



Technical Report 2

October 28, 2009

Emily Couric Clinical Cancer Center Charlottesville, VA

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Construction Management
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EXECUTIVE SUMMARY

In this technical report, there are a few different topics discussed. A detailed project schedule is provided that was derived from a schedule provided to me over the summer. The schedule is around 190 activities not counting the headings. There are three different site layouts for different stages during construction. The first site plan is for construction during demolition of the existing parking garage. The second site plan is for construction during the steel placement. The third site plan is for the rest of construction after the steel is completed.

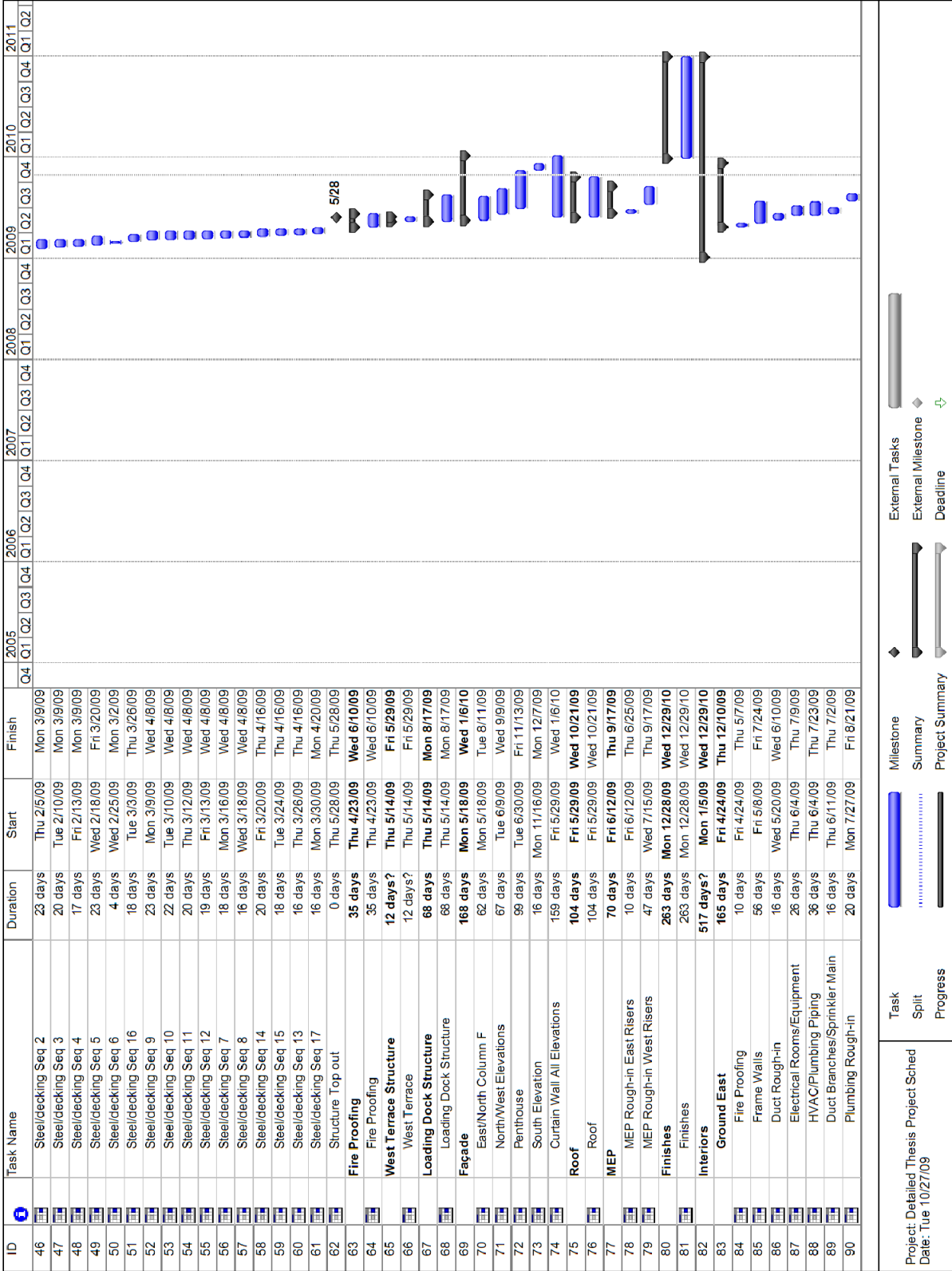
A detailed structural system estimate is provided with all of the details in the appendix and a summary discussed in the actual report. The schedule shows that the building will be constructed from East to West and floor by floor. The general conditions estimate is also provided with a discussion about what was included. The final topic discussed in this report was the PACE Roundtable that took place on October 14th and 15th at the Penn Stater Conference Center Hotel. This section gives an overview of the event and highlights some of the topics I thought were interesting and what I enjoyed about the event.

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DETAILED PROJECT SCHEDULE

A detailed project schedule, derived from a much more detailed schedule last updated in February 2009, is shown below. This schedule expands upon the project schedule summary in the previous technical assignment. This project has been in the planning stages since 2005 and finally broke ground on April 12, 2008. They mobilized the site in June of 2008 as the garage demolition was finishing. They had to demolish an existing parking garage before they could start building the cancer center. The building is separated into three different sections by column lines F-K, C-F, and Z-C for the construction of the exterior walls. The steel is split into 17 sequences and will top out on May 28, 2009. It is being constructed from the east to the west, floor by floor and will be substantially complete on December 29, 2010.



SITE LAYOUT PLANNING

I have drawn 3 different site plans for different stages in construction which are located in appendix C. The first site layout plan is for demolition of the existing parking garage. There is access to the site from two different streets, Jefferson and Lee, therefore; the dumpsters are located along one street for easy access for the garbage trucks. There are no trailers on site because the site is too small to accommodate them therefore; they are located nearby off site. Two demolition machines were used to demolish the garage and place debris in the dumpsters. The fence is located around the entire site to prevent pedestrians from entering the construction area.

The second site layout plan is for the superstructure construction. The fence has been moved in closer to the building to allow normal traffic to flow more easily around the site. One dumpster was removed because there is less construction waste on the site during this phase. A soil pile is located on the site from the foundation construction and will be reused to backfill or it will be taken off site in dump trucks. A mobile crane is located on site to easily move around the building and construction the frame of the building. There is also a material layout area where materials can be organized and stored for ease of construction.

The third site layout plan is for the rest of the construction phases. It will be able to stay the same throughout because the crane is no longer necessary after the steel is in place and the mechanical equipment is set. There is more material storage on the site because more contractors have mobilized and need somewhere to store their tools and materials. The soil pile is also gone because it has either been put back in place or removed from the site.

DETAILED STRUCTURAL SYSTEMS ESTIMATE

The following detailed estimate is an estimate based on a hand takeoff I performed of the structural system on the Emily Couric Clinical Cancer Center. A summary is provided below and the details, including the takeoff is in appendix A. The foundation is precast caissons under each column. The columns are steel columns with composite metal deck and lightweight concrete placed on the decking.

I performed this estimate by taking off each piece of steel by type and length. I tabulated them in an excel spreadsheet and sorted them to get a final quantity and input the data into a Cost Works estimating program using RSMMeans. After the steel was counted for, I went through and found that there are 12 different types of concrete floor. I measured the areas of each type in order to most accurately calculate the cost of each. The estimate also includes the cost to move earthwork for the foundations as the foundations are also included in the concrete for the structural system.

	My Estimate	Gilbane
Earthwork	\$140,722.05	
Concrete	\$1,644,053.03	3,749,427
Steel	\$3,412,913.20	4,234,143
	\$5,197,688.28	\$7,983,570.00

Compared to the estimate given to me by the Gilbane Building Company my estimate was about 3 million dollars less than the Gilbane estimate. The steel was only about \$800,000 which is likely due to the price of miscellaneous metals not included in my estimate but they are included in the Gilbane estimate. The stairs are also included in the Gilbane total and not in mine. The metal for my estimate was based on simple construction and there are a few complex member sizes installed on this job such as one member that is on a 45 degree angle and slanted. These complex items cannot be accounted for based on my experience level. Additionally, bolts and other unique connections and welds are not accounted for.

The concrete estimate is largely different from the Gilbane estimate due to a number of reasons, some of which can be explained. One of the largest differences has to be involved with the linear accelerator rooms. It is very difficult to estimate based on the fact that the formwork is unique for these spaces, volume is not a typical shape and most likely the concrete has additives and other traits that make it more costly to install. RSMMeans also does a poor job of providing information for estimating caissons and drilled piers for foundations. Also note that general floor slabs, in some cases, are unusually shaped and decreased the accuracy of the takeoff and some concrete may have been omitted.

GENERAL CONDITIONS ESTIMATE

The general conditions estimate is shown in Appendix C with the details. The estimate includes items such as site trailers, temporary site utilities, insurance, testing, staffing, tools and safety equipment, and other equipment to be used on site. The calculated duration of the project is 32 months or 136 weeks for these items. The total estimated general conditions are \$6,784,880.

The project has 2 trailers located off site but near enough to walk to. These trailers house the staff which includes a project executive, 2 project managers, a field engineer, 2 superintendents, and the administrative assistant. The trailer includes items such as office supplies, air conditioning, heating, internet, phone and toilets.

The equipment on the site includes a mobile crane for the duration of the steel construction. Additionally, there is a forklift, material hoist, and boom man lift. The superintendents each have a pickup truck charged to the job.

The major portion of general conditions has to do with insurance and bonding. The job includes liability, auto, workers compensation, and other applicable insurances. A performance bond was also added to the estimate.

CRITICAL INDUSTRY ISSUES

The PACE Roundtable took place on Wednesday, October 14th and Thursday, October 15th at the Penn Stater Conference Center hotel. On Wednesday there was a short introduction of what to expect at the Roundtable followed by a delicious dinner with the industry members and students having time to get to know each other. This was a great time to relax and talk to professionals about their current projects and make contacts for future references.

On Thursday, the roundtable opened up with a short welcome from Dr. Chimay Anumba, the department head of Architectural Engineering, followed by the industry panel. The industry panel consisted of five industry members discussing how their companies are coping with the economic situation and how they are moving forward. Each company had different strategies to deal with it and they all said the competition was getting more difficult. There are more firms bidding on the same projects that typically there would only be 3 or 4 bidders and now there are 15 to 20 bidders. They have recognized that they have to differentiate themselves more to stand out and keep the advantage over the other bidders.

There were three different breakout sessions to discuss different topics such as Energy and the Construction Industry, Business and Networking, and BIM Execution Planning. I chose to go to the Energy and the Construction Industry session because I thought maybe I could get a few ideas for my thesis since it is an outpatient clinic for cancer patients and is trying to achieve a LEED Silver rating. The first half of the session was to identify current problems or issues with energy in the construction industry. We had 5 industry members in this session that helped with input on what is going on in the industry now. The students help to identify problems, too.

The second half of the session was devoted to what we can do about the issues and the new systems that are more energy efficient. A lot of students would discuss their building and ask the industry members if they had any suggestions or if they thought they were on the right track with changing the system. There were a lot of talk about solar panels and different technologies that they are coming out with. A lot of ideas were discussed for multiple different types of buildings that were very helpful for the 5th year student thesis projects.

After lunch, each of the facilitators gave a brief overview of what was discussed in each session which was nice to hear about what everyone else had discussed. A student panel followed this session which was a group of students that discussed what technologies we use and what is acceptable to use for business purposes. I was on the panel and was the only one that does not text and have the internet on my phone. I thought this session was very interesting and had a lot of beneficial information for both the student and the industry members. It was interesting to see how many industry members have blackberry's and are texting the whole time.

Personally, I think technology is very beneficial to the construction industry but there needs to be limits on what to use and when to use it. I think it is good because you can transfer information very quickly and get things accomplished a lot faster than you used to be able to. On the other hand, I have seen how people are losing their ability to communicate effectively because they cannot write a proper e-mail or letter. I think that there needs to be a lecture in a class or two about proper use of technology. As far as checking personal e-mails at work, I think that there needs to be self-control and you should know when it is ok and when it is not. If you have a slower day then I think there is no problem to check your e-mail but if there is work that needs to get done then I would not be taking time out of my day to check personal e-mails when I could do it at home and get the work done in a timely manner.

I think both parties learned from this discussion and helped to get a better understanding where each person is coming from. We, the students, like to have the information at our fingertips at all times. The industry members don't think it is necessary to have it all of the time. I think it is a personal thing and you need to decide what you want to use and what you don't want to use.

The final session was on what is the role of continuing education in construction? Mostly, this involved industry members discussing what worked for them and their companies. Some people agreed that webinars worked best because they could do them from their trailer or office and didn't have to take time to go somewhere to learn about something. Others said they prefer to have an entire day where they go and have a day of educational events or training sessions. They said it was easier to block out an entire day than to take half a day or an hour or two to learn about something. This also came down to personal preference on which you liked better. There are benefits to both and I think that you need to find what works best for you to learn the most that you can while maintaining your busy life.

The chart below is a list of contacts that I met at the roundtable and their companies. I may need to ask them a few questions about my thesis or could possibly be working with them in the future.

Name	Company
Chris Taylor	Southland Industries, Inc.
Chuck Tomasco	Truland Systems, Inc.
Jeremy Sibert	Henzel Phelps Construction
Dan Kerr	McClure Company
Alyssa Adams	McClure Company

APPENDIX A: STRUCTURAL SYSTEMS ESTIMATE

Unit Detail Report



Year 2009

Date: 28-Oct-09

Structural Estimate

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 03 Concrete					
032110502700	Reinforcing steel, shop size extra, #7 to #11 bar, A615, grade 40, material only, included in delivered price	19.34	Ton	\$53.64	\$1,037.62
032113100150	Galvanized coating, for reinforcing steel, add to fabricated & delivered price of uncoated reinforcing	19.34	Ton	\$1,265.00	\$24,470.16
032205500200	Welded wire fabric, sheets, 6 x 6 - W2.1 x W2.1 (8 x 8) 30 lb. per C.S.F., A185	5.25	C.S.F.	\$55.98	\$293.90
032205500300	Welded wire fabric, sheets, 6 x 6 - W2.9 x W2.9 (6 x 6) 42 lb. per C.S.F., A185	1,337.10	C.S.F.	\$64.83	\$86,684.19
032205500300	Welded wire fabric, sheets, 6 x 6 - W2.9 x W2.9 (6 x 6) 42 lb. per C.S.F., A185	273.07	C.S.F.	\$59.51	\$16,250.10
033053404500	Structural concrete, in place, free-standing wall, 15" thick x 18' high, includes forms(4 uses), reinforcing steel, and finishing	1,949.00	C.Y.	\$401.53	\$782,581.97
033053404820	Structural concrete, in place, slab on grade, over 10000 S.F., 6" thick, includes finishing only	27,306.50	S.F.	\$3.06	\$83,557.89
033053404900	Structural concrete, in place, slab on grade, over 10000 S.F., 12" thick, includes finishing only	4,016.00	S.F.	\$5.68	\$22,810.88
033105350411	Structural concrete, ready mix, normal weight, 6000 PSI, includes local aggregate, sand, Portland cement and water, delivered, excludes all additives and treatments	632.00	C.Y.	\$149.56	\$94,521.92
033105701500	Structural concrete, placing, elevated slab, pumped, 6" to 10" thick, includes vibrating, excludes material	2,187.00	C.Y.	\$16.69	\$36,501.03
033105703900	Structural concrete, placing, pile caps, pumped, 6 C.Y. to 10 C.Y., includes vibrating, excludes material	632.00	C.Y.	\$13.33	\$8,424.56
033116100780	Structural concrete, ready mix, lightweight, 110 #/C.F., 3500 psi, includes lightweight aggregate, sand, portland cement and water, excludes all additives and treatments	2,187.00	C.Y.	\$171.08	\$374,151.96
033529300200	Concrete finishing, floors, manual screed, bull float, manual float, manual steel trowel	178,995.00	S.F.	\$0.63	\$112,766.85
Division 03 Subtotal					\$1,644,053.03
Division 05 Metals					
051223174550	Column, structural tubing, 6" x 6" x 1/4" x 12'-0", incl shop primer, cap & base plate, bolts	12.00	Ea.	\$529.53	\$6,354.36
051223174550	Column, structural tubing, 6" x 6" x 1/4" x 12'-0", incl shop primer, cap & base plate, bolts	39.00	Ea.	\$529.53	\$20,651.67
051223174600	Column, structural tubing, 8" x 8" x 3/8" x 14'-0", incl shop primer, cap & base plate, bolts	11.00	Ea.	\$1,034.96	\$11,384.56

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
051223174600	Column, structural tubing, 8" x 8" x 3/8" x 14'-0", incl shop primer, cap & base plate, bolts	108.00	Ea.	\$1,034.96	\$111,775.68
051223174650	Column, structural tubing, 10" x 10" x 1/2" x 16'-0", incl shop primer, cap & base plate, bolts	5.00	Ea.	\$1,837.01	\$9,185.05
051223174650	Column, structural tubing, 10" x 10" x 1/2" x 16'-0", incl shop primer, cap & base plate, bolts	45.00	Ea.	\$1,837.01	\$82,665.45
051223177000	Column, structural, 2-tier, W10x45, A992 steel, incl shop primer, splice plates, bolts	384.00	L.F.	\$83.31	\$31,991.04
051223177000	Column, structural, 2-tier, W10x45, A992 steel, incl shop primer, splice plates, bolts	240.00	L.F.	\$83.31	\$19,994.40
051223177050	Column, structural, 2-tier, W10x68, A992 steel, incl shop primer, splice plates, bolts	188.00	L.F.	\$123.22	\$23,165.36
051223177150	Column, structural, 2-tier, W12x50, A992 steel, incl shop primer, splice plates, bolts	204.00	L.F.	\$92.39	\$18,847.56
051223177200	Column, structural, 2-tier, W12x87, A992 steel, incl shop primer, splice plates, bolts	138.00	L.F.	\$156.64	\$21,616.32
051223177200	Column, structural, 2-tier, W12x87, A992 steel, incl shop primer, splice plates, bolts	56.00	L.F.	\$156.64	\$8,771.84
051223177200	Column, structural, 2-tier, W12x87, A992 steel, incl shop primer, splice plates, bolts	326.00	L.F.	\$156.64	\$51,064.64
051223177350	Column, structural, 2-tier, W14x74, A992 steel, incl shop primer, splice plates, bolts	940.00	L.F.	\$133.72	\$125,696.80
051223177400	Column, structural, 2-tier, W14x120, A992 steel, incl shop primer, splice plates, bolts	246.00	L.F.	\$214.08	\$52,663.68
051223177400	Column, structural, 2-tier, W14x120, A992 steel, incl shop primer, splice plates, bolts	312.00	L.F.	\$214.08	\$66,792.96
051223177450	Column, structural, 2-tier, W14x176, A992 steel, incl shop primer, splice plates, bolts	208.00	L.F.	\$311.80	\$64,854.40
051223177450	Column, structural, 2-tier, W14x176, A992 steel, incl shop primer, splice plates, bolts	428.00	L.F.	\$311.80	\$133,450.40
051223750100	Structural steel member, 100-ton project, 1 to 2 story building, W6x9, A992 steel, shop fabricated, incl shop primer, bolted connections	107.00	L.F.	\$25.04	\$2,679.28
051223750120	Structural steel member, 100-ton project, 1 to 2 story building, W6x15, A992 steel, shop fabricated, incl shop primer, bolted connections	55.00	L.F.	\$35.22	\$1,937.10
051223750140	Structural steel member, 100-ton project, 1 to 2 story building, W6x20, A992 steel, shop fabricated, incl shop primer, bolted connections	47.00	L.F.	\$44.29	\$2,081.63
051223750300	Structural steel member, 100-ton project, 1 to 2 story building, W8x10, A992 steel, shop fabricated, incl shop primer, bolted connections	2,011.00	L.F.	\$26.76	\$53,814.36
051223750320	Structural steel member, 100-ton project, 1 to 2 story building, W8x15, A992 steel, shop fabricated, incl shop primer, bolted connections	91.00	L.F.	\$35.22	\$3,205.02

Emily Couric Clinical Cancer Center
Charlottesville, VA

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
051223750350	Structural steel member, 100-ton project, 1 to 2 story building, W8x21, A992 steel, shop fabricated, incl shop primer, bolted connections	30.00	L.F.	\$45.72	\$1,371.60
051223750360	Structural steel member, 100-ton project, 1 to 2 story building, W8x24, A992 steel, shop fabricated, incl shop primer, bolted connections	20.00	L.F.	\$51.83	\$1,036.60
051223750600	Structural steel member, 100-ton project, 1 to 2 story building, W10x12, A992 steel, shop fabricated, incl shop primer, bolted connections	480.33	L.F.	\$30.44	\$14,621.35
051223750620	Structural steel member, 100-ton project, 1 to 2 story building, W10x15, A992 steel, shop fabricated, incl shop primer, bolted connections	149.00	L.F.	\$35.22	\$5,247.78
051223750620	Structural steel member, 100-ton project, 1 to 2 story building, W10x15, A992 steel, shop fabricated, incl shop primer, bolted connections	299.00	L.F.	\$35.22	\$10,530.78
051223750700	Structural steel member, 100-ton project, 1 to 2 story building, W10x22, A992 steel, shop fabricated, incl shop primer, bolted connections	814.00	L.F.	\$47.63	\$38,770.82
051223750700	Structural steel member, 100-ton project, 1 to 2 story building, W10x22, A992 steel, shop fabricated, incl shop primer, bolted connections	440.00	L.F.	\$47.63	\$20,957.20
051223750720	Structural steel member, 100-ton project, 1 to 2 story building, W10x26, A992 steel, shop fabricated, incl shop primer, bolted connections	792.00	L.F.	\$54.32	\$43,021.44
051223750740	Structural steel member, 100-ton project, 1 to 2 story building, W10x33, A992 steel, shop fabricated, incl shop primer, bolted connections	54.00	L.F.	\$67.59	\$3,649.86
051223750900	Structural steel member, 100-ton project, 1 to 2 story building, W10x49, A992 steel, shop fabricated, incl shop primer, bolted connections	164.00	L.F.	\$95.29	\$15,627.56
051223751100	Structural steel member, 100-ton project, 1 to 2 story building, W12x16, A992 steel, shop fabricated, incl shop primer, bolted connections	293.00	L.F.	\$34.13	\$10,000.09
051223751100	Structural steel member, 100-ton project, 1 to 2 story building, W12x16, A992 steel, shop fabricated, incl shop primer, bolted connections	519.50	L.F.	\$34.13	\$17,730.54
051223751300	Structural steel member, 100-ton project, 1 to 2 story building, W12x22, A992 steel, shop fabricated, incl shop primer, bolted connections	659.00	L.F.	\$44.63	\$29,411.17
051223751500	Structural steel member, 100-ton project, 1 to 2 story building, W12x26, A992 steel, shop fabricated, incl shop primer, bolted connections	105.00	L.F.	\$51.32	\$5,388.60
051223751520	Structural steel member, 100-ton project, 1 to 2 story building, W12x35, A992 steel, shop fabricated, incl shop primer, bolted connections	20.00	L.F.	\$67.62	\$1,352.40
051223751900	Structural steel member, 100-ton project, 1 to 2 story building, W14x26, A992 steel, shop fabricated, incl shop primer, bolted connections	1,782.00	L.F.	\$50.59	\$90,151.38

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
051223752300	Structural steel member, 100-ton project, 1 to 2 story building, W14x34, A992 steel, shop fabricated, incl shop primer, bolted connections	185.00	L.F.	\$65.71	\$12,156.35
051223752320	Structural steel member, 100-ton project, 1 to 2 story building, W14x43, A992 steel, shop fabricated, incl shop primer, bolted connections	123.00	L.F.	\$81.47	\$10,020.81
051223752360	Structural steel member, 100-ton project, 1 to 2 story building, W14x74, A992 steel, shop fabricated, incl shop primer, bolted connections	264.00	L.F.	\$135.43	\$35,753.52
051223752700	Structural steel member, 100-ton project, 1 to 2 story building, W16x26, A992 steel, shop fabricated, incl shop primer, bolted connections	2,497.00	L.F.	\$50.55	\$126,223.35
051223752900	Structural steel member, 100-ton project, 1 to 2 story building, W16x31, A992 steel, shop fabricated, incl shop primer, bolted connections	4,545.00	L.F.	\$60.24	\$273,790.80
051223753100	Structural steel member, 100-ton project, 1 to 2 story building, W16x40, A992 steel, shop fabricated, incl shop primer, bolted connections	69.00	L.F.	\$76.29	\$5,264.01
051223753100	Structural steel member, 100-ton project, 1 to 2 story building, W16x40, A992 steel, shop fabricated, incl shop primer, bolted connections	85.00	L.F.	\$76.29	\$6,484.65
051223753140	Structural steel member, 100-ton project, 1 to 2 story building, W16x67, A992 steel, shop fabricated, incl shop primer, bolted connections	23.00	L.F.	\$123.97	\$2,851.31
051223753140	Structural steel member, 100-ton project, 1 to 2 story building, W16x67, A992 steel, shop fabricated, incl shop primer, bolted connections	150.00	L.F.	\$123.97	\$18,595.50
051223753300	Structural steel member, 100-ton project, 1 to 2 story building, W18x35, A992 steel, shop fabricated, incl shop primer, bolted connections	932.00	L.F.	\$68.43	\$63,776.76
051223753500	Structural steel member, 100-ton project, 1 to 2 story building, W18x40, A992 steel, shop fabricated, incl shop primer, bolted connections	1,510.00	L.F.	\$77.03	\$116,315.30
051223753520	Structural steel member, 100-ton project, 1 to 2 story building, W18x46, A992 steel, shop fabricated, incl shop primer, bolted connections	468.00	L.F.	\$87.53	\$40,964.04
051223753700	Structural steel member, 100-ton project, 1 to 2 story building, W18x50, A992 steel, shop fabricated, incl shop primer, bolted connections	245.00	L.F.	\$95.13	\$23,306.85
051223753900	Structural steel member, 100-ton project, 1 to 2 story building, W18x55, A992 steel, shop fabricated, incl shop primer, bolted connections	64.00	L.F.	\$103.72	\$6,638.08
051223753920	Structural steel member, 100-ton project, 1 to 2 story building, W18x65, A992 steel, shop fabricated, incl shop primer, bolted connections	148.00	L.F.	\$121.03	\$17,912.44
051223753940	Structural steel member, 100-ton project, 1 to 2 story building, W18x76, A992 steel, shop fabricated, incl shop primer, bolted connections	60.00	L.F.	\$140.13	\$8,407.80

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
051223753960	Structural steel member, 100-ton project, 1 to 2 story building, W18x86, A992 steel, shop fabricated, incl shop primer, bolted connections	30.00	L.F.	\$157.32	\$4,719.60
051223754100	Structural steel member, 100-ton project, 1 to 2 story building, W21x44, A992 steel, shop fabricated, incl shop primer, bolted connections	657.00	L.F.	\$83.45	\$54,826.65
051223754300	Structural steel member, 100-ton project, 1 to 2 story building, W21x50, A992 steel, shop fabricated, incl shop primer, bolted connections	1,459.00	L.F.	\$93.96	\$137,087.64
051223754500	Structural steel member, 100-ton project, 1 to 2 story building, W21x62, A992 steel, shop fabricated, incl shop primer, bolted connections	59.00	L.F.	\$115.16	\$6,794.44
051223754740	Structural steel member, 100-ton project, 1 to 2 story building, W21x93, A992 steel, shop fabricated, incl shop primer, bolted connections	35.00	L.F.	\$168.89	\$5,911.15
051223754760	Structural steel member, 100-ton project, 1 to 2 story building, W21x101, A992 steel, shop fabricated, incl shop primer, bolted connections	17.00	L.F.	\$182.26	\$3,098.42
051223754780	Structural steel member, 100-ton project, 1 to 2 story building, W21x122, A992 steel, shop fabricated, incl shop primer, bolted connections	30.00	L.F.	\$218.55	\$6,556.50
051223754900	Structural steel member, 100-ton project, 1 to 2 story building, W24x55, A992 steel, shop fabricated, incl shop primer, bolted connections	992.00	L.F.	\$102.26	\$101,441.92
051223755100	Structural steel member, 100-ton project, 1 to 2 story building, W24x62, A992 steel, shop fabricated, incl shop primer, bolted connections	249.00	L.F.	\$114.68	\$28,555.32
051223755300	Structural steel member, 100-ton project, 1 to 2 story building, W24x68, A992 steel, shop fabricated, incl shop primer, bolted connections	219.00	L.F.	\$124.23	\$27,206.37
051223755500	Structural steel member, 100-ton project, 1 to 2 story building, W24x76, A992 steel, shop fabricated, incl shop primer, bolted connections	30.00	L.F.	\$138.55	\$4,156.50
051223755700	Structural steel member, 100-ton project, 1 to 2 story building, W24x84, A992 steel, shop fabricated, incl shop primer, bolted connections	67.00	L.F.	\$152.10	\$10,190.70
051223755740	Structural steel member, 100-ton project, 1 to 2 story building, W24x104, A992 steel, shop fabricated, incl shop primer, bolted connections	61.00	L.F.	\$187.62	\$11,444.82
051223756100	Structural steel member, 100-ton project, 1 to 2 story building, W30x99, A992 steel, shop fabricated, incl shop primer, bolted connections	93.00	L.F.	\$178.16	\$16,568.88
051223756300	Structural steel member, 100-ton project, 1 to 2 story building, W30x108, A992 steel, shop fabricated, incl shop primer, bolted connections	60.00	L.F.	\$193.44	\$11,606.40
051223756500	Structural steel member, 100-ton project, 1 to 2 story building, W30x116, A992 steel, shop fabricated, incl shop primer, bolted connections	60.00	L.F.	\$207.96	\$12,477.60

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
051223756520	Structural steel member, 100-ton project, 1 to 2 story building, W30x132, A992 steel, shop fabricated, incl shop primer, bolted connections	30.00	L.F.	\$235.65	\$7,069.50
051223756580	Structural steel member, 100-ton project, 1 to 2 story building, W30x191, A992 steel, shop fabricated, incl shop primer, bolted connections	88.00	L.F.	\$336.17	\$29,582.96
051223756700	Structural steel member, 100-ton project, 1 to 2 story building, W33x118, A992 steel, shop fabricated, incl shop primer, bolted connections	60.00	L.F.	\$210.74	\$12,644.40
051223756900	Structural steel member, 100-ton project, 1 to 2 story building, W33x130, A992 steel, shop fabricated, incl shop primer, bolted connections	119.00	L.F.	\$232.01	\$27,609.19
051223757300	Structural steel member, 100-ton project, 1 to 2 story building, W36x135, A992 steel, shop fabricated, incl shop primer, bolted connections	65.00	L.F.	\$240.36	\$15,623.40
051223757500	Structural steel member, 100-ton project, 1 to 2 story building, W36x150, A992 steel, shop fabricated, incl shop primer, bolted connections	105.00	L.F.	\$266.14	\$27,944.70
053113503560	Metal decking, steel, open type, wide rib, galvanized, over 500 Sq, 3" D, 16 ga	133,710.00	S.F.	\$6.04	\$807,608.40
053123502700	Metal decking, steel, open type, wide rib, galvanized, over 500 Sq, 1-1/2" D, 20 ga	13,963.00	S.F.	\$2.88	\$40,213.44
Division 05 Subtotal					\$3,412,913.20
Division 31 Earthwork					
316326161500	Concrete caissons for marine construction, cased shafts, 140 to 175 tons capacity, 19" diameter, 40' depth, includes mobilization and demobilization up to 50 miles	2,415.00	V.L.F.	\$58.27	\$140,722.05
Division 31 Subtotal					\$140,722.05

APPENDIX B: STRUCTURAL SYSTEMS TAKEOFF

Floor Schedule

Type	Description	Floor	Area	Volume	Volume
LS1	9" normal weight structural slab	GROUND 1	2088		
LS2	9" normal weight structural slab	GROUND 2	1020.75		
LP1	12" normal weight structural slab	GROUND 3	231		
LS4	9" normal weight structural slab	GROUND 4	675.75	4015.5	
6" SOG	6" normal weight	GROUND 5	27306.5		
S1	3.5" LW CONC.; 1.5 18 gage galv. Composite deck with WWF 6x6 w2.0xw2.0	MEZZANINE 1	525		6.886574074
G	1.75x3/16" galv. Steel bar grading with cross bars at 4" max	MEZZANINE 2	704		
S2	3.5" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	FIRST	26239		404.9228395
S2	3.5" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	SECOND	27230		420.2160494
S2	3.5" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	THIRD	27230		420.2160494
S2	3.5" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	FOURTH	25891		399.5524691
S3	3" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	ROOF 1	11867		183.132716
S4	6.5" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.9	ROOF 2	13214		326.2716049
S5	9" LW CONC.; 3" 18 gage galv. Composite deck with WWF 6x6 w2.9xw2.10	ROOF 3	810	133710	26.25
R	1.5" 20 gage galvanized roof deck	PENTHOUSE	13963		
		Totals:	178995		2187.448302

Structural Framing Schedule						
Plan	Type	Weight	Length	Count	Total Length	Total Lenth of Type
S401	HSS10X10X1/2		20	2	40	
S401	HSS10X10X1/2		21	2	42	82
S401	HSS10X10X3/8		33	1	33	
S401	HSS10X10X3/8		20.5	4	82	
S401	HSS10X10X3/8		17	1	17	
S401	HSS10X10X3/8		27	1	27	
S401	HSS10X10X3/8		20	2	40	
S401	HSS10X10X3/8		20	2	40	
S401	HSS10X10X3/8		31	2	62	
S401	HSS10X10X3/8		21	2	42	343
S401	HSS10X10X5/8		16	1	16	
S401	HSS10X10X5/8		26	1	26	42
	HSS10x3x5/16		12	2	24	
	HSS10x3x5/16		12	2	24	
S205	HSS10x3x5/16		12	2	24	72
S401	HSS12X12X1/2		33	2	66	66
S202	HSS4x4x1/4		9	2	18	
S202	HSS4x4x1/4		11	2	22	
s206	HSS4x4x1/4		64	2	128	168
S202	HSS5x5x5/16		11	2	22	
S202	HSS5x5x5/16		15	4	60	
S202	HSS5x5x5/16		14	4	56	138
S202	HSS6x4x.25		6	6	36	
S202	HSS6x6x.25		16	2	32	
S202	HSS6x6x.25		9	2	18	
S202	HSS6x6x.25		8	1	8	94
S202	HSS8x6x.625		32	1	32	
S202	HSS8x6x.625		37	1	37	69
s206	HSS8x8x1/4		35	4	140	
s206	HSS8x8x1/4		30	10	300	440
S401	HSS8X8X3/8		20	2	40	
S401	HSS8X8X3/8		17	6	102	
S401	HSS8X8X3/8		18	2	36	
S401	HSS8X8X3/8		20.5	2	41	
S401	HSS8X8X3/8		31	2	62	
S401	HSS8X8X3/8		33	2	66	
S401	HSS8X8X3/8		20	2	40	
S401	HSS8X8X3/8		21	2	42	
S401	HSS8X8X3/8		25	1	25	
S401	HSS8X8X3/8		22	1	22	
S401	HSS8X8X3/8		25	1	25	
S401	HSS8X8X3/8		22	1	22	523
s314	HSS8X8X5/16		23	6	138	
s314	HSS8X8X5/16		21	6	126	264
S201	w10x12	12	17.3333	1	17.3333	
S201	w10x12	12	20	1	20	
S201	w10x12	12	10	1	10	
S201	w10x12	12	7	2	14	
S201	w10x12	12	16	2	32	
S201	w10x12	12	18	1	18	
S201	w10x12	12	19	1	19	
S201	w10x12	12	17	1	17	
S202	w10x12	12	9	1	9	

Structural Framing Schedule						
S202	w10x12	12	7	2	14	
S202	w10x12	12	15	2	30	
S202	w10x12	12	20	1	20	
S203	w10x12	12	7	1	7	
S203	w10x12	12	4	1	4	
S203	w10x12	12	15	4	60	
S203	w10x12	12	9	1	9	
S204approx	w10x12	12	7	1	7	
S204approx	w10x12	12	4	1	4	
S204approx	w10x12	12	15	4	60	
S204approx	w10x12	12	9	1	9	
S205	w10x12	12	7	1	7	
S205	w10x12	12	10	1	10	
S205	w10x12	12	7	2	14	
S205	w10x12	12	25	1	25	
S205	w10x12	12	9	1	9	
S205	w10x12	12	20	1	20	
S205	w10x12	12	15	1	15	480.3333
S201	w10x15	15	16	1	16	
S201	w10x15	15	19	1	19	
S202	w10x15	15	19	2	38	
S203	W10X15	15	19	2	38	
S204approx	W10X15	15	19	2	38	149
S201	w10x17	17	16	1	16	
S201	w10x17	17	19	5	95	
S205	w10x17	17	19	2	38	
s206	w10x17	17	30	5	150	299
	w10x19	19	8	1	8	
	w10x19	19	16	1	16	
	w10x19	19	15	2	30	
S201	w10x19	19	19	1	19	
S202	w10x19	19	19	12	228	
S203	W10X19	19	19	12	228	
S204approx	W10X19	19	19	12	228	
S205	w10x19	19	19	3	57	814
S201	w10x22	22	19	3	57	
S205	w10x22	22	19	7	133	
S205	w10x22	22	15	2	30	
s206	w10x22	22	35	2	70	
s206	w10x22	22	30	5	150	440
	w10x26	26	17	3	51	
S201	w10x26	26	19	3	57	
S202	w10x26	26	19	9	171	
S203	W10X26	26	19	9	171	
S204approx	W10X26	26	19	9	171	
S205	w10x26	26	19	9	171	792
s206	w10x30	30	35	1	35	35
S205	w10x33	33	19	1	19	19
S201	w10x45	45	18	1	18	
S201	w10x45	45	16	1	16	
S205	w10x45	45	19	1	19	53
S201	w10x49	49	19	2	38	
s206	w10x49	49	35	1	35	73
S201	w10x60	60	19	2	38	38

Structural Framing Schedule						
S201	w12x14	14	17.333	3	51.999	
S201	w12x14	14	20	1	20	
S202	w12x14	14	9	1	9	
S203	w12x14	14	10	1	10	
S204approx	w12x14	14	10	1	10	
S205	w12x14	14	14	1	14	
S205	w12x14	14	14	1	14	
S205	w12x14	14	24	1	24	
s206	w12x14	14	30	4	120	
s206	w12x14	14	20	1	20	292.999
S201	w12x16	16	21	1	21	
S201	w12x16	16	21	1	21	
S201	w12x16	16	9.5	1	9.5	
S201	w12x16	16	16	1	16	
S202	w12x16	16	20	1	20	
S202	w12x16	16	22	1	22	
S203	w12x16	16	20	1	20	
S203	W12X16	16	20	1	20	
S204approx	w12x16	16	20	1	20	
S204approx	W12X16	16	20	1	20	
S205	w12x16	16	20	1	20	
S205	w12x16	16	20	1	20	
s206	w12x16	16	30	9	270	
s206	w12x16	16	20	1	20	519.5
S201	w12x19	19	17.333	6	103.998	
S201	w12x19	19	21	1	21	
S201	w12x19	29	14	1	14	
S205	w12x19	19	20	1	20	
s206	w12x19	19	30	14	420	
s206	w12x19	19	20	4	80	658.998
S202	w12x26	26	11	5	55	
s206	w12x26	26	30	1	30	
s206	w12x26	26	20	1	20	105
s206	w12x35	35	20	1	20	20
S201	w14x22	22	20	1	20	
S201	w14x22	22	21	2	42	
S201	w14x22	22	20	1	20	
S201	w14x22	22	14	1	14	
S202	w14x22	22	19	1	19	
S202	w14x22	22	22	3	66	
S202	w14x22	22	21	2	42	
S202	w14x22	22	30	2	60	
S203	w14x22	22	8	1	8	
S203	w14x22	22	16	3	48	
S203	W14X22	22	23	5	115	
S203	W14X22	22	20	2	40	
S203	w14x22	22	24	2	48	
S204approx	w14x22	22	8	1	8	
S204approx	w14x22	22	16	3	48	
S204approx	W14X22	22	23	5	115	
S204approx	W14X22	22	20	2	40	
S204approx	w14x22	22	24	2	48	
S205	w14x22	22	11	2	22	
S205	w14x22	22	24	1	24	

Structural Framing Schedule						
S205	w14x22	22	23	1	23	
S205	w14x22	22	20	1	20	
S205	w14x22	22	30	1	30	
S205	w14x22	22	24	2	48	
S205	w14x22	22	22	2	44	
S205	w14x22	22	30	6	180	
s206	w14x22	22	35	10	350	
s206	w14x22	22	30	8	240	1782
	w14x34	34	30	1	30	
s206	w14x34	35	35	1	35	
s206	w14x34	34	30	4	120	185
s206	w14x43	43	35	1	35	
s206	w14x43	43	44	2	88	123
s206	w14x61	61	44	3	132	132
s206	w14x68	68	44	3	132	132
S201	w16x26	26	20	1	20	
S201	w16x26	26	23	1	23	
S201	w16x26	26	27	5	135	
S201	w16x26	26	30	2	60	
S201	w16x26	26	30	2	60	
S201	w16x26	26	14	2	28	
S201	w16x26	26	24	2	48	
S201	w16x26	26	30	2	60	
S201	w16x26	26	24	2	48	
S202	w16x26	26	21	1	21	
S202	w16x26	26	22	1	22	
S202	w16x26	26	22	1	22	
S202	w16x26	26	21	1	21	
S202	w16x26	26	30	11	330	
S202	w16x26	26	21	1	21	
S202	w16x26	26	23	1	23	
S203	w16x26	26	30	1	30	
S203	w16x26	26	20	1	20	
S203	w16x26	26	30	1	30	
S203	W16X26	26	23	2	46	
S203	W16X26	26	30	12	360	
S204approx	w16x26	26	30	1	30	
S204approx	w16x26	26	20	1	20	
S204approx	w16x26	26	30	1	30	
S204approx	W16X26	26	23	2	46	
S204approx	W16X26	26	30	12	360	
S205	w16x26	26	30	1	30	
S205	w16x26	26	20	1	20	
S205	w16x26	26	11	1	11	
S205	w16x26	26	23	2	46	
S205	w16x26	26	21	3	63	
S205	w16x26	26	20	1	20	
S205	w16x26	26	19	1	19	
S205	w16x26	26	27	2	54	
S205	w16x26	26	30	6	180	
s206	w16x26	26	35	4	140	2497
S201	w16x31	31	20	1	20	
S201	w16x31	31	30	5	150	
S201	w16x31	31	24	1	24	

Structural Framing Schedule						
S201	w16x31	31	18	1	18	
S201	w16x31	31	18	1	18	
S201	w16x31	31	30	1	30	
S201	w16x31	31	30	12	360	
S202	w16x31	31	19	4	76	
S202	w16x31	31	22	1	22	
S202	w16x31	31	30	32	960	
S203	w16x31	31	15	1	15	
S203	w16x31	31	20	1	20	
S203	W16X31	31	20	5	100	
S203	W16X31	31	30	34	1020	
S204approx	w16x31	31	15	1	15	
S204approx	w16x31	31	20	1	20	
S204approx	W16X31	31	20	5	100	
S204approx	W16X31	31	30	34	1020	
S205	w16x31	31	9	1	9	
S205	w16x31	31	30	1	30	
S205	w16x31	31	20	5	100	
S205	w16x31	31	28	1	28	
S205	w16x31	31	30	13	390	4545
S201	w16x36	36	25	1	25	
S205	w16x36	36	14	1	14	
S205	w16x36	36	30	1	30	69
S201	w16x40	40	23	3	69	
S201	w16x40	40	16	1	16	85
S201	w16x67	67	23	1	23	23
S205	w18x130	130	30	5	150	150
S205	w18x24	24	10	1	10	10
S201	w18x35	35	20	1	20	
S201	w18x35	35	27	1	27	
S201	w18x35	35	23	1	23	
S201	w18x35	35	20	1	20	
S201	w18x35	35	19	1	19	
S201	w18x35	35	11	4	44	
S201	w18x35	35	20	3	60	
S201	w18x35	35	35	1	35	
S201	w18x35	35	30	1	30	
S202	w18x35	35	19	1	19	
S202	w18x35	35	19	1	19	
S202	w18x35	35	35	1	35	
S202	w18x35	35	30	4	120	
S202	w18x35	35	35	1	35	
S203	w18x35	35	33	1	33	
S203	W18X35	35	20	1	20	
S203	W18X35	35	19	1	19	
S203	W18X35	35	25	1	25	
S203	W18X35	35	35	1	35	
S204approx	w18x35	35	33	1	33	
S204approx	W18X35	35	20	1	20	
S204approx	W18X35	35	19	1	19	
S204approx	W18X35	35	25	1	25	
S204approx	W18X35	35	35	1	35	
S205	w18x35	35	30	1	30	
S205	w18x35	35	19	1	19	

Structural Framing Schedule						
S205	w18x35	35	27	3	81	
S205	w18x35	35	22	1	22	922
S201	w18x40	40	20	1	20	
S201	w18x40	40	22	2	44	
S201	w18x40	40	30	1	30	
S201	w18x40	40	35	1	35	
S201	w18x40	40	33	1	33	
S202	w18x40	40	23	1	23	
S202	w18x40	40	19	1	19	
S202	w18x40	40	23	1	23	
S202	w18x40	40	30	4	120	
S202	w18x40	40	24	1	24	
S202	w18x40	40	35	1	35	
S203	w18x40	40	23	1	23	
S203	w18x40	40	35	1	35	
S203	W18X40	40	23	1	23	
S203	W18X40	40	19	1	19	
S203	W18X40	40	25	1	25	
S203	W18X40	40	30	4	120	
S203	W18X40	40	24	1	24	
S204approx	w18x40	40	23	1	23	
S204approx	w18x40	40	35	1	35	
S204approx	W18X40	40	23	1	23	
S204approx	W18X40	40	19	1	19	
S204approx	W18X40	40	25	1	25	
S204approx	W18X40	40	30	4	120	
S204approx	W18X40	40	24	1	24	
S205	w18x40	40	31	1	31	
S205	w18x40	40	15	1	15	
S205	w18x40	40	24	1	24	
S205	w18x40	40	24	1	24	
S205	w18x40	40	22	1	22	
S205	w18x40	40	30	15	450	1510
S202	w18x46	46	30	3	90	
S202	w18x46	46	35	2	70	
S203	W18X46	46	30	2	60	
S203	W18X46	46	24	1	24	
S203	W18X46	46	35	2	70	
S204approx	W18X46	46	30	2	60	
S204approx	W18X46	46	24	1	24	
S204approx	W18X46	46	35	2	70	468
S201	w18x50	50	30	1	30	
S201	w18x50	50	30	1	30	
S202	w18x50	50	19	1	19	
S202	w18x50	50	30	1	30	
S203	w18x50	50	38	1	38	
S203	W18X50	50	30	1	30	
S204approx	w18x50	50	38	1	38	
S204approx	W18X50	50	30	1	30	245
S202	w18x55	55	29	1	29	
S205	w18x55	55	35	1	35	64
S203	w18x60	60	40	1	40	
S203	w18x60	60	34	1	34	
S204approx	w18x60	60	40	1	40	

Structural Framing Schedule						
S204approx	w18x60	60	34	1	34	148
S203	W18X71	71	30	1	30	
S204approx	W18X71	71	30	1	30	60
S205	w18x86	86	27	1	27	27
S201	w21x101	101	17	1	17	17
S205	w21x122	122	30	1	30	30
S201	w21x40	40	20	1	20	
S201	w21x44	44	30	1	30	
S201	w21x44	44	30	1	30	
S201	w21x44	44	30	2	60	
S201	w21x44	44	22	1	22	
S201	w21x44	44	35	1	35	
S201	w21x44	44	37	1	37	
S202	w21x44	44	29	2	58	
S202	w21x44	44	23	1	23	
S203	W21X44	44	30	2	60	
S203	W21X44	44	25	1	25	
S204approx	W21X44	44	30	2	60	
S204approx	W21X44	44	25	1	25	
S205	w21x44	44	22	1	22	
S205	w21x44	44	30	5	150	657
S201	w21x50	50	21	1	21	
S201	w21x50	50	30	2	60	
S201	w21x50	50	40	1	40	
S202	w21x50	50	29	5	145	
S202	w21x50	50	10	1	10	
S202	w21x50	50	23	1	23	
S202	w21x50	50	30	5	150	
S202	w21x50	50	30	2	60	
S203	W21X50	50	30	7	210	
S203	W21X50	50	25	1	25	
S203	W21X50	50	30	5	150	
S203	W21X50	50	30	2	60	
S204approx	W21X50	50	30	7	210	
S204approx	W21X50	50	25	1	25	
S204approx	W21X50	50	30	5	150	
S204approx	W21X50	50	30	2	60	
S205	w21x50	50	30	2	60	1459
S201	w21x55	55	35	1	35	35
S201	w21x62	62	24	1	24	24
S205	w21x93	93	35	1	35	35
S201	w24x103	103	32	1	32	
S201	w24x103	103	29	1	29	61
S201	w24x55	55	30	1	30	
S201	w24x55	55	29	1	29	
S201	w24x55	55	12	1	12	
S201	w24x55	55	27	1	27	
S201	w24x55	55	30	1	30	
S201	w24x55	55	30	1	30	
S202	w24x55	55	29	5	145	
S202	w24x55	55	23	1	23	
S202	w24x55	55	35	1	35	
S202	w24x55	55	30	1	30	
S202	w24x55	55	8	1	8	

Structural Framing Schedule						
S203	w24x55	55	35	1	35	
S203	W24X55	55	30	3	90	
S203	W24X55	55	25	1	25	
S203	W24X55	55	30	2	60	
S204approx	w24x55	55	35	1	35	
S204approx	W24X55	55	30	3	90	
S204approx	W24X55	55	25	1	25	
S204approx	W24X55	55	30	2	60	
S205	w24x55	55	23	1	23	
S205	w24x55	55	30	5	150	992
S202	w24x62	62	29	1	29	
S205	w24x62	62	35	2	70	
S205	w24x62	62	30	5	150	249
S202	w24x68	68	29	1	29	
S202	w24x68	68	40	1	40	
S203	W24X68	68	30	2	60	
S204approx	W24X68	68	30	2	60	
S205	w24x68	68	30	1	30	219
S202	w24x76	76	30	1	30	30
S201	w27x84	84	22	2	44	
S202	w27x84	84	23	1	23	67
S205	w30x108	108	30	1	30	
S205	w30x108	108	30	1	30	60
S203	W30X116	116	30	1	30	
S204approx	W30X116	116	30	1	30	60
S201	w30x124	124	30	1	30	30
S201	w30x191	191	28	1	28	
S201	w30x191	191	30	1	30	
S201	w30x191	191	30	1	30	88
S201	w30x90	90	28	1	28	28
S202	w30x99	99	30	1	30	
S205	w30x99	99	35	1	35	65
S203	W33X118	118	30	1	30	
S204approx	W33X118	118	30	1	30	60
S202	w33x130	130	29	1	29	
S203	W33X130	130	30	1	30	
S204approx	W33X130	130	30	1	30	
S205	w33x130	130	30	1	30	119
S202	w36x135	135	30	1	30	
S205	w36x135	135	35	1	35	65
S202	w40x149	149	35	1	35	
S203	W40X149	149	35	1	35	
S204approx	W40X149	149	35	1	35	105
	w6x12	12	6	1	6	
	w6x12	12	11	3	33	39
	w6x15	15	8	2	16	16
	w6x20	20	12	2	24	
	w6x20	20	13	1	13	
	w6x20	20	10	1	10	47
	w6x9	9	3	1	3	
	w6x9	9	9	4	36	
	w6x9	9	8	2	16	
	w6x9	9	7	4	28	
	w6x9	9	6	4	24	107

Structural Framing Schedule						
S201	w8x10	10	5.5	2	11	
S201	w8x10	10	6.5	1	6.5	
S201	w8x10	10	13	1	13	
S201	w8x10	10	7	1	7	
S201	w8x10	10	8	3	24	
S201	w8x10	10	6	6	36	
S201	w8x10	10	8	7	56	
S201	w8x10	10	10	2	20	
S201	w8x10	10	9.5	1	9.5	
S201	w8x10	10	4	1	4	
S201	w8x10	10	10	2	20	
S201	w8x10	10	4.5	2	9	
S201	w8x10	10	14	1	14	
S201	w8x10	10	6	7	42	
S201	w8x10	10	10.5	3	31.5	
S201	w8x10	10	7	2	14	
S201	w8x10	10	5	4	20	
S201	w8x10	10	10	1	10	
S201	w8x10	10	8	2	16	
S201	w8x10	10	6	1	6	
S201	w8x10	10	7	3	21	
S201	w8x10	10	13	1	13	
S201	w8x10	10	12	1	12	
S201	w8x10	10	17	1	17	
S201	w8x10	10	10	1	10	
S201	w8x10	10	7	1	7	
S201	w8x10	10	16	1	16	
S201	w8x10	10	11	2	22	
S201	w8x10	10	10	1	10	
S201	w8x10	10	12	3	36	
S201	w8x10	10	10	2	20	
S201	w8x10	10	6	1	6	
S201	w8x10	10	7	1	7	
S201	w8x10	10	5	2	10	
S202	w8x10	10	11	1	11	
S202	w8x10	10	8	1	8	
S202	w8x10	10	7	1	7	
S202	w8x10	10	11	2	22	
S202	w8x10	10	12	3	36	
S202	w8x10	10	4	1	4	
S202	w8x10	10	7	2	14	
S202	w8x10	10	10	1	10	
S202	w8x10	10	11	1	11	
S202	w8x10	10	5	3	15	
S202	w8x10	10	10	1	10	
S202	w8x10	10	6	1	6	
S202	w8x10	10	15	1	15	
S202	w8x10	10	3	3	9	
S202	w8x10	10	14	1	14	
S202	w8x10	10	2.5	1	2.5	
S202	w8x10	10	10	2	20	
S202	w8x10	10	4	1	4	
S202	w8x10	10	15	1	15	
S202	w8x10	10	10	1	10	

Structural Framing Schedule						
S202	w8x10	10	16	1	16	
S202	w8x10	10	7	1	7	
S202	w8x10	10	8	2	16	
S202	w8x10	10	9	1	9	
S203	w8x10	10	8	1	8	
S203	w8x10	10	4	2	8	
S203	w8x10	10	5	3	15	
S203	w8x10	10	7	1	7	
S203	w8x10	10	16	1	16	
S203	w8x10	10	8	1	8	
S203	w8x10	10	12	3	36	
S203	w8x10	10	11	2	22	
S203	w8x10	10	10	1	10	
S203	w8x10	10	7	1	7	
S203	w8x10	10	17	1	17	
S203	w8x10	10	10	1	10	
S203	w8x10	10	15	2	30	
S203	w8x10	10	11	1	11	
S203	w8x10	10	9	2	18	
S203	w8x10	10	8	1	8	
S203	w8x10	10	4	4	16	
S203	w8x10	10	10	2	20	
S203	w8x10	10	7	3	21	
S203	w8x10	10	17	1	17	
S203	w8x10	10	5	3	15	
S203	w8x10	10	6	1	6	
S203	W8X10	10	10	1	10	
S203	W8X10	10	12	1	12	
S203	W8X10	10	19	1	19	
S204approx	w8x10	10	8	1	8	
S204approx	w8x10	10	4	2	8	
S204approx	w8x10	10	5	3	15	
S204approx	w8x10	10	7	1	7	
S204approx	w8x10	10	16	1	16	
S204approx	w8x10	10	8	1	8	
S204approx	w8x10	10	12	1	12	
S204approx	w8x10	10	11	2	22	
S204approx	w8x10	10	10	1	10	
S204approx	w8x10	10	7	1	7	
S204approx	w8x10	10	17	1	17	
S204approx	w8x10	10	10	1	10	
S204approx	w8x10	10	15	2	30	
S204approx	w8x10	10	11	1	11	
S204approx	w8x10	10	9	2	18	
S204approx	w8x10	10	8	1	8	
S204approx	w8x10	10	4	4	16	
S204approx	w8x10	10	10	2	20	
S204approx	w8x10	10	7	3	21	
S204approx	w8x10	10	17	1	17	
S204approx	w8x10	10	5	3	15	
S204approx	w8x10	10	6	1	6	
S204approx	W8X10	10	10	1	10	
S204approx	W8X10	10	12	1	12	
S204approx	W8X10	10	19	1	19	

Structural Framing Schedule						
S205	w8x10	10	10	1	10	
S205	w8x10	10	13	1	13	
S205	w8x10	10	10	8	80	
S205	w8x10	10	8	5	40	
S205	w8x10	10	6	2	12	
S205	w8x10	10	9	1	9	
S205	w8x10	10	4	2	8	
S205	w8x10	10	7	4	28	
S205	w8x10	10	17	1	17	
S205	w8x10	10	12	1	12	
S205	w8x10	10	7	1	7	
S205	w8x10	10	11	1	11	
S205	w8x10	10	2	1	2	
S205	w8x10	10	14	1	14	
S205	w8x10	10	5	1	5	
S205	w8x10	10	11	1	11	
S205	w8x10	10	5	1	5	
S205	w8x10	10	8	2	16	
S205	w8x10	10	4	2	8	
S205	w8x10	10	2	1	2	
S205	w8x10	10	15	1	15	
s206	w8x10	10	3	24	72	
s206	w8x10	10	5	6	30	
s206	w8x10	10	6	1	6	2011
S201	w8x15	15	8	4	32	
S201	w8x15	15	10	2	20	
S205	w8x15	15	6	3	18	
S205	w8x15	15	11	1	11	
S205	w8x15	15	10	1	10	91
	w8x21	21	15	2	30	30
S203	w8x24	24	10	1	10	
S204approx	w8x24	24	10	1	10	20

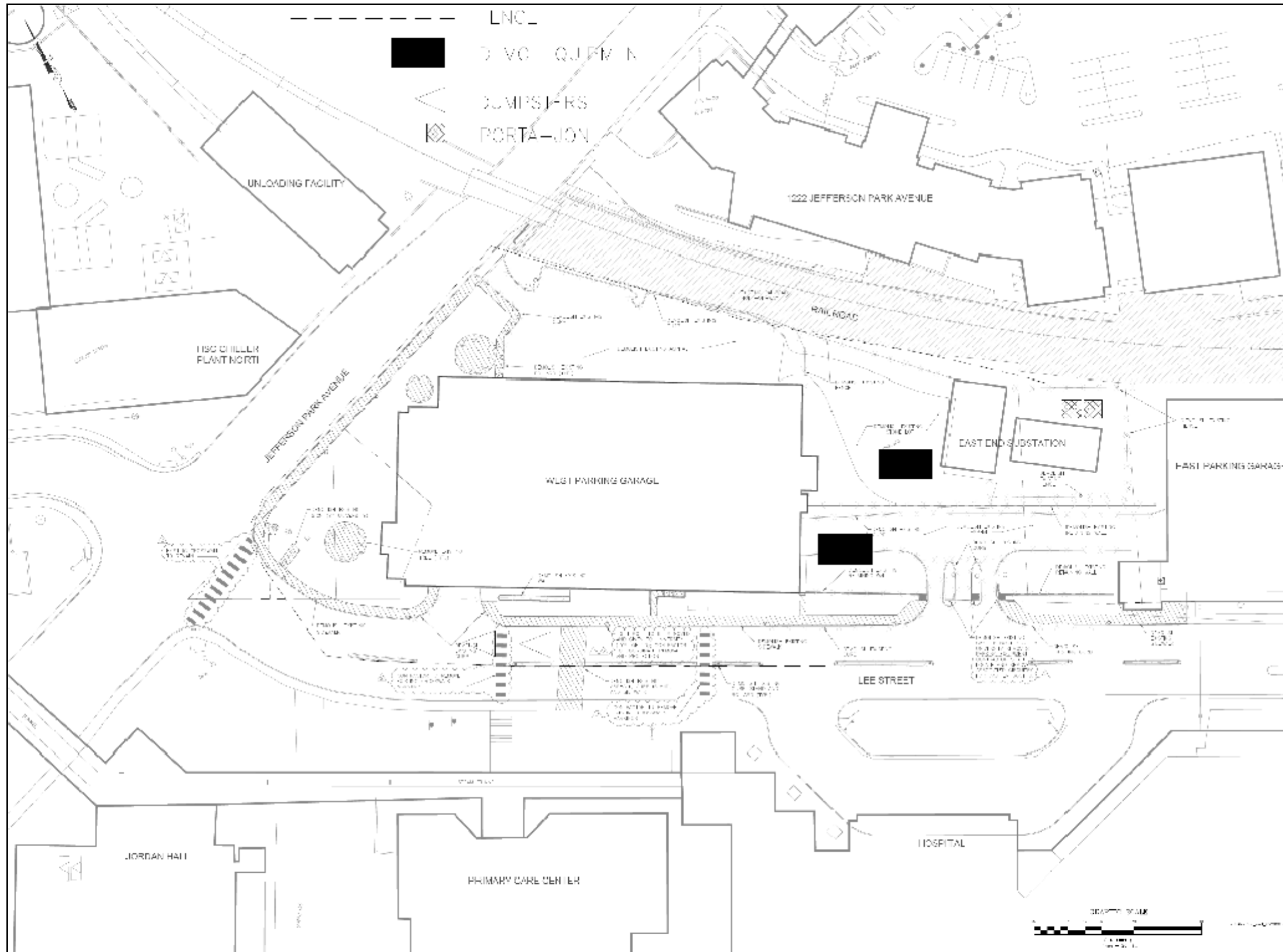
Structural Column Schedule

Plan	Type	Weight	Length	Count	Total Length	Total Length of Type
	HSS10X10X1/4		9	6	54	54
S310	HSS6X6X1/2		34	1	34	34
S310	HSS6X6X1/4		42	1	42	66
S310	HSS6X6X1/4		24	1	24	
	HSS6X6X3/16		42	1	42	42
	HSS7X7X1/4		2	6	12	12
S310	HSS8X8X1/4		16	1	16	16
	HSS8X8X3/8		42	1	42	42
	HSS8X8X5/16		42	1	42	42
S310	W10X33	33	24	1	24	384
S310	W10X33	33	18	1	18	
	W10X33	33	38	2	76	
	W10X33	33	18	3	54	
	W10X33	33	20	1	20	
	W10X33	33	24	7	168	
	W10X33	33	12	2	24	
S310	W10X49	49	34	1	34	240
	W10X49	49	38	1	38	
	W10X49	49	50	1	50	
	W10X49	49	16	1	16	
	W10X49	49	34	3	102	
	W10X54	54	16	1	16	16
S310	W10X68	68	52	2	104	172
	W10x68	68	34	2	68	
S310	W12X40	40	24	1	24	160
	W12X40	40	18	3	54	
	W12X40	40	34	1	34	
	W12X40	40	24	2	48	
	W12X45	45	24	1	24	24
	W12X50	50	24	5	120	120
	W12X53	53	24	2	48	48
S310	W12X65	65	52	1	52	90
	W12X65	65	38	1	38	
S310	W12X72	72	18	1	18	18
	W12X79	79	38	1	38	326
	W12X79	79	50	1	50	
	W12X79	79	34	7	238	
	W12X87	87	38	1	38	38
S310	W14X109	109	52	4	208	246
	W14X109	109	38	1	38	
S310	W14X124	124	52	1	52	52
S310	W14X132	132	52	5	260	260
S310	W14X145	145	52	1	52	52
S310	W14X159	159	52	2	104	104
S310	W14X176	176	52	1	52	52
S310	W14X43	43	24	1	24	108
	W14X43	43	18	2	36	
	W14X43	43	24	2	48	
	W14X48	48	24	1	24	24
	W14X53	53	24	2	48	48
S310	W14X61	61	38	1	38	386
	W14X61	61	24	4	96	
	W14X61	61	42	5	210	
	W14X61	61	42	1	42	
	W14X63	63	38	1	38	38
	W14X68	68	42	4	168	168
	W14X74	74	42	2	84	84
	W14X82	82	42	2	84	84
S310	W14X90	90	52	3	156	324
	W14X90	90	38	2	76	
	W14X90	90	50	1	50	
	W14x90	90	42	1	42	
S310	W14X99	99	52	2	104	104

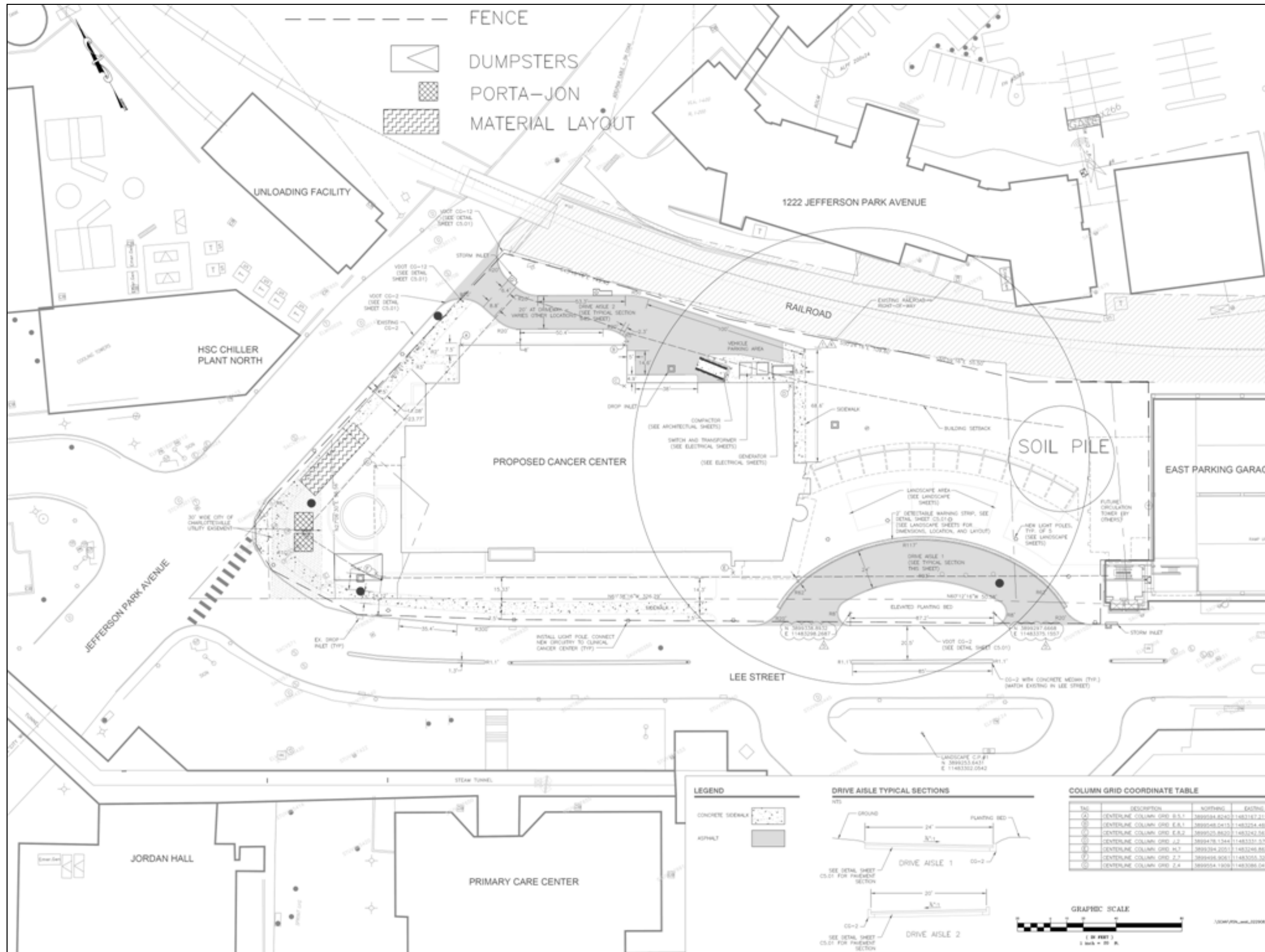
Drilled Shafts

Raduis	Area	Depth	CY
3	7.068583	35	9.162979
3	7.068583	40	10.47198
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	45	11.78097
3	7.068583	35	9.162979
3	7.068583	52.5	13.74447
3	7.068583	40	10.47198
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	55	14.39897
3	7.068583	55	14.39897
3	7.068583	40	10.47198
3	7.068583	35	9.162979
3	7.068583	40	10.47198
3	7.068583	35	9.162979
3	7.068583	45	11.78097
3	7.068583	50	13.08997
3	7.068583	52.5	13.74447
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	35	9.162979
3	7.068583	45	11.78097
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	35	9.162979
3	7.068583	45	11.78097
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	45	11.78097
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	45	11.78097
3	7.068583	50	13.08997
3	7.068583	55	14.39897
3	7.068583	50	13.08997
3	7.068583	50	13.08997
3	7.068583	30	7.853982
3	7.068583	30	7.853982
3	7.068583	30	7.853982
3	7.068583	35	9.162979
3	7.068583	45	11.78097
3	7.068583	45	11.78097
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	35	9.162979
3	7.068583	30	7.853982
	TOTAL	2415	632.2455

Tons of rebar
19.3442



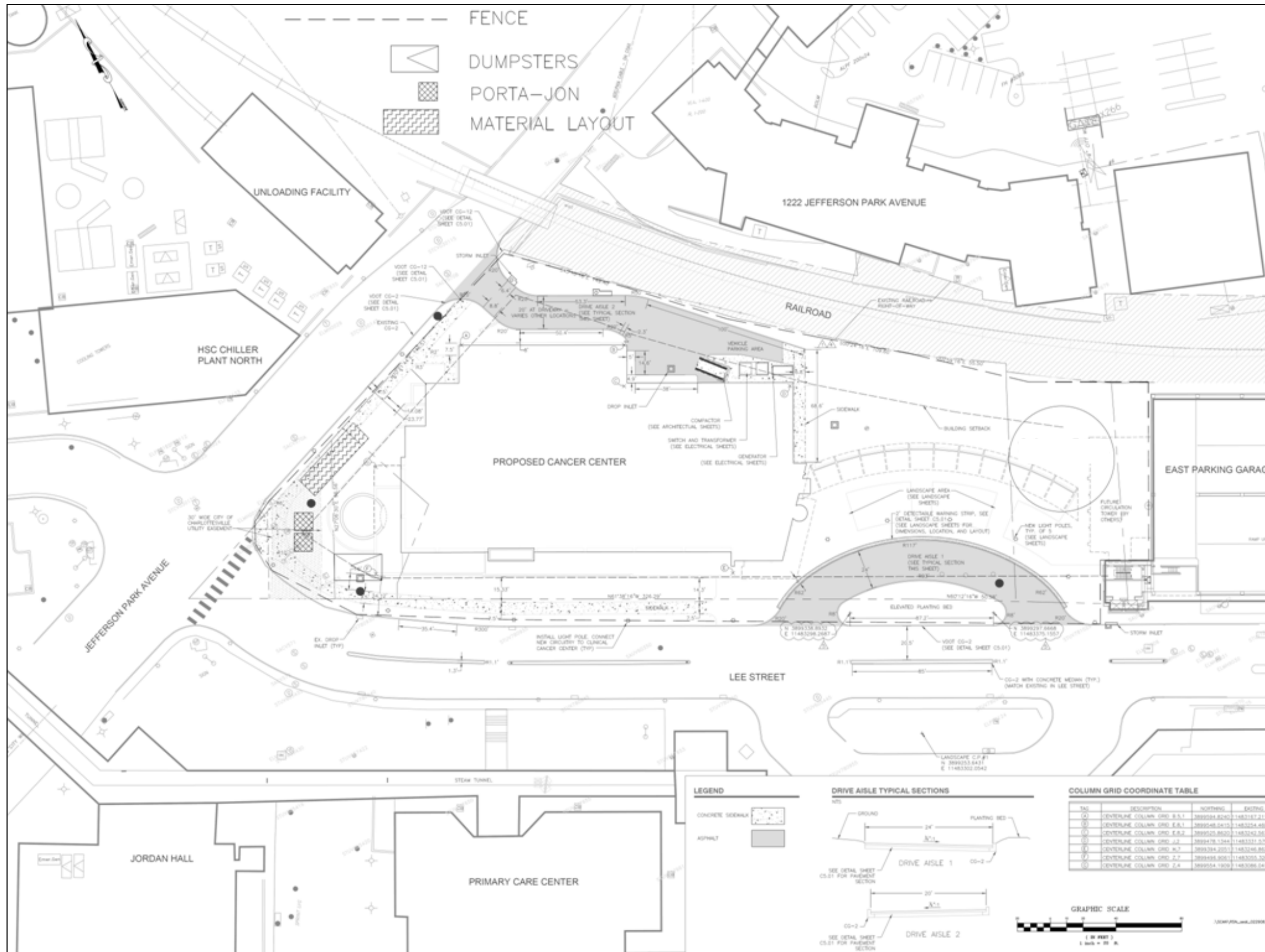
<p>Emily Couric Clinical Cancer Center Charlottesville, VA</p>	<p>Brittany Muth TECH 2</p>	<p>Site Plan Demolition Phase</p>
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Emily Couric Clinical
Cancer Center
Charlottesville, VA

Brittany Muth
TECH 2

Site Plan
Superstructure
Phase



Emily Couric Clinical
Cancer Center
Charlottesville, VA

Brittany Muth
TECH 2

Site Plan
Finishes Phase