

TECHNICAL ASSIGNMENT 2

NORTHEAST HOSPITAL EXPANSION 123 Medical Lane, USA

Joshua Miller

Construction Management Option

Advisor: Craig Dubler

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NORTHEAST HOSPITAL EXPANSION

EXECUTIVE SUMMARY

Technical Assignment 2 provides an in-depth analysis of the Northeast Hospital Expansion project. The assignment utilizes the creation of a comprehensive project schedule and a detailed structural estimate partnered with assemblies estimates of the mechanical, electrical and plumbing systems for the new construction. In order to better understand the sequencing and phasing of the project, site logistic plans were created with a general conditions estimate. Finally this technical assignment allowed for a LEED evaluation.

Project Schedule

The Northeast Hospital Expansion project received its notice to proceed on January 8th, 2013 and expects to undergo construction until complete for occupancy move in on the sixth floor September 6th, 2015. In the projects entirety, a total duration of 733 days need to occur. The hospital expansion begins with pre-construction activities until ground is broken on January 21st, 2013. Pouring the foundation quickly follows with the construction of the floors above not far behind. The building envelope works from the South clockwise toward the East. Once weather tight, the interior MEP systems and finishers work from the base of the structure towards the penthouse until complete for occupancy.

Detailed Structural Estimate & MEP Assemblies Estimate

In order to fully understand all of the components involved in the design and construction of the new patient tower for the Northeast Hospital Expansion, a detailed structural estimate was conducted for the concrete superstructure. The structural estimate determined 4026 CY of concrete, 1065.3 tons of reinforcement, and 12 tons of post-tensioning tendons provide a \$6.8 million frame for the rest of the design to stand on.

Knowing that the buildings frame does not give an entire understanding, assemblies estimates of the mechanical, electrical, and plumbing systems provided a better grasp of the building's entire design. These estimates were done by picking apart each system for its primary components. The mechanical and plumbing systems came to \$8,685,173.55 and \$1,516,189.00 respectively. The electrical system fell between these two values at a cost of \$5,781,190.00.

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Site Layout Planning

Throughout the course of the new patient tower construction, the job site will undergo three primary phase changes in how the site functions. The first phase is excavation in which there will be an assembly line of dump trucks circling the hospital to haul dirt. The second is the construction of the superstructure. Here there will be a tower crane constructed and a material hoist to lift material to the guys working on the upper floors. The final phase change will occur when the building becomes fully enclosed and the lay down areas move to their specific floors within the structure.

General Conditions Estimate

A general conditions estimate demonstrates the amount of resources necessary for the general contractor to manage the Northeast Hospital Expansion project. From the estimate one notices the allocation for \$1,504,500.00 in project staffing, \$86,766.00 for reimbursables, \$1,850,056.00 for the general requirements on the project and an additional \$314,509.52 for insurance and bonds. In total, an estimated \$2,164,565.52 is necessary to run the job.

LEED Evaluation

The Northeast Hospital Expansion aims to achieve a rating of LEED Silver. This means the project team must receive 50 to 59 LEED points. These points primarily occur from location and transportation, water efficiency, material resources, and indoor environmental quality credits. The project team also intends to achieve additional bonus credits with an innovation credit.

Based on a LEED evaluation process developed by Penn State University, the LEED score for this project could increase slightly. The slight increase provides a total of 65 points which provide additional buffer points for obtaining LEED Silver or even the possibility of reaching LEED Gold.

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TECHNICAL ASSIGNMENT 2

Project Schedule

The Northeast Hospital Expansion project in total is scheduled to last 733 work days from the notice to proceed until the six floor is complete and ready for occupancy. The project commenced on January 8^{th} , 2013 and expects to undergo construction until September 6^{th} , 2015. Over the course the two and half year time period, more than 390 activities must occur prior to full occupancy. These activities and durations were derived from the assistance of the Whiting-Turner project team and have been assembled into Primavera6 for a more comprehendible format.

Procurement and Coordination

Prior to breaking any ground on the actual site, the project team must first begin with the acquiring of permits, the procurement of materials and vendors, coordinating with the subcontractors, and submitting submittals. Throughout the majority of the project, materials will also need to be ordered and the necessary permits will need to be obtained. The project team must also have their subcontractors sign-off on coordinated drawings to ensure all trades are aware of their surrounding conditions and are able to install per the drawings and specifications.

Site Work and Foundation

Work officially begins with the breaking of ground for the foundation of the new patient tower on January 21st of 2013 after a brief site demolition. While excavation occurs, sheeting and shoring pile are driven into the ground to restrain the soil walls from collapsing. With the area for the foundation cleared, the laying out of grade beams and the drill for the caissons take place. On another portion of the site a concrete pad for the tower crane commences. Once reinforcing and form work are in place for the caissons, grade beams, tower crane pad, and foundation walls concrete is poured and allowed to cure. All of the under slab mechanical and electrical is then placed followed by the framing and pouring of the slab on grade. With the tower crane pad cured, the crane is then erected. The foundation is complete with the addition of waterproofing and the removal of reshores. In all, this phase lasts from January 14, 2013 to September 10, 2013.

<u>Superstructure</u>

With the foundation in place the patient tower's concrete structure can begin to rise from the ground up. First the ground floor slab is formed with reinforcement laid out. The slab is formed in three separate pours starting from the west and moving east. MEP sleeves are placed prior to any pour to avoid excessive core drills. Once the ground floor slab comes to strength the forming and reinforcing of the 1st floor columns begins on the west side of the ground floor slab and will again move eastward. Pouring will occur in the same pattern until the 1st floor slab is elevated above the ground floor. The first through seventh floor slabs all receive post tensioning. This means around the 15-20 day mark these slabs have their tendons pulled in order to create a stronger slab. This process continues the entire way up the building until topping out on the 20th of March 2014.

Envelope

After the concrete has been allowed to cure, work on the skin of the building begins. First, metal studs are added to the West wall where they are then put up moving to the East, making sure to be placed everywhere on the North and South walls. After the studs have been placed the regular wall systems can be installed again from west to east moving from the base of the tower to the top. The curtain wall is then hung in a similar fashion. The metal cladding that attached to the regular wall type are the last to be laid out and installed.

On the roof, rain drains are set and connected with the application of air and vapor barriers. With the barriers applied, the built-up membrane roof system is added. Flashing and trim follow before the final covering with the green roof system on top for May 18, 15.

Central Utility Plant

For the construction of the new utility plant, construction begins in the basement once the ground floor slab has been constructed. Hangs are the first parts to be place followed by the main ducts and then mechanical system mains. The large equipment can then be laid out and set. The in-wall electrical and plumbing are the last to be installed with drywall following right behind. Once all penetrations have been fire stopped or caulked, work for the new central utility plant moves up to the penthouse. There the same cycle of trades occurs ending with a work complete list and the new central utility plant functional by March 9th, 2015.

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MEP and Finishes

Similar to the construction of the new central utility plant, work on the ground floors MEP systems starts with the rough-in of the mains followed by the branches moving from west to east from the bottom to the top. The stud walls are then constructed and blocking is placed. While in-wall med gas and electrical occur ducts receive insulation. The hard ceils then begin to go up while electrical wires are pulled through conduit and terminated. Drywall follows and the ceiling grid attached. Light fixtures and grills are then hung and sprinkler heads are cut in. During the final paint job, testing and balancing, and a final clean the next floor is already well underway. Once a floor is complete it is the owner's intention to begin immediately using the completed space. Unlike all the other floors, the 7th floor will remain just pipe and duct mains since it will remain unfinished until the hospital needs to expand with future growth.

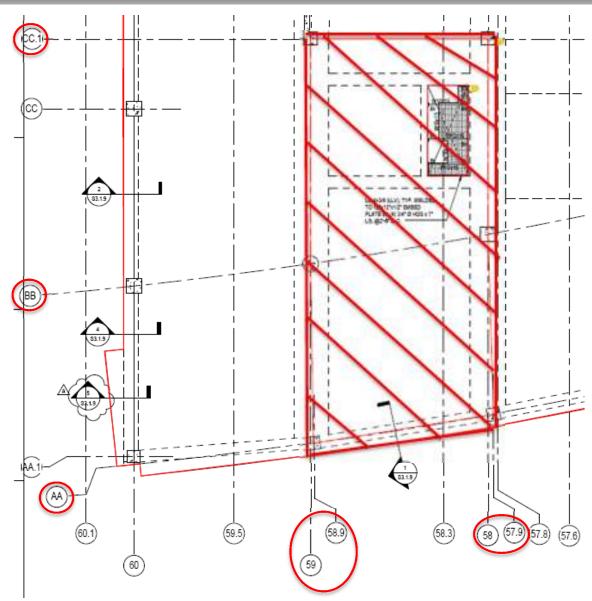
Detailed Structural Estimate & MEP Assemblies Estimate

When conducting the detailed concrete estimate a few methods were applied to ease with the tedious take offs and calculations. The first was the modularization of a concrete bay. In order to receive a more accurate answer two different bays were taken into consideration. The first bay was the exterior bay between column lines AA and Bb and also between 58.9 and 57.9. The second bay was the adjacent interior bay between the column line CC.1 and BB and then 58 and 59. As see on the next page these two bays were chosen since they best represented the average sized columns in the entire building. Next, the amount of cubic yards in the two bays were calculated for on each floor. The cubic yards per bay on each floor were then summed together and average by the number of floors in the building, seven. This gives an average cubic yards per floor per bay. In order to make this number more useful it was converted into square footage based on the number of square feet in one bay. Finally the result was taken and multiplied by the square footage of all the floors that applied.

Since this calculation only generated results for the columns in the structure, it was then necessary to calculate concrete volumes by the different types of forms such as slabs, grade beams, caissons, foundation walls, and the concrete steps. Utilizing RSMeans Cost Data 2015 and 2014 it was possible to associate pricing with the different types of concrete and concrete forms.

The reinforcement and post tensioning tendons still need to be accounted for a long with the formwork and how the concrete was going to place in the first place. Reinforcement was calculated through the assumption that reinforcement will make up on average 4% of concretes volume. Using the density of steel and the total cubic yards of concrete a simplified method was enacted. Post tensioning was then calculated based on weight per linear foot which came from averaging the length of the shortest and longest post tensioning tendons. This length was multiplied by the number of tendons per floor and given a 10% increase in length since the tendons are snaked through the concrete and then pulled tight. With all concrete members accounted for the below quantities were obtained.

Total CY concrete	4026.27	CY
Weight of Rebar	1065.3	tons
Weight of Pt Tendons	12.0	tons



Above are the two bays utilized to simplify the column estimate.

	Det	ailed Estimate	Actual Contract Value						
Concrete	\$	6,832,273.47	\$	9,286,120.00					
GSF		193000		226640					
\$/SF	\$	35.40	\$	40.97					

The above table compares the cost of concrete according to the detailed estimate with the actual contract value. Unfortunately the cost per square foot does not fall within the 10% range with the actual contract value. It is possible this difference can be accounted for by the exclusion of renovation work in the detailed estimate. Another possible point of error may have come from the over simplification of the columns, reinforcement, and tendons. For a more detailed look at the calculations please refer below for the material, labor, and equipment breakdown and Appendix A for the concrete take offs.

Concrete																
RSMeans#	Description	QTY U	INIT	Mate	rial/UNIT	Mate	rial	Lab	oor/UNIT	Lab	bor	Equipment/U	NIT	Equipment	To	otal Cost
Caissons																
316326133280 online	Caissons 4' diameter	12.0 e	a	\$	445.00	\$	5,340.00	\$	3,425.00	\$	41,100.00	\$ 3,325.	00	\$ 39,900.00	1 \$	86,340.00
316326133300 online	Caissons 5' Diamter	25.0 e	a	\$	520.00	\$	13,000.00	\$	4,200.00	\$	105,000.00	\$ 4,050.	00	\$ 101,250.00	\$	219,250.00
316326133320 online	Caissons 5.5' Diameter	1.0 e	a	\$	520.00	\$	520.00	\$	4,200.00	\$	4,200.00	\$ 4,050.	00	\$ 4,050.00	\$	8,770.00
316326133320 online	Caissons 6' Diamter	11.0 e	a	\$	865.00	\$	9,515.00	\$	6,300.00	\$	69,300.00	\$ 6,100.	00	\$ 67,100.00	\$	145,915.00
316326133340 online	Caissons 6.5' Diameter	6.0 e	a	\$	865.00	\$	5,190.00	\$	6,300.00	\$	37,800.00	\$ 6,100.	00	\$ 36,600.00	\$	79,590.00
316326133340 online	Caissons 7' Diameter	3.0 e	а	\$	1,350.00	\$	4,050.00	\$	9,450.00	\$	28,350.00	\$ 9,150.	00	\$ 27,450.00	\$	59,850.00
Concrete in Place																
033053.40.4900	SOG	12500.0 S	F	\$	3.92	\$	49,000.00	\$	1.10	\$	13,750.00	\$ 0.	01	\$ 125.00	\$	62,875.00
033053.40.4260	Foundation Wall	516.1 C	Υ	\$	137.00	\$	70,701.96	\$	178.00	\$	91,860.93	\$ 15.	25	\$ 7,870.11	. \$	170,433.00
033053.40.0300	Grade Beams	435.4 C	Υ	\$	315.00	\$ 1	137,163.02	\$	590.00	\$	256,908.51	\$ 47.	50	\$ 20,683.31	. \$	414,754.84
033053.40.6200	Retaining Wall Type A	175.4 C	Υ	\$	137.00	\$	24,031.51	\$	138.00	\$	24,206.93	\$ 11.	30	\$ 1,982.16	\$	50,220.60
033053.40.6200	Retaining Wall Type B	79.1 C	Υ	\$	137.00		10,839.62		138.00		10,918.74		_	\$ 894.07		22,652.44
033053.40.1950	Foundation Columns	110.4 C		\$	210.00		23,181.71		273.00		30,136.22		_	\$ 2,428.56	_	55,746.48
033053.40.1900	Elevated G Floor Slab	25.7 C		\$	273.00	•	7,021.60	_	187.00		4,809.67		_	\$ 374.23		12,205.50
033053.40.1900	Elevated PT 10.5" Slabs	604.9 C	Υ	\$	273.00	\$ 1	165,148.15	Ś	187.00	Ś	113,123.46	Š 14.	55	\$ 8,801.85	Ś	287,073.46
033053.40.1900	Elevated PT 12.5" Slab	102.9 C		\$	273.00		28,086.42	_	187.00	-	19,238.68		_	\$ 1,496.91		48,822.02
033053.40.1000	Concrete Columns	158.1 C		Ś	210.00		33,192.30	_	273.00	-	43,149.99		00			79,819.57
033053.40.7000	Stair Landings (free standing)	2016.0 S	F	Ś		Ś	8.850.24	-	10.85		21,873.60		_	\$ 342.72		31,066.56
033053.40.0300	Concrete Beams	49.4 C		\$	315.00		15,575.00		590.00		29,172.22		_	\$ 2,348.61		47,095.83
033053.40.6200	Concrete Walls	987.3 C		\$	137.00	•	135,254.52	_	138.00	-	136,241.78		_	\$ 11,156.03		282,652.33
Reinforcing							,	-						,,	i i	,
	Reinforcement take at (4% by Conc. Vol.)	1065.35 to	ons	\$	970.00	\$ 1.0	033,389.40	Ś	625.00	Ś	665.843.69	s -		\$ -	Ś	1,699,233.09
032211.10.0200	WWF	25000.0 S		\$	17.20	. ,	430,000.00		28.00		700,000.00		_	\$ -	\$	
032305.50.0300	PT Tendons	24047.3 II		\$	2.18		52,423.16		2.45		58,915.93		_	\$ 1,442.84	_	112,781.93
Placing Concrete	J					-	,	-			,			,	ı,	
033113.70.1450	Elevated slabs over 10" thick w/ Crane and Bucke	733.5 C	v	\$	31.24	Ś	22,915.76	Ś	13.41	ς	9,836.76	\$ 44.	55	\$ 32,752.52	Ś	65,505.04
033113.70.3300	Grade Beams w/ Crane and Bucket	435.4 C		\$	26.74		11,643.62		11.36	-	4,946.58		_	\$ 16,590.19	-	33,180.39
033113.70.4700	Slab On Grade Over 6" with Crane and bucket	42.9 C		\$	20.50		878.77		0.74		31.72		_	\$ 910.49	_	1,820.99
033113.70.1050	Concrete Columns with Crane and Bucket	268.4 C		\$	28.50		7,650.76	_	12.25	-	3,288.48		_	\$ 10,939.24		21,878.48
033113.70.1030	Walls 12" Thick with Crane and Bucket	1868.3 C		\$		\$	59,784.15		13.60		25,408.27		-	\$ 85,192.42		170,384.84
015419.600100	Tower Crane		/lonths		9.100.00		136,500.00	_		-	372,000.00		_	\$ 508,500.00		
Form Work	Tower Crane	15.0	nontins	Į.	3,100.00	د د	130,300.00	ے ر	24,000.00	٧	372,000.00	\$ 33,300.	50	Ç 300,300.00	۲	1,017,000.00
031113.25.7150	Column formwork	8591 S	ECΛ	Ś	0.75	¢	6.443.39	¢	5.70	¢	48,969.75	\$ -		\$ -	\$	55.413.13
031113.20.2650	Concrete Beam Formwork	1335 S		\$	0.73	•	1,121.40		5.55		7,409.25		_	\$ -	\$	
031113.50.0020	Grade Beam Formwork	9923.71 S		\$		•	31.160.43		4.14		41.084.14		_	\$ -	\$,
031113.85.4600	Retaining Wall Formwork	6398.65 S		\$		•	12,989.26		7.30	-	46,710.15		_	\$ -	\$	
031113.35.4550	Stair Landings Formwork	732.00 S		\$		\$	2,569.32		4.67		3,418.44		_	\$ -	\$	5,987.76
031113.35.4550	Forms Elevated Slabs	5453.17 S		\$	3.51		19,140.62		4.67		25,466.29		-	\$ - \$ -	\$	44,606.90
031113.65.3050	Form SOG	5453.17 S		\$		\$	404.88			\$	1,681.00		-	\$ - \$ -	\$	2,085.88
31113.65.3050	Form Concrete Walls	512.50 S 5357.33 S		\$		\$		•		\$			_	\$ - \$ -	\$,
	Form Concrete Walls	5557.33 5	FCA	Ş	5.03	ډ	16,232.72	Ş	7.65	Ş	42,055.07	- د		-	Ş	58,287.79
inishing	Dull floor assessed floor and Dancas Co. 1	247000 00 0	_	ċ		ć		,	0.50	^	100 500 00	ć		ć		100 500 00
	Bull float, manual float, and Broom finish	217000.00 S	F	\$	-	\$	-	\$	0.50	Ş	108,500.00	\$ -		\$ -	\$	108,500.00
TOTAL															1	6 000 070 47
													+		\$	6,832,273.47
													-		+	226640 SF
															\$	30.15 /SF

System	Asse	emblies Estimate	\$/SF		Actua	al Contract Value	\$/\$	SF
GSF		186000		0		226640		0
Mechanical	\$	8,685,173.55	\$	46.69	\$	39,260,743.00	\$1	173.23
Electrical	\$	5,781,190.00	\$	31.08	\$	18,076,235.00	\$	79.76
Plumbing	\$	1,516,189.00	\$	8.15	(INCL	UDE IN MECH)	-	·

Along with the detailed concrete estimate an assemblies estimate was conducted for the mechanical, electrical and plumbing systems in the Northeast Hospital project for the new patient tower. From the numbers alone the two estimates seem to be entirely different buildings, but the actual contract takes into consideration the creation of a temporary central utility plant capable of sustaining the existing hospital while the new central utility plant undergoes construction. Also the actual contract value takes in to consideration all of the renovation work that was excluded from the assemblies estimates. Furthermore most of the values in RSMeans, the cost source for the assemblies estimate, did not have specific enough matches or even options that fit into the new patient tower. Most of the equipment was three to four times the size of the equipment listed in the books. Utilizing a resource that more closely matched the design equipment may have produced a much more accurate comparison. For a full breakdown of the assemblies and costs used for each system please review Appendix B.

Site Layout Planning

Excavation

Once mobilization occurs to the site. The first phase of the project is to excavate the foundation for the new patient tower. This involves the use of an excavator and numerous dump trucks to haul the soil away from the site. To accomplish this the site will use the road that wraps around the back of the existing hospital and conveniently parallels the site of the new patient tower. Dump trucks will enter the site at the Northeast entrance and drive to the excavation site. There the excavator will load their truck will dirt to haul away using the west side entrance. Soldier piles and lagging will need to be used at the excavator starts to dig down deeper. Along with the excavation a concrete pad must be formed for the tower crane that will be on site. To do this a concrete mixing station will be setup just south of the tower crane pad location.

<u>Superstructure</u>

Once the foundation is complete and the pad for the tower crane has been poured and cured, it is time for the superstructure to commence building. For this phase of the project a tower crane is erected on top of its concrete pad where it can begin to place concrete with a bucket. All of the concrete work will flow from west to east on the structure. The lay down areas are all located near the base of the crane with the exception of the one on the west side of the site. This lay down area is meant for work that takes place with the utilities feeding the new patient tower and the temporary central utility. A material hoist is also constructed to the north of the tower crane for an easier way to transport materials to the higher floors and to loosen the constraints with material being supplied to the upper floors.

MEP & Finishes

After the new patient tower is fully enclosed and all materials have been distributed to their appropriate floors, the finalizing of the MEP systems and finishes phase can commence. In this phase the lay down areas are now inside the patient tower and are located on the floors where the material is most needed. Work in flows in a zigzag pattern from north to south moving from the west to the east. At this point in time there is no longer a need for the tower crane since the building is fully enclosed and all of the heavy lifts have been completed. The material hoist has also been dismantled

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since the elevators in the building are now operational. All of the large equipment is already in place.

General Conditions Estimate

General Cor	nditions Estimate															
RSMeans	Description	Qty	Units	М	lat.	Total Mat.	La	bor	То	tal Labor	Eq	μip.	Tot	al Equip	To	tal
Project Staff																
13113.200180	Sr. Project Manager	68	Weeks	\$	-	\$ -	\$2	2,600.00	\$1	76,800.00	\$	-	\$	-	\$	176,800.00
13113.200180	Project Manager	136	Weeks	\$	-	\$ -	\$2	2,275.00	\$3	09,400.00	\$	-	\$	-	\$	309,400.0
13113.200180	Project Manager	68	Weeks	\$	-	\$ -	\$2	2,275.00	\$1	54,700.00	\$	-	\$	-	\$	154,700.0
13113.200240	Superintendent	136	Weeks	\$	-	\$ -	\$2	2,125.00	\$2	89,000.00	\$	-	\$	-	\$	289,000.0
13113.200240	Superintendent	68	Weeks	\$	-	\$ -	\$2	2,125.00	\$1	44,500.00	\$	-	\$	-	\$	144,500.0
13113.200240	Superintendent	68	Weeks	\$	-	\$ -	\$2	2,125.00	\$1	44,500.00	\$	-	\$	-	\$	144,500.0
13113.200100	Project Engineer	136	Weeks	\$	-	\$ -	\$1	1,400.00	\$1	90,400.00	\$	-	\$	-	\$	190,400.0
13113.200100	Project Engineer	68	Weeks	\$	-	\$ -	\$1	1,400.00	\$	95,200.00	\$	-	\$	-	\$	95,200.0
													Sı	ıbtotal:	\$	1,504,500.0
Reimbursables	5															
15213.200450	Trailor Rental	32	Months	\$	340.00	\$10,880.00	\$1	1,300.00	\$	1,300.00	\$	-	\$	-	\$	12,180.0
15213.200700	Trailer Utilities	32	Months	\$	300.00	\$ 9,600.00	\$	-	\$	-	\$	-	\$	-	\$	9,600.0
15213.400120	Office Supplies	32	Months	\$	250.00	\$ 8,000.00	\$	-	\$	-	\$	-	\$	-	\$	8,000.0
13233.501500	Camera Time Lapse Equipment	2	EA	\$	2,650.00	\$ 5,300.00	\$	-	\$	-	\$	-	\$	-	\$	5,300.0
13233.501720	Cameraman and film - Color	2	Days	\$	1,425.00	\$ 2,850.00	\$	-	\$	-	\$	-	\$	-	\$	2,850.0
	Computers and Tablets	8	EA	\$	900.00	\$ 7,200.00	\$	-	\$	-	\$	-	\$	-	\$	7,200.0
	Software	32	Months	\$	600.00	\$19,200.00	\$	-	\$	-	\$	-	\$	-	\$	19,200.0
	Copier and Plotter	2	EA	\$	3,500.00	\$ 7,000.00	\$	-	\$	-	\$	-	\$	-	\$	7,000.0
	Shippping and postage	136	Weeks	\$	100.00	\$13,600.00	\$	-	\$	-	\$	-	\$	-	\$	13,600.0
	Two Way Radios	4	EA	\$	209.00	\$ 836.00	\$	-	\$	-	\$	-	\$	-	\$	836.0
		İ											Sı	ıbtotal:	\$	85,766.0
General Requi	rements															
	Portable Toilets	30	Months	\$	1,325.00	\$39,750.00	\$	-	\$	-	\$	-	\$	-	\$	39,750.0
	Jobsite Dumpsters/ Trash removal	110	Weeks	\$	720.00	\$79,200.00	\$	-	\$	-	\$	-	\$	-	\$	79,200.0
024119.190106	Trash Chute 30" Diameter	1	EA	\$	320.00	\$ 320.00	\$	59.50	\$	59.50	\$	30.50	\$	30.50	\$	410.0
	Jobsite Safety	32	Months	\$	1,000.00	\$32,000.00			\$	-	\$	-	\$	-	\$	32,000.0
030513850710	Winter Protection	3000	SF	\$	0.46	\$ 1,380.00	\$	1.20	\$	3,600.00	\$	-	\$	-	\$	4,980.0
	Barricades and Railing	2500	LF	\$	3.12	\$ 7,800.00	\$	2.36	\$	5,900.00	\$	-	\$	-	\$	13,700.0
015616100100	Dust Partitions	2500	SF	\$	0.30	\$ 750.00	\$	0.38	\$	950.00	\$	-	\$	-	\$	1,700.0
	Sticky Mats	30	EA	\$	960.00	\$28,800.00	\$	-	\$	-	\$	-	\$	-	\$	28,800.0
017613200020	Temporary Protection of Installed Construction	5000	SF	\$	0.38	\$ 1,900.00	\$	0.32	\$	1,600.00	\$	-	\$	-	\$	3,500.0
	Final Project Clean-up	1	EA	\$4	40,000.00	\$40,000.00	\$	-	\$	-	\$	-	\$	-	\$	40,000.0
015813.500200	·	500		\$	31.50	\$15,750.00	\$	-	\$	-	\$	-	\$	-	\$	15,750.0
				Ċ	-		Ė						Sı	ıbtotal:	\$	259,790.0
Subtotal															_	1,850,056.0
	Insurance	12%													\$	222,006.7
	Bonds	5%													\$	92,502.8
		1												Total:	¢ 2	,164,565.52

As seen at on the first page of this section the general conditions for the Northeast Hospital Expansion were estimated at \$1,504,500.00 in project staffing, \$86,766.00 for reimbursables, \$1,850,056.00 for the general requirements on the project and an additional \$314,509.52 for insurance and bonds. The total cost comes to \$2,164,565.52. The actual contract cost for the general conditions is \$13 million. This vast contrast in cost can be attributed to the number of people Whiting-Turner is staffing on the job and the lack of people staffed in the general conditions estimate. Staff is the most expensive resource in the general conditions.

When formulating the costs for the general conditions estimate it was taken into consideration that six dumpster and 5 portable toilets would be need on the job site. Along with each staff member was scaled back in time charge to this project as this project would near its turnover date.

LEED Evaluation

The Northeast Hospital Expansion aims to achieve a rating of LEED Silver. This means the project team must receive 50 to 59 LEED points. These points primarily occur from location and transportation, water efficiency, material resources, and indoor environmental quality credits. The project team also intends to achieve additional bonus credits with an innovation credit

In their attempt to achieve LEED Silver, the project team will test and balance the HVAC equipment to verify compliance with ASHRAE 62.1 and 90.1, use regional materials and recycle construction waste. The use of composite woods that do not contain any urea formaldehyde and insulation and that may adhere only by solvent cements and adhesive primers helps achieve the sourcing of raw materials credit. The domestic water pumps must comply with ASHRAE/IESNA 90.1 and healthcare plumbing fixtures must consume water in compliance with credits WE 1 and WE 3 for water use reduction. A green roof is also planned to cover the top of the building to reduce the heat island effect and aid in storm water treatment. Finally by implementing single door pharmacy refrigerators with high efficiency top mounted refrigeration, the project team aims for an innovation credit.

Based on a LEED evaluation process developed by Penn State University, the LEED score for this project obtain more points. The additional points could allow the building to total 65 points which can provide plenty of additional buffer points for obtaining LEED Silver or even reaching LEED Gold.

To order to reach further from just achieving LEED Siler the project team will need to tap into unapproached credits. These credits include the indoor air quality assessment. Water metering, and the surrounding density and diverse uses.

The indoor air quality assessment credit has the ability gain 2 point, but going for both points seems as though it would be rather expensive. Instead the single point option is just a matter of documenting and flushing the HVAC system prior to start up. This action only needs to be done once and gives the team one additional point.

The water metering credit has the potential to be another rather simple point that appears as though it would not consume too much time or money to obtain. This credit requires that a permanent water be installed on two specific pieces of equipment from a rather long list. Two piece of equipment on that list are a boiler and a domestic water heater. Both of these units exist in the current building design and would not take much to add a water meter to them.

The final LEED credit that may be worth chasing after is the surrounding density and diverse uses credit. This credit requires that the site for the building be picked within 0.5 mile walking distance to a number of different businesses as well as meet a population density factor. Based on the location of the current site there at least two shopping centers within walking distance and hospital is placed in the middle of a dense residential neighborhood.

The project appears to be on the right track for achieve a LEED accreditation, but the goals of the project could be bumped a slight bit higher to obtain an even more popular rating of LEED Gold.

Appendix A: Concrete Take-Offs

PT Tendons

Assume an average length of tendon

Longest Tendon 115 ft Shortest Tendon 49 ft

"Frank Haas's "How to Estimate the Cost of a Post-

Average Length 82 ft

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Level	# of PT	Total Length	Adj for Stretch	Avg lb/Ft	total lbs
Level 1	48	3936	4329.6	0.62	2684.352
Level 2	54	4428	4870.8	0.62	3019.896
Level 3	57	4674	5141.4	0.62	3187.668
Level 4	57	4674	5141.4	0.62	3187.668
Level 5	54	4428	4870.8	0.62	3019.896
Level 6	54	4428	4870.8	0.62	3019.896
Level 7	54	4428	4870.8	0.62	3019.896
Level 8	52	4264	4690.4	0.62	2908.048

24047.32

Same as Level 3

Same as Level 5 Same as Level 5

Concrete Beams

TYPE	Qty/Fl	Floors	Width	Depth	Length	CY/CB	total CY	SFCA/Beam	Total SFCA
CB11	3	9	16	18	11	0.81	22	22	594
CB33	1	9	14	24	25	2.16	19.44	58.3333333	525
CB34	1	9	12	24	12	0.89	8	24	216
total							49.44		1335

Slab	QTY	AREA (SF)	Perimeter	Depth (in)	CY	total CY	SFCA	total SFCA
SOG 10"	1	12500	615	10	42.86694	42.86694	512.5	512.5
SOMD 6"	1	12500	615	6	25.72016	25.72016	307.5	307.5
PT Slabs 10.5"	7	24000	718	10.5	86.41975	604.9383	628.25	4397.75
PT Slabs 12.5"	1	24000	718	12.5	102.8807	102.8807	747.9167	747.9167

Stair Landing

Qty	Width	length	SF/ea	total SF	SFCA/ea	SFCA total
36	7	8	56	2016	20.33333	732

WWF	SF
SOG	12500

Retaining Wall Concrete

_Recaining v	vali Concret	le							
TYPE	Height	Length	Α	В	С	D	E	CY	SFCA
A1	4	279	1.5	1	2.5	1.33	0	75.7	2234
A2	5	45.5	2.5	1	3.5	1.33	0	16.3	457
A3	6	32.25	3.5	1	4.5	1.33	1	15.5	389
A4	7	57.75	4	1	5	1.33	1	31.3	810.5
A5	8.5	50.75	6.5	1	7.5	1.33	1	36.6	864.75
Total A								175.4	4755.25
B1	3	9.5	1	1	3	1	0	2.1	59
B2	4	39	1.25	1	4	1	0	11.6	314
B3	5	35.5	1.5	1	4.5	1.33	1	15.8	357
B4	6	75.95	2	1	7	1.5	1.167	49.7	913.4
Total B								79.1	1643.4

Foundation

Wall	Width (ft)	Length (ft)	Height (ft)	CY	SFCA
East					
E1	1.5	76	12	50.7	1860
E2	1.5	36.75	12	24.5	918
E3	1.5	11.25	12	7.5	306
E4	2	36	12	32.0	912
E5	1.5	37.5	12	25.0	936
E6	1.5	9.27	12	6.2	258.48
North					
N1	1.5	134.5	12	89.7	3264
N2	1.5	2	12	1.3	84
N3	1.5	21	12	14.0	540
Elevators					
Elev1	1	18	12	8.0	456
Elev2	1	14.5	12	6.4	372
Elev3	1	18	12	8.0	456
Elev4	0.5	11.5	12	2.6	288
Elev5	1	21.5	12	9.6	540
Elev6	1	14.5	12	6.4	372
Elev7	1	21.5	12	9.6	540
West					
W1	1.5	43.5	12	29.0	1080
W2	1.5	17.5	12	11.7	456
W3	0.833	17.5	12	6.5	439.992
W4	0.833	19	12	7.0	475.992
South					
S1	1.5	16.5	12	11.0	432
S2	1.5	22	12	14.7	564
S3	1.5	30	12	20.0	756
S4	1.167	29.5	12	15.3	736.008
S5	1.167	32.5	12	16.9	808.008
S6	1.5	62	12	41.3	1524
S7	1.5	62	12	41.3	1524
total				516.1	20898.48

Typical on 7 Floors

· /picar cir	1 ypicar cir 7 riccis							
Location	width	Length	Height	CY	SCFA			
stair E	12	39	14	20.22	119.0			
	12	42	14	21.78	126.0			
Central	12	32	14	16.59	102.7			
	12	31	14	16.07	100.3			
	12	22	14	11.41	79.3			
Stair W	18	10	14	7.78	65.3			
	18	24	14	18.67	98.0			
	18	14	14	10.89	74.7			
			total/FL	123.41	765.3			
			Total CY	987.26	5357.3			

Floor 3 Column Bay

Bay Area	1976	SF

Floor	Height (ft)	Width (in)	Length (in)	Diameter (in)	CY	SFCA
G				, , , , , ,		
CC.1-58	12	28	28		2.42	112
BB-58	12	30	30		2.78	120
AA-57.8	12			34	3.95	34
AA-58.9	12			34	3.95	34
88-59	12	32	32		3.16	128
CC.1-59	12	28	28		2.42	112
1st						0
CC.1-58	20	28	28		4.03	186.6667
BB-58	20	30	30		4.63	200
AA-57.9	20	26	26		3.48	173.3333
AA-58.9	20	26	26		3.48	173.3333
BB-59	20	32	32		5.27	213.3333
CC.1-59	20	28	28		4.03	186.6667
2nd	<u> </u>					0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
BB-59	14			32	4.34	37.33333
CC.1-59	14	26	26		2.43	121.3333
3rd						0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
BB-59	14			32	4.34	37.33333
CC.1-59	14	26	26		2.43	121.3333
4th						0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
BB-59	14			28	3.80	32.66667
CC.1-59	14	26	26		2.43	121.3333
5th						0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
88-59	14			28	3.80	32.66667
CC.1-59	14	26	26		2.43	121.3333

6th						0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
BB-59	14			28	3.80	32.66667
CC.1-59	14	26	26		2.43	121.3333
7th						0
CC.1-58	14	26	26		2.43	121.3333
BB-58	14	30	30		3.24	140
AA-57.9	14	26	26		2.43	121.3333
AA-58.9	14	26	26		2.43	121.3333
BB-59	14			28	3.80	32.66667
CC.1-59	14	26	26		2.43	121.3333
Bay Total					20.76	703.8333
Total					0.01	0.4

33 <-Avg by # of floors

Floor		SF	Adj. Column CY	Adj. SFCA
	G	12500	10.9	4452.4
	1	24000	21.0	8548.6
	2	24000	21.0	8548.6
	3	24000	21.0	8548.6
	4	24000	21.0	8548.6
	5	24000	21.0	8548.6
	6	24000	21.0	8548.6
	7	24000	21.0	8548.6
Total			158.1	64292.47

Gra			

Grade Bear					
Mark	Total Length	Width	Depth	CY	SFCA
GB1	32	3	3	10.7	288.0
GB2	30.5	3	3	10.2	274.5
GB3	30.5	3	3	10.2	274.5
GB4	31	3	3	10.3	279.0
G85	45.5	3	3	15.5	418.5
GB6	14.5	4	4	8.6	174.0
GB7	18	3	4	8.0	180.0
GB8	14	3	3	4.7	126.0
GB9	30	3	4	13.3	300.0
GB10	26	3	4	11.6	260.0
GB11	37.5	4	4	22.2	450.0
GB12	17.5	3	4	7.8	175.0
GB13	10.75	4	4	6.4	129.0
GB14	69	4	5	51.1	897.0
GB15	10.5	4	4	6.2	126.0
GB16	12.5	4	4.5	8.3	156.3
GB17	16	4	4.5	10.7	200.0
G818	18	4	4.5	12.0	225.0
GB19	10	4	45	6.7	125.0
GB20	30	3	3	10.0	270.0
GB21	28	3	3	9.3	252.0
GB22	13	3	3	43	117.0
GB23	23	4	5	17.0	299.0
GB24	12.5	4	5	93	162.5
GB25	0	4	6	0.0	0.0
GB26	22.5	3	4.5	113	236.3
GB27	42	3	4.3	18.7	420.0
GB28	0	3	4	0.0	0.0
GB29	0	3	4.5	0.0	0.0
GB30	51.5	2	4.5		437.8
				17.2 3.0	94.5
GB31 GB32	13.5 51	2	3	113	357.0
GB33	15.5	2	3	3.4	108.5
GB34	30.5	2	3	6.8	213.5
		_			84.0
G835	12	2	3	2.7	
GB36	0	4	4.5	0.0	0.0
GB37	28.5	4	4.5	19.0	356.3
G838	11.25	4	4.5	7.5	140.6
GB39	22.5	3	4	10.0	225.0
GB40	7	2	3	1.6	49.0
GB41	0	2	3	0.0	0.0
GB42	13.5	2	3	3.0	94.5
GB43	10.25	3	3	3.4	92.3
GB44	24.87	3	3	8.3	223.8
GB45	11.5	3	3	3.8	108.5
GB46	10	2	3	2.2	70.0
GB47	13.5	5	3	7.5	175.5
GB48	11	3	3	3.7	99.0
GB49	20.5	3	3	6.8	184.5
G850	0	4	5	0.0	0.0
Total				435.4	9923.7

Grade Bear	n Take off				
Mark	Length (ft)				
GB20	30				
GB21	30 28				
GB21 GB22 GB23	13				
GB23	11.5				
GB23	11.5 11.5 12.5				
GB23 GB24	11.5 12.5				
	28.5				
G837 G838	28.5 11.25				
G839 G839	11.25 11.25				
G840	7				
GB42	13.5				
GB31	42 E				
G832	14.5				
C826	14.5 22.5				
GB32	11.5				
GB27	21				
GB27 GB32	21				
GB32	15.5				
G830	25.75				
G830 G832	25.75 9.5				
GB30	25.75				
G833	15.5				
GB14	34.5				
GB14 GB34	34.5 30.5				
IG835	12				
GB14 GB11 GB10	34.5				
GB11	37.5				
GB10	26				
G89	30				
GB12	17.5				
G86	17.5 14.5				
G87					
G87 G88	18 14				
GB15	10.5 10.75				
GB15 GB13	10.75				
G85	16.5				
G85	30				
GB18	18				
G85 G818 G819	10				
GB17	16				
GB16	12.5				
G84	31				
G83	30.5				
GB2	30.5				
G81 G843	32				
G843	32 10.25				
GB44	24.87 13.5				
GB47	13.5				
GB49	20.5				
GB45	10				
GB48	11				
GB45	11.5				

Caissons

Mark	diameter	V Rebar	V Oty	Ties	Tie Spacing	Dowels	D Oty
C4	4	#10	8	#4	1.33	#10	4
C5	5	#11	10	#4	1.33	#11	6
C5.5	5.5	#11	12	#4	1.33	#11	8
C6	6	#11	14	#4	1.33	#11	10
C6.5	6.5	#11	16	#4	1.33	#11	12
C7	7	#11	18	#4	1.33	#11	14

Туре	Diameter	Qty	Avg Depth	LVF (tot Depth)
C4	4	12	28.6	343
C5	5	25	35.0	874.0
C5.5	5.5	1	25.5	25.5
C6	6	11	33.8	372
C6.5	6.5	6	32.0	192
C7	7	3	30.5	91.5

1	C4	12	5.58
2	C4	12	5.58
3	C6	18	12.56
4	C4	12	5.58
5	C7	17	13.84
6	C5	14	8.14
7	C5	15	8.72
8	C4	15.5	7.21
9	C6	15.5	10.82
10	C5	15	8.72
11	C5	15	8.72
12	C4	15	6.98
13	C5	15	8.72
14	C5	15	8.72
15	C4	16.5	7.68
16	C5	16	9.30
17	C5	21	12.21
	C5	21	12.21
19	C5	17	9.89
20	C5.5	25.5	16.31
21	C6	35.5	24.77
22	C4	41.5	19.31
23	_	62.666	36.44
	C5	62.666	36.44
25	_	46.5	21.63
26	C5	60.5	35.18
27	C7	49	39.89
28	_	46.5	32.45
29		46.5	32.45
30	_	36.5	16.98
31	C4	41.5	19.31
	C6.5	41.5	31.37
	C5	41.5	24.13
	C6.5	35.5	26.84
35		25.5	19.28
36	C6.5	26	19.65
37	C6	26	18.14
	C6	31	21.63
	C6.5	36	27.21
40		32.5	22.68
41	C7	25.5	20.76
42	C6	27.5	19.19
	C6.5	27.5	20.79
	C5	22.5	13.08
	C5	18	10.47
46	C5	18	10.47

Caisson # Mark Depth CY

Á	47	C4	45	20.93
4	48	C5	49.5	28.78
Á	49	C5	49	28.49
	50	C5	48.833	28.40
	51	C5	53.666	31.21
	52	C5	58.5	34.02
	53	C5	53.5	31.11
	54	C5	48.5	28.20
	55	C5.0	38.5	22.39
	56	C5.0	38.5	22.39
	57	C5.0	38.5	22.39
	58	C5.0	38.5	22.39
	59	C5.0	38.5	22.39
(50	C5.0	38.5	22.39
(51	C6	46.5	32.45
(52	C4	49	22.79
(53	C6	46.5	32.45
(54	C5	62.666	36.44
otal			2129	1297.60

	to Gro	

Foundation t	o Ground Flo	or				
Column #	Height (ft)	Width (in)	Length (in)	Diameter	CY	SECA
AA-52.1	8	34	34	0	2.38	90.67
AA-53.1, AA-						
54.9	8	0	0	34	2.64	22.67
AA-54.1	8	0	0	34	2.64	22.67
AA-55.9	8	0	0	34	2.64	22.67
AA-56.9	8	0	0	34	2.64	22.67
AA-57.8	8	0	0	34	2.64	22.67
AA-58.9	7	0	0	34	2.31	19.83
AA. 1-60	6.5	0	0	34	2.14	18.42
BB-54	20	28	30	0	4.32	198.33
BB-55	16	30	30	0	3.70	160.00
BB-56	15	36	28	0	4.15	170.67
BB-57	18.5	26	26	0	3.22	160.33
88-58	18.5	30	30	0	4.28	185.00
88-59	19	32	32	0	5.00	202.67
BB-60, CC-60	19	30	30	0	4.40	190.00
CC. 1-57	16	30	30	0	3.70	160.00
CC. 1-58, CC.						
1-59	16	32	32	0	4.21	170.67
CC. 2-50	7.5	0	0	18	131	11.25
CC.3-54	19	28	30	0	4.10	183.67
CC.3-55	16	30	30	0	3.70	160.00
CC.3-56	16	36	28	0	4.15	170.67
CC. 4-53	8		32	0	2.11	85.33
DD-60	19	26	26	0	3.30	164.67
DD. 1-56.6,						
DD. 1-57,						
DD. 2-58.3	16	24	12	0	119	96.00
DD. 1-59	16	30	30	0	3.70	160.00
DD. 2-57.6	21	24	12	0	156	126.00
DD. 2-57.8	21	24	24	0	3.11	168.00
DD. 3-59, EE-						
59	16	30	30	0	3.70	160.00
DD. 4-52	7.5	26	26	0	130	65.00
DD. 5-55.						
DD. 5-56	17	20	36	0	3.15	158.67
EE. 1-56.6,						
EE. 1-57	16.5	24	24	0	2.44	132.00
EE. 1-57.6,						
EE. 1-57.8	21	24	24	0	3.11	168.00
EE. 1-58.3	16.5		30	0		148.50
EE. 1-59.5,						
EE. 1-60.1	16.5	12	24	0	1.22	99.00
EE. 2-51	7.5					
EE. 2-52	7.5					
EE. 2-53	6.5					
EE. 2-53.7,	0.5	20				55.57
EE. 2-54.2	16	24	34	0	3.36	154.67
EE. 2-54	0	0	0		0.00	
				total	110.39	
1						

Appendix B: MEP Take Offs

Mechanical												
FCU's	Quantity of unit	s: 24										
RSMeans	Fixtures	Qty	Units	Mat.		Tot	t. Mat	Inst.		Tot. Inst.	То	tal
D30301153560	FCU-1, FCU-4, FC-5	280	SF	\$	9.10	\$	2,548.00	\$	9.50	\$ 2,660.00	\$	5,208.00
									Total f	or single room:	\$	5,208.00
									Tot	al for all rooms:	\$	124,992.00
AHU's												
RSMeans	Fixtures	Qty	Units	Mat.		Tot	t. Mat	Inst.		Tot. Inst.	То	tal
D30501603320	AHU-18S	1375	SF	\$	15.10	\$	20,762.50	\$	9.75	\$ 13,406.25	\$	34,168.75
D30501603320	AHU-19S	2650	SF	\$:	15.10	\$	40,015.00	\$	9.75	\$ 25,837.50	\$	65,852.50
D30501603320	AHU-20S	3900	SF	\$	15.10	\$	58,890.00	\$	9.75	\$ 38,025.00	\$	96,915.00
D30501603320	AHU-21S	5650	SF	\$:	15.10	\$	85,315.00	\$	9.75	\$ 55,087.50	\$	140,402.50
D30501603320	AHU-22S	1375	SF	\$:	15.10	\$	20,762.50	\$	9.75	\$ 13,406.25	\$	34,168.75
D30501603320	AHU-23S	6585	SF	\$:	15.10	\$	99,433.50	\$	9.75	\$ 64,203.75	\$	163,637.25
D30501603320	AHU-24S	84000	SF	\$:	15.10	\$1,	,268,400.00	\$	9.75	\$ 819,000.00	\$	2,087,400.00
D30501603320	AHU-25S	84000	SF	\$	15.10	\$1,	,268,400.00	\$	9.75	\$ 819,000.00	\$	2,087,400.00
D30501603320	AHU-26S	2000	SF	\$	15.10	\$	30,200.00	\$	9.75	\$ 19,500.00	\$	49,700.00
											\$	4,759,644.75
Boiler's												
RSMeans	Fixtures	Qty	Units	Mat.		Tot	t. Mat	Inst.		Tot. Inst.	То	tal
D30201061140	BLR-1, BLR-2, BLR-3	3	EA	\$81,5	00.00	\$	244,500.00	\$19,0	00.00	\$ 57,000.00	\$	301,500.00
											\$	301,500.00
Chillers												
RSMeans	Fixtures	Qty	Units	Mat.		Tot	t. Mat	Inst.		Tot. Inst.	То	tal
D30201061140	CH-1, CH-2, CH-3, CH-4	4	EA	\$81,5	00.00	\$	326,000.00	\$19,0	00.00	\$ 76,000.00	\$	402,000.00
											\$	402,000.00
Unit Heaters												
RSMeans	Fixtures	Qty	Units	Mat.		Tot	t. Mat	Inst.		Tot. Inst.	То	tal
	UH-1	345		\$	8.01	\$	2,763.45		511.35	\$ 1,211,415.75	\$	1,214,179.20
	UH G-1S	535	SF	\$	8.01	\$	4,285.35	\$ 3,	511.35	\$ 1,878,572.25	\$	1,882,857.60
											\$	3,097,036.80
									Tot	al Mechanical:	\$	8,685,173.55

Lighting and	Electrical				4							
L'abrea.												
Lighting	le: .	la.	I		_	-	l	1	т_			
	Fixtures	Qty	Units	Mat.	+	Tot. Mat	Inst.	Tot. Inst.	_	otal		
	Recessed Fluorescent, 11 fixture per 400 SF	196000		\$ 5.25	-	\$ 1,029,000.00	\$ 10.50	\$ 2,058,000.0	+	3,087,000.00		
D50202950800	Lighting ON/Off Controls	196000		\$ 0.52	-	\$ 101,920.00	\$ 0.40	\$ 78,400.0	<u> </u>	180,320.00		
D50201250600	Recepticals	1260	EA	\$ 72.00	0	\$ 90,720.00	\$ 225.00	\$ 283,500.0	_	374,220.00		
					4				\$	3,641,540.00		
Generators		ı	I	ı	_		<u> </u>	1				
	Fixtures	Qty	Units	Mat.	_	Tot. Mat	Inst.	Tot. Inst.	_	otal		
	EGS-1	_	Cost/kW	\$ 174.00	-	\$ 348,000.00	\$ 25.50	\$ 51,000.0	<u> </u>	399,000.00		
	EGS-2		Cost/kW	\$ 174.00	\rightarrow	\$ 348,000.00	\$ 25.50	\$ 51,000.0	<u> </u>	399,000.00		
D50902100960	EGS-3	2000	Cost/kW	\$ 174.00	0	\$ 348,000.00	\$ 25.50	\$ 51,000.0) \$	399,000.00		
									\$	1,197,000.00		
Substations												
RSMeans	Fixtures	Qty	Units	Mat.		Tot. Mat	Inst.	Tot. Inst.	To	otal		
D50902100960	Substation 1S - 4000A	1	EA	\$83,600.00	0	\$ 83,600.00	\$11,925.00	\$ 11,925.0) \$	95,525.00		
D50902100960	Substation 2S - 4000A	1	EA	\$83,600.00	0	\$ 83,600.00	\$11,925.00	\$ 11,925.0) \$	95,525.00		
D50902100960	Substation 3S - 4000A	1	EA	\$83,600.00	0	\$ 83,600.00	\$11,925.00	\$ 11,925.0) \$	95,525.00		
D50902100960	Substation CHILLERS -3000A	1	EA	\$62,700.00	0	\$ 62,700.00	\$10,925.00	\$ 10,925.0) \$	73,625.00		
D50902100960	Emg. Generator Switchgear - 4000A	1	EA	\$83,600.00	0	\$ 83,600.00	\$11,925.00	\$ 11,925.0) \$	95,525.00		
									\$	455,725.00		
Distribution Par	nels											
RSMeans	Fixtures	Qty	Units	Mat.		Tot. Mat	Inst.	Tot. Inst.	To	otal		
D50902100960	100A Panelboards	56	EA	\$ 3,375.00	0	\$ 189,000.00	\$ 2,500.00	\$ 140,000.0) \$	329,000.00		
D50902100960	225A Panelboards	15	EA	\$ 5,675.00	0	\$ 85,125.00	\$ 3,400.00	\$ 51,000.0) \$	136,125.00		
D50902100960	600A Panelboard	1	EA	\$14,400.00	0	\$ 14,400.00	\$ 7,400.00	\$ 7,400.0) \$	21,800.00		
						_			\$	486,925.00		
						Tot	tal Lighting	and Electrica	: \$	\$ 5,781,190.00		

Plumbing Assen	nblies							
ū								
Patient room	Quantity of room:	210		_				
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20101102160	FI Mount WC w/ ADA		1 EA	\$ 790.00	\$ 790.00	\$ 835.00	\$ 835.00	\$ 1,625.0
D20103102300	Wall Hung Lav. Handicap		1 EA	\$ 1,475.00	\$ 1,475.00	\$ 920.00		\$ 2,395.0
D20104301960	Counter Single Bowl Sink		1 EA	\$ 395.00	\$ 395.00	\$ 840.00		\$ 1,235.0
						Total fo	r single room:	\$ 5,255.0
						Total	for all rooms:	\$ 1,103,550.0
Autopsy room	Quantity of room:	1						
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20101102160	FI Mount WC w/ ADA		1 EA	\$ 790.00	\$ 790.00	\$ 835.00	\$ 835.00	\$ 1,625.0
D20103102300	Wall Hung Lav. Handicap		1 EA	\$ 1,475.00	\$ 1,475.00	\$ 920.00	\$ 920.00	\$ 2,395.0
D20104202160	Double Compartment Sink		1 EA	\$ 615.00	\$ 615.00	\$ 855.00	\$ 855.00	\$ 1,470.0
D20107101600	Shower, stall ,baked enamel		1 EA	\$ 1,550.00	\$ 1,550.00	\$ 880.00	\$ 880.00	\$ 2,430.0
						Total for	r single room:	\$ 7,920.0
						Total	for all rooms:	\$ 7,920.0
G Floor Work Area	Quantity of room:	1						
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20104202160	Double Compartment Sink		1 EA	\$ 615.00	\$ 615.00	\$ 855.00	\$ 855.00	\$ 1,470.0
D20107101960	Emergency Eye Wash Station		1 EA	\$ 112.00	\$ 112.00	\$ 325.00	\$ 325.00	\$ 437.0
						Total for	r single room:	\$ 1,907.0
						Total	for all rooms:	\$ 1,907.0
Dirty Linens Room	Quantity of room:	1						
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20104202160	Double Compartment Sink		1 EA	\$ 615.00	\$ 615.00	\$ 855.00	\$ 855.00	\$ 1,470.0
D20107101960	Emergency Eye Wash Station		1 EA	\$ 112.00	\$ 112.00	\$ 325.00	\$ 325.00	\$ 437.0
						Total for	r single room:	\$ 1,907.0
						Total	for all rooms:	\$ 1,907.0
Central Office Area	Quantity of room:	7						
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20101102160	FI Mount WC w/ ADA		4 EA	\$ 790.00	\$ 3,160.00	\$ 835.00	\$ 3,340.00	\$ 6,500.0
D20103102300	Wall Hung Lav. Handicap		4 EA	\$ 1,475.00		\$ 920.00	\$ 3,680.00	\$ 9,580.0
D20104202160	Double Compartment Sink		4 EA	\$ 615.00	\$ 2,460.00	\$ 855.00	\$ 3,420.00	\$ 5,880.0
D20104202080	Single Compartment Sink		5 EA	\$ 460.00	\$ 2,300.00	\$ 795.00	\$ 3,975.00	\$ 6,275.0
						Total fo	r single room:	\$ 28,235.0
						Total	for all rooms:	\$ 197,645.0
Corridor	Quantity of room:				T	1		T
RSMeans	Fixtures	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20108201920	Floor Mounted Water Cooler	<u> </u>	1 EA	\$ 1,200.00	\$ 1,200.00	\$ 640.00	\$ 640.00	\$ 1,840.0
							r single room:	
						Total	for all rooms:	\$ 12,880.0
Domestic Water Hea						ı		
RSMeans	Equipment	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20202502260	600 MBH input, 576GPH		3 EA	\$ 24,100.00	\$ 72,300.00	\$ 4,050.00	\$ 12,150.00	\$ 84,450.0
			-				Total:	\$ 84,450.0
Roof Drains	Quantity of Roof Drains:		8	1	I =	I	1	T =
RSMeans	Equipment	Qty	Units	Mat.	Tot. Mat	Inst.	Tot. Inst.	Total
D20402102040	4" diam., 10' high		1 EA	\$ 455.00	\$ 455.00	\$ 930.00	\$ 930.00	\$ 1,385.0
D20402102080	For each additional foot	12	0 EA	\$ 11.00	\$ 1,320.00	\$ 26.50		\$ 4,500.0
			-				gle roof drain:	
			-			Total for al	I Roof Drains:	\$ 105,930.0
			-					
						Tota	al Plumbing:	\$ 1,516,189.0

Appendix C: LEED Evaluation Penn State Approach

LEED Evaluation

Abbrev.	Credit	Effort Level	Points
Integration	ve Process		
IP	Integrative Process	MANDITORY	1
Location	& Transportation		
LT	LEED for Neighborhood Development Location	MINIMAL	16
LT	Sensitive Land Protection	MANDITORY	1
LT	High Priority Site	NOT	2
LT	Surrounding Density and Diverse Uses	MANDITORY	1 2 5
LT	Access to Quality Transit	SIGNIFICANT	
LT	Bicycle Facilities	MANDITORY	1
LT	Reduced Parking Footprint	MINIMAL	1
LT	Green Vehicles	NOT	1
Suita inab	le Site		
SS	Site Assessment		1
SS	Site Selection	MINIMAL	1
SS	Development Density and Community Connectivity	SIGNIFICANT	5
SS	Brownfield Redevelopment	NOT	1
SS	Alt. Transportation : Public Transportation Access	MINIMAL	6
SS	Alt. Trans.: Bicycle Storage & Changing Rooms	MINIMAL	1
SS	Alt. Trans.: Low Emitting and Fuel Efficient Vehicles	MINIMAL	3
SS	Alt. Transportation : Parking Capacity	MINIMAL	2
55	Site Development: Protect or Restore Habitat	MINIMAL	3 2 2 1 1
SS	Maximize Open Space	NOT	1
55	Stormwater Design: Quantity Control	MINIMAL	1
55	Stormwater Design: Quality Control	MINIMAL	1
55	Heat Island Effect: Non-Roof	MINIMAL	1
55	Heat Island Effect: Roof	MANDITORY	1
SS	Light Pollution Reduction	MANDITORY	1
Water Ef	_		
WE	Outdoor Water Use Reduction		0
WE	Indoor Water Use Reduction		0
WE	Building-level Water Metering		0
WE	Outdoor Water Use Reduction	MINIMAL	2
WE	Indoor Water Use Reduction	MANDITORY	2
WE	Cooling Tower Water Use	MINIMAL	
WE	Water Metering	MANDITORY	1
Energy &	Atmosphere		
EA	Fundamental Commissioning and Verification		0
EA	Minimum Energy Performance		0
EA	Building-Level Energy Metering		0
EA	Fundamental Refrigerant Management		0
EA	Optimize Energy Performance	SIGNIFICANT	18
EA	Advanced Energy Metering	MINIMAL	1

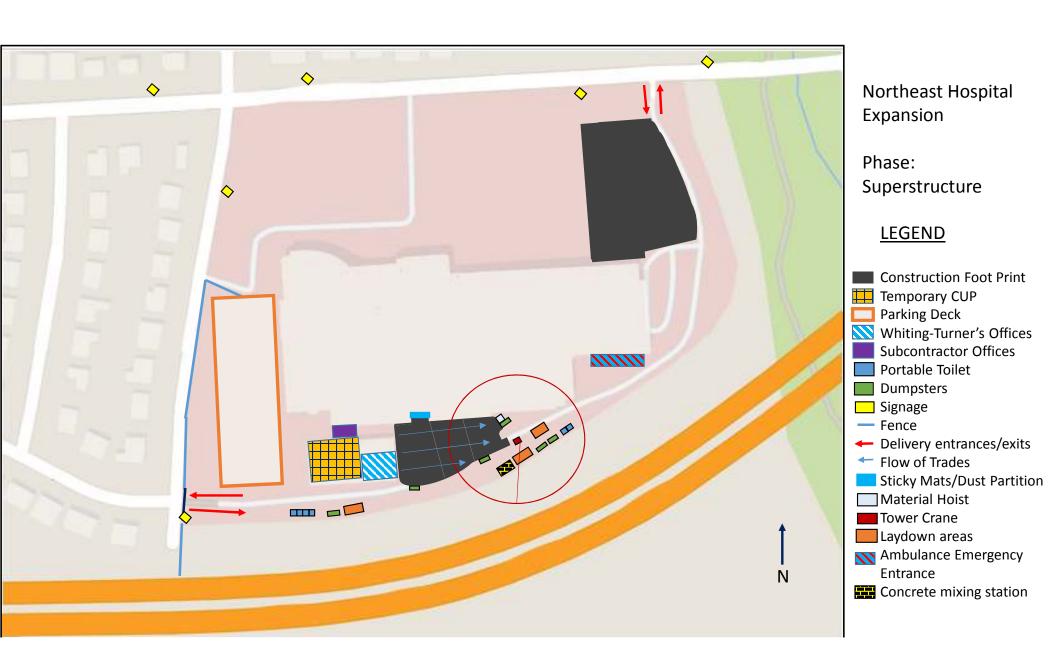
EA	Demand Response	NOT	2
EA	Renewable Energy Production	MINIMAL	3
EA	Enhanced Commissioning	NOT	2
EA	Enhanced Refrigerant Management	SIGNIFICANT	2
EA	Green Power and carbon offsets	NOT	2
Materials	& Resources		
MR	Construction and Demolition Waste Management Planning		0
MR	Building Life-Cycle Impact Reduction	NOT	5
MR	BPD &O - En vironmental Product Declarations	MANDITORY	2
MR	BPD & O - Sourcing of Raw Materials	MANDITORY	2
MR	Construction Waste Management	MINIMAL	2
MR	Regional Materials	SIGNIFICIANT	2
MR	Certified Wood	MANDITORY	1
Indoor Er	nvirnomental Quality		
IEQ	Construction Indoor Air Quality Management Plan	MANDITORY	1
IEQ	Enhanced Indoor Air Quality Strategies	MINIMAL	2
IEQ	Low Emitting Materials	SIGNIFICANT	3
IEQ	Indoor Air Quality Assessment	SIGNIFICANT	2
IEQ	Thermal Comfort	MANDITORY	1
IEQ	Interior Lighting	MINIMAL	2
IEQ	Daylighting	NOT	3
Innnovati	ion & Design Process		
ID	Innovation	SIGNIFICANT	5
ID	Accredited Professional	MANDITORY	1
Regional	Priority		
RP	Regional Priority	MINIMAL	4

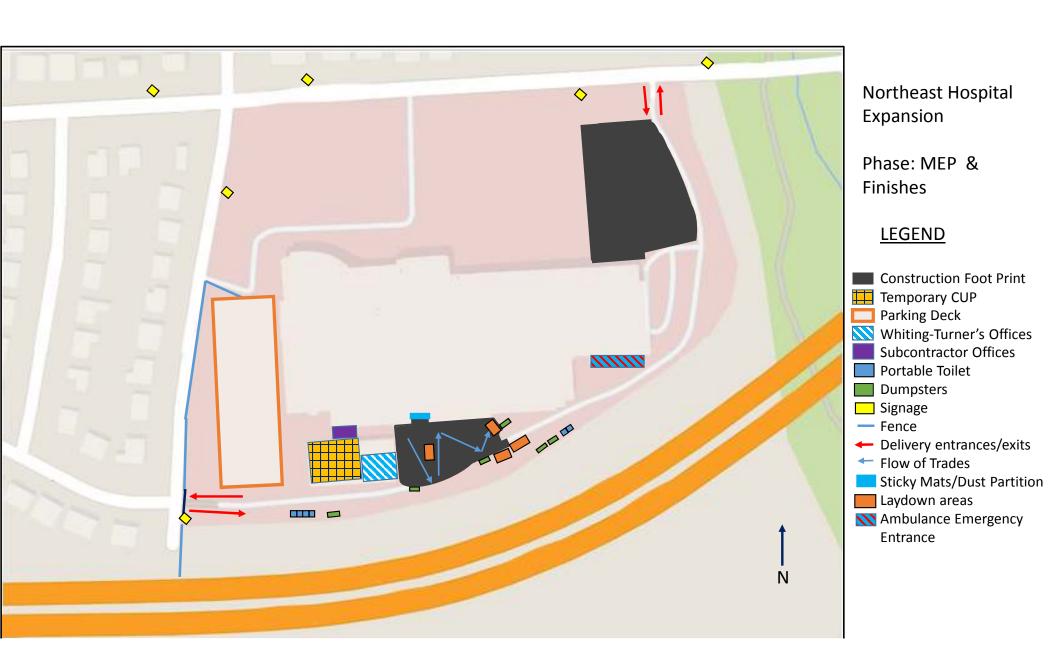
MANDITORY	25
SIGNIFICANT	40
MINIMAL	53
NOT	19

ATTAINABLE = 65

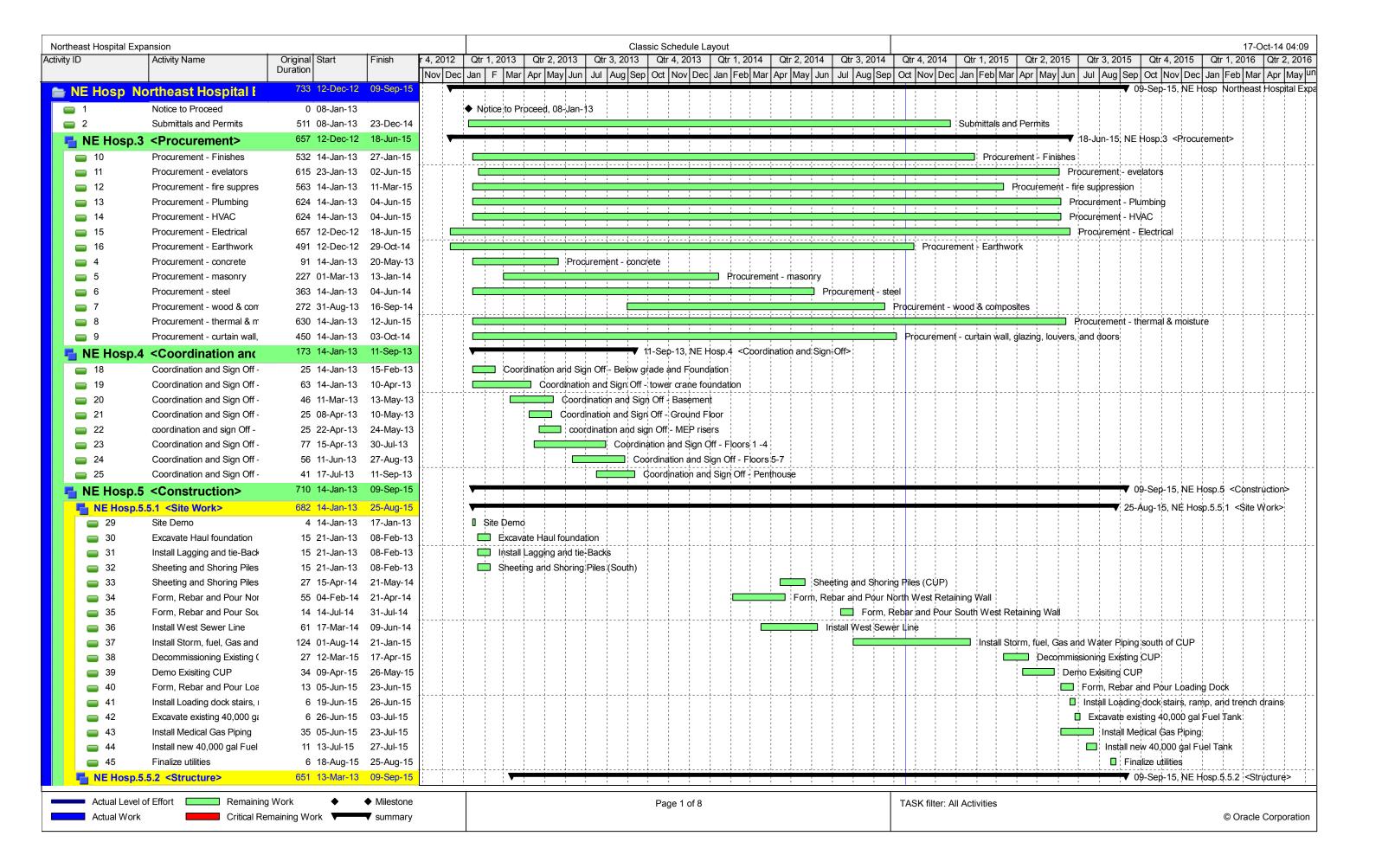
Appendix D: Site Logistics Plans







Appendix E: Primavera Project Schedule



		Activity Name	Original Start Duration	Finish	r 4, 2012	Otr 1	2013	Ot 2 2042 Ot	0.0040	01: 4 0040 01: 4 0044 01: 0		04-0-0044	01 4 004	Ot - 4	0015								
									r 3, 2013						, 2015	Qtr 2, 2015		_		4, 2015			Qtr 2,
					Nov Dec	Jan I	Mar	Apr May Jun Jul		Oct Nov Dec Jan Feb Mar Apr M		Jul Aug Sep	Oct Nov D	ec Jan F	eb Mar	Apr May Ju	ın Jul Au	Sep	Oct I	Nov De	c Jan F	eb Ma	r Apr N
	<u>-</u>	5.5.2.5.2.1 <basement></basement>	130 13-Mar-13						1 1	10-Sep-13, NE Hosp.5.5.2,5.2.1 <base< td=""><td>ement></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>:</td><td></td><td></td><td></td></base<>	ement>									:			
	48	Layout Grade Beam	1 26-Mar-13				1 1	Layout Grade Bear	1 1														
_		Form, Rebar, Pour Tower (5 27-Mar-13	•				Form, Rebar, Pou	i i											-			
	5 0	Cure Tower Crane Founda	3 01-Apr-13	•	ļ <u>-</u>	ļļ		Cure Tower Cran	11	tion						}}}			 				
	5 1	Erect tower Crane	2 05-Apr-13				1	Erect tower Crar	i i											1			
	_	Form, rebar, pour Grade B	75 28-Mar-13				_	1 1 1	1 1	ar, pour Grade Beams and Columns										i			
-		Place Rebar and install Cai	36 13-Mar-13	,				Place Rebar	1 1														
		Excavate and F/R/P Elevate	26 21-Mar-13					Excavate and	i i											:			
		Form , rebar and pour four	73 09-Apr-13		 				4	bar and pour foundation walls						ļ ļ			<u> </u>				
	5 6	Install Wall braces	22 07-Jun-13					1 1 1	nstall Wall											:			
		Waterproof North Foundat	7 19-Apr-13					Waterproof N	1 1											į			
	5 8	Install Underslab Mechanica	29 20-May-13					1 1 1	1 1	slab Mechanical										:			
=	5 9	Form, Rebar and Pour SO	25 03-Jun-13					i i i	1 1	ar and Pour SOG										į			
=	_	Waterproof West and Sout	22 10-Jun-13		ļ	<u> </u>			44	f West and South Foundation Walls						ļ			ļļ.				
=	a 61	Water proof East foundatio	8 24-Jun-13					□ W	1 1	f East foundation wall										1 1 1		1	
=	a 62	Remove reshores	1 10-Sep-13	10-Sep-13					I F	Remove reshores													
	6 3	Foundation compete	0 10-Sep-13						♦ F	Foundation compete, 10-Sep-13										1			
		5.5.2.5.2.2 <ground floor=""></ground>	589 07-Jun-13	<u> </u>														09	9-Sep-	-15, NE	Hosp.5.	5.2.5.2.	2 <gr< td=""></gr<>
	_	Form and rebar west portic	12 07-Jun-13					ii i	1	par west portion Ground floor Slab						ļ ļ ļ ļ							
=	_	Install west portion MEP sle	5 14-Jun-13					1 1 1	1 1	rtion MEP sleeves and Openings													
=	a 67	Pour west portion Ground f	1 20-Jun-13					1 1 1	1 1	tion Ground floor slab										1			
	68	Form and rebar central por	6 29-Jun-13	08-Jul-13				i i i	i i	rebar central portion Ground floor Slab													
=	9 69	Install central portion MEP:	1 02-Jul-13	02-Jul-13				1 In	stall centra	al portion MEP sleeves and Openings										1			
	7 0	Pour central portion Ground	1 08-Jul-14	08-Jul-14					jj.			l Pour centra	al portion Grou	ınd floor s	lab								
=	7 1	Form and rebar east portio	6 09-Jul-13	16-Jul-13					1 1	rebar east portion Ground floor Slab										!			
	7 2	Install east portion MEP sle	1 16-Jul-13	16-Jul-13				1	Install east	st portion MEP sleeves and Openings				1 1	i					į			
=	3 73	Pour east portion Ground fl	8 18-Jul-13	29-Jul-13				_	Pour ea	ast portion Ground floor slab										-			
	3 74	remove reshores	1 30-Sep-13	30-Sep-13						I remove reshores										i			
=	3 75	Ground Slab Complete	0 30-Sep-13							♦ Ground Slab Complete, 30-Sep-13													
=	3 76	Install shoring posts for elev	30 01-Nov-13	12-Dec-13				1 1 1 1 1 1 1 1 1		Install shoring posts for	elevated	deck								!			
=	7 7	Trench/Install/Backfill electr	50 30-Jun-14	05-Sep-14							į	—	rench/Install/E	Backfill ele	ctri¢al Du	uctbanks							
=	7 8	Trench/install/Backfill 8" Wa	7 22-Sep-14	30-Sep-14								1	Trench/inst	tall/Backfill	8" Wate	r Line from e	ast to west						
	7 9	trench/Install/cover 8" NG a	2 30-Sep-14	01-Oct-14									I trench/Inst	all/cover 8	" NG an	d fuel lines							
-	3 80	Backfill and compact drivew	3 03-Oct-14	07-Oct-14									Backfill an	d compac	t drivewa	ay aisle				!			
-	3 81	Stone/compact driveway ais	3 26-Dec-14	30-Dec-14										■ Stone	e/compa	ct driveway a	islę readying	for pa	veme	nt			
-	3 82	Pave driveway aisle base o	1 19-May-15	19-May-15												I Pa	ve driveway	aisle t	base c	oat			
-	3 83	Pave driveway aisle top coa	1 09-Sep-15	09-Sep-15							1 1			1 1				ΙP	ave dr	iveway	aisle top	coat	i i
4	NE Hosp.5	5.5.2.5.2.3 <level 1=""></level>	81 21-Jun-13	11-Oct-13				-	1 1	11-Oct-13, NE Hosp 5.5.2.5.2.3 <	Level 1>									1			
=	8 6	Form, rebar and pour west	26 21-Jun-13	26-Jul-13		<u> </u>	_		Form, re	ebar and pour west level 1 columns and	l slab												
_	3 87	Install west MEP Sleeves	10 05-Jul-13	18-Jul-13					Install wes	st MEP Sleeves	1 1					,		1 1			-,		
	88	Stress west PT Tendons	1 20-Jul-13	22-Jul-13				0	Stress we	est PT Tendons									i	i !			
=	3 89	Form, rebar and pour centi	17 09-Jul-13	31-Jul-13					Form, r	rebar and pour central level 1 columns a	and slab									1			
=	90	Install central MEP sleeves	6 18-Jul-13	25-Jul-13					Install ce	entral MEP sleeves										1		!	
_	9 1	Stress central PT Tendons	1 30-Jul-13	30-Jul-13					l Stress c	central PT Tendons										1			
_	92	Form, rebar and pour east	11 27-Jul-13	12-Aug-13					Form	n, rebar and pour east level 1 columns a	and slab	 		1 1						₁			
_	9 3	Install east MEP sleeves	4 01-Aug-13	06-Aug-13					I Install	east MEP sleeves				1 1						i !			
=	94	Stress east PT Tendons	1 10-Aug-13	12-Aug-13			1 1		I Stress	s east PT Tendons							1 1	1 1		1	1 1 1 1 1 1	!	1 1
- Actu	ual Level of	Effort Remaining	Work ♦	Milestone						Page 2 of 8			TASK filter:	All Activi	ties								

Northe	east Hospital Exp	pansion					Classic Schedule La	avout							1	7-Oct-14 04:09
Activity I		Activity Name	Original Start	Finish	r 4, 2012	Qtr 1, 2013 Qtr 2, 2013	Qtr 3, 2013 Qtr 4, 2013	,	4 Qtr 3, 2014	Qtr 4, 2014	Qtr 1, 2015	Qtr 2, 2015	Qtr 3, 2015	Qtr 4, 2015		16 Qtr 2, 2016
			Duration		Nov Dec	Jan F Mar Apr May Jun	Jul Aug Sep Oct Nov Dec	Jan Feb Mar Apr May Ju	un Jul Aug Se	p Oct Nov Dec	Jan Feb Ma	ır Apr May Jui	Jul Aug Sep	Oct Nov De	c Jan Feb	Mar Apr May un
	= 95	Remove reshores	1 11-Oct-13	11-Oct-13				shores								
	= 96	Level 1 Slab Complete	0 11-Oct-13				◆ Level 1 Slab	Complete, 11-Oct-13								
	NE Hosp	0.5.5.2.5.2.4 <level 2=""></level>	68 27-Jul-13	30-Oct-13	[[▼ 30-Oct-1	3, NE Hosp.5.5.2.5.2.4 <le< td=""><td>vel 2></td><td></td><td>]</td><td></td><td></td><td></td><td></td><td></td></le<>	vel 2>]					
	= 100	Install west MEP Sleeves	6 09-Aug-13	16-Aug-13			■ Install west MEP Slee	ves								
	= 101	Stress west PT Tendons	1 22-Aug-13	22-Aug-13			I Stress west PT Tend	ons								
	= 102	Form, rebar and pour centi	39 27-Jul-13	19-Sep-13			Form, rebar an	d pour central level 2 column	is and slab							
	= 103	Install central MEP sleeves	12 21-Aug-13	05-Sep-13			Install central MER	P sleeves								
	= 104	Stress central PT Tendons	1 07-Sep-13	09-Sep-13			Stress central PT	Tendons								
	= 105	Form, rebar and pour east	26 08-Aug-13	12-Sep-13			Form, rebar and	pour east level 2 columns ar	nd slab							
	= 106	Install east MEP sleeves	12 21-Aug-13	05-Sep-13			Install east MEP s	leeves								
	= 107	Stress east PT Tendons	1 04-Sep-13	04-Sep-13			Stress east PT Ter	ndons								
	= 108	Remove reshores	2 29-Oct-13	30-Oct-13			▮ Remove	reshores								
	<u> </u>	Level 2 Slab Complete	0 29-Oct-13				♦ Level 2 S	lab Complete, 29-Oct-13								
		0.5.5.2.5.2.5 <level 3=""></level>	82 20-Aug-13	11-Dec-13			1	1-Dec-13, NE Hosp.5.5.2.5.2	2.5 <level 3=""></level>							
	= 111	Structure Level 3	73 31-Aug-13	_				tructure Level 3						1 1 1 1 1 1 1 1 1		
	<u> </u>	Form, rebar and pour east	13 31-Aug-13				Form, rebar and	d pour east level 3 columns a	and slab							
	<u> </u>	Install east MEP Sleeves	2 09-Sep-13				I Install east MEP									
	<u> </u>	Stress east PT Tendons	1 17-Sep-13				Stress east PT 1	Tendons			iii		-			
	<u> </u>	Form, rebar and pour centi	13 05-Sep-13	-			Form, rebar an	nd pour central level 3 colum	ns and slab							
	= 116	Install central MEP sleeves	4 12-Sep-13	•			☐ Install central MI	i ' i i i i								
	= 117	Stress central PT Tendons	1 21-Sep-13				Stress central									
	<u> </u>	Form, rebar and pour west	34 20-Aug-13					and pour west level 3 column	ne and elah							
	119	Install west MEP sleeves	3 16-Sep-13				I Install west MER						-	-		
	113	Stress west PT Tendons	1 26-Sep-13	-			Stress west P									
	<u> </u>	Remove reshores	1 11-Nov-13	•				ve reshores								
	121	Level 3 Slab Complete	0 11-Nov-13	11-1107-13				3 Slab Complete, 11-Nov-13								
		2.5.5.2.5.2.6 <level 4=""></level>	50 16-Sep-13	22 Nov 12				lov-13, NE Hosp.5.5 2.5.2.6	d 0,401.45							
	125	Form, rebar and pour east	10 16-Sep-13		·			nd pour east level 4 columns			 -			÷÷		
	= 126	Install east MEP Sleeves	1 23-Sep-13	•			I Install east MEI		and slap							
	407	Stress east PT Tendons	1 28-Sep-13	•			Stress east P									
	= 127 = 128	Form, rebar and pour centi	12 19-Sep-13	-				and pour central level 4 colu	mpe and elab							
		Install central MEP sleeves	•				I Install central	i 'i i i i i	illing ally slab							
	_		1 26-Sep-13 1 04-Oct-13				Stress central	{ { - -								
	= 130	Stress central PT Tendons					i	i i i i i								
	= 131	Form, rebar and pour west	10 24-Sep-13					and pour west level 4 colum	ns and slab							
	<u> </u>	Install west MEP sleeves	1 01-Oct-13				I Install west M									
	= 133	Stress west PT Tendons	1 08-Oct-13				I Stress west									
	= 134	Remove reshores	1 22-Nov-13		ļ		. + + + + + + +	love reshores						<u>.</u>		
	= 135	Level 4 Slab complete	0 22-Nov-13					l 4 Slab complete, 22-Nov-1	i i i							
		5.5.2.5.2.7 <level 5=""></level>	61 27-Sep-13					20-Dec-13, NE Hosp.5.5.2.5								
	<u> </u>	Form, rebar and pour east	14 27-Sep-13				i	ar and pour east level 5 colur	rırış and siab							
	= 139	Install east MEP Sleeves	3 07-Oct-13				I Install east N									
	= 140	Stress east PT Tendons	1 17-Oct-13		ļ¦		l Stress eas									
	= 141	Form, rebar and pour centi	16 02-Oct-13		li i			ar and pour central level 5 c	olumns and slab							
	= 142	Install central MEP sleeves	2 14-Oct-13					al MEP sleeves								
	= 143	Stress central PT Tendons						ntral PT Tendons								
	= 144	Form, rebar and pour west	15 07-Oct-13	25-Oct-13				par and pour west level 5 col	umns and slab							
	= 145	Install west MEP sleeves	3 15-Oct-13	17-Oct-13			I Install west	MEP sleeves								
						1										
	Actual Level	of Effort Remaining	Work ◆	◆ Milestone			Page 3 of 8			TASK filter: A	II Activities					
	Actual Work	Critical Ren	maining Work	▼ summary			-								© Ora	cle Corporation

Northeas	st Hospital Exp	ansion				Classic Schedule Layout						17-Oct-14 04:09									
Activity ID	<u> </u>	Activity Name	Original Start	Finish	r 4, 2012	Qtr 1, 2013 Qtr 2, 20	13 Qtr 3, 2013 Qtr 4, 2013 Q	tr 1, 2014 Qtr 2, 201	14 Qtr 3, 2014	4 Qtr 4	1, 2014	Qtr 1, 2015	Qtr 2, 2015	Qtr 3, 2015	Qtr 4, 201	15 Qtr 1, 20	016 Qtr 2, 2016				
	•		Duration		Nov Dec	Jan F Mar Apr May	Jun Jul Aug Sep Oct Nov Dec Jar		Jun Jul Aug S	ep Oct I	Nov Dec Ja	an Feb Ma	r Apr May Jun	Jul Aug Sep	Oct Nov [Dec Jan Feb	Mar Apr May un				
	= 146	Stress west PT Tendons	1 25-Oct-13				I Stress west F	1 1 1 1								1 1					
	— 147	Remove reshores	10 09-Dec-13					move reshores													
	= 148	Level 5 Slab Complete	0 19-Dec-13					el 5 Slab Complete, 19-I	1 1 1												
		.5.5.2.5.2.8 <level 6=""></level>	61 15-Oct-13					07-Jan-14, NE Hosp.5.5	: : :	6>											
	= 151	Form, rebar and pour east	13 15-Oct-13				iiiiiii	and pour east level 6 co	olumns and slab												
	= 152	Install east MEP Sleeves	3 22-Oct-13				[] Install east MI														
	= 153	Stress east PT Tendons	1 31-Oct-13				Stress east I														
	= 154	Form, rebar and pour centi	9 21-Oct-13					and pour central level 6	6 columns and sla	ab¦ ¦	1 1					1 1 1 1					
	= 155	Install central MEP sleeves	3 25-Oct-13				I Install centra														
	= 156	Stress central PT Tendons	1 02-Nov-13					ral PT Tendons													
	= 157	Form, rebar and pour west	12 23-Oct-13					ar and pour west level 6	columns and sla	ıb											
	= 158	Install west MEP sleeves	2 30-Oct-13				I Install west I	i i i i i													
	= 159	Stress west PT Tendons	1 07-Nov-13				I Stress wes	st PT Tendons													
	= 160	Remove reshores	20 11-Dec-13	07-Jan-14				Remove reshores								1 1					
	= 161	Level 7 Slab Complete	0 06-Jan-14				iiiiiii	_evel 7 Slab Complete, (
		.5.5.2.5.2.9 <level 7=""></level>	47 29-Oct-13	_				1-Jan-14, NE Hosp.5.5.								1 1 1 1 1 1					
	= 164	Form, rebar and pour east	10 29-Oct-13					ar and pour east level 7	columns and sla	ab						i i i i					
	= 165	Install east MEP Sleeves	2 04-Nov-13				in otali odot	MEP Sleeves													
	= 166	Stress east PT Tendons	1 12-Nov-13					st PT Tendons								i i i i					
	= 167	Form, rebar and pour centi	12 31-Oct-13	15-Nov-13				oar and pour central leve	el 7 columns and	l slab											
	= 168	Install central MEP sleeves	4 05-Nov-13	08-Nov-13			Install centr	ral MEP sleeves								i i I I					
	= 169	Stress central PT Tendons	1 15-Nov-13				I Stress cer	ntral PT Tendons								1 1					
	= 170	Form, rebar and pour west	10 05-Nov-13	18-Nov-13			Form, re	bar and pour west level	7 columns and s	slab											
	= 171	Install west MEP sleeves	2 11-Nov-13				■ Install wes	st MEP sleeves													
	= 172	Stress west PT Tendons	1 19-Nov-13	19-Nov-13			I Stress we	est PT Tendons													
	= 173	Remove reshores	2 31-Dec-13	01-Jan-14			I R	temove reshores			i i										
	= 174	Level 7 slab Complete	0 31-Dec-13				♦ Le	evel 7 slab Complete, 31	1-Dec-13												
	NE Hosp	.5.5.2.5.2.10 <penthouse></penthouse>	186 11-Nov-13	28-Jul-14			▼		1 1 1	I-14, NE I	losp.5.5.2.5	.2.10 <per< th=""><th>nthouse></th><th></th><th></th><th></th><th></th></per<>	nthouse>								
	= 177	Form, rebar and pour east	11 11-Nov-13	25-Nov-13			Form, re	ebar and pour east pent	thouse slab							1 1					
	= 178	Install east MEP Sleeves	2 18-Nov-13	19-Nov-13			I Install ea	st MEP Sleeves							1						
	= 179	Stress east PT Tendons	1 26-Nov-13	26-Nov-13			I Stress €	east PT Tendons													
	= 180	Form, rebar and pour centi	20 13-Nov-13	10-Dec-13			Form	, rebar and pour central	l penthouse slab												
	= 181	Install central MEP sleeves	6 20-Nov-13	27-Nov-13			☐ Install o	entral MEP sleeves													
	= 182	Stress central PT Tendons	1 06-Dec-13	06-Dec-13			I Stress	s central PT Tendons													
	= 183	Form, rebar and pour west	19 18-Nov-13	12-Dec-13			Form	n, rebar and pour west p	oenthouse slab												
	= 184	Install west MEP sleeves	1 02-Dec-13	02-Dec-13			I Install v	west MEP sleeves								1 1					
	= 185	Stress west PT Tendons	1 10-Dec-13	10-Dec-13			I Stres	s west PT Tendons													
	= 186	Remove reshores	3 03-Jan-14				<u>10</u> F	Remove reshores													
	= 187	Erect East Columns and Be	18 13-Jan-14	05-Feb-14			_	Erect East Columns	s and Beams												
	= 188	Erect Central Columns and	6 04-Feb-14	11-Feb-14				■ Erect Central Colu	ımns and Beams	s	jj	ii	iii	<u>i </u>							
	= 189	Erect West columns and Be	6 11-Feb-14	18-Feb-14				Erect West column	nns and Beams												
	= 190	Detail columns and Beams	34 04-Feb-14	21-Mar-14				Detail colum	nns and Beams												
	= 191	Top Out	0 20-Mar-14					◆ Top Out, 20	-Mar-14							1 1					
	= 192	Remove tower Crane	4 09-Jul-14	14-Jul-14					■ Remove	tower Cr	ane										
	= 193	Infill tower Crane	11 14-Jul-14	28-Jul-14					Infill to	ower ¢rar	ne					1 1 1 1 1 1					
	NE Hosp.5	.5.3 <envelope></envelope>	446 18-Nov-13	03-Aug-15									1 1	03-Aug	j-15, NE Hos	p.5.5.3 ∢Enve	lope>				
	NE Hosp	.5.5.3.5.3.1 <south elevation<="" td=""><td>275 18-Nov-13</td><td>05-Dec-14</td><td></td><td></td><td></td><td>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>1 1 1</td><td></td><td>05-D</td><td>ec-14, NE</td><td>Hosp.5.5.3.5.3.1</td><td><south elevati<="" td=""><td>on></td><td>1 1 1 1 1 1</td><td></td></south></td></south>	275 18-Nov-13	05-Dec-14				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1		05-D	ec-14, NE	Hosp.5.5.3.5.3.1	<south elevati<="" td=""><td>on></td><td>1 1 1 1 1 1</td><td></td></south>	on>	1 1 1 1 1 1					
	Actual Level of Actual Work	-	Work •	◆ Milestone ▼ summary			Page 4 of 8			TASI	K filter: All A	ctivities				© Or	acle Corporation				

vity ID	· · · · · · · · · · · · · · · · · · ·	ansion Activity Name	Original Start	Finish	r 4, 2012	Qtr 1, 2013 Qtr 2, 2013	Classic Schedule Layout Qtr 3, 2013 Qtr 4, 2013 Qtr 1, 2014 Qtr 2, 2014 Qtr 3, 2014	17-Oct-14 0- Utr 4, 2014 Qtr 1, 2015 Qtr 2, 2015 Qtr 3, 2015 Qtr 4, 2015 Qtr 1, 2016 Qtr 2,
ity ib		7 tolivity realife	Duration	T IIIIOTT				ep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr M
	197	mobilize and layout	1 18-Nov-13	18-Nov-13	11.10.120.	, sa. , . , . , . , . , . , . , . , . , . ,	I mobilize and layout	
	= 198	Install curtainwall anchors fi	4 28-Feb-14	05-Mar-14			☐ Install curtainwall anchors from	L2 to L4
	<u> </u>	Install Curtainwall anchors	13 06-Mar-14	24-Mar-14			Install Curtainwall anchors fr	rom L5 to penthouse
	<u> </u>	Install Metal studs L1	51 18-Feb-14	29-Apr-14			Install Metal studs L1	
	<u> </u>	Install regular wall units L1	7 11-Apr-14	21-Apr-14			☐ Install regular wall units	
	<u> </u>	Install regular wall membra	5 09-May-14	15-May-14			☐ Install;regular wall r	
	<u> </u>	Install curtainwall units start	37 24-Apr-14	13-Jun-14	1 1			vall units starting at L2 to L7
	204	Install curtainwall membran	•	17-Jun-14			☐ Install curtain	
	<u> </u>	Layout and install metal par	105 14-Jul-14	05-Dec-14				Layout and install metal panels
	206	Layout and install soffits	14 04-Nov-14					Layout and install soffits
		.5.5.3.5.3.2 <west elevatio<="" td=""><td>443 21-Nov-13</td><td></td><td></td><td></td><td>—</td><td>▼ 03-Aug-15, NE Hosp.5.5.3.5;3.2 <west elev<="" td=""></west></td></west>	443 21-Nov-13				—	▼ 03-Aug-15, NE Hosp.5.5.3.5;3.2 <west elev<="" td=""></west>
	209	Install Metal Studs L1 to L4	62 21-Nov-13				Install Metal Studs L1 to L4	
	<u> </u>	Install Metal Studs L5 to L7	62 04-Feb-14	30-Apr-14			Install Metal Studs L5	to L7
	<u> </u>	Place regular wall starter si	17 04-Feb-14	•			Place regular wall starter sills L1	4
	<u> </u>	Place regular wall starter si	13 25-Mar-14				Place regular wall starter	
	<u> </u>	Install regular Wall units L1	77 18-Dec-13	•			Install regular Wall units L	
	214	install regular wall units L51	9 31-Mar-14	•			install regular wall units L	
	215	Layout and Install Metal Pa						out and Install Metal Panels
	2 16	Layout and Install Soffits	·	03-Aug-15				□ Lavout and Install Soffits
		.5.5.3.5.3.2.10 <north eleva<="" td=""><td>274 11-Dec-13</td><td><u> </u></td><td></td><td></td><td></td><td>29-Dec-14, NE Hosp.5.5.3.5.3.2.10 <north elevation=""></north></td></north>	274 11-Dec-13	<u> </u>				29-Dec-14, NE Hosp.5.5.3.5.3.2.10 <north elevation=""></north>
	219	Install Metal Studs L1 to L4	140 11-Dec-13	_			Install Metal	Studs L1 to L4
	220	Install Metal Studs L5 to L7	66 28-Feb-14				Install Metal Stud	
	22 3	Install Curtainwall anchors	54 02-May-14	,				urtainwall anchors at L4 to Penthouse
	222	Install both regular wall and	20 02-May-14					ar wall and curtainwall starter sills
	223	Install regular wall units L1	79 01-Mar-14	•			recording to the first of the f	wall units L1 to L4
	224	Install regular wall units L5	19 09-May-14				Install regular w	
	225	Install regular wall membra	29 02-May-14					wall membrane
	22 3	Install curtainwall units	2 26-Jun-14				I Install curtai	
	220 227	Install curtainwall membran	57 19-May-14					Il curtainwall membrane
	<u>227</u> 228	Layout and place metal par	161 19-May-14	_	1 1		Illoca	Layout and place metal panels
L		.5.5.3.5.3.3 <east elevation<="" td=""><td>162 03-Jun-14</td><td></td><td></td><td></td><td></td><td></td></east>	162 03-Jun-14					
		Install Curtainwall anchors I	1 03-Jun-14				1 Install Curtainw	▼ 14-Jan-15, NE Hosp.5.5.3.5 <east elevation=""> all anchors L5 to L7</east>
	231	Install curtainwall units	11 06-Jun-14				Install curtainw	
	232 233	Install curtainwall membran	3 30-Jun-14		- L			ainwall membrane
	233234	Material hoist removal	10 09-Sep-14					Material hoist removal
		Install Metal studs L5 to L7	7 22-Sep-14	•				☐ Install Metal studs L5 to L7
	235236	Install metal studs L1 to L4	8 30-Sep-14					☐ Install metal studs L3 to L4
	_							
	237	Install regular wall unit L1 to Install regular wall unit L5 to	32 09-Oct-14 7 11-Nov-14					Install regular wall unit L1 to L4
	238	Install regular wall unit L5 to		19-Nov-14 05-Nov-14				Install regular wall unit L5 to L7
	239240	ŭ	39 07-Nov-14					Install regular wall sills Layout and install metal panels L1 to L4
		Layout and install metal par						Layout and install metal panels L1 to L4 Layout and install metal panels L5 to L7
	241	Layout and install metal par .5.5.3.5.3.4 < Penthouse Rc	22 16-Dec-14 281 21-Apr-14		1			Layout and install metal panels L5 to L7 18-May-15, NE Hosp.5.5.3.5.3.4 <penthouse roof=""></penthouse>
	=_NE Hosp == 244	Install Temporary Roofing a	281 21-Apr-14 28 21-Apr-14				Install Tomporary	▼ 18-May-15, NE:Hosp.5.5.3.3.4 <pentinguse root=""> y Roofing and Wall Tarping</pentinguse>
	<u>244</u> <u>245</u>	Set and connect roof drains	26 25-May-14	-				nnect roof drains
	<u>245</u> 246	Air and vapor barrier	33 25-May-14					apor barrier
	~	Built-up Membrane roof	7 30-Jun-14					lembrane roof
	247	Duit-up Metholatie 1001	i 30-Juli-14	00-Jul- 14			. , , , , , , ; ; ; <u>, , , , , , , , , , </u>	icijiulai le i OQi

Northeas	st Hospital Exp	ansion						Classic Schedule La	ayout										17-Oct-14 04	4:09
Activity ID	<u> </u>	Activity Name	Original Start	Finish	r 4, 2012 Qtr 1			Qtr 3, 2013			Qtr 3, 2014	Qtr 4, 2	2014 Q	Otr 1, 2015	Qtr 2, 2015	Qtr 3, 2015	Qtr 4, 20	15 Qtr 1,	2016 Qtr 2, 2	2016
	_		Duration		Nov Dec Jan	F Mar Apr Ma	y Jun	Jul Aug Sep Oct Nov Dec	Jan Feb Ma					n Feb Mar	Apr May Jui	n Jul Aug Sep	Oct Nov	Dec Jan Fe	b Mar Apr M	lay un
	= 248	Weather Tight	0 07-Jul-14				4				♦ Weather Tig									
	2 49	roof trim and flashing	13 30-Sep-14									roof		- : -: :						
	= 250	coping	6 16-Dec-14										□ col	ping						
	= 251	Install green Roof System	•				į								i i i	all green Roof S	i i i			
-	<u> </u>	.5.4 <cup></cup>	387 16-Sep-13				1	V			! !		1 1			Hosp.5.5.4 <cl< td=""><td>1 1 1</td><td></td><td></td><td>1</td></cl<>	1 1 1			1
	, 	.5.5.4.5.4.1 <basement></basement>	334 16-Sep-13						ļļ				25	5-Dec-14, NE	E Hosp.5.5.4.5	i.4.1 <basement< td=""><td><u> </u></td><td></td><td></td><td></td></basement<>	<u> </u>			
	255	Install MEP Hangers	1 16-Sep-13					l Install MEP Han	F 1 1											
	256	Install duct Mains from riser	35 03-Dec-13							uct Mains from rise		1 1								:
	257	Medical gas, CHW, HHW,	20 08-Jan-14						1 1 1	al gas, CHW, HH	W, Steam, NG	and Dom	. Water M	lains						
	258	sprinkler Mains	7 17-Jan-14						sprinkle	1 1 1 1										
	= 259	sanitary Mains	13 08-Jan-14						sanitary						 					
	= 260	Layout MEP equipment	6 29-Jan-14	05-Feb-14			1		1 1	ut MEP equipment	1 1									-
	= 261	In-wall electrical rough-in	6 21-Mar-14				İ		i i i	In-wall electrica	1 1							i i		į
	= 262	In-wall plumbing rough-in/te	19 21-Mar-14	•			1			In-wall plum	-1 -1									
	= 263	sprinkler heads and branch	58 04-Feb-14	•			1				eads and brar	1 1								1
	= 264	Hang, Tape & finsh Dry wa	8 17-Apr-14	•					; ;;;		pe & finsh Dry	walls								
	265	Install door frames	6 02-May-14	•							oor frame's									-
	= 266	firestop and caulk floor pen	7 21-May-14	-			į			fires	top and caulk t	floor penet	i i							į
	= 267	work complete list and inspe	16 26-Nov-14										1 1	- 1 1	ist and inspect	ions		1 1		
	= 268	Acceptance	4 22-Dec-14				i						□ Ac	cceptance				i i		
		.5.5.4.5.4.2 <penthouse></penthouse>	283 07-Feb-14	_					· · · · · · · · · · · · · · · · · · ·					1	0-Mar-15, NE	Hosp.5.5.4.5.4.2	Penthous	se>		
	271	Install West shaft steel	4 07-Feb-14						■ Insta	all West shaft steel	i i	1. 1								:
	272	rough-in west HVAC and P	24 14-Feb-14				į			rough-in west H	1 1	1 I								į
	273	rough-in west Electrical and	113 11-Mar-14	J			1			1	1 1	h-in west E	Electrical a	ind telecom i	risers					!
	274	Install East shaft steel	1 01-Apr-14				1			Install East sha	- ; ;							i i i i		İ
	275	rough-in East HVAC and Pl	16 30-Jun-14	21-Jul-14				 	<u> </u>		rough-in l		- 1 1							
	276	rough-in East Electrical and	6 17-Jul-14	24-Jul-14			i				rough-in	i i	i i	i i i	S			i i		į
	= 277	Install MEP Hangers in pen	98 24-Mar-14	-							! !	MEP Hang	- !	nthouse						
	= 278	Spray fireproofing Penthou	35 01-May-14								Spray fireproof	1 1	1 1							:
	2 79	Rough-in OH CW, Steam, I	59 26-May-14	·			į				; ; -	gḥ-in OH C	- 1	- ; ; ;						
	= 280	rough-in electrical conduit n	20 11-Jul-14	07-Aug-14					ļļ		rough-						ļļ			
	= 281	Layout MEP equipment in p	6 31-Jul-14				į				1 1	1 1	1 1	penthouse						į
	= 282	Medical gas mains	8 31-Jul-14	_							! !	cal gas mai	1 1							
	283	Piping and Plumbing insulat	5 08-Aug-14	_							1 1 1	5 1	1 7 1	lation and ta	gging			1 1		
	284	rough-in Sanitary piping	13 31-Jul-14	18-Aug-14							roug	ph-in Sanita	ary piping							
	= 285	sprinkler and dom water ma	32 11-Aug-14		ļļļ.				ļļ						andbranche		<u> </u>			
	= 286	wall blocking and in-wall rou	6 30-Sep-14	07-Oct-14			į					i i	- i - i -	i i i	i i i	ing & electrical				
	= 287	In-wall plumbing QC and te	2 07-Oct-14	08-Oct-14			-					1 1		g QC and te	- ! !			1 1		
	= 288	In-wall plumbing rough-in for	8 07-Oct-14	16-Oct-14			1					□ l'n-w	all plumbir	ng rough-in f	or toilet rooms	\$		i i i i		
	2 89	In-wall close-in inspection/te	50 14-Oct-14	22-Dec-14			1						1 1		inspection/tes	ting/QC				
	= 290	MEP Equipment Set	6 29-Oct-14	05-Nov-14	ļļļi.				ļļ				- 4 4[]-	ment \$et	ļļļ		ļļ			
	2 91	Hang, tape, and finish Dryv					1						1 1		finish Drywall	1 1 1		1 1		
	= 292	firestop and caulk floor pen	4 15-Dec-14				1						- : :	- 11 1	ilk floor penetr	ations		1 1		
	293	Prime paint walls	17 22-Dec-14				ĺ							Prime paint	walls					į
	= 294	staff toilet floor, fixtures and	15 30-Dec-14				1						1 1	- ; ; ;	1 1	and accessories		1 1		
	= 295	test and balance CUP pent	2 06-Jan-15	07-Jan-15			j 		1 1 1			.]]	<u>. j j j.</u>	test and bala	ance CUP pen	thouse				
	= 296	work complete list and final	36 20-Jan-15	10-Mar-15		1 1 1	-						ו	w w	ork complete	ist and final inspe	ections and	acceptance		
											1			· 						
	Actual Level of	•		◆ Milestone				Page 6 of 8				TASK fil	iter: All Ad	ctivities						
	Actual Work	Critical Re	emaining Work	summary														© (Oracle Corpora	ation

Northeast Hospital Exp	pansion					Classic Schedu	ule Layout													1	7-Oct-14 (4:09
tivity ID	Activity Name	Original Start Duration	Finish	r 4, 2012	Qtr 1, 2013 Qtr 2, 2013		I			tr 3, 2014		r 4, 2014	Qtr 1, 20		2, 2015	Qtr 3, 20		Qtr 4, 20			6 Qtr 2,	
- 207	New CUP Complete	0 09-Mar-15		Nov Dec	Jan F Mar Apr May Jun	Jul Aug Sep Oct Nov	Dec Jan Fet	Mar Apr M	lay Jun Ju	I Aug Se	p Oct	Nov Dec			_	Jul Aug		ct Nov I	Dec Jar	r Feb N	/ar Apr	lay
■ 297	5.5.5 < Ground Level>	363 13-Jan-14	02 Jun 15											▼ New C		lete, 09-Ma 3-Jun-15, N	1 1	555 -0	Ground I	ovol>		į
300	rough-In electrical conduit,	18 13-Jan-14	05-Juli- 15 05-Feb-14				V	dugh-In electi	rical conduit	donitoty	dom	oter mains			0.)-Juli-15, IV	⊏ поѕр	.5.5.5 10	JI OUI IU I	_evei~		
300	Install duct Mains from riser	63 27-Jan-14	23-Apr-14						nstall duct M	1 1	1	1 1										
301			•			<u> </u>					44-	4	hining mail			<u> </u>		-				
	Rough-in Med gas, sprinkle	17 24-Mar-14	15-Apr-14						ough-in Med estop and Fi	-1 1			piping maii	is :								
303	Firestop and Fire caulk pen	6 03-Apr-14	10-Apr-14					i i i	i* i	- i - i -	i	i i							į			
304	rough-in dom water, med g	10 11-Apr-14	24-Apr-14					1 1 1	ough-in dom	- 1	ed gas	, duct, spri	nkier brand	nes					!			
305	Frame walls	3 02-May-14	•						Frame wal			.i .i						-	į			
3 06	Frame ceiling and bulkheac	1 03-Jun-14	03-Jun-14			·	! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !	-		e ceiling ar	nd; bulk	neads										
307	Install blocking	1 05-Jun-14	05-Jun-14						I Install	blocking		1							i			
308	in-wall plumbing, electrical r	35 30-Jun-14	15-Aug-14							1 1	1.	1 1	trical rough	n-in ; ;								
3 09	duct insulation	7 31-Jul-14	08-Aug-14							dụct	- 1	1 1							i			
a 310	Install med gas headwall ar	19 14-Aug-14									1	1 T	eadwall an	1 1	ough-in							
a 311	In-wall controls rough-in	37 20-Aug-14	09-Oct-14		·		i i i	<u> </u>					rols rough-		<u>-</u>	ļ						
a 312	Layout hard ceiling and inst	9 30-Sep-14	10-Oct-14													hts, and ai	dist.					
= 313	Pull electric, security, and IT	27 10-Oct-14	17-Nov-14								=	Pull	electric, sec	urity, and I	T wires							
a 314	Hard Ceiling Overhead Clo	7 15-Oct-14	23-Oct-14									Hard Ce	ling Overhe	ead Close-	in Inspecti	on and QC						
a 315	In-wall electrical testing and	5 07-Nov-14	13-Nov-14									☐ In-wa	ll electrical	testing and	J QC							
= 316	Install drywall ceiling and Ha	25 31-Oct-14	03-Dec-14									In	stall drywal	l ceiling an	d Haṅg, ta	pe, and fin	ish dry v	vall				
= 317	firestop and caulk wall pene	9 25-Nov-14	05-Dec-14									🔲 fii	estop and	caulk wall	penetratio	h						
a 318	Prime and paint walls	11 05-Dec-14	19-Dec-14										Prime and	paint wall	s				1	1 1		
a 319	Frame and install ceiling gri	9 17-Dec-14	29-Dec-14										Frame a	nd install	eilinggrid							
a 320	install light fixtures, ceiling ti	7 29-Dec-14	06-Jan-15										install li	ght fixtures	s, ceiling ti	les, and air	dist.		i			
<u> </u>	Cut-in sprinkler drops and t	3 05-Jan-15	07-Jan-15										Cut-in	sprinkler d	rops and t	rim						
<u> </u>	hydro test sprinkler system	3 09-Jan-15	13-Jan-15		iiiii			-iii					l hydro	test sprink	ler system	-ii n¦						
323	Ceiling overhead close-in in	27 13-Jan-15	18-Feb-15										1 1	- 11		se-in inspe	ction		!			
324	Install ceiling tiles and trim	13 10-Feb-15	26-Feb-15										1 1 1	Install ce	1	1 1 1			į			
325	Install doors, fixtures, flooring	45 16-Feb-15												- : :	- 1	rs, fixtures,	flooring	and sig	nage			
326	final paint		•											1 1	inal paint			,				
327	test and blance	6 24-Mar-15	•					-						<u>-</u> i	t and blan	de						
328	final clean	5 15-Apr-15													final clear	!!!			į			
329	work complete list, Inspectic	27 21-Apr-15	•												1	rk complete	liet Ine	nections	and acc	entance		
330	comissioning	20 07-May-15	-											- 1 7	- ;	missionina		pections,	andace	cptance		
331	Ground Level Complete for	0 02-Jun-15	03-3411-13												1	ound Leve	!!!	ate for O	ccupanc	v 02- lin	-15	
	5.5.6 <1st Floor>	396 20-Dec-13	26 Jun 15	ļ	i i i i i i i i i i i i i i i i i i i	<u> </u>	· · · · · · · · · · · · · · · · ·	<u> </u>	·			i i i		·	¥ 0	26-Jun-1	i i	ii-				
334	rough-In electrical conduit,	68 20-Dec-13						rough	-In electrical	conduit e	canitary	domiwate	r maine		'	20-3011-1	O, INC 11	03p.3.3.0	3 - 15(1	1001		
335	Rough-in Med gas, sprinkle	17 28-Feb-14						i i i	n-in electrical	i i'	1 2	i i	i i i						1			
								1 1 1	1 1	1 1	i	1 1	ig mains									
336	Firestop and Fire caulk pen	·	08-Apr-14					1 1 1	estop and Fir	1 1	1	1 1	r bronches						1			
337	rough-in dom water, med g	13 18-Mar-14	•	ļ <u> </u>	, , , , , , , , , , , , , , , , , , ,	,	i i i	roug	h-in dom wa	ii			i; branches			ļ						
338	Frame walls and install slee	17 02-May-14	•							walls and i	1	!!!							1			
339	Frame ceiling and bulkheac	8 30-Jun-14				, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1 1	1 1	17	d bulkhead	ıs									
340	Install blocking	16 20-May-14							Insta	1 1	- 1	1							1			
341	in-wall plumbing, electrical r		25-Jun-14			, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			!!!	1 1	17	ectrical rou	igh-in¦									
342	duct insulation	26 04-Jun-14	09-Jul-14	ļ	ļļļ					duct insula		11										
343	Plumbing Insulation and tag	57 31-Jul-14	17-Oct-14								1	: :	Insulation a		1			1 1	1			
= 344	Install med gas headwall ar	37 20-Aug-14								=	1	1 1	gas headw	1 1	vall rough	-in			i !			
= 345	Pull and terminate electrical	4 22-Sep-14	25-Sep-14	1 1				1 1 1		1 1	I ∤ Pul	l and termi	nate electri	cal		1 1			-	1 1		
Actual Level	`		◆ Milestone▼ summary			Page 7 c	of 8				ТА	SK filter: A	II Activities							© Ora	cle Corpoi	_ at

Northeast Hospital Expansion						Classic Schedule Layout							17-Oct-14 04:09								
Activity ID		Activity Name	Original Start	Finish		Qtr 1, 2013 Qtr 2, 20						Qtr 3, 2014	Qtr 4, 2014 Qtr 1, 2015 Qtr 2, 2015 Qtr 3, 2015 Qtr 4, 2015 Qtr 1, 2016 Qtr 2, 2016								
			Duration		Nov Dec	Jan F Mar Apr May	Jun Jul Aug Sep	Oct Nov Dec	Jan	Feb Mar Apr Ma	y Jun Ju	I Aug Sep	Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May ^{ur}								
	346	Layout hard ceiling and inst	54 14-Aug-14										Layout hard ceiling and install cable tray, lights, and air dist.								
	347	Pull control, FA, security, an	6 08-Oct-14	15-Oct-14									☐ Pull control, FA, security, and IT wires								
	348	Hard Ceiling Overhead Clo	36 15-Oct-14	03-Dec-14					-				Hard Ceiling Overhead Close-in Inspection and QC								
		5.5.6.Patient rooms <patie< td=""><td>159 18-Nov-14</td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td>26-Jun-15, NE Hosp.5.5,6.Patient rooms <patient rooms<="" td=""></patient></td></patie<>	159 18-Nov-14						-				26-Jun-15, NE Hosp.5.5,6.Patient rooms <patient rooms<="" td=""></patient>								
	350	In Wall Insulation	6 18-Nov-14						1				☐ In Wall Insulation								
	351	Install Drywall Ceilings	9 10-Dec-14						i				☐ Install Drywall Ceilings								
	352	Hang, Tape and finish dry v						 	 	¦			Hàng, Tape and finish dry wall								
	353	firestop and caulk wall pen∈							-				firestop and caulk wall penetrations								
	354	Prime and paint walls	16 12-Jan-15										Prime and paint walls								
	355	Frame and install ceiling gri	7 28-Jan-15						-				☐ Frame and install ceiling grid								
	356	install light fixtures, ceiling ti	7 04-Feb-15										install light fixtures, ceiling tiles, and air dist.								
	357	Cut-in sprinkler drops and t	6 10-Feb-15						. .	ļ			Cut-in sprinkler drops and trim								
	358	hydro test sprinkler system	1 16-Feb-15								i i		I hydro test sprinkler system								
	359	Ceiling overhead close-in in	21 17-Feb-15										Ceiling overhead close-in inspection								
	360	Install ceiling tiles and trim	34 17-Feb-15	•					!				Install ceiling tiles and trim								
	361	Install controls, flooring, sec	16 23-Mar-15	•					-				Install controls, flooring, security devices, doors and casework								
	362	Setup, hookup, and caulk p	8 08-Apr-15	•					. 	ļļļļ			Setup, hookup, and caulk plumbing fixtures								
	363	install rails, signage and fina	27 08-Apr-15	•							i i		install rails, signage and final paint								
	364	test and blance	7 30-Mar-15	•				1 1	1				☐ test and blance								
	365	final clean	6 05-May-15	-					į				☐ final clean								
	366	work complete list, Inspectic	28 13-May-15						-				work complete list, Inspections, and acceptance								
	367	comissioning	21 29-May-15	26-Jun-15						ļ.,			comissioning								
	368	1st Level Complete for Occ	0 25-Jun-15										◆ 1st Level Complete for Occupancy, 25-Jun-15								
	· · · · · · · · · · · · · · · · · · ·	5.7 <repetition 1st="" fl<="" of="" td=""><td>448 15-Jan-14</td><td>·</td><td></td><td></td><td></td><td>1 1</td><td>_</td><td></td><td>1 1</td><td></td><td>▼ 07-Sep-15, NE Hosp.5.5.7 <repetition 1st<="" of="" td=""></repetition></td></repetition>	448 15-Jan-14	·				1 1	_		1 1		▼ 07-Sep-15, NE Hosp.5.5.7 <repetition 1st<="" of="" td=""></repetition>								
	370	2nd Level	396 15-Jan-14								i i	ii	2nd Level								
	371	3rd Level	396 30-Jan-14	•							1 1	1 1	3rd Level								
	372	4th Level	396 05-Feb-14	14-Aug-15		i i i i i i 				1			4th Level								
	373	5th Level	396 03-Mar-14	· ·							-	1 1	5th Level								
	374	6th Level	396 28-Mar-14	04-Sep-15					-		1 1	1 1	6th Level								
	375	All Floors Complete for Occ	0 07-Sep-15								i i		◆ All Floors Complete for Occupancy, 07-Sep-15								
	·	5.8 <7th Floor>	74 15-Aug-14						-				▼ 26-Nov-14, NE Hosp.5.5.8 <7th Floor>								
	377		74 15-Aug-14	26-Nov-14		i i i i i i 			. 1				7th Level								
	378	rough-In electrical conduit,	46 15-Aug-14										rough-In electrical conduit, sanitary, dom water mains								
	379	Install duct Mains from riser	18 15-Aug-14									-	Install duct Mains from riser taps								
	380	Rough-in Med gas, sprinkle	27 03-Sep-14	09-Oct-14									Rpugh-in Med gas, sprinklers, and HVAC piping mains								
	381	Roughin duct, med gas, H\	24 06-Sep-14	09-Oct-14					-				Roughin duct, med gas, HVAC dom water branches								
	382	Piping test/QC	24 06-Sep-14	09-Oct-14					. <u> </u>	i i i i	. j j		Piping test/QC								
	383	duct insulation	24 06-Sep-14	09-Oct-14					-				duct insulation								
	384	Install electrical and sprinkle	24 06-Sep-14	09-Oct-14					1				Install electrical and sprinkler branches								
	385	Pull and terminate electric,	5 01-Oct-14	07-Oct-14					1				Pull and terminate electric, security, and IT wires								
	386	In-wall electrical testing and	1 06-Oct-14	06-Oct-14					!				In-wall electrical testing and QC and controls install								
	387	In-wall close in	13 07-Oct-14	23-Oct-14					. <u> </u>		. j j		In-wall close in								
	388	Hang and finsh Dry wall	8 21-Oct-14	29-Oct-14				1 1					☐ Hang and finsh Dry wall								
	389	Test and Balance	8 21-Oct-14	29-Oct-14					1				☐ Test and Balance								
	390	7th Level Complete Until No	0 28-Oct-14					1 1					◆ 7th Level Complete Until Need for Occupany, 28-Oct-14								
	Actual Level o	of Effort Remaining	ı Work	◆ Milestone				Dogo 0 -f 0					TASK filter: All Activities								
	Actual Work	•	·	▼ summary				Page 8 of 8					TASK filter: All Activities © Oracle Corporation								