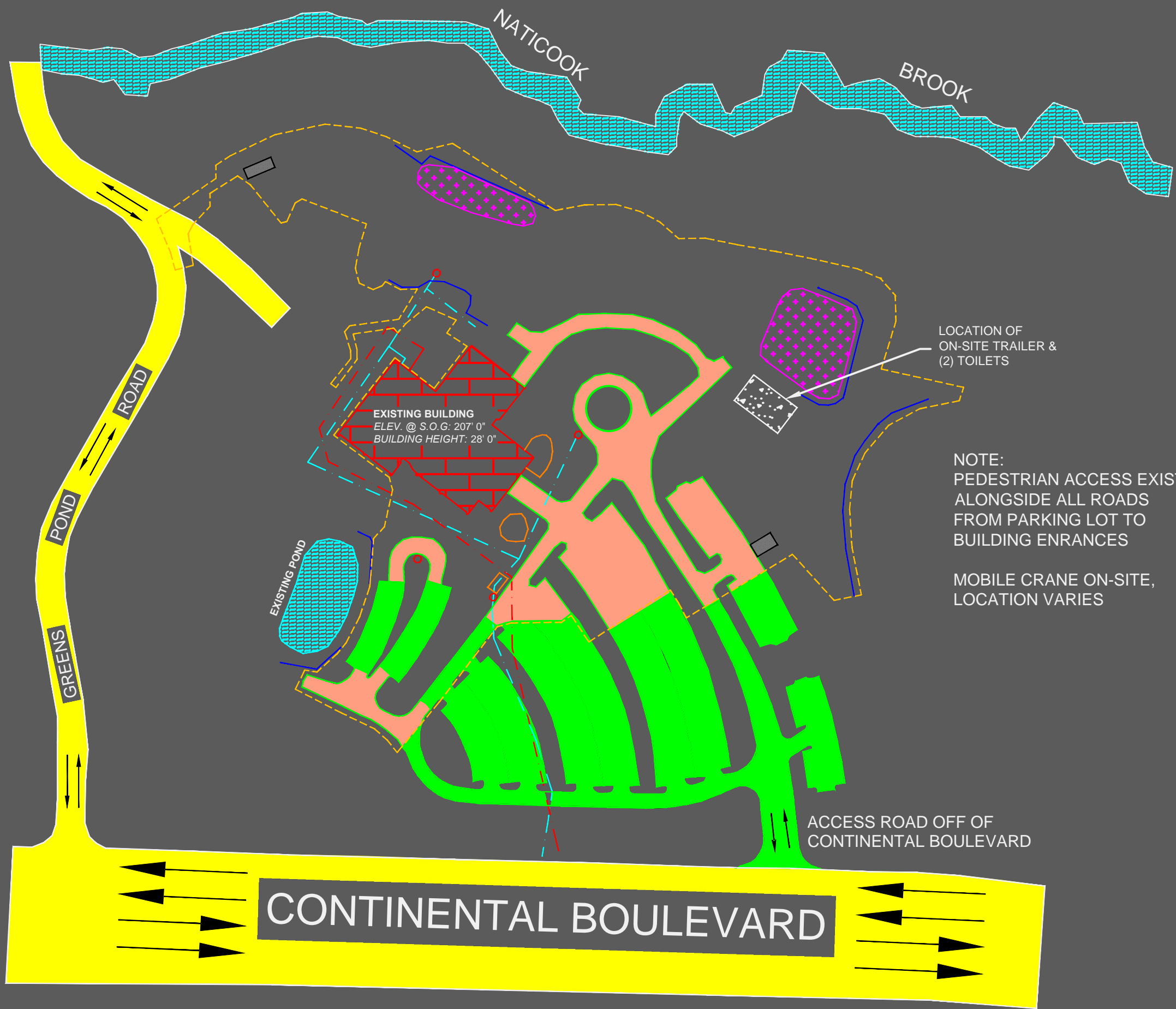
ALL LIGHT POLES WITHIN THE LIMIT OF WORK ARE TO BE REMOVED AND REPLACED

ACCESS ROAD OFF OF CONTINENTAL BOULEVARD

LEGEND

-  Existing Building
-  Existing Pavement
-  Existing Pavement to be Removed
-  Concrete Pads to be Removed, unless noted otherwise
-  Existing Hydrant to be Removed
-  Limit of Work (TYP)
-  Access Roads
-  Pavement Sawcut (TYP)
-  Water Body
-  Existing Drainage and/or Headwall to be Removed
-  Roof Over Kitchen/Jersey Barriers to be Removed
-  Existing Gazebo to be Removed

CONTINENTAL BOULEVARD






LOCATION OF ON-SITE TRAILER & (2) TOILETS

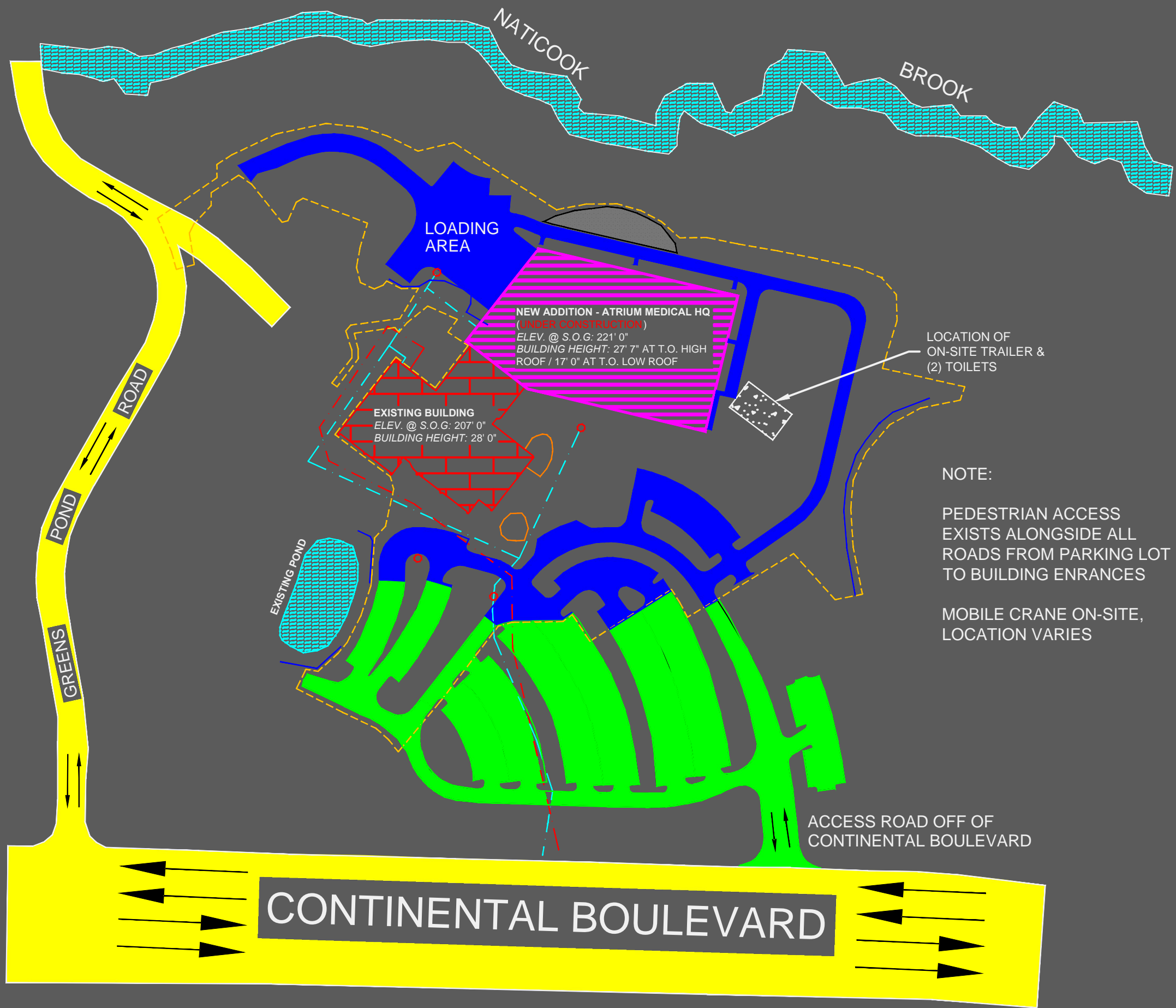
NOTE: PEDESTRIAN ACCESS EXISTS ALONGSIDE ALL ROADS FROM PARKING LOT TO BUILDING ENTRANCES

MOBILE CRANE ON-SITE, LOCATION VARIES

ACCESS ROAD OFF OF CONTINENTAL BOULEVARD

LEGEND

-  Existing Building
-  Existing Pavement to be Removed
-  Existing Pavement
-  Concrete Helicopter Pad
-  Proposed Silt Fence
-  Orange Constr. Fence
-  Hydrant
-  Water Main
-  Gas Line
-  Limit of Work (TYP)
-  Access Roads
-  Material Stockpile Area
-  Water Body
-  Stabilized Constr. Entrance



LOCATION OF ON-SITE TRAILER & (2) TOILETS

NOTE:
 PEDESTRIAN ACCESS EXISTS ALONGSIDE ALL ROADS FROM PARKING LOT TO BUILDING ENTRANCES
 MOBILE CRANE ON-SITE, LOCATION VARIES

LEGEND

- New Addition
- Existing Building
- Existing Pavement
- New Pavement
- Concrete Helicopter Pad
- Proposed Silt Fence
- Orange Constr. Fence
- Hydrant
- Water Main
- Gas Line
- Limit of Work (TYP)
- Access Roads
- Water Body
- Stabilization Matting

→[General Conditions Cost Estimate]←

General Conditions Cost Estimate						Total Project Cost	\$17,400,000.00
General Conditions	Quantity	Unit	Mat'l \$/ Unit	Labor \$/ Unit	Equip \$/ Unit	Total \$/ Unit	Total Cost
Building Permit	1	Job	--	--	--	0.50%	\$87,000.00
Builders Risk Insurance	1	Job	--	--	--	0.24%	\$41,760.00
General Insurance	1	Job	--	--	--	0.25%	\$43,500.00
Plans	5	Ea.	\$2,350.00	--	--	2350	\$11,750.00
Telephone	7	Months	\$81.00	--	--	\$81.00	\$567.00
Water	1012	CSF	--	--	--	\$1.65	\$11,688.60
Power	1012	CSF	--	--	--	\$1.65	\$11,688.60
Dumpster	7	Months	\$78.50	--	--	\$78.50	\$549.50
Office Trailer	7	Months	\$203.00	--	--	\$203.00	\$1,421.00
Storage Trailer	7	Months	\$78.50	--	--	\$78.50	\$549.50
Toilets	7	Months	\$50.00	--	--	\$50.00	\$350.00
Job Super	32	Weeks	\$2,350.00	--	--	\$2,350.00	\$75,200.00
Project Manager	16	Weeks	--	\$2,525.00	--	\$2,525.00	\$40,400.00
Assistant Super	32	Weeks	--	\$2,050.00	--	\$2,050.00	\$65,600.00
Winter Conditions (Allowance)	101200	SF	\$0.25	\$0.39	--	\$0.64	\$64,768.00
Forklift	16	Weeks	--	\$1,875.00	\$2,650.00	\$4,525.00	\$72,400.00
Job Sign	101200	SF	\$0.32	--	--	\$0.32	\$31,878.00
Photographs	3	Day	\$1,225.00	--	--	\$1,225.00	\$3,675.00
Temporary Fencing w/ Screen	250	LF	\$9.75	\$7.35	--	\$17.10	\$4,275.00
Safety Requirements	1	LS	--	--	--	\$5,000.00	\$5,000.00
Mobilization/Demobilization	4	25Mi	--	\$350.00	\$500.00	\$850.00	\$3,400.00
Final Cleaning	1	Job	--	--	--	0.30%	\$52,200.00
Daily Cleaning	101.2	MSF	0.81	27.5	2.81	\$31.12	\$3,149.34
Testing	1	Project	--	--	--	\$33,100.00	\$33,100.00
Total							\$665,869.54



LEED 2009 for New Construction and Major Renovations

Project Checklist

5 Sustainable Sites Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1

4 Water Efficiency Possible Points: 10

Y	?	N			
Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
2			Credit 3	Water Use Reduction	2 to 4

2 Energy and Atmosphere Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
1			Credit 1	Optimize Energy Performance	1 to 19
1			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2

8 Materials and Resources Possible Points: 14

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
3			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
1			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2	Construction Waste Management	1 to 2
1			Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
1			Credit 4	Recycled Content	1 to 2
1			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1

6 Indoor Environmental Quality Possible Points: 15

Y	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1

1 Innovation and Design Process Possible Points: 6

Y	?	N			
1			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

Regional Priority Credits Possible Points: 4

Y	?	N			
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

26 Total Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110