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Executive Summary

Cost Impacts and Schedule constraints are essential factors for the delivery of the Sears Centre. Estimates and schedules produced will reflect the typical construction model used for building structural systems and assemblies. This report will address (5) main issues related to the cost analysis for the Sears Centre. Issues that will be evaluated in this report are as follows:

Cost Method & Analysis:

- ❖ Precast Panel Erection Site Layout & Planning
- ❖ Detailed Project Scheduling
- ❖ HVAC Assemblies Square foot cost determination
- ❖ Detail Quantity takeoff & structural systems estimate
- ❖ General Conditions cost evaluation

Three precast erection layouts were evaluated for the placement of building envelope systems and main trusses assemblies. One layout will be selected to determine the crane scheme which minimizes remobilization and maximizes load placement. Lattice boom crawler cranes were chosen for the placement of critical members of the superstructure systems. (1) Steel Beams & Columns (2) Concrete Beams & Columns (3) PCI & ACI Precast Panels. 200 Activities were composed to form the construction sequence for all building tasks. Specific emphasis were placed on construction activities and sequences directly related to site balancing & infrastructure, building excavation, masonry, foundation & superstructure systems and MEP rough in with distribution.

Two factors worth further evaluation are the time constraints attributed to architectural finishes, FF&E installation and asphalt production “winter shutdown.” In the Chicago area, asphalt production operations for road construction are suspended during winter months due to frost temperatures. Asphalt placement typically occurs in 50 ° F temperatures. Quality Assurance prohibits material placement in temperatures below this limits. It is for this reason a 96 day winter shutdown is reflect in the exterior construction schedule.

The Sears Centre air distribution network is composed of (3) separate ventilation systems. An assembly estimate was based off of the largest component of the HVAC system, the Variable Air Volume (VAV) system. The systems services 240,000 CFM @ 95,789 SF. Quantity takes were generated concrete foundation, precast & steel superstructure systems. The previous parametric estimate of technical report (1) was the milestone used to generate an accurate arena takeoff. In addition to all structural elements, raker beams and FF & E seating risers were computed in the total cubic yards of concrete. Detailed structural system estimates in MS² software referenced live production rates and labor cost for all line items.

General conditions estimates were generated off of RS. Means values and factored with Chicago, IL labor and production rates. *Total Estimate Cost* \sum **(Mechanical, Structural, General Conditions)** = $\$ 3,912,624 + \$ 10,798,798 + \$ 2,158,728 = \$ 16,870,150$. It is the intent of this technical document to provide the frame for Sears Centre cost reporting.



Cost Method Analysis Report

Site Layout & Planning

(3) Layouts were evaluated to select the best possible layout and placement for the 300 TON Crawler Crane. A 75'-0" Boom was previous selected to erect the precast panels, however in the interest of time and remobilization a 120'-0" boom crane of the same type and capacity was evaluated. Results revealed that remobilization would be reduced by 33% from 9 to 6 movements.

Although both cranes meet the required lifting capacity a crane has to be selected to place structural members at a height range of 45'-0" to 75'-0" The three requirements governing the selection of the crane types are:

Crane Selection Determinants:

1. Rated Lifting capacities
2. Minimum lifting heights \geq 300 TON(s) @ 45'-0"
3. Erection location beyond building perimeter to reduce sequencing conflicts with internal column installation

Typical Precast Panel Weights:

$$\text{Panel Weight (PLF)} = [\mathbf{P_L} - \text{Panel Length} \times \mathbf{P_W} - \text{Panel Width}] * [\text{Panel Unit Weight (PSF)}]$$

Type (A) Wall Panels
 $P_L = 3'-0''$
 $P_W = 12'-0''$
Unit weight = 20 PSF
Panel Weight = 720 lbs

Type (B) Wall Panels
 $P_L = 3'-0''$
 $P_W = 12'-0''$
Unit weight = 25 PSF
Panel Weight = 900 lbs

Type (A) Wall Panels
 $P_L = 3'-0''$
 $P_W = 18'-0''$
Unit weight = 30 PSF
Panel Weight = 1,620 lbs

Typical Roof Truss Assemblies:

$$\text{Truss Weights} = \sum (\text{W beam}_{\text{sub weights}}) = 876 \text{ TON(s)} / 19 \text{ Trusses} = 46 \text{ Ton Truss}$$

Individual Truss Wt. \approx 46 TON(s)
 = 92,223 lbs

Crane Selection Process:

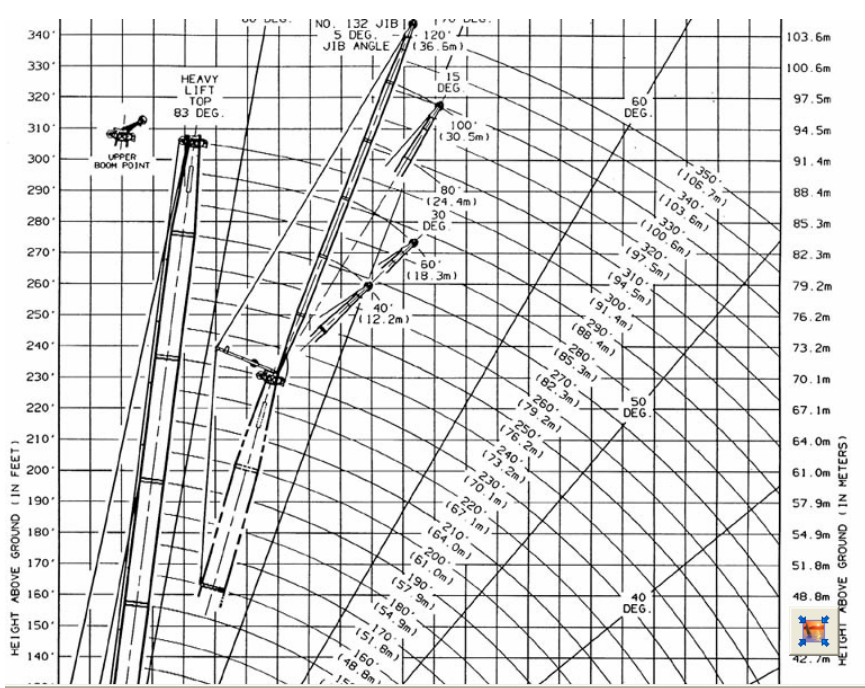
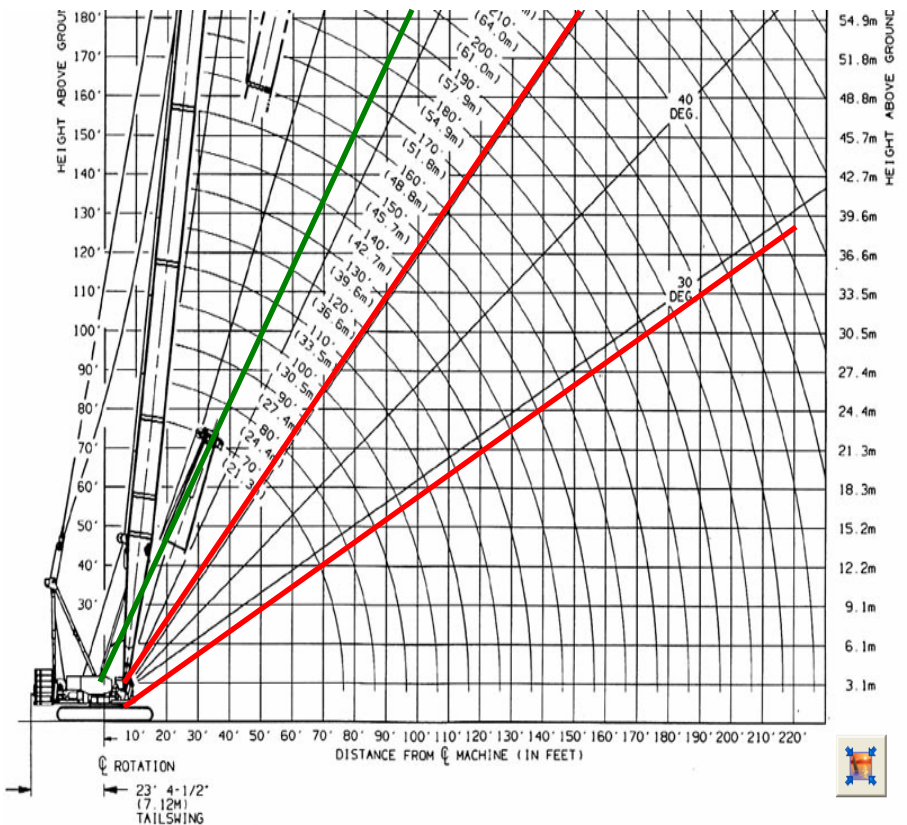
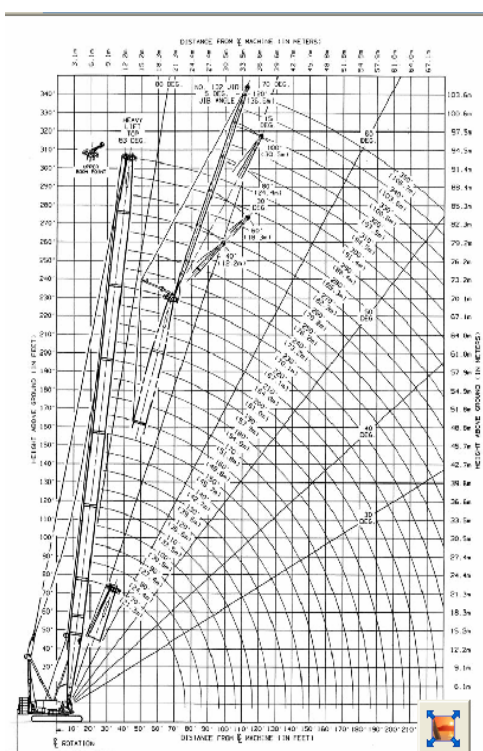
The 300 TON Manitowoc 300'-0" Boom 2250 Series (3) Crawler Crane was selected for precast erection and roof truss installation. An effective operating radius between 90'-0" and 250'-0" can be used to install all perimeter precast and metal panels. Truss installation will require an operating radius between 90'-0" and 40'-0".



Cost Method Analysis Report

**Arnon L. Bazemore
Construction Management**

SEARS CENTRE



Oper. Rad. Feet	Boom Ang. Deg.	Boom Point Elev. Feet	Boom Capacity Pounds
300 Ft. BOOM			
46	83.0	303.4	123,300 *
48	82.6	305.1	122,900 *
50	82.2	306.8	122,500 *
55	81.3	304.1	120,400 *
60	80.3	303.2	116,000 *
65	79.3	302.3	111,600 *
70	78.3	301.2	108,300 *
75	77.4	300.1	104,900 *
80	76.4	298.9	101,700 *
85	75.4	297.6	94,800 *
90	74.4	296.2	88,000 *
95	73.4	294.7	82,000 *
100	72.4	293.1	76,600 *
105	71.4	291.4	71,700 *
110	70.4	289.6	67,200 *
115	69.4	287.7	63,200 *
120	68.3	285.7	59,400 *
125	67.3	283.6	55,800 *
130	66.2	281.4	52,400 *
135	65.2	279.1	49,100 *
140	64.1	276.7	45,900 *
145	63.1	274.1	41,900 *
150	62.0	271.5	38,600 *
155	60.9	268.7	35,400 *
160	59.8	265.8	32,800 *
165	58.7	262.7	30,200 *
170	57.5	259.5	27,800 *
175	56.4	256.2	25,500 *
180	55.2	252.8	23,300 *
185	54.0	249.1	21,300 *
190	52.8	245.4	19,300 *
195	51.6	241.4	17,700 *
200	50.4	237.3	16,100 *
205	49.1	233.0	14,500 *
210	47.8	228.4	13,100 *
215	46.5	223.7	11,700 *
220	45.2	218.8	10,400 *
225	43.8	213.6	9,200 *
230	42.4	208.1	8,100 *
235	40.9	202.4	7,000 *
240	39.5	196.4	6,000 *
245	37.9	190.0	5,000 *
250	36.3	183.3	4,200 *



*Arnon L. Bazemore
Construction Management*

SEARS CENTRE

Cost Method Analysis Report

General Contractor Trailers and temporary power hook ups are located in the north east quadrant of the site. Erection paths follow a counter clockwise route from north to east. Erosion control measures and site fencing are around the perimeter of the site along access roads (*Prairie Stone Parkway & Pratum Avenue*). Measures have been put in place to protect all temporary and permanent utilities. Several utilities will be augered under existing roads and parking sections. Pedestrian safety has been provided by means of barricade and dedicated path ways directly across Prairie Stone Parkway north of the Sears Centre Site.

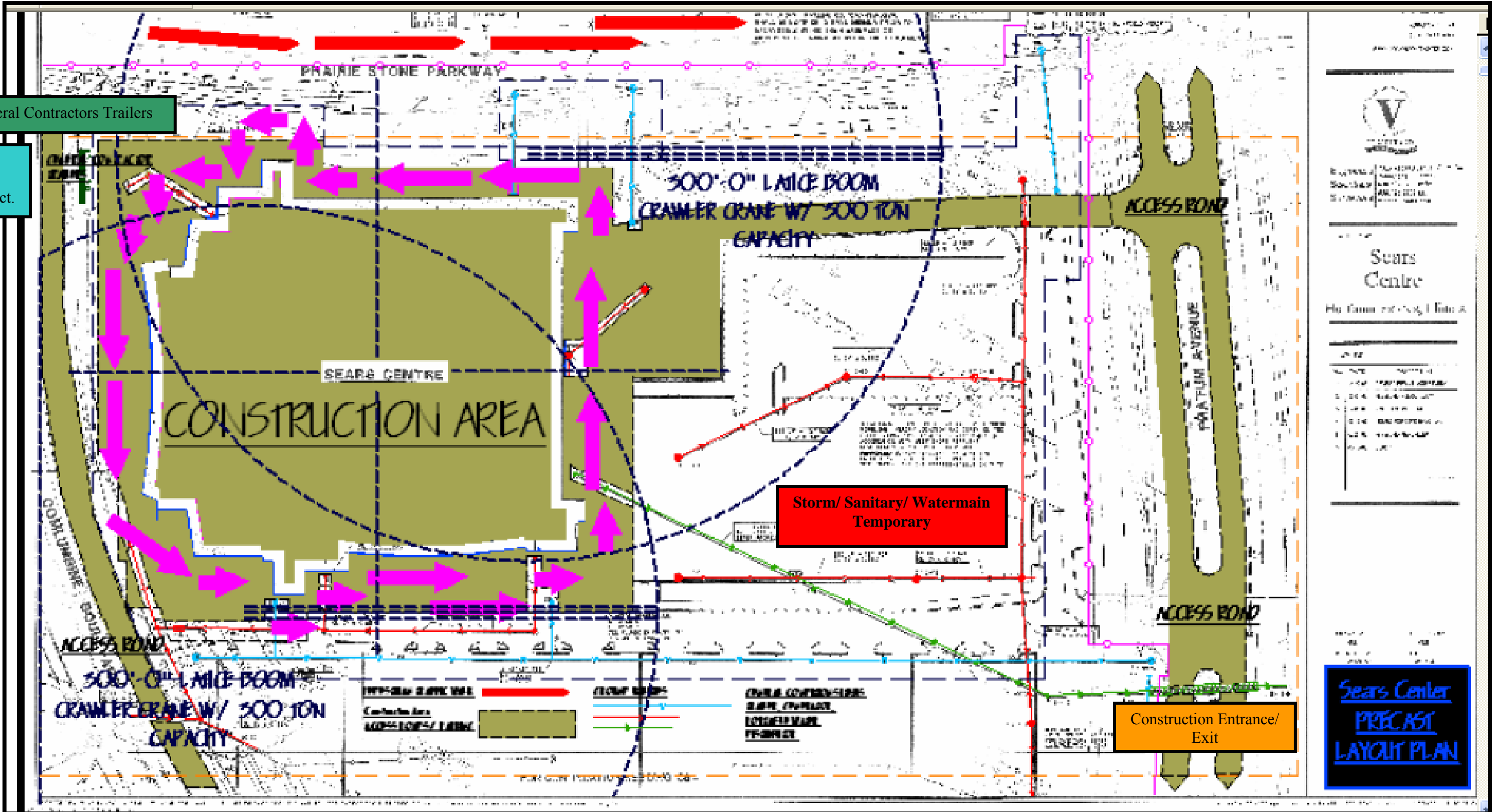


SEARS CENTRE

Cost Method Analysis Report

General Contractors Trailers

Temp. Power Connect.





Detail Scheduling Summary

200 Activities have been planned for the construction of the Sears Centre. The basic components of the schedule were divided into three main tasks with the following subtask.

Detail Schedule Summary

- 1. Schematic Design & Budget Approval**
- 2. Preconstruction Services**
 - Village Submittal/ Approval Process
 - Bidding-Award/ Procurement Process
- 3. Construction**
 - Excavation
 - Foundation Systems
 - ✓ Perimeter Foundations
 - ✓ Interior Columns & Footings
 - Masonry Veneer Installation
 - Precast Erection
 - Steel Erection & Misc. Steel
 - Interior Construction
 - MEP-Distribution Rough-In
 - MEP-Installation
 - ✓ Drywall Finishes
 - ✓ Architectural Finishes
 - ✓ FF&E Installation
 1. *Ice Floor Construction*
 2. *Score electric conduit distribution*
 3. *Stadium Seating Installation*
 4. *Scoreboard and Ring Bowl LED Displays*
 - Existing Construction
 - ✓ Site Balancing
 - ✓ Asphalt Winter Shutdown
 - ✓ Asphalt Placement
- 4. Punchlist/ Inspection**
- 5. Project Turnover**

Key Scheduling Factors

Architectural and FF&E Fixtures are critical to successful delivery of the Sears Centre facility. These schedule tasks include Suite construction and finishes, stadium seating installation, scoreboard w/ LED displays and ice/ cover event floor finishes.

<u>Key Task</u>	<u>Allocated Duration</u>
Misc FF&E Suite Construction	35 days



Cost Method Analysis Report

Stadium Seating	40 days
Ice-Floor Construction	125 days
Scoreboard/ LED Installation	50 days

Sample Duration Calculations:

Quantity

Daily crew output (Production Rate)

**Quantity x
8 hours
day**

**Man-hours
Constr. Activity
x Workers in Crew**

365	1	Work Week	1	Month	1.2	Year
Work Day(s) Listed above	5	Work Day(s)	5	Work Week(s)	12	Month
5-Day/ 8-Hour Work Cycle						
315	1	Work Week	1	Month	1.1	Year
Work Day(s) Listed above	5	Work Day(s)	5	Work Week(s)	12	Month
6-Day/ 8-Hour Work Cycle (Overtime)						
315	1	Work Week	1	Month	0.9	Year
Work Day(s) Listed above	6	Work Day(s)	5	Work Week(s)	12	Month
4-Day/ 10-Hour Work Cycle						
252	1	Work Week	1	Month	1.1	Year
Work Day(s) Listed above	4	Work Day(s)	5	Work Week(s)	12	Month
5-Day/ 10-Hour Work Cycle (Overtime)						
252	1	Work Week	1	Month	0.8	Year
Work Day(s) Listed above	5	Work Day(s)	5	Work Week(s)	12	Month



HVAC Assemblies Estimate Summary

Results: Based on 95,789 SF HVAC Variable Air Volume System

<u>Mat'l Square Foot Cost</u>	<u>Labor Square Foot Cost</u>	<u>Total Square Foot Cost</u>
\$ 32.41/ SF	\$ 6.87/ SF	\$ 39.21/ SF

<u>Building Size</u> x	<u>Unit Cost</u> =	<u>Total System Cost</u>
95,789 SF	\$39.21	\$ 3,912,624 (includes 4% fee)

Actual System Cost Deviation
 $\sigma = \$ 3,950,000 - \$ 3,912,624 = \$ 37,376$

For Full Report Reference Appendix Section Page 23 – Page 26

Detailed Estimate Summary

Results: Based on Detailed Takeoff and MC² Software Estimate

<u>Concrete Cubic Yards</u>		<u>Total Tons of Steel</u>
9,835 CY of Concrete		1,180 Tons of Steel
<u>Mat'l Square Foot Cost</u>	<u>Labor Square Foot Cost</u>	<u>Total Square Foot Cost</u>
\$ 10.53/ SF	\$ 9.86/ SF	\$ 44.99/ SF
		<i>includes labor fringes & mark up cost</i>
<u>Building Size</u> x	<u>Unit Cost</u> =	<u>Total System Cost</u>
240,000 SF	\$44.99	\$ 10,798,798

For Full Take-Off Report Reference Appendix Section Page 27 – Page 46
For Full Estimate Report Reference Appendix Section Page 46 – Page 48

General Conditions Estimate Summary

<u>Total General Conditions Cost</u>
\$ 1,660,560
<u>Factored GC Cost</u>
\$ 2,158,728

For Full Take Off Report Reference Appendix Section Page 49 – Page 50



Appendix Report Findings

Appendix

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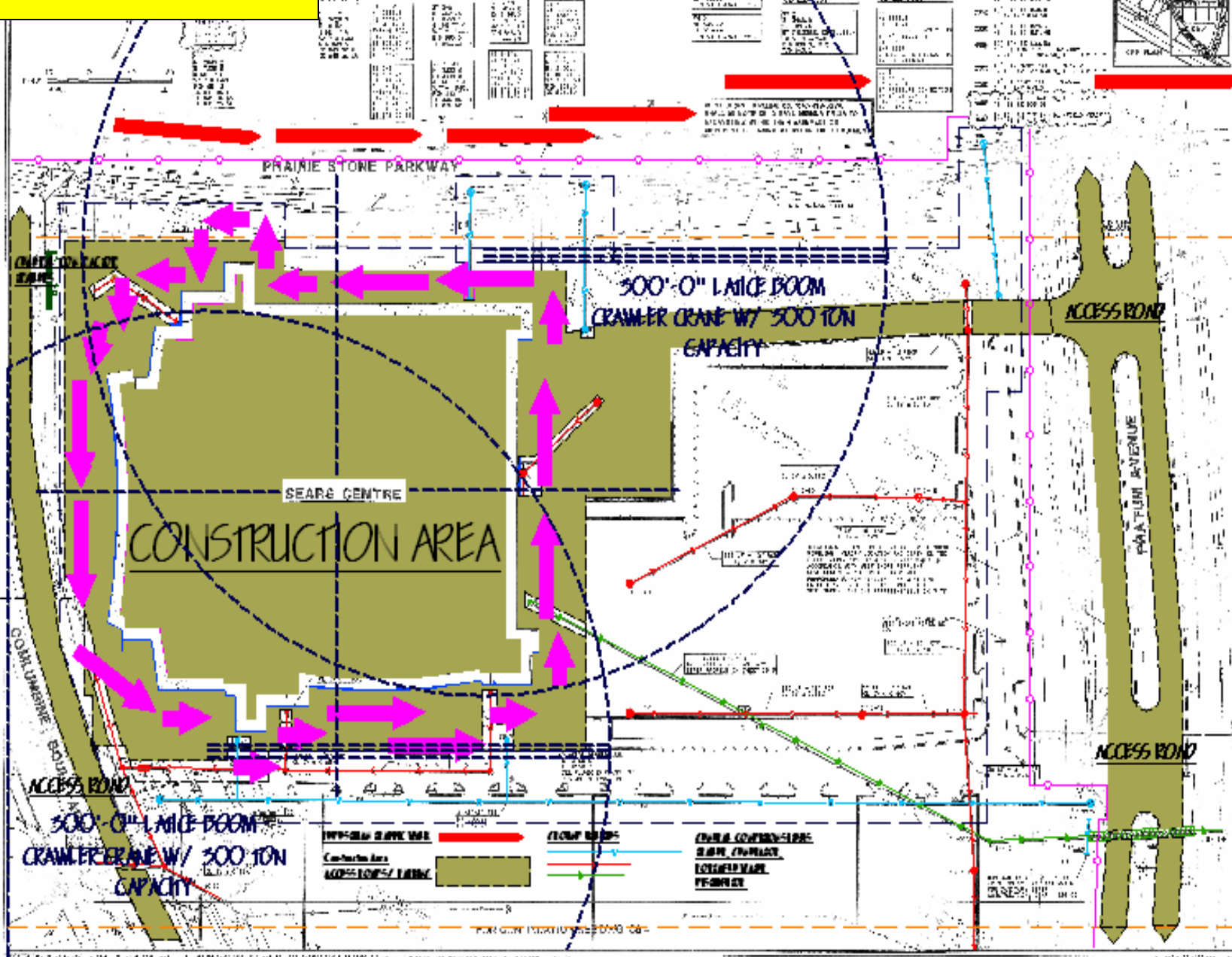
SEARS CENTRE
PRECAST PANEL ERECTION
CRANE LAYOUT SCHEMES

SCHEME #3 – 300'-0" BOOM CRAWLER CRANE W/ 2
REMOBILIZATIONS

SCHEME #2 – 120'-0" BOOM CRAWLER CRANE W/ 6
REMOBILIZATIONS

SCHEME #1 – 75'-0" BOOM CRAWLER CRANE W/ 9
REMOBILIZATIONS

**300 TON Lattice Boom
Crawler Crane w/ 300'-0"
Boom – Scheme #3**



RYAN
4800 EAST 14TH AVENUE
DENVER, CO 80232
TEL: 303.751.1200
FAX: 303.751.1201
WWW.RYAN.COM

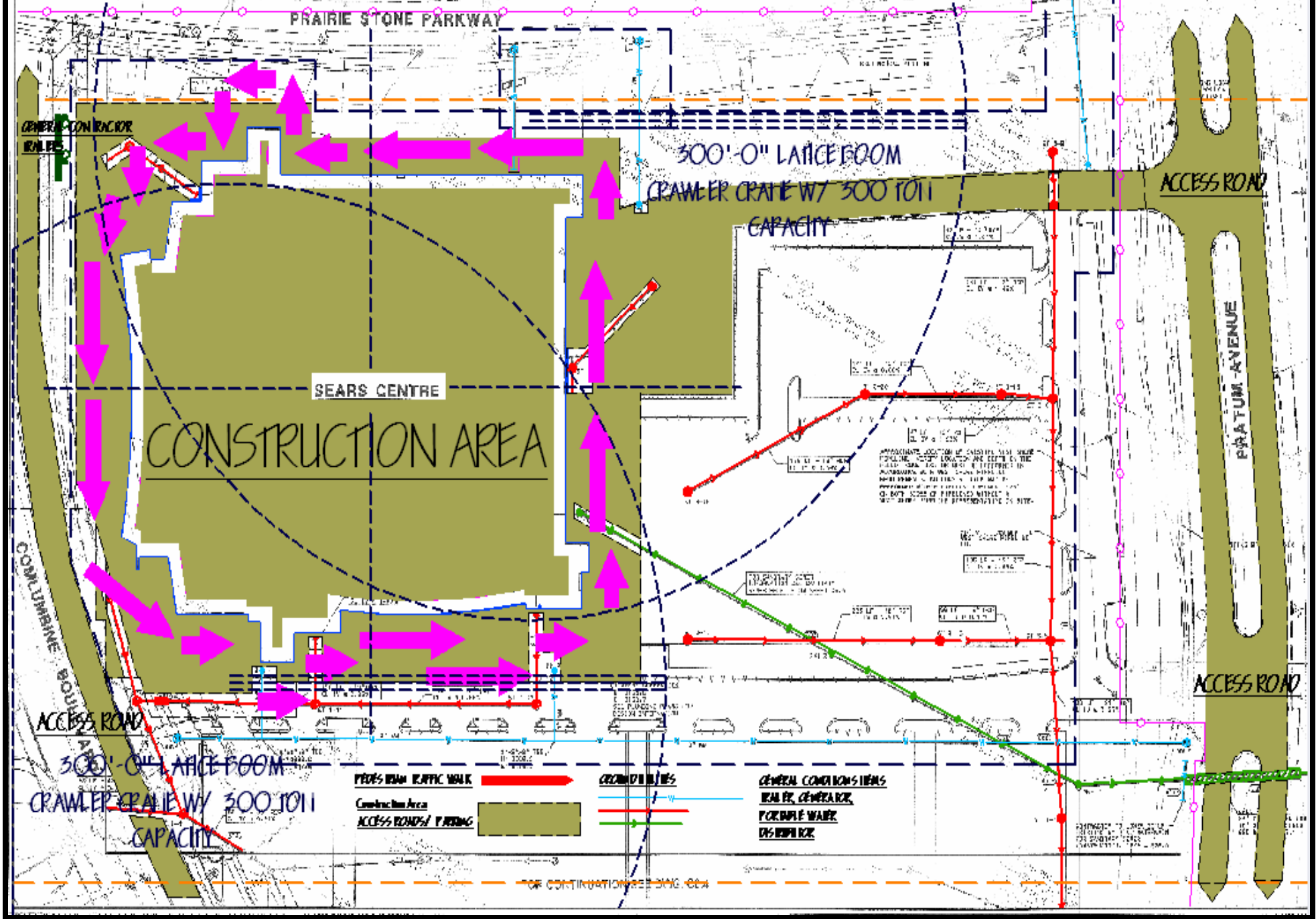


Sears Centre
1100 East 17th Avenue

NO.	DESCRIPTION
1	CONSTRUCTION AREA
2	CRANE CONTACT ZONE
3	CRANE CAPTURE ZONE
4	CRANE CONTROL ZONE
5	CRANE CLEARANCE ZONE
6	UTILITY CROSSING
7	ACCESS ROAD

**Sears Centre
PRECAST
LAYOUT PLAN**

300 TON Lattice Boom Crawler Crane w/ 300'-0" Boom – Scheme #3(Enlarged Plan)



300'-0" LATTICE BOOM
CRAWLER CRANE W/ 300 TON
CAPACITY

SEARS CENTRE

CONSTRUCTION AREA

ACCESS ROAD

PRATUM AVENUE

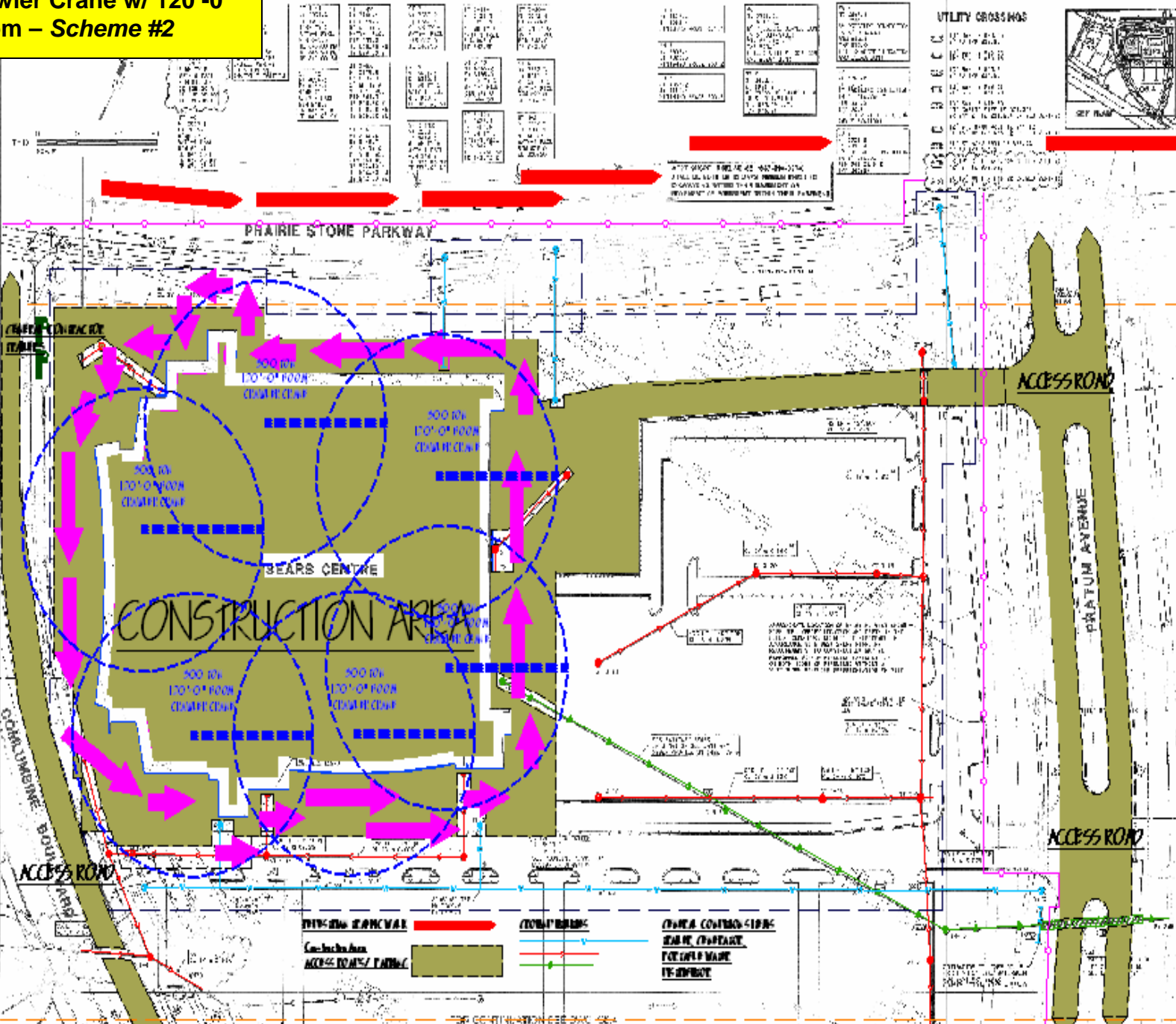
ACCESS ROAD

300'-0" LATTICE BOOM
CRAWLER CRANE W/ 300 TON
CAPACITY

- PEDESTRIAN PATH/WALK
- CONDUIT RIGS
- GENERAL CONDITIONS
- CONSTRUCTION AREA
- ACCESS ROADS/ PAVING
- SEWER
- WATER
- GENERAL CONDITIONS
- SEWER
- WATER
- DISBURSE

FOR CONTINUATION SEE DRAWING 024

**300 TON Lattice Boom
Crawler Crane w/ 120'-0"
Boom - Scheme #2**



10000 100th Ave SE
Bellevue, WA 98003
206.461.1000
www.ryansteel.com

V
VERICAD
CONSTRUCTION SOFTWARE

Project: SEARS CENTRE
Location: SEATTLE, WA
Scale: 1/8" = 1'-0"

Client:
**Sears
Centre**
P.O. Box 1000, Seattle, WA 98101

Legend:

1	CRANE TRAVEL
2	CRANE COVERAGE
3	CRANE CONTROL SIGNALS
4	CRANE ACCESS ROADS
5	CONCRETE FOUNDATION
6	UTILITY CROSSINGS

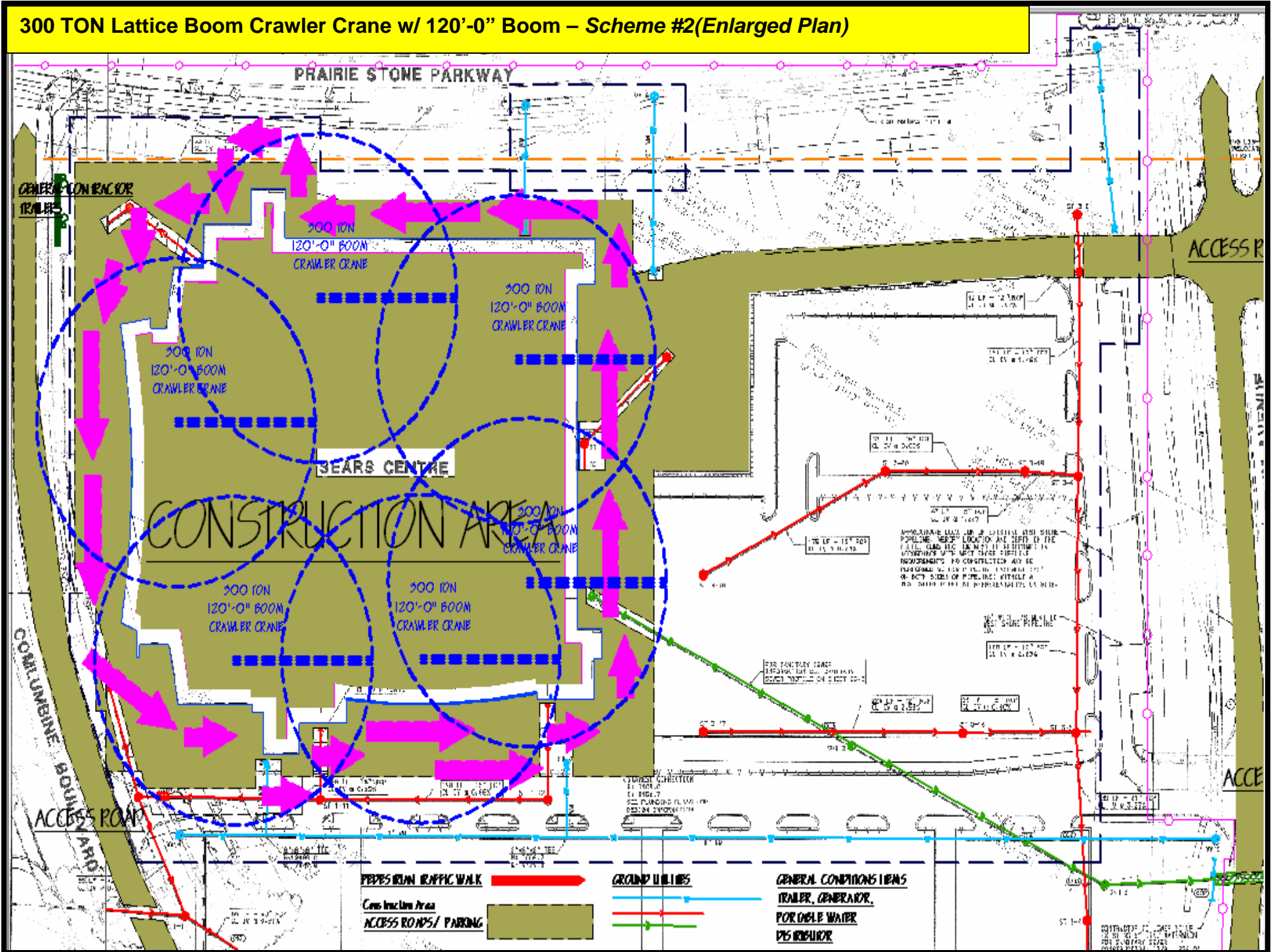
Scale:

1/8" = 1'-0"	1/4" = 1'-0"
1/2" = 1'-0"	3/4" = 1'-0"
1" = 1'-0"	1 1/2" = 1'-0"

**Sears Center
PRECAST
LAYOUT PLAN**

DATE: 10/15/2010

300 TON Lattice Boom Crawler Crane w/ 120'-0" Boom – Scheme #2(Enlarged Plan)

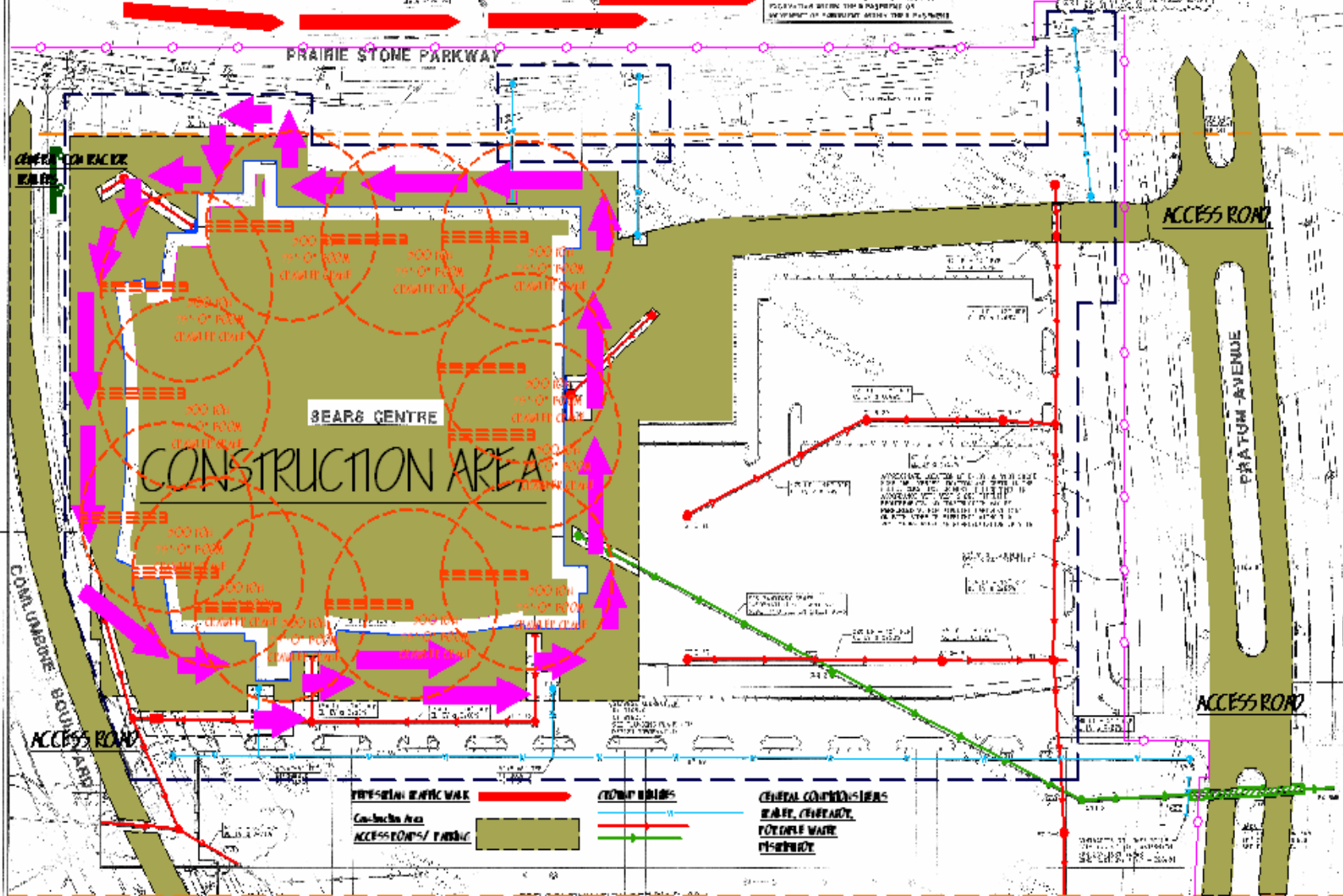


**300 TON Lattice Boom
Crawler Crane w/ 75'-0"
Boom – Scheme #1**

1. 100' x 100' x 10' CONCRETE MAT	2. 100' x 100' x 10' CONCRETE MAT	3. 100' x 100' x 10' CONCRETE MAT	4. 100' x 100' x 10' CONCRETE MAT	5. 100' x 100' x 10' CONCRETE MAT	6. 100' x 100' x 10' CONCRETE MAT
7. 100' x 100' x 10' CONCRETE MAT	8. 100' x 100' x 10' CONCRETE MAT	9. 100' x 100' x 10' CONCRETE MAT	10. 100' x 100' x 10' CONCRETE MAT	11. 100' x 100' x 10' CONCRETE MAT	12. 100' x 100' x 10' CONCRETE MAT
13. 100' x 100' x 10' CONCRETE MAT	14. 100' x 100' x 10' CONCRETE MAT	15. 100' x 100' x 10' CONCRETE MAT	16. 100' x 100' x 10' CONCRETE MAT	17. 100' x 100' x 10' CONCRETE MAT	18. 100' x 100' x 10' CONCRETE MAT
19. 100' x 100' x 10' CONCRETE MAT	20. 100' x 100' x 10' CONCRETE MAT	21. 100' x 100' x 10' CONCRETE MAT	22. 100' x 100' x 10' CONCRETE MAT	23. 100' x 100' x 10' CONCRETE MAT	24. 100' x 100' x 10' CONCRETE MAT
25. 100' x 100' x 10' CONCRETE MAT	26. 100' x 100' x 10' CONCRETE MAT	27. 100' x 100' x 10' CONCRETE MAT	28. 100' x 100' x 10' CONCRETE MAT	29. 100' x 100' x 10' CONCRETE MAT	30. 100' x 100' x 10' CONCRETE MAT

UTILITY CROSSINGS

1. 10" WATER MAIN	2. 12" WATER MAIN	3. 18" WATER MAIN	4. 24" WATER MAIN
5. 30" WATER MAIN	6. 36" WATER MAIN	7. 42" WATER MAIN	8. 48" WATER MAIN
9. 54" WATER MAIN	10. 60" WATER MAIN	11. 66" WATER MAIN	12. 72" WATER MAIN
13. 78" WATER MAIN	14. 84" WATER MAIN	15. 90" WATER MAIN	16. 96" WATER MAIN
17. 102" WATER MAIN	18. 108" WATER MAIN	19. 114" WATER MAIN	20. 120" WATER MAIN



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V CONSULTANTS
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Sears Centre
Hoffman Estates, Illinois

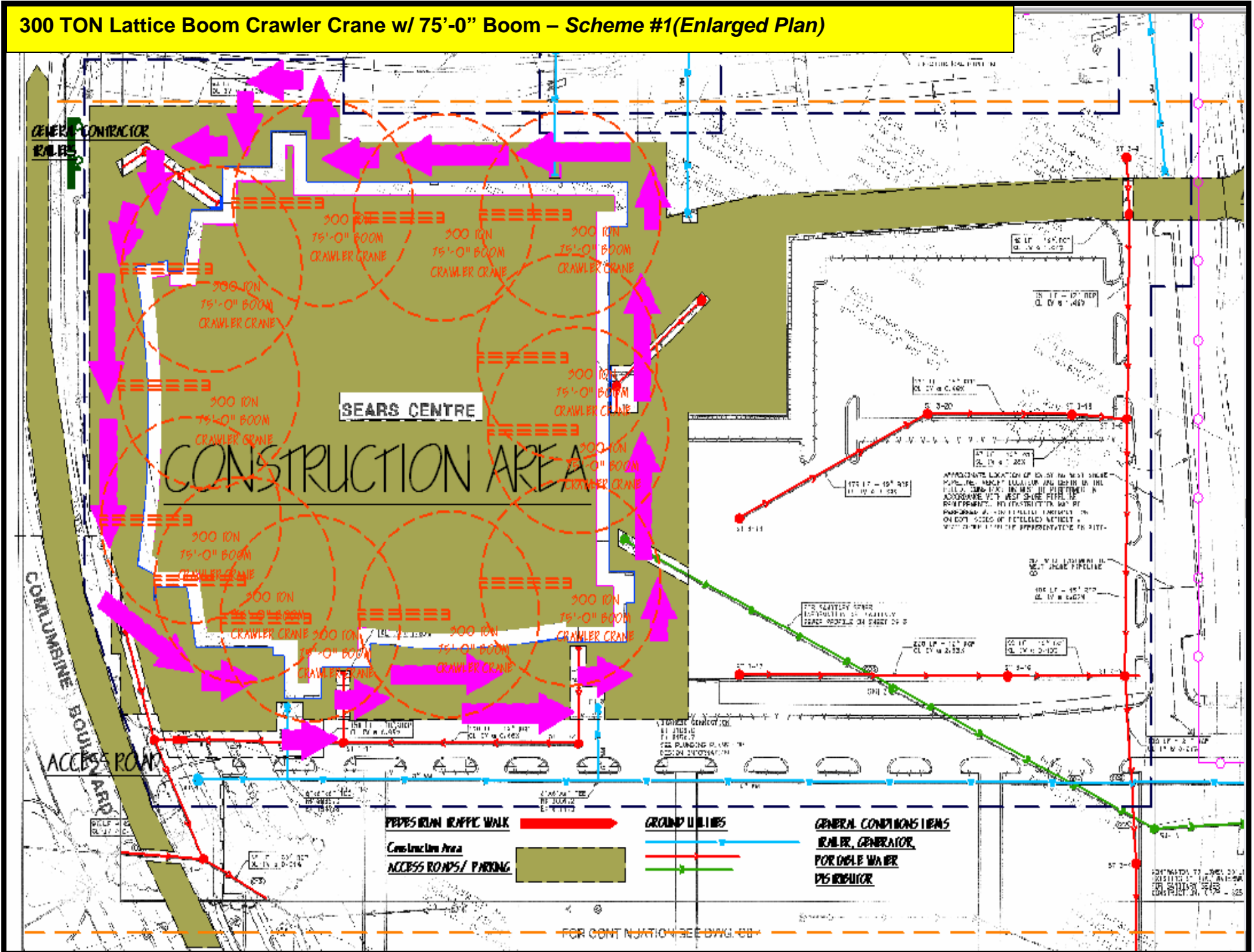
REVISIONS

NO.	DATE	DESCRIPTION
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2	02/12/08	REVISED PERMITS
3	03/10/08	REVISED PERMITS
4	04/08/08	REVISED PERMITS
5	05/06/08	ISSUE

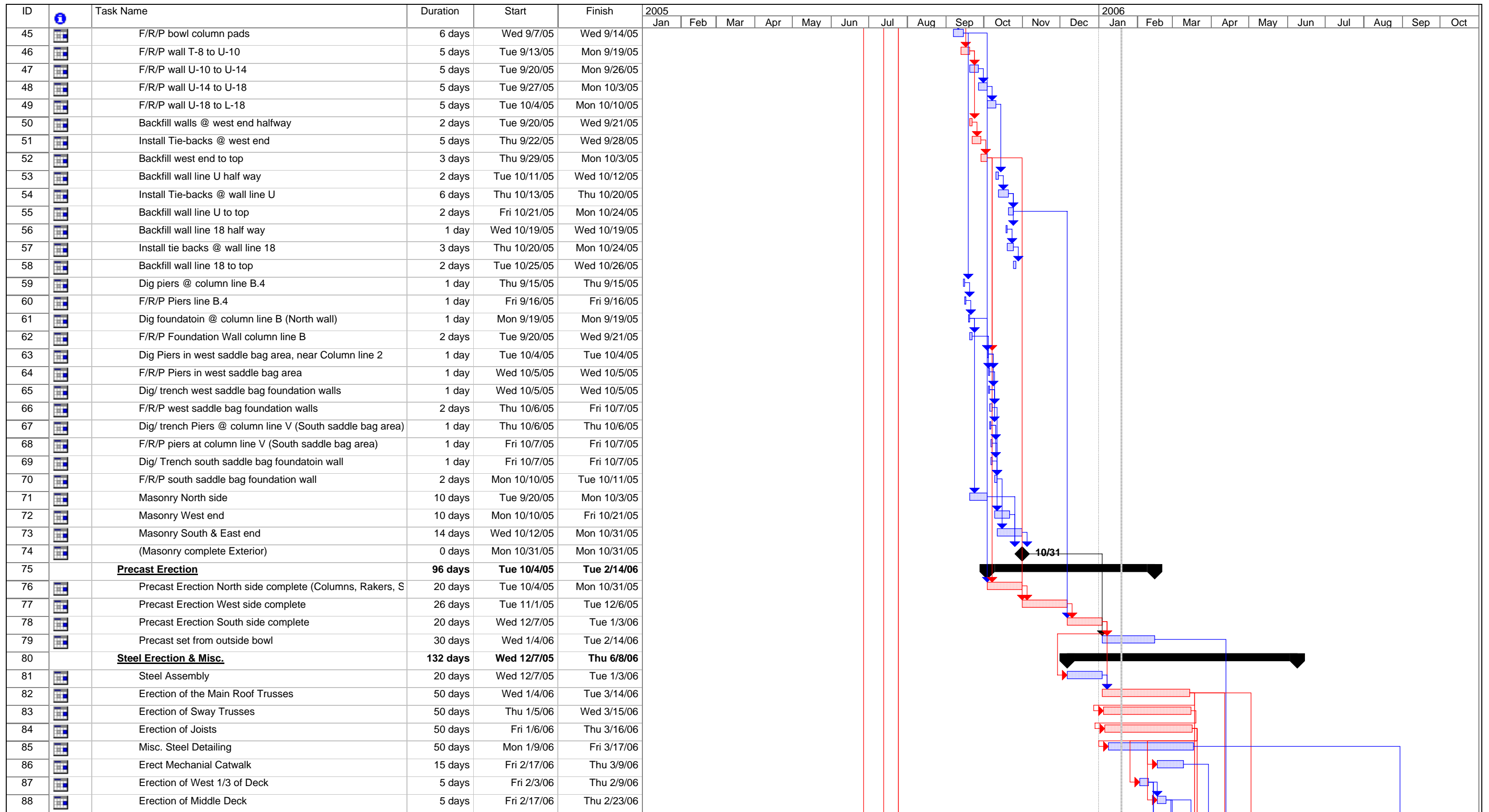
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**Sears Center
PRECAST
LAYOUT PLAN**

300 TON Lattice Boom Crawler Crane w/ 75'-0" Boom – Scheme #1 (Enlarged Plan)



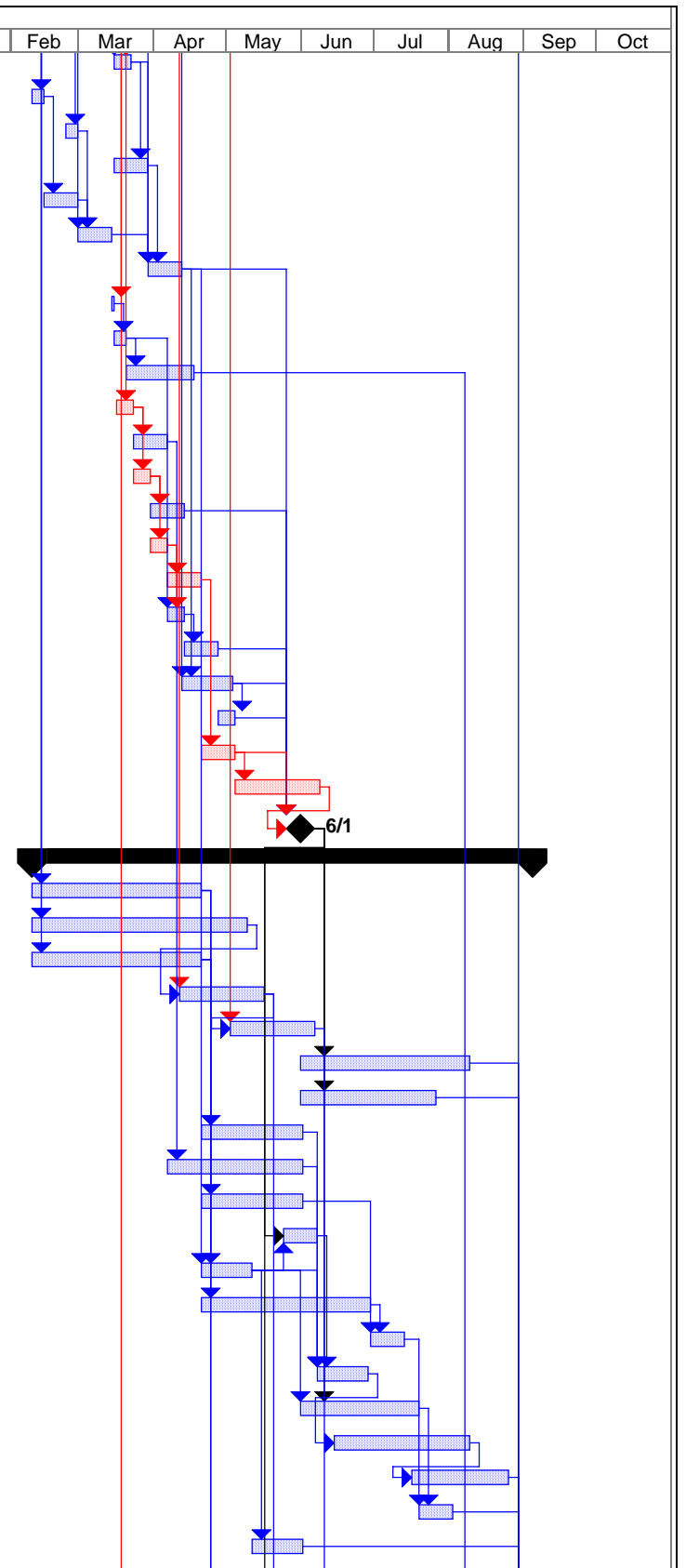
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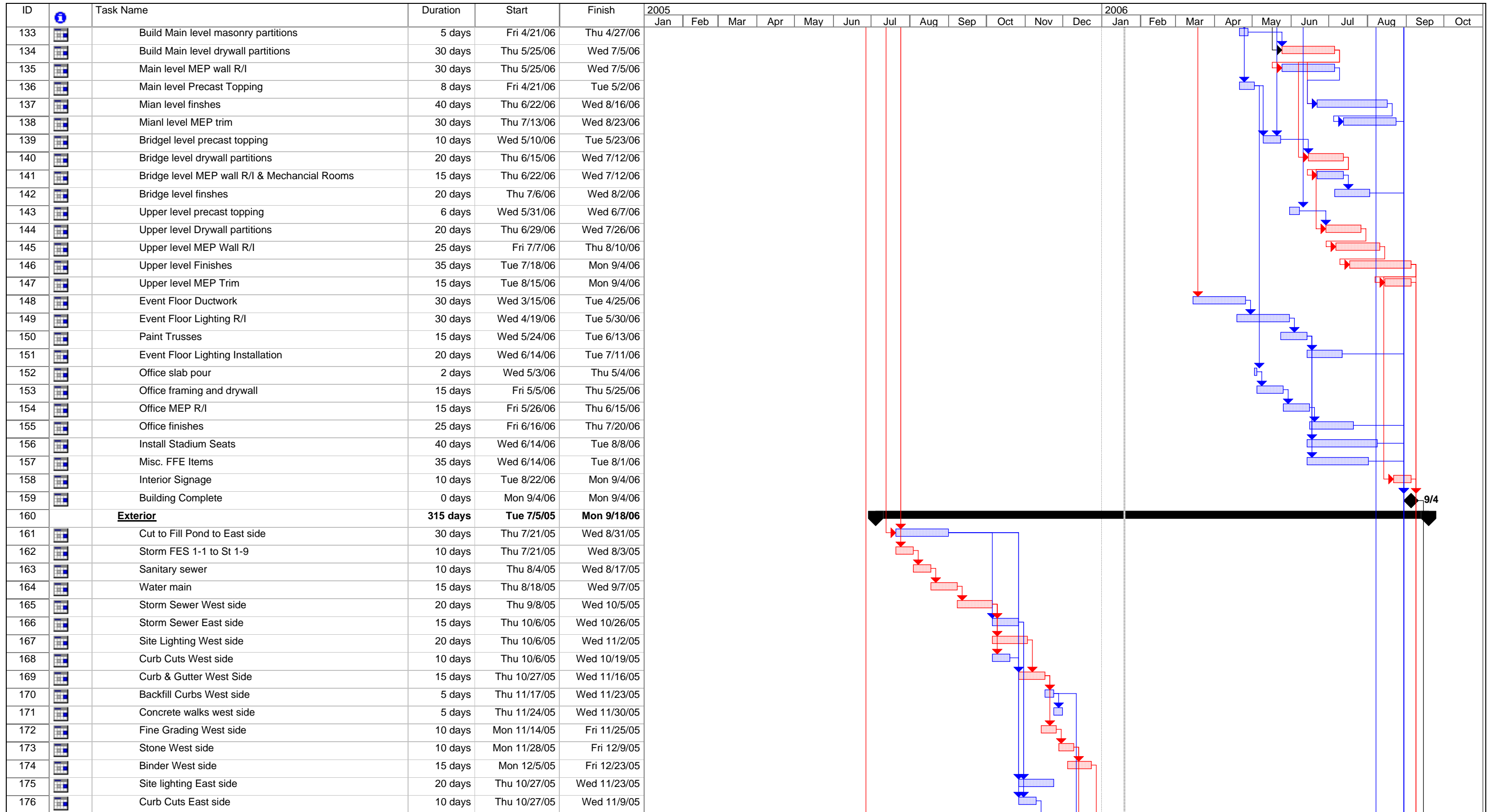
Project: Sears Centre Detail Sch 10.2' Date: Thu 1/19/06	Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
	Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
	Progress		Rolled Up Task		Rolled Up Progress		Project Summary			

Page 2

ID	Task Name	Duration	Start	Finish	2005												2006						
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
89	Erection of East 1/3 of Deck	5 days	Thu 3/16/06	Wed 3/22/06																			
90	Frame West 1/3 of Parapet Wall	3 days	Fri 2/10/06	Tue 2/14/06																			
91	Frame Middle of Parapet Wall	3 days	Fri 2/24/06	Tue 2/28/06																			
92	Frame East 1/3 of Parapet Wall	10 days	Thu 3/16/06	Wed 3/29/06																			
93	Install West 1/3 of Roof	10 days	Wed 2/15/06	Tue 2/28/06																			
94	Install Middle 1/3 of Roof	10 days	Wed 3/1/06	Tue 3/14/06																			
95	Install East 1/3 of Roof	10 days	Thu 3/30/06	Wed 4/12/06																			
96	Remove backfill over ftgs @ L-18 to C-18	1 day	Wed 3/15/06	Wed 3/15/06																			
97	Set precast dock area	3 days	Thu 3/16/06	Mon 3/20/06																			
98	Build Dock Retaining Walls	20 days	Tue 3/21/06	Mon 4/17/06																			
99	Set Steel North end (girt etc.)	5 days	Fri 3/17/06	Thu 3/23/06																			
100	Install Metal siding North side	10 days	Fri 3/24/06	Thu 4/6/06																			
101	Set Steel West end (girt etc.)	5 days	Fri 3/24/06	Thu 3/30/06																			
102	Install Metal siding @ West end	10 days	Fri 3/31/06	Thu 4/13/06																			
103	Set Steel South side (girts etc.)	5 days	Fri 3/31/06	Thu 4/6/06																			
104	Install Metal siding South side	10 days	Fri 4/7/06	Thu 4/20/06																			
105	Set Steel East side (girts etc.)	5 days	Fri 4/7/06	Thu 4/13/06																			
106	Install Metal siding East end (Top)	10 days	Fri 4/14/06	Thu 4/27/06																			
107	Saddle bag and secondary roof install	15 days	Thu 4/13/06	Wed 5/3/06																			
108	East end wall cladding (Lower)	5 days	Fri 4/28/06	Thu 5/4/06																			
109	Punched windows	10 days	Fri 4/21/06	Thu 5/4/06																			
110	Structural Curtain wall at entry	25 days	Fri 5/5/06	Thu 6/8/06																			
111	Weather tight systems	0 days	Thu 6/1/06	Thu 6/1/06																			
112	Interior	147 days	Fri 2/10/06	Mon 9/4/06																			
113	Event level underground Elect. & Plumbing R/I	50 days	Fri 2/10/06	Thu 4/20/06																			
114	Suspend MEP in Event Level	63 days	Fri 2/10/06	Tue 5/9/06																			
115	Main Level MEP R/I	50 days	Fri 2/10/06	Thu 4/20/06																			
116	Bridge Level MEP R/I	25 days	Wed 4/12/06	Tue 5/16/06																			
117	Upper Level MEP R/I	25 days	Wed 5/3/06	Tue 6/6/06																			
118	Construct Elevators	50 days	Thu 6/1/06	Wed 8/9/06																			
119	Build Electrical Switchgear	40 days	Thu 6/1/06	Wed 7/26/06																			
120	Build Boilers	30 days	Fri 4/21/06	Thu 6/1/06																			
121	Build Chillers & Cooling Towers	40 days	Fri 4/7/06	Thu 6/1/06																			
122	Build Ice Plant	30 days	Fri 4/21/06	Thu 6/1/06																			
123	Install Fire Pump	10 days	Thu 5/25/06	Wed 6/7/06																			
124	Poure event level SOG	15 days	Fri 4/21/06	Thu 5/11/06																			
125	Construct Ice rink	50 days	Fri 4/21/06	Thu 6/29/06																			
126	Freeze rink	10 days	Fri 6/30/06	Thu 7/13/06																			
127	Build event level masonry partitions	15 days	Thu 6/8/06	Wed 6/28/06																			
128	Event level drywall partitions	35 days	Thu 6/1/06	Wed 7/19/06																			
129	Event level finishes	40 days	Thu 6/15/06	Wed 8/9/06																			
130	Event level MEP Trim	30 days	Mon 7/17/06	Fri 8/25/06																			
131	Rink Protection Hard floor for Concerts	10 days	Thu 7/20/06	Wed 8/2/06																			
132	Erect & fill internal stairs	15 days	Fri 5/12/06	Thu 6/1/06																			



Project: Sears Centre Detail Sch 10.2 Date: Thu 1/19/06	Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
	Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
	Progress		Rolled Up Task		Rolled Up Progress		Project Summary			



Project: Sears Centre Detail Sch 10.2
Date: Thu 1/19/06

Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
Progress		Rolled Up Task		Rolled Up Progress		Project Summary			

ID	Task Name	Duration	Start	Finish	2005												2006					
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
177	Curb & Gutter East side	15 days	Thu 11/3/05	Wed 11/23/05																		
178	Backfill Curb East side	5 days	Thu 11/24/05	Wed 11/30/05																		
179	Fine Grading East side	10 days	Thu 12/1/05	Wed 12/14/05																		
180	Stone East side	12 days	Mon 12/12/05	Tue 12/27/05																		
181	Binder East side	15 days	Mon 12/26/05	Fri 1/13/06																		
182	Concrete Paving Truck Dock South side	4 days	Tue 7/5/05	Fri 7/8/05																		
183	Concrete Paving Truck Dock North side	4 days	Mon 7/11/05	Thu 7/14/05																		
184	Concrete Paving South side Truck Ramp'	4 days	Fri 7/15/05	Wed 7/20/05																		
185	Concrete Paving North side Truck Ramp	4 days	Thu 7/21/05	Tue 7/26/05																		
186	Winter Shut down	96 days	Mon 1/16/06	Mon 5/29/06																		
187	Curb & Gutter around Arena	10 days	Tue 5/30/06	Mon 6/12/06																		
188	Concrete Sidewalk around Arena	25 days	Tue 6/13/06	Mon 7/17/06																		
189	Asphalt Surface West side	15 days	Tue 7/18/06	Mon 8/7/06																		
190	Asphalt Surface East side & binder around Arena	15 days	Tue 8/8/06	Mon 8/28/06																		
191	Striping West side	5 days	Tue 8/8/06	Mon 8/14/06																		
192	Striping East side	5 days	Tue 8/29/06	Mon 9/4/06																		
193	Landscaping West Side	30 days	Mon 12/12/05	Fri 1/20/06																		
194	Landscaping East side	30 days	Thu 12/1/05	Wed 1/11/06																		
195	Landscaping finishing touches	45 days	Tue 5/30/06	Mon 7/31/06																		
196	Site Inspections	10 days	Tue 9/5/06	Mon 9/18/06																		
197	<u>Punchlist/ Inspections</u>	<u>0 days</u>	<u>Mon 9/4/06</u>	<u>Mon 9/4/06</u>																		
198	<u>Punchlist complete/ Inspections</u>	<u>10 days</u>	<u>Tue 9/5/06</u>	<u>Mon 9/18/06</u>																		
199	<u>COO</u>	<u>0 days</u>	<u>Mon 9/18/06</u>	<u>Mon 9/18/06</u>																		
200	<u>Project Turnover</u>	<u>0 days</u>	<u>Mon 9/18/06</u>	<u>Mon 9/18/06</u>																		

Project: Sears Centre Detail Sch 10.2' Date: Thu 1/19/06	Task		Milestone		Rolled Up Critical Task		Split		Group By Summary	
	Critical Task		Summary		Rolled Up Milestone		External Tasks		Deadline	
	Progress		Rolled Up Task		Rolled Up Progress		Project Summary			

Sears Centre Mechanical Air Distribution Estimate
Assembly Estimate for Event Floor Area

Notes:

Engineering Fees **p steel** **490.00000** **PCF**

Mechanical & Plumbing Minimum Design Fee 4% Total Cost

Air Handling Units:

Quantity	Size	Designation
6	40,000 cfm	<i>(VAV) - AHU - 70/30 Variable Air Volume Air Handling Unit</i>
4	40,000 cfm	<i>(REV) Return Relief Air Unit</i>
2	30,000 cfm	<i>(REV) Return Relief Air Unit</i>

Horizontal Supply Duct Distribution

Duct Description	Duct Size		Area		Duct Run	Volume	Weight (lb)
	Width/ Diameter	Depth	Thickness	Area			
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	213.36 LF	20.94 CF	10260.58 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	209.03 LF	20.51 CF	10052.35 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	128.01 LF	12.56 CF	6156.06 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	37.11 LF	3.64 CF	1784.64 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	44.53 LF	4.37 CF	2141.47 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	60 LF	5.89 CF	2885.43 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	173.65 LF	17.04 CF	8350.91 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	60 LF	5.89 CF	2885.43 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	44.53 LF	4.37 CF	2141.47 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	37.11 LF	3.64 CF	1784.64 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	128.01 LF	12.56 CF	6156.06 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	209.03 LF	20.51 CF	10052.35 lb
66" diameter uninsulated Spiral Supply Duct	66 in	in	0.04167 LF	0.098144 SF	216.36 LF	21.23 CF	10404.85 lb
<i>Sub Total</i>					<i>1560.73 LF</i>	<i>153.18 CF</i>	<i>75056.21 lb</i>
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	16.7 LF	0.46 CF	227.21 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	89.04 LF	2.47 CF	1211.41 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	22.26 LF	0.62 CF	302.85 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	35.25 LF	0.98 CF	479.58 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	18.55 LF	0.52 CF	252.38 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	49.48 LF	1.37 CF	673.19 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	18.55 LF	0.52 CF	252.38 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	35.25 LF	0.98 CF	479.58 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	22.26 LF	0.62 CF	302.85 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	89.04 LF	2.47 CF	1211.41 lb
48" x 48" Uninsulated Square Supply Duct	48 in	48 in	0.04167 LF	0.027766 SF	16.7 LF	0.46 CF	227.21 lb
<i>Sub Total</i>					<i>413.08 LF</i>	<i>11.47 CF</i>	<i>5620.04 lb</i>

Horizontal Return Duct Distribution

Duct Description	Duct Size			Area		Duct Run	Volume	Weight (lb)
	Width/ Diameter	Depth	Thickness	Area	Area			
66" diameter insulated Spiral Return Duct	66 in	in	0.04167 LF	0.098144 SF		213.36 LF	20.94 CF	10260.58 lb
66" diameter insulated Spiral Return Duct	66 in	in	0.04167 LF	0.098144 SF		209.03 LF	20.51 CF	10052.35 lb
<i>Sub Total</i>						<i>422.39 LF</i>	<i>41.45 CF</i>	<i>20312.93 lb</i>
36" diameter insulated Spiral Return Duct	36 in	in	0.04167 LF	0.053519 SF		82.86 LF	4.43 CF	2172.94 lb
<i>Sub Total</i>						<i>82.86 LF</i>	<i>4.43 CF</i>	<i>2172.94 lb</i>
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		16.7 LF	0.26 CF	127.76 lb
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		15.46 LF	0.24 CF	118.27 lb
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		34.63 LF	0.54 CF	264.93 lb
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		34.63 LF	0.54 CF	264.93 lb
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		15.46 LF	0.24 CF	118.27 lb
36" x 18" Uninsulated Square Supply Duct	36 in	18 in	0.04167 LF	0.015613 SF		16.7 LF	0.26 CF	127.76 lb
<i>Sub Total</i>						<i>133.58 LF</i>	<i>2.09 CF</i>	<i>1021.93 lb</i>

Vertical Supply Duct Distribution

40" x 20" Uninsulated Square Supply Duct	40 in	20 in	0.04167 LF	0.017349 SF		600 LF	10.41 CF	5100.62 lb
<i>Sub Total</i>						<i>600 LF</i>	<i>10.40943 CF</i>	<i>5100.62 lb</i>
24" x 48" Uninsulated Square Supply Duct	24 in	48 in	0.04167 LF	0.020821 SF		960 LF	19.99 CF	9794.33 lb
<i>Sub Total</i>						<i>960 LF</i>	<i>19.98843 CF</i>	<i>9794.33 lb</i>
96" diameter uninsulated Spiral Supply Duct	96 in	in	0.04167 LF	0.142769 SF		66 LF	9.42 CF	4617.14 lb
<i>Sub Total</i>						<i>66 LF</i>	<i>9.42 CF</i>	<i>4617.14 lb</i>

Other Equipment

5'-0" x 4'-0" Heave Duty Grills	12 ea.	Area 240 SF
4'-0" x 5'-0" x 5'-0" Silencers	6 ea.	Area 840 SF

Duct Reducers

66" → 36" Duct Reducers	2 ea.
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Means Cost Data

Uniformat Number	Item Name	Unit	Mat'l	Unit Cost		Total
				Labor		
15720.100.1000	40,000 cfm (VAV) - AHU - 70/30 Variable Air Volume Air Handling Unit	ea.	\$ 38,500.00	\$ 3,050.00	\$	41,550.00
15850.800.5840	30,000 cfm (REV) Return Relief Air Unit	ea.	\$ 4,700.00	\$ 825.00	\$	5,525.00
15850.800.5860	40,000 cfm (REV) Return Relief Air Unit	ea.	\$ 6,025.00	\$ 965.00	\$	6,990.00

Note: Since 66" Std Duct are specialty items the following Assumption was made below

15810.700.3577	64" dia Rigid Fiber Plastic Duct	ea.	\$ 269.00	\$ 70.50	\$	339.50
<i>Interpolated</i>	66" dia Rigid Fiber Plastic Duct	ea.	\$ 277.50	\$ 72.25	\$	349.75
15810.700.3578	68" dia Rigid Fiber Plastic Duct	ea.	\$ 286.00	\$ 74.00	\$	360.00
15810.700.3763	64" dia Rigid Fiber Plastic Duct Reducers	ea.	\$ 253.00	\$ 70.50	\$	323.50
<i>Interpolated</i>	66" dia Rigid Fiber Plastic Duct Reducers	ea.	\$ 261.50	\$ 72.25	\$	333.75
15810.700.3764	68" dia Rigid Fiber Plastic Duct Reducers	ea.	\$ 270.00	\$ 74.00	\$	344.00

Specialty Fabrication for Sheet Metal Ductwork

15810.100.0500	Prices for Duct Assemblies > 200 lbs.	lbs	\$ 1.04	\$ 3.83	\$	4.87
15810.100.0520	Prices for Duct Assemblies (200 lbs. - 500 lbs.)	lbs	\$ 0.84	\$ 3.68	\$	4.52
15810.100.0540	Prices for Duct Assemblies (500 lbs. - 1000 lbs.)	lbs	\$ 0.74	\$ 3.53	\$	4.27
15810.100.0560	Prices for Duct Assemblies (1000 lbs. - 2000 lbs.)	lbs	\$ 0.59	\$ 3.40	\$	3.99
15810.100.0570	Prices for Duct Assemblies (2000 lbs. - 5000 lbs.)	lbs	\$ 0.56	\$ 3.27	\$	3.83
15810.100.0580	Prices for Duct Assemblies > 5000 lbs.	lbs	\$ 0.54	\$ 3.16	\$	3.70
15840.100.7600	5'-0" x 4'-0" Heavy Duty Grilles	ea.	\$ 310.00	\$ 40.00	\$	350.00
15890.300.5890	AHU Silencers Assume (4'-0" x 5'-0" x 5'-0")	ea.	\$ 1,325.00	\$ 276.00	\$	1,601.00

Arena Event Floor

95789 SF

	Item Prices	Unit	Mat'l Cost	Labor Cost	Total Cost
15720.100.1000	40,000 CFM (VAV) Air Handling Units	Total	\$ 231,000.00	\$ 18,300.00	\$ 249,300.00
15850.800.5840	30,000 CFM Relief Unit	Total	\$ 9,400.00	\$ 1,650.00	\$ 11,050.00
15850.800.5860	40,000 CFM Relief Unit	Total	\$ 12,050.00	\$ 1,930.00	\$ 13,980.00
<i>Interpolated</i>	66" diameter uninsulated Spiral Supply Duct	Total	\$ 433,102.58	\$ 112,762.74	\$ 545,865.32
<i>Interpolated</i>	66" → 36" Duct Reducers	Total	\$ 523.00	\$ 144.50	\$ 667.50
15810.100.0570	48" x 48" Uninsulated Square Supply Duct	Total	\$ 3,147.22	\$ 5,103.59	\$ 8,250.81
15810.100.0580	66" diameter insulated Spiral Return Duct	Total	\$ 10,968.98	\$ 64,188.85	\$ 75,157.83
15810.100.0570	36" diameter insulated Spiral Return Duct	Total	\$ 1,216.85	\$ 7,105.52	\$ 8,322.37
15810.100.0540	36" x 18" Uninsulated Square Supply Duct	Total	\$ 756.23	\$ 3,607.42	\$ 4,363.65
15810.100.0570	40" x 20" Uninsulated Square Supply Duct	Total	\$ 2,856.35	\$ 16,679.03	\$ 19,535.38
15810.100.0580	24" x 48" Uninsulated Square Supply Duct	Total	\$ 5,288.94	\$ 30,950.08	\$ 36,239.02
15810.100.0570	96" diameter uninsulated Spiral Supply Duct	Total	\$ 2,585.60	\$ 15,098.04	\$ 17,683.64
15840.100.7600	5'-0" x 4'-0" Heave Duty Grills	Total	\$ 3,720.00	\$ 480.00	\$ 4,200.00
15890.300.5890	AHU Silencers Assume (4'-0" x 5'-0" x 5'-0")	Total	\$ 7,950.00	\$ 1,656.00	\$ 9,606.00

Square Foot Cost

	Computed Square Foot Assembly Estimate	Unit	Mat'l Cost	Labor Cost	Total Cost
15720.100.1000	40,000 CFM (VAV) Air Handling Units	SF	\$ 2.41	\$ 0.19	\$ 2.60
15850.800.5840	30,000 CFM Relief Unit	SF	\$ 0.10	\$ 0.02	\$ 0.12
15850.800.5860	40,000 CFM Relief Unit	SF	\$ 0.13	\$ 0.02	\$ 0.15
<i>Interpolated</i>	66" diameter uninsulated Spiral Supply Duct	SF	\$ 4.52	\$ 1.18	\$ 5.70

<i>Interpolated</i>	66" → 36" Duct Reducers	SF	\$	0.01	\$	0.00	\$	0.01
15810.100.0570	48" x 48" Uninsulated Square Supply Duct	SF	\$	0.03	\$	0.05	\$	0.09
15810.100.0580	66" diameter insulated Spiral Return Duct	SF	\$	0.11	\$	0.67	\$	0.78
15810.100.0570	36" diameter insulated Spiral Return Duct	SF	\$	0.01	\$	0.07	\$	0.09
15810.100.0540	36" x 18" Uninsulated Square Supply Duct	SF	\$	0.01	\$	0.04	\$	0.05
15810.100.0570	40" x 20" Uninsulated Square Supply Duct	SF	\$	0.03	\$	0.17	\$	0.20
15810.100.0580	24" x 48" Uninsulated Square Supply Duct	SF	\$	0.06	\$	0.32	\$	0.38
15810.100.0570	96" diameter uninsulated Spiral Supply Duct	SF	\$	0.03	\$	0.16	\$	0.18
15840.100.7600	5'-0" x 4'-0" Heavy Duty Grills	SF	\$	15.50	\$	2.00	\$	17.50
15890.300.5890	AHU Silencers Assume (4'-0" x 5'-0" x 5'-0")	SF	\$	9.46	\$	1.97	\$	11.44
Assembly Square Foot Cost based off of 95,789								
SF		SF	\$	32.41	\$	6.87	\$	39.28

Air Distribution Cost for Event Floor \$39.28/ SF

Cost of Air Distribution System (Event Floor)

\$	3,912,624	<i>(Includes Mech. Engineers Fee)</i>
Comparison		Percentage
Event Floor Comprises Percentage of Total HVAC Budget		99%
HVAC Budget		
\$	3,950,000	
Dollar Comparisons		
\$	3,950,000	
	- \$ 3,912,624	
\$	37,376	

Sears Centre QTO Key Assumptions

Sears Centre QTO Key Assumptions					
Structure Members	Compressive Strength Design f'c (psi)				
<i>(4") thick Slab on Grade</i>	4000	PSI	Sears Center Building Totals		
<i>(5") thick Slab on Grade</i>	5000	PSI	Cubic Yards of Concrete		
<i>(6") thick Slab on Grade</i>	5000	PSI	9835	Cubic Yards	
<i>Deep Foundation Walls</i>	4000	PSI	Ton(s) of Steel		
<i>Precast/ CIP Dock Walls</i>	4000	PSI	1180	Ton(s)	
<i>Strip Ftgs</i>	4000	PSI			
<i>Spread/ Column Ftgs</i>	4000	PSI			
<i>Grade Beams</i>	3000	PSI			
<i>Structural Precast Concrete</i>	4000	PSI			
<i>Precast Beams</i>	4000	PSI			
<i>Precast Raker Beams</i>	4000	PSI			
<i>Precast Risers</i>	4000	PSI			
<i>Precast Columns</i>	4000	PSI			
<i>10" Precast Planks</i>	4000	PSI			
<i>Slab on Deck</i>	3000	PSI			
Notes:					
Grade Beams Reference Note 1/ S100			Notes:		
Trench Beams Reference Note 2 /S100			Assume Typical Plank Detail for 10" Hollow Core Unit		
			Plank Dimensions		
Notes:			Length (ft)	Width (ft)	Depth (ft)
Assume #4 Dowel(s) w/ 12" spacing for all 4" SOG/ Foundation connections			8.35	34.00	0.88
Assume #4 Dowel(s) w/ 6" spacing for all 5" & 6" SOG/ Foundation connections			Area =	284	SF
			Volume =	250	CF
SOG Designations				9	CuYD
<i>Slab on Grade Area</i>	<i>Floor Thickness (in)</i>	<i>Design Strength</i>			
<i>Main Concourse</i>	4"	4000	Assume Typical Riser Profile		
<i>Lower Bowl Seating</i>	5"	5000	Riser Dimensions		
<i>Event Floor</i>	6"	5000	Horizontal Face		
<i>Above Grade Areas</i>	0.88" + 2" concrete topping	3000	Length (ft)	Width (ft)	Depth (ft)
			3.00	34.00	0.57
Key Unit Conversions			Vertical Face		
1 CuYd =	27	CF	Length (ft)	Width (ft)	Depth (ft)
1 Ton =	2000	lbs	1.29	34.00	0.72
ρ steel	490	PCF	Area H =	102	SF
ρ concrete	150	PCF	Area V =	44	SF
			Total Volume =	90	CF
Assume Typical Metal Deck: 3N x 18 Gauge use 3NP 18/20 Unit (Wt) 5.08 PSF				3	CuYD
Length (ft)	Width (ft)	Area (SF)			
5.00	5.00	25	1 Square Foot (SF) =	144	in ²
Unit Weight (P/SF)	Piece Weight (lb)				
5.08	127.00				

Sears Centre Foundation System Quantity Takeoff																								
Ref Sheet SHT: S200.1, S200.2																								
Grade Beam Dimensions											Foundation Tiebacks SHT: S200.1													
Width (ft)	Height (ft)	Length (ft)		Quantity	CuYD(s)	Rebar/ Dowel		Note/ SHT	Tieback Type	Tieback Length (ft)	(∅) Tieback Diameter (in)	Quantity	Area (SF)	Wht. (lb)	Wht. (ton)									
1.50	LF	4.00	LF	142.55	LF	1.00	ea	31.68	CY	(3) #5 bars	3/ S502	100 kip Steel Tieback	55.00	LF	1.02	IN	13.00	ea.	0.0113	SF	3976.12	lb.	1.99	ton
1.50	LF	4.00	LF	139.15	LF	1.00	ea	30.92	CY	(3) #5 bars	3/ S502	100 kip Steel Tieback	55.00	LF	1.02	IN	24.00	ea.	0.0113	SF	7340.54	lb.	3.67	ton
1.50	LF	4.00	LF	59.06	LF	1.00	ea	13.12	CY	(3) #5 bars	3/ S502						Sub Total				Sub Total		Sub Total	
				340.76	LF			75.72	CY								37	ea.			11316.66	lb.	5.66	ton
Ref Sheet SHT: S200.1																								
Concrete Column Pads											Foundation Tiebacks SHT: S200.2													
Width (ft)	Height (ft)	Length (ft)		Quantity	CuYD(s)	Rebar/ Dowel		Mark	Tieback Type	Tieback Length (ft)	(∅) Tieback Diameter (in)	Quantity	Area (SF)	Wht. (lb)	Wht. (ton)									
6.25	LF	6.25	LF	1.25	LF	3.00	ea	5.43	CY	#6 @ 6" o.c.	G	100 kip Steel Tieback	55.00	LF	1.02	IN	28.00	ea.	0.0113	SF	8563.96	lb.	4.28	ton
5.00	LF	5.00	LF	1.50	LF	6.00	ea	8.33	CY	#4 @ 6" o.c.	S	100 kip Steel Tieback	55.00	LF	1.02	IN	13.00	ea.	0.0113	SF	3976.12	lb.	1.99	ton
6.00	LF	6.00	LF	1.25	LF	5.00	ea	8.33	CY	#4 @ 6" o.c.	R						Sub Total				Sub Total		Sub Total	
10.00	LF	10.00	LF	2.50	LF	2.00	ea	18.52	CY	#6 @ 6" o.c.	E4	Foundation Tiebacks SHT: S200.3												
13.00	LF	13.00	LF	2.60	LF	1.00	ea	16.27	CY	#8 @ 6" o.c.	E2	Tieback Type	Tieback Length (ft)	(∅) Tieback Diameter (in)	Quantity	Area (SF)	Wht. (lb)	Wht. (ton)						
15.00	LF	15.00	LF	3.00	LF	1.00	ea	25.00	CY	#8 @ 6" o.c.	E3	100 kip Steel Tieback	55.00	LF	1.02	IN	19.00	ea.	0.0113	SF	5811.26	lb.	2.91	ton
13.50	LF	13.50	LF	3.00	LF	1.00	ea	20.25	CY	#7 @ 6" o.c.	E1	100 kip Steel Tieback	55.00	LF	1.02	IN	6.00	ea.	0.0113	SF	1835.13	lb.	0.92	ton
11.00	LF	11.00	LF	2.50	LF	1.00	ea	11.20	CY	#7 @ 6" o.c.	E5						Sub Total				Sub Total		Sub Total	
8.50	LF	8.50	LF	1.50	LF	4.00	ea	16.06	CY	#6 @ 6" o.c.	K						25	ea.			7646.39	lb.	3.82	ton
8.50	LF	8.50	LF	1.50	LF	4.00	ea	16.06	CY	#6 @ 6" o.c.	J													
5.75	LF	5.75	LF	1.25	LF	1.00	ea	1.53	CY	#5 @ 6" o.c.	M	Foundation Tiebacks SHT: S200.4												
8.50	LF	8.50	LF	1.50	LF	3.00	ea	12.04	CY	#6 @ 6" o.c.	C	Tieback Type	Tieback Length (ft)	(∅) Tieback Diameter (in)	Quantity	Area (SF)	Wht. (lb)	Wht. (ton)						
9.25	LF	9.25	LF	1.50	LF	3.00	ea	14.26	CY	#6 @ 6" o.c.	D	100 kip Steel Tieback	55.00	LF	1.02	IN	23.00	ea.	0.0113	SF	7034.68	lb.	3.52	ton
5.75	LF	5.75	LF	1.25	LF	6.00	ea	9.18	CY	#5 @ 6" o.c.	B	100 kip Steel Tieback	55.00	LF	1.02	IN	0.00	ea.	0.0113	SF	0.00	lb.	0.00	ton
6.00	LF	9.00	LF	1.33	LF	6.00	ea	15.96	CY	#5 @ 6" o.c.	A						Sub Total				Sub Total		Sub Total	
						Sub Total		Sub Total									23	ea.			7034.68	lb.	3.52	ton
						47.00	ea	198.43	CY															
Ref Sheet SHT: S200.2																								
Concrete Column Pads																								
Width (ft)	Height (ft)	Length (ft)		Quantity	CuYD(s)	Rebar/ Dowel		Mark																
6.00	LF	9.00	LF	1.33	LF	7.00	ea	18.62	CY	#5 @ 6" o.c.	A													
5.75	LF	5.75	LF	1.25	LF	7.00	ea	10.71	CY	#5 @ 6" o.c.	B													
8.50	LF	8.50	LF	1.50	LF	3.00	ea	12.04	CY	#6 @ 6" o.c.	C													
9.25	LF	9.25	LF	1.50	LF	4.00	ea	19.01	CY	#6 @ 6" o.c.	D													
13.50	LF	13.50	LF	3.00	LF	1.00	ea	20.25	CY	#7 @ 6" o.c.	E1													
13.00	LF	13.00	LF	2.60	LF	1.00	ea	16.27	CY	#8 @ 6" o.c.	E2													
15.00	LF	15.00	LF	3.00	LF	1.00	ea	25.00	CY	#8 @ 6" o.c.	E3													
10.00	LF	10.00	LF	2.50	LF	2.00	ea	18.52	CY	#6 @ 6" o.c.	E4													
11.00	LF	11.00	LF	2.50	LF	2.00	ea	22.41	CY	#7 @ 6" o.c.	E5													
5.75	LF	5.75	LF	1.25	LF	1.00	ea	1.53	CY	#5 @ 6" o.c.	F	Page Totals												
6.25	LF	6.25	LF	1.25	LF	1.00	ea	1.81	CY	#6 @ 6" o.c.	G	Total Number of Tie bac		126	ea.									
7.75	LF	7.75	LF	1.50	LF	3.00	ea	10.01	CY	#5 @ 6" o.c.	H	Total Ton(s) of Steel		19.27	ton									
8.50	LF	8.50	LF	1.50	LF	4.00	ea	16.06	CY	#6 @ 6" o.c.	J													

Main Concourse Floor Slab Area				F'c = 4,000 PSI		Thickness		4 in ≈		0.33		LF			
Calculation	Scale Factor	Mult. Factor	b ₁ (ft)		b ₂ (ft)		h (ft)		Area (SF)		Thick Δ		CuYd		
Area = (1/2)b ₁ h	0.50	2.00	--	LF	--	LF	--	LF	--	SF	--	LF	--	CY	
Area =b ₁ h	1.00	2.00													
Area =(1/2)(b ₁ +b ₂)h	0.50	2.00													
A ₁ =b ₁ h	1.00	2.00	23.19	LF	0.00	LF	14.53	LF	673.90	SF	0.33	LF	8.24	CY	
A ₂ =b ₁ h	1.00	2.00	102.11	LF	0.00	LF	16.08	LF	3283.86	SF	0.33	LF	40.14	CY	
A ₃ =(1/2)(b ₁ +b ₂)h	0.50	2.00	15.77	LF	19.17	LF	6.50	LF	227.11	SF	0.33	LF	2.78	CY	
A ₄ =(1/2)(b ₁ +b ₂)h	0.50	2.00	35.25	LF	41.74	LF	14.22	LF	1094.80	SF	0.33	LF	13.38	CY	
A ₅ =(1/2)(b ₁ +b ₂)h	0.50	2.00	29.38	LF	49.47	LF	19.79	LF	1560.44	SF	0.33	LF	19.07	CY	
A ₆ =(1/2)(b ₁ +b ₂)h	0.50	2.00	34.32	LF	52.26	LF	6.80	LF	588.74	SF	0.33	LF	7.20	CY	
A ₇ =(1/2)(b ₁ +b ₂)h	0.50	2.00	9.59	LF	5.57	LF	26.90	LF	407.80	SF	0.33	LF	4.98	CY	
A ₈ =b ₁ h	1.00	2.00	98.34	LF	0.00	LF	23.50	LF	4621.98	SF	0.33	LF	56.49	CY	
A ₉ =(1/2)(b ₁ +b ₂)h	0.50	2.00	3.40	LF	8.67	LF	29.07	LF	350.87	SF	0.33	LF	4.29	CY	
A ₁₀ =(1/2)(b ₁ +b ₂)h	0.50	2.00	63.39	LF	42.05	LF	8.67	LF	914.16	SF	0.33	LF	11.17	CY	
A ₁₁ =(1/2)(b ₁ +b ₂)h	0.50	2.00	31.23	LF	42.05	LF	12.37	LF	906.47	SF	0.33	LF	11.08	CY	
A ₁₂ =(1/2)(b ₁ +b ₂)h	0.50	2.00	24.74	LF	31.23	LF	5.57	LF	311.75	SF	0.33	LF	3.81	CY	
A ₁₃ =(1/2)(b ₁ +b ₂)h	0.50	2.00	25.97	LF	28.45	LF	5.26	LF	286.25	SF	0.33	LF	3.50	CY	
A ₁₄ =(1/2)(b ₁ +b ₂)h	0.50	2.00	34.32	LF	40.82	LF	16.08	LF	1208.25	SF	0.33	LF	14.77	CY	
A ₁₅ =b ₁ h	1.00	2.00	19.23	LF	0.00	LF	23.50	LF	903.81	SF	0.33	LF	11.05	CY	
A ₁₆ =(1/2)(b ₁ +b ₂)h	0.50	2.00	15.15	LF	16.08	LF	26.59	LF	830.41	SF	0.33	LF	10.15	CY	
A ₁₇ =b ₁ h	1.00	2.00	10.91	LF	0.00	LF	10.72	LF	233.91	SF	0.33	LF	2.86	CY	
A ₁₈ =(1/2)(b ₁ +b ₂)h	0.50	2.00	8.04	LF	10.72	LF	23.91	LF	448.55	SF	0.33	LF	5.48	CY	
A ₁₉ =(1/2)(b ₁ +b ₂)h	0.50	2.00	0.00	LF	0.00	LF	0.00	LF	0.00	SF	0.33	LF	0.00	CY	
A ₂₀ =b ₁ h	1.00	2.00	156.79	LF	0.00	LF	9.28	LF	2910.02	SF	0.33	LF	35.57	CY	
A ₂₁ =(1/2)(b ₁ +b ₂)h	0.50	2.00	4.54	LF	4.74	LF	3.09	LF	28.68	SF	0.33	LF	0.35	CY	
A ₂₂ =(1/2)(b ₁ +b ₂)h	0.50	2.00	5.77	LF	4.33	LF	6.60	LF	66.66	SF	0.33	LF	0.81	CY	
A ₂₃ =(1/2)(b ₁ +b ₂)h	0.50	2.00	4.54	LF	5.98	LF	7.07	LF	74.38	SF	0.33	LF	0.91	CY	
A ₂₄ = (1/2)b ₁ h	0.50	2.00	1.03	LF	0.00	LF	4.12	LF	4.24	SF	0.33	LF	0.05	CY	
A ₂₅ = (1/2)b ₁ h	0.50	2.00	2.27	LF	0.00	LF	23.09	LF	52.41	SF	0.33	LF	0.64	CY	
A ₂₆ = (1/2)b ₁ h	0.50	2.00	2.27	LF	0.00	LF	23.09	LF	52.41	SF	0.33	LF	0.64	CY	
A ₂₇ =(1/2)(b ₁ +b ₂)h	0.50	2.00	1.03	LF	2.06	LF	2.47	LF	7.63	SF	0.33	LF	0.09	CY	
A ₂₈ =(1/2)(b ₁ +b ₂)h	0.50	2.00	8.25	LF	7.63	LF	5.77	LF	91.63	SF	0.33	LF	1.12	CY	
A ₂₉ =b ₁ h	1.00	2.00	7.21	LF	0.00	LF	7.21	LF	103.97	SF	0.33	LF	1.27	CY	
Total Concourse Area									Sub Total				Sub Total		
AT = Σ (A ₁ - A ₂₉)									22245.11	SF			271.88	CY	
Upper Bowl Slab Area				F'c = 4,000 PSI		Thickness		5 in ≈		0.42		LF			
Calculation	Scale Factor	Mult. Factor	A ₁ (SF)		A ₀ (SF)				Area (SF)		Thick Δ		CuYd		
									--		--		--		
A _{1'} --	1.00	2.00	646.00	SF	83.00	SF			563.00	SF	0.42	LF	8.76	CY	

A _{2'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{3'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{4'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{5'}	--	1.00	2.00	646.00	SF	83.00	SF			563.00	SF	0.42	LF	8.76	CY
A _{6'}	--	1.00	1.00	3180.00	SF	0.00	SF			3180.00	SF	0.42	LF	49.47	CY
A _{7'}	--	1.00	2.00	646.00	SF	83.00	SF			563.00	SF	0.42	LF	8.76	CY
A _{8'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{9'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{10'}	--	1.00	2.00	1330.00	SF	76.00	SF			1254.00	SF	0.42	LF	19.51	CY
A _{11'}	--	1.00	2.00	646.00	SF	83.00	SF			563.00	SF	0.42	LF	8.76	CY
A _{12'}	--	1.00	1.00	12300.00	SF	0.00	SF			12300.00	SF	0.42	LF	191.33	CY
A _{13'}	--	1.00	1.00	12300.00	SF	0.00	SF			12300.00	SF	0.42	LF	191.33	CY
Total Upper Bowl Slab Area										Sub Total		Sub Total			
AT	= Σ (A1' - A13')									37556.00	SF			584.20	CY
Lower Bowl Slab Area		F'c = 5,000 PSI			Thickness		6 in ≈				0.50		LF		
Calculation		Scale Factor	Mult. Factor	A ₁ (SF)					Area (SF)	Thick Δ		CuYd			
A _{1'}	--	1.00	2.00	835.00	SF				1670.00	SF	0.50	LF	30.93	CY	
A _{2'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{3'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{4'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{5'}	--	1.00	2.00	835.00	SF				1670.00	SF	0.50	LF	30.93	CY	
A _{6'}	--	1.00	2.00	835.00	SF				1670.00	SF	0.50	LF	30.93	CY	
A _{7'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{8'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{9'}	--	1.00	2.00	1765.00	SF				3530.00	SF	0.50	LF	65.37	CY	
A _{10'}	--	1.00	2.00	835.00	SF				1670.00	SF	0.50	LF	30.93	CY	
A _{11'}	--	1.00	1.00	1205.00	SF				1205.00	SF	0.50	LF	22.31	CY	
A _{12'}	--	1.00	1.00	19033.00	SF				19033.00	SF	0.50	LF	352.46	CY	
Stage Slab Area										Sub Total		Sub Total			
AT	= Σ (A1' - A12')									48098.00	SF			890.70	CY

Stage Slab Area		F'c = 5,000 PSI		Thickness	6 in ≈	0.50 LF				
Calculation	Scale Factor	Mult. Factor	A ₁ (SF)			Area (SF)	Thick Δ		CuYd	
A ₁	--	1.00	1.00	10125.00	SF	10125.00	0.50	LF	187.50	CY
Stage Slab Area						Sub Total			Sub Total	
AT	=					10125.00	SF		187.50	CY
f'c = 4,000 psi w/ 4" thick SOG =				22245.11	SF	271.88				
f'c = 4,000 psi w/ 5" thick SOG =				37556.00	SF	584.20				
f'c = 5,000 psi w/ 6" thick SOG =				58223.00	SF	1078.20				
Total Slab on Grade Area =				118024.11	SF	1934.29				
Building Area				240000.00	SF					
SOG Area (less) -				118024.11	SF					
Above Grade Slab Area =				121975.89	SF					
f'c = 4,000 psi w/ 4" thick SOG Perimeter										
				346.00	LF				#4 Slab Dowels @ 12" spacing	
				238.00	LF					
				305.00	LF					
				293.00	LF	3008x12	3008.00		Dowels	
				342.00	LF	12.00				
				266.00	LF					
				251.00	LF					
				187.00	LF					
				220.00	LF					
				143.00	LF					
				217.00	LF					
		+		200.00	LF					
				3008.00	LF					
f'c = 4,000 psi w/ 5" thick SOG Perimeter										
				630.00	LF				#4 Slab Dowels @ 6" spacing	
				710.00	LF					
		+		58.00	LF					
				1398.00	LF	1398x12(2)	2796.00		Dowels	
						12.00				
f'c = 5,000 psi w/ 6" thick SOG Perimeter										
				470.00	LF				#4 Slab Dowels @ 6" spacing	
				29.00	LF					
		+		264.00	LF					
				763.00	LF	763x12(2)	1526.00		Dowels	
						12.00				
Page Totals										
Total Cubic Yards of Concrete:				1934.29	CY					

Sears Centre Superstructure System Quantity Takeoff

Ref Sheet SHT: S400																				
Column Height Determination																				
Elev. Floor Height Column Notes:																				
Below Grade Slab: 75.33 LF -- LF Assume Column Fabrication in 24'-0" Sections																				
Finish Floor Grade 100.00 LF 24.67 LF																				
Top of Low Lobby Roof 114.67 LF 14.67 LF Assume Typical Column Length 24 LF																				
Bridge Level 123.67 LF 9.00 LF																				
Suite Level 133.17 LF 9.50 LF																				
Top of Wall 145.50 LF 12.33 LF																				
Roof Trusses																				
Bottom Chord 146.25 LF -- LF																				
Top Chord 156.25 LF 10.00 LF																				
Perimeter Steel Columns Reference SHT S 200.1																				
Width (ft)	Height (ft)	Length (ft)	Thickness (ft)	Area (SF)	Member Wt	Quantity	Weight (lbs)	Weight (tons)	Column Type	Column Pieces (ea)										
0.50	LF	0.50	LF	70.17	LF	0.0208	LF	0.02	SF	9.98	PLF	1.00	ea.	700.30	lbs	0.3501	ton	HSS 6x6x1/4	3	ea
0.67	LF	0.67	LF	70.17	LF	0.0208	LF	0.03	SF	13.45	PLF	10.00	ea.	943.46	lbs	0.4717	ton	HSS 8x8x1/4	3	ea
0.67	LF	0.67	LF	45.00	LF	0.0313	LF	0.04	SF	20.04	PLF	3.00	ea.	901.81	lbs	0.4509	ton	HSS 8x8x3/4	2	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	61.00	PLF	4.00	ea.	2745.00	lbs	1.3725	ton	W 14X61	2	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	82.00	PLF	6.00	ea.	3690.00	lbs	1.8450	ton	W 14X82	2	ea
Sub Total				275.34	LF							24.00	ea.	8980.56	lbs	4.4903	ton		12	ea
Perimeter Steel Columns Reference SHT S 200.2																				
Width (ft)	Height (ft)	Length (ft)	Thickness (ft)	Area (SF)	Member Wt	Quantity	Weight (lbs)	Weight (tons)	Column Type	Column Pieces (ea)										
0.50	LF	0.50	LF	45.00	LF	0.0208	LF	0.02	SF	9.98	PLF	4.00	ea.	1796.40	lbs	0.8982	ton	HSS 6x6x1/4	2	ea
0.67	LF	0.67	LF	70.17	LF	0.0208	LF	0.03	SF	13.45	PLF	5.00	ea.	943.46	lbs	0.4717	ton	HSS 8x8x1/4	3	ea
0.67	LF	0.67	LF	70.17	LF	0.0625	LF	0.08	SF	39.12	PLF	2.00	ea.	2745.29	lbs	1.3726	ton	HSS 8x8x3/4	3	ea
0.67	LF	0.67	LF	45.00	LF	0.0625	LF	0.08	SF	39.12	PLF	1.00	ea.	1760.55	lbs	0.8803	ton	HSS 8x8x3/4	2	ea
0.67	LF	0.67	LF	70.17	LF	0.0313	LF	0.04	SF	20.07	PLF	1.00	ea.	1408.42	lbs	0.7042	ton	HSS 8x8x3/8	3	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	61.00	PLF	1.00	ea.	2745.00	lbs	1.3725	ton	W 14X61	2	ea

--	LF	1.17	LF	45.00	LF	--	LF	--	SF	82.00	PLF	3.00	ea.	3690.00	lbs	1.8450	ton	W 14X82		2	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	90.00	PLF	2.00	ea.	4050.00	lbs	2.0250	ton	W 14X90		2	ea
--	LF	1.17	LF	70.17	LF	--	LF	--	SF	90.00	PLF	1.00	ea.	6315.30	lbs	3.1577	ton	W 14X90		3	ea
1.00	LF	1.00	LF	45.00	LF	0.0313	LF	0.06	SF	30.19	PLF	4.00	ea.	5434.91	lbs	2.7175	ton	HSS 12x12x3/8		2	ea
1.00	LF	1.00	LF	45.00	LF	0.0417	LF	0.08	SF	39.99	PLF	2.00	ea.	1799.36	lbs	0.8997	ton	HSS 12x12x1/2		2	ea
Sub Total				595.68	LF							26.00	ea.	32688.69	lbs	16.34	ton			26	ea
Perimeter Steel Columns Reference SHT S 200.3																					
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Weight (lbs)		Weight (tons)		Column Type		Column Pieces (ea)	
0.50	LF	0.50	LF	70.17	LF	0.0208	LF	0.02	SF	9.98	PLF	3.00	ea.	2100.89	lbs	1.0504	ton	HSS 6x6x1/4		3	ea
0.67	LF	0.67	LF	70.17	LF	0.0208	LF	0.03	SF	13.45	PLF	10.00	ea.	943.46	lbs	0.4717	ton	HSS 8x8x1/4		3	ea
0.67	LF	0.67	LF	70.17	LF	0.0313	LF	0.04	SF	20.04	PLF	1.00	ea.	1406.22	lbs	0.7031	ton	HSS 8x8x3/8		3	ea
0.67	LF	0.67	LF	70.17	LF	0.0417	LF	0.05	SF	26.53	PLF	1.00	ea.	1861.48	lbs	0.9307	ton	HSS 8x8x1/2		3	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	61.00	PLF	4.00	ea.	2745.00	lbs	1.3725	ton	W 14X61		2	ea
--	LF	30.00	LF	70.17	LF	--	LF	--	SF	150.00	PLF	3.00	ea.	10525.50	lbs	5.2628	ton	W 36X150		3	ea
Sub Total				395.85	LF							22.00	ea.	19582.55	lbs	9.7913	ton			17	ea
Perimeter Steel Columns Reference SHT S 200.4																					
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Weight (lbs)		Weight (tons)		Column Type		Column Pieces (ea)	
0.67	LF	0.67	LF	70.17	LF	0.0208	LF	0.03	SF	13.45	PLF	6.00	ea.	5660.73	lbs	2.8304	ton	HSS 8x8x1/4		3	ea
0.67	LF	0.67	LF	70.17	LF	0.0313	LF	0.04	SF	20.04	PLF	2.00	ea.	1406.22	lbs	0.7031	ton	HSS 8x8x3/8		3	ea
0.67	LF	0.67	LF	11.96	LF	0.0313	LF	0.04	SF	20.04	PLF	1.00	ea.	239.68	lbs	0.1198	ton	HSS 8x8x3/8		1	ea
1.00	LF	1.00	LF	34.63	LF	0.0417	LF	0.08	SF	40.01	PLF	2.00	ea.	1385.68	lbs	0.6928	ton	HSS 12x12x1/2		2	ea
--	LF	1.17	LF	45.00	LF	--	LF	--	SF	61.00	PLF	2.00	ea.	2745.00	lbs	1.3725	ton	W 14X61		2	ea
--	LF	1.17	LF	70.17	LF	--	LF	--	SF	90.00	PLF	1.00	ea.	6315.30	lbs	3.1577	ton	W 14X90		3	ea
--	LF	1.17	LF	70.17	LF	--	LF	--	SF	109.00	PLF	1.00	ea.	7648.53	lbs	3.8243	ton	W 14X109		3	ea
--	LF	30.00	LF	70.17	LF	--	LF	--	SF	150.00	PLF	2.00	ea.	10525.50	lbs	5.2628	ton	W 36X150		3	ea
Sub Total				442.44	LF							17.00	ea.	35926.65	lbs	17.9633	ton			20	ea
Precast Columns SHT S 200.1																					
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Column Type		Column Pieces (ea)	
2.00	LF	2.00	LF	70.17	LF	--	LF	4.00	SF	600.00	PLF	6.00	ea.	1684.08	CF	62.3733	CY	C17-C20		3	ea
1.33	LF	1.33	LF	70.17	LF	--	LF	1.77	SF	265.34	PLF	1.00	ea.	124.12	CF	4.5972	CY	C22		3	ea
1.50	LF	1.50	LF	34.63	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	467.51	CF	17.3150	CY	C1-C6		2	ea
1.50	LF	1.50	LF	11.96	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	161.46	CF	5.9800	CY	C9-C14		1	ea
1.50	LF	1.50	LF	5.57	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	75.20	CF	2.7850	CY	PC Stub		1	ea
Sub Total				192.50	LF							25.00	ea.	2512.36	CF	93.05	CY			10.00	ea
Precast Columns SHT S 200.2																					
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Column Type		Column Pieces (ea)	
2.00	LF	2.00	LF	70.17	LF	--	LF	4.00	SF	600.00	PLF	8.00	ea.	2245.44	CF	83.1644	CY	C17-C20		3	ea

1.33	LF	1.33	LF	70.17	LF	--	LF	1.77	SF	265.34	PLF	1.00	ea.	124.12	CF	4.5972	CY	C22	3	ea
1.50	LF	1.50	LF	34.63	LF	--	LF	2.25	SF	337.50	PLF	7.00	ea.	545.42	CF	20.2008	CY	C1-C7	2	ea
1.50	LF	1.50	LF	11.96	LF	--	LF	2.25	SF	337.50	PLF	7.00	ea.	188.37	CF	6.9767	CY	C9-C15	1	ea
1.50	LF	1.50	LF	5.57	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	75.20	CF	2.7850	CY	PC Stub	1	ea
Sub Total				192.50	LF							29.00	ea.	3178.55	CF	117.72	CY		10.00	ea
Precast Columns SHT S 200.3																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Column Type		Column Pieces (ea)
2.00	LF	2.00	LF	70.17	LF	--	LF	4.00	SF	600.00	PLF	4.00	ea.	1122.72	CF	41.5822	CY	C17,C20	3	ea
1.50	LF	1.50	LF	34.63	LF	--	LF	2.25	SF	337.50	PLF	5.00	ea.	389.59	CF	14.4292	CY	C1,C8	2	ea
1.50	LF	1.50	LF	11.96	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	161.46	CF	5.9800	CY	C9,C16,C26	1	ea
1.50	LF	1.50	LF	5.57	LF	--	LF	2.25	SF	337.50	PLF	5.00	ea.	62.66	CF	2.3208	CY	PC Stub	1	ea
Sub Total				122.33	LF							20.00	ea.	1736.43	CF	64.31	CY		7.00	ea
Precast Columns SHT S 200.4																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Column Type		Column Pieces (ea)
2.00	LF	2.00	LF	70.17	LF	--	LF	4.00	SF	600.00	PLF	4.00	ea.	1122.72	CF	41.5822	CY	C17,C20	3	ea
1.50	LF	1.50	LF	34.63	LF	--	LF	2.25	SF	337.50	PLF	5.00	ea.	389.59	CF	14.4292	CY	C1,C8	2	ea
1.50	LF	1.50	LF	11.96	LF	--	LF	2.25	SF	337.50	PLF	6.00	ea.	161.46	CF	5.9800	CY	C9,C16,C26	1	ea
1.50	LF	1.50	LF	5.57	LF	--	LF	2.25	SF	337.50	PLF	5.00	ea.	62.66	CF	2.3208	CY	PC Stub	1	ea
Sub Total				122.33	LF							20.00	ea.	1736.43	CF	64.31	CY		7.00	ea
Precast Beams SHT S 200.1 - S 200.4 Main Concourse																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.33	LF	2.33	LF	34.32	LF	--	LF	3.10	SF	464.84	PLF	2.00	ea.	212.71	CF	7.8781	CY	1B1		
1.00	LF	2.00	LF	22.57	LF	--	LF	2.00	SF	300.00	PLF	2.00	ea.	90.28	CF	3.3437	CY	1B3		
1.50	LF	2.50	LF	36.80	LF	--	LF	3.75	SF	562.50	PLF	12.00	ea.	1656.00	CF	61.3333	CY	1B4-1B7		
1.33	LF	3.00	LF	44.84	LF	--	LF	3.99	SF	598.50	PLF	2.00	ea.	357.82	CF	13.2527	CY	1B8		
1.50	LF	3.00	LF	42.36	LF	--	LF	4.50	SF	675.00	PLF	2.00	ea.	381.24	CF	14.1200	CY	1B9/1B10		
1.00	LF	2.00	LF	30.92	LF	--	LF	2.00	SF	300.00	PLF	4.00	ea.	247.36	CF	9.1615	CY	1B19		
1.50	LF	2.00	LF	30.92	LF	--	LF	3.00	SF	450.00	PLF	2.00	ea.	185.52	CF	6.8711	CY	1B21		
Sub Total				242.73	LF							26.00	ea.	3130.93	CF	115.96	CY			
Steel Beams Reference SHT S 200.1 - S 200.4 Main Concourse																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Weight (lbs)		Weight (tons)		Beam Type		
--	LF	1.17	LF	14.84	LF	--	LF	--	SF	22.00	PLF	2.00	ea.	652.96	lbs	0.3265	ton	W 14X22		
--	LF	1.17	LF	13.00	LF	--	LF	--	SF	22.00	PLF	2.00	ea.	572.00	lbs	0.2860	ton	W 14X22		
--	LF	1.17	LF	9.89	LF	--	LF	--	SF	22.00	PLF	2.00	ea.	435.16	lbs	0.2176	ton	W 14X22		
--	LF	1.17	LF	13.91	LF	--	LF	--	SF	22.00	PLF	2.00	ea.	612.04	lbs	0.3060	ton	W 14X22		
--	LF	2.00	LF	70.17	LF	--	LF	--	SF	55.00	PLF	2.00	ea.	7718.70	lbs	3.8594	ton	W 24X55		

--	LF	2.00	LF	70.17	LF	--	LF	--	SF	76.00	PLF	2.00	ea.	10665.84	lbs	5.3329	ton	W 24X76		
Sub Total				191.98	LF							12.00	ea.	20656.70	lbs	10.33	ton			
Precast Raker Beams SHT S 200.1 - S 200.4 Main Concourse																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.50	LF	3.00	LF	30.15	LF	--	LF	4.50	SF	675.00	PLF	14.00	ea.	1899.45	CF	70.3500	CY	1RB1-1RB6		
1.50	LF	2.00	LF	17.83	LF	--	LF	3.00	SF	450.00	PLF	28.00	ea.	1497.72	CF	55.4711	CY	1RB8-1RB13		
1.50	LF	2.00	LF	30.15	LF	--	LF	3.00	SF	450.00	PLF	14.00	ea.	1266.30	CF	46.9000	CY	1RB1-1RB8		
Sub Total				78.13	LF							56.00	ea.	4663.47	lbs	172.72	CY			
Precast Beams SHT S 201.1 - S 201.4 Bridge Level																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.50	LF	3.00	LF	29.07	LF	--	LF	4.50	SF	675.00	PLF	4.00	ea.	523.26	CF	19.3800	CY	2B1		
1.50	LF	3.00	LF	49.16	LF	--	LF	4.50	SF	675.00	PLF	2.00	ea.	442.44	CF	16.3867	CY	2B2		
1.50	LF	3.00	LF	45.14	LF	--	LF	4.50	SF	675.00	PLF	4.00	ea.	812.52	CF	30.0933	CY	2B3		
1.50	LF	2.00	LF	49.16	LF	--	LF	3.00	SF	450.00	PLF	2.00	ea.	294.96	CF	10.9244	CY	2B9		
Sub Total				172.53	LF							12.00	ea.	2073.18	CF	76.78	CY			
Precast Raker Beams SHT S 201.1 - S 201.4 Bridge Level																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.50	LF	3.00	LF	40.92	LF	--	LF	4.50	SF	675.00	PLF	22.00	ea.	4051.08	CF	150.0400	CY	2RB1,2RB2		
1.50	LF	3.00	LF	40.92	LF	--	LF	4.50	SF	675.00	PLF	2.00	ea.	368.28	CF	13.6400	CY	2RB3		
Sub Total				81.84	LF							24.00	ea.	4419.36	CF	163.68	CY			
Steel Beams Reference SHT S 200.1 - S 200.4 Bridge Level																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Weight (lbs)		Weight (tons)		Beam Type		
--	LF	0.83	LF	12.00	LF	--	LF	--	SF	12.00	PLF	2.00	ea.	288.00	lbs	0.1440	ton	W 10X12		
--	LF	1.00	LF	6.80	LF	--	LF	--	SF	14.00	PLF	1.00	ea.	95.20	lbs	0.0476	ton	W 12X14		
--	LF	1.00	LF	15.00	LF	--	LF	--	SF	14.00	PLF	2.00	ea.	420.00	lbs	0.2100	ton	W 12X14		
--	LF	1.00	LF	10.00	LF	--	LF	--	SF	19.00	PLF	3.00	ea.	570.00	lbs	0.2850	ton	W 12X19		
--	LF	1.00	LF	16.00	LF	--	LF	--	SF	19.00	PLF	3.00	ea.	912.00	lbs	0.4560	ton	W 12X19		
--	LF	1.17	LF	14.00	LF	--	LF	--	SF	22.00	PLF	3.00	ea.	924.00	lbs	0.4620	ton	W 14X22		
--	LF	1.17	LF	15.00	LF	--	LF	--	SF	22.00	PLF	5.00	ea.	1650.00	lbs	0.8250	ton	W 14X22		
--	LF	1.17	LF	22.00	LF	--	LF	--	SF	22.00	PLF	5.00	ea.	2420.00	lbs	1.2100	ton	W 14X22		
--	LF	1.17	LF	11.13	LF	--	LF	--	SF	22.00	PLF	2.00	ea.	489.72	lbs	0.2449	ton	W 14X22		
--	LF	1.17	LF	13.00	LF	--	LF	--	SF	30.00	PLF	3.00	ea.	1170.00	lbs	0.5850	ton	W 14X30		
--	LF	1.17	LF	24.00	LF	--	LF	--	SF	30.00	PLF	3.00	ea.	2160.00	lbs	1.0800	ton	W 14X30		
--	LF	1.17	LF	29.07	LF	--	LF	--	SF	33.00	PLF	1.00	ea.	959.31	lbs	0.4797	ton	W 14X33		
--	LF	1.17	LF	30.90	LF	--	LF	--	SF	34.00	PLF	1.00	ea.	1050.60	lbs	0.5253	ton	W 14X34		
--	LF	1.33	LF	29.00	LF	--	LF	--	SF	26.00	PLF	3.00	ea.	2262.00	lbs	1.1310	ton	W 16X26		

--	LF	1.33	LF	25.00	LF	--	LF	--	SF	26.00	PLF	8.00	ea.	5200.00	lbs	2.6000	ton	W 16X26		
--	LF	1.33	LF	18.00	LF	--	LF	--	SF	26.00	PLF	4.00	ea.	1872.00	lbs	0.9360	ton	W 16X26		
--	LF	1.33	LF	27.00	LF	--	LF	--	SF	31.00	PLF	9.00	ea.	7533.00	lbs	3.7665	ton	W 16X31		
--	LF	1.33	LF	22.00	LF	--	LF	--	SF	31.00	PLF	4.00	ea.	2728.00	lbs	1.3640	ton	W 18X31		
--	LF	1.50	LF	24.00	LF	--	LF	--	SF	31.00	PLF	4.00	ea.	2976.00	lbs	1.4880	ton	W 18X31		
--	LF	1.50	LF	22.00	LF	--	LF	--	SF	35.00	PLF	4.00	ea.	3080.00	lbs	1.5400	ton	W 18X35		
--	LF	1.50	LF	27.00	LF	--	LF	--	SF	35.00	PLF	2.00	ea.	1890.00	lbs	0.9450	ton	W 18X35		
--	LF	1.50	LF	29.00	LF	--	LF	--	SF	35.00	PLF	4.00	ea.	4060.00	lbs	2.0300	ton	W 18X35		
--	LF	1.50	LF	30.00	LF	--	LF	--	SF	35.00	PLF	5.00	ea.	5250.00	lbs	2.6250	ton	W 18X35		
--	LF	1.50	LF	25.00	LF	--	LF	--	SF	40.00	PLF	5.00	ea.	5000.00	lbs	2.5000	ton	W 18X40		
--	LF	1.50	LF	30.00	LF	--	LF	--	SF	40.00	PLF	5.00	ea.	6000.00	lbs	3.0000	ton	W 18X40		
--	LF	1.50	LF	33.40	LF	--	LF	--	SF	40.00	PLF	5.00	ea.	6680.00	lbs	3.3400	ton	W 18X40		
--	LF	1.50	LF	18.55	LF	--	LF	--	SF	55.00	PLF	5.00	ea.	5101.25	lbs	2.5506	ton	W 18X55		
--	LF	1.50	LF	18.00	LF	--	LF	--	SF	76.00	PLF	5.00	ea.	6840.00	lbs	3.4200	ton	W 18X76		
--	LF	1.75	LF	30.00	LF	--	LF	--	SF	44.00	PLF	2.00	ea.	2640.00	lbs	1.3200	ton	W 21X44		
--	LF	1.75	LF	36.00	LF	--	LF	--	SF	44.00	PLF	4.00	ea.	6336.00	lbs	3.1680	ton	W 21X44		
--	LF	1.75	LF	27.00	LF	--	LF	--	SF	44.00	PLF	10.00	ea.	11880.00	lbs	5.9400	ton	W 21X44		
--	LF	1.75	LF	38.00	LF	--	LF	--	SF	50.00	PLF	3.00	ea.	5700.00	lbs	2.8500	ton	W 21X50		
--	LF	1.75	LF	30.30	LF	--	LF	--	SF	50.00	PLF	1.00	ea.	1515.00	lbs	0.7575	ton	W 21X50		
--	LF	2.00	LF	34.32	LF	--	LF	--	SF	55.00	PLF	1.00	ea.	1887.60	lbs	0.9438	ton	W 24X55		
--	LF	2.00	LF	34.00	LF	--	LF	--	SF	55.00	PLF	2.00	ea.	3740.00	lbs	1.8700	ton	W 24X55		
--	LF	2.00	LF	7.21	LF	--	LF	--	SF	62.00	PLF	1.00	ea.	447.02	lbs	0.2235	ton	W 24X62		
--	LF	2.00	LF	29.00	LF	--	LF	--	SF	62.00	PLF	3.00	ea.	5394.00	lbs	2.6970	ton	W 24X62		
--	LF	2.00	LF	70.17	LF	--	LF	--	SF	76.00	PLF	2.00	ea.	10665.84	lbs	5.3329	ton	W 24X76		
--	LF	2.25	LF	29.00	LF	--	LF	--	SF	84.00	PLF	1.00	ea.	2436.00	lbs	1.2180	ton	W 27X84		
--	LF	2.25	LF	41.76	LF	--	LF	--	SF	84.00	PLF	1.00	ea.	3507.84	lbs	1.7539	ton	W 27X84		
--	LF	2.50	LF	38.65	LF	--	LF	--	SF	99.00	PLF	1.00	ea.	3826.35	lbs	1.9132	ton	W 30X99		
--	LF	2.50	LF	38.34	LF	--	LF	--	SF	108.00	PLF	1.00	ea.	4140.72	lbs	2.0704	ton	W 30X108		
--	LF	2.50	LF	39.33	LF	--	LF	--	SF	108.00	PLF	1.00	ea.	4247.64	lbs	2.1238	ton	W 30X108		
--	LF	2.50	LF	28.40	LF	--	LF	--	SF	116.00	PLF	1.00	ea.	3294.40	lbs	1.6472	ton	W 30X116		
--	LF	2.75	LF	40.00	LF	--	LF	--	SF	118.00	PLF	2.00	ea.	9440.00	lbs	4.7200	ton	W 33X118		
0.50	LF	0.50	LF	17.63	LF	0.0208	LF	0.02	SF	9.98	PLF	1.00	ea.	175.95	lbs	0.0880	ton	HSS 6x6x1/4		
0.50	LF	0.50	LF	20.75	LF	0.0208	LF	0.02	SF	9.98	PLF	1.00	ea.	207.09	lbs	0.1035	ton	HSS 6x6x1/4		
Sub Total				1226.71	LF							145.00	ea.	161062.52	lbs	80.53	ton			
Precast Beams SHT S 201.1 - S 201.4 Suite Level																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt		Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.50	LF	3.00	LF	35.40	LF	--	LF	4.50	SF	675.00	PLF	9.00	ea.	1433.70	CF	53.1000	CY	3B1-3B7		
1.50	LF	2.00	LF	33.24	LF	--	LF	3.00	SF	450.00	PLF	5.00	ea.	498.60	CF	18.4667	CY	2B13-3B17		
1.50	LF	2.00	LF	34.00	LF	--	LF	3.00	SF	450.00	PLF	10.00	ea.	1020.00	CF	37.7778	CY	3B17		
Sub Total				102.64	LF							24.00	ea.	2952.30	CF	109.34	CY			
Precast Raker Beams SHT S 201.1 - S 201.4 Suite Level																				

Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt	Quantity		Cubic Feet		Cubic Yards		Beam Type		
1.50	LF	3.00	LF	30.48	LF	--	LF	4.50	SF	675.00	PLF	22.00	ea.	3017.52	CF	111.7600	CY	3RB1,3RB2	
1.50	LF	3.00	LF	30.48	LF	--	LF	4.50	SF	675.00	PLF	2.00	ea.	274.32	CF	10.1600	CY	3RB3	
Sub Total				60.96	LF							24.00	ea.	3291.84	CF	121.92	CY		
Steel Beams Reference SHT S 200.1 - S 200.4 Suite Floor & Roof																			
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt	Quantity		Weight (lbs)		Weight (tons)		Beam Type		
--	LF	0.83	LF	12.00	LF	--	LF	--	SF	12.00	PLF	4.00	ea.	576.00	lbs	0.2880	ton	W 10X12	
--	LF	1.00	LF	6.80	LF	--	LF	--	SF	14.00	PLF	2.00	ea.	190.40	lbs	0.0952	ton	W 12X14	
--	LF	1.00	LF	15.00	LF	--	LF	--	SF	14.00	PLF	4.00	ea.	840.00	lbs	0.4200	ton	W 12X14	
--	LF	1.00	LF	10.00	LF	--	LF	--	SF	19.00	PLF	6.00	ea.	1140.00	lbs	0.5700	ton	W 12X19	
--	LF	1.00	LF	16.00	LF	--	LF	--	SF	19.00	PLF	6.00	ea.	1824.00	lbs	0.9120	ton	W 12X19	
--	LF	1.17	LF	14.00	LF	--	LF	--	SF	22.00	PLF	6.00	ea.	1848.00	lbs	0.9240	ton	W 14X22	
--	LF	1.17	LF	15.00	LF	--	LF	--	SF	22.00	PLF	10.00	ea.	3300.00	lbs	1.6500	ton	W 14X22	
--	LF	1.17	LF	22.00	LF	--	LF	--	SF	22.00	PLF	10.00	ea.	4840.00	lbs	2.4200	ton	W 14X22	
--	LF	1.17	LF	11.13	LF	--	LF	--	SF	22.00	PLF	4.00	ea.	979.44	lbs	0.4897	ton	W 14X22	
--	LF	1.17	LF	13.00	LF	--	LF	--	SF	30.00	PLF	6.00	ea.	2340.00	lbs	1.1700	ton	W 14X30	
--	LF	1.17	LF	24.00	LF	--	LF	--	SF	30.00	PLF	6.00	ea.	4320.00	lbs	2.1600	ton	W 14X30	
--	LF	1.17	LF	29.07	LF	--	LF	--	SF	33.00	PLF	2.00	ea.	1918.62	lbs	0.9593	ton	W 14X33	
--	LF	1.17	LF	30.90	LF	--	LF	--	SF	34.00	PLF	2.00	ea.	2101.20	lbs	1.0506	ton	W 14X34	
--	LF	1.33	LF	29.00	LF	--	LF	--	SF	26.00	PLF	6.00	ea.	4524.00	lbs	2.2620	ton	W 16X26	
--	LF	1.33	LF	25.00	LF	--	LF	--	SF	26.00	PLF	16.00	ea.	10400.00	lbs	5.2000	ton	W 16X26	
--	LF	1.33	LF	18.00	LF	--	LF	--	SF	26.00	PLF	8.00	ea.	3744.00	lbs	1.8720	ton	W 16X26	
--	LF	1.33	LF	27.00	LF	--	LF	--	SF	31.00	PLF	18.00	ea.	15066.00	lbs	7.5330	ton	W 16X31	
--	LF	1.33	LF	22.00	LF	--	LF	--	SF	31.00	PLF	8.00	ea.	5456.00	lbs	2.7280	ton	W 18X31	
--	LF	1.50	LF	24.00	LF	--	LF	--	SF	31.00	PLF	8.00	ea.	5952.00	lbs	2.9760	ton	W 18X31	
--	LF	1.50	LF	22.00	LF	--	LF	--	SF	35.00	PLF	8.00	ea.	6160.00	lbs	3.0800	ton	W 18X35	
--	LF	1.50	LF	27.00	LF	--	LF	--	SF	35.00	PLF	4.00	ea.	3780.00	lbs	1.8900	ton	W 18X35	
--	LF	1.50	LF	29.00	LF	--	LF	--	SF	35.00	PLF	8.00	ea.	8120.00	lbs	4.0600	ton	W 18X35	
--	LF	1.50	LF	30.00	LF	--	LF	--	SF	35.00	PLF	10.00	ea.	10500.00	lbs	5.2500	ton	W 18X35	
--	LF	1.50	LF	25.00	LF	--	LF	--	SF	40.00	PLF	10.00	ea.	10000.00	lbs	5.0000	ton	W 18X40	
--	LF	1.50	LF	30.00	LF	--	LF	--	SF	40.00	PLF	10.00	ea.	12000.00	lbs	6.0000	ton	W 18X40	
--	LF	1.50	LF	33.40	LF	--	LF	--	SF	40.00	PLF	10.00	ea.	13360.00	lbs	6.6800	ton	W 18X40	
--	LF	1.50	LF	18.55	LF	--	LF	--	SF	55.00	PLF	10.00	ea.	10202.50	lbs	5.1013	ton	W 18X55	
--	LF	1.50	LF	18.00	LF	--	LF	--	SF	76.00	PLF	10.00	ea.	13680.00	lbs	6.8400	ton	W 18X76	
--	LF	1.75	LF	30.00	LF	--	LF	--	SF	44.00	PLF	4.00	ea.	5280.00	lbs	2.6400	ton	W 21X44	
--	LF	1.75	LF	36.00	LF	--	LF	--	SF	44.00	PLF	8.00	ea.	12672.00	lbs	6.3360	ton	W 21X44	
--	LF	1.75	LF	27.00	LF	--	LF	--	SF	44.00	PLF	20.00	ea.	23760.00	lbs	11.8800	ton	W 21X44	
--	LF	1.75	LF	38.00	LF	--	LF	--	SF	50.00	PLF	6.00	ea.	11400.00	lbs	5.7000	ton	W 21X50	
--	LF	1.75	LF	30.30	LF	--	LF	--	SF	50.00	PLF	2.00	ea.	3030.00	lbs	1.5150	ton	W 21X50	
--	LF	2.00	LF	34.32	LF	--	LF	--	SF	55.00	PLF	2.00	ea.	3775.20	lbs	1.8876	ton	W 24X55	
--	LF	2.00	LF	34.00	LF	--	LF	--	SF	55.00	PLF	4.00	ea.	7480.00	lbs	3.7400	ton	W 24X55	

--	LF	2.00	LF	7.21	LF	--	LF	--	SF	62.00	PLF	2.00	ea.	894.04	lbs	0.4470	ton	W 24X62		
--	LF	2.00	LF	29.00	LF	--	LF	--	SF	62.00	PLF	6.00	ea.	10788.00	lbs	5.3940	ton	W 24X62		
--	LF	2.00	LF	70.17	LF	--	LF	--	SF	76.00	PLF	4.00	ea.	21331.68	lbs	10.6658	ton	W 24X76		
--	LF	2.25	LF	29.00	LF	--	LF	--	SF	84.00	PLF	2.00	ea.	4872.00	lbs	2.4360	ton	W 27X84		
--	LF	2.25	LF	41.76	LF	--	LF	--	SF	84.00	PLF	2.00	ea.	7015.68	lbs	3.5078	ton	W 27X84		
--	LF	2.50	LF	38.65	LF	--	LF	--	SF	99.00	PLF	2.00	ea.	7652.70	lbs	3.8264	ton	W 30X99		
--	LF	2.50	LF	38.34	LF	--	LF	--	SF	108.00	PLF	2.00	ea.	8281.44	lbs	4.1407	ton	W 30X108		
--	LF	2.50	LF	39.33	LF	--	LF	--	SF	108.00	PLF	2.00	ea.	8495.28	lbs	4.2476	ton	W 30X108		
--	LF	2.50	LF	28.40	LF	--	LF	--	SF	116.00	PLF	2.00	ea.	6588.80	lbs	3.2944	ton	W 30X116		
--	LF	2.75	LF	40.00	LF	--	LF	--	SF	118.00	PLF	4.00	ea.	18880.00	lbs	9.4400	ton	W 33X118		
0.50	LF	0.50	LF	17.63	LF	0.0208	LF	0.02	SF	9.98	PLF	2.00	ea.	351.90	lbs	0.1759	ton	HSS 6x6x1/4		
0.50	LF	0.50	LF	20.75	LF	0.0208	LF	0.02	SF	9.98	PLF	2.00	ea.	414.17	lbs	0.2071	ton	HSS 6x6x1/4		
Sub Total				1226.71	LF							290.00	ea.	322125.05	lbs	161.06	ton			
Roof Truss Assembly SHT S 200.1 - S 200.4 Suite Floor & Roof																				
Width (ft)		Height (ft)		Length (ft)		Thickness (ft)		Area (SF)		Member Wt	Quantity		Weight (lbs)		Weight (tons)		Beam Type			
--	LF	0.83	LF	24.74	LF	--	LF	--	SF	34.00	PLF	38.00	ea.	31964.08	lbs	15.9820	ton	W 14X34		
--	LF	0.83	LF	25.05	LF	--	LF	--	SF	34.00	PLF	38.00	ea.	32364.60	lbs	16.1823	ton	W 14X34		
--	LF	0.83	LF	29.38	LF	--	LF	--	SF	34.00	PLF	38.00	ea.	37958.96	lbs	18.9795	ton	W 14X34		
--	LF	0.83	LF	14.84	LF	--	LF	--	SF	38.00	PLF	38.00	ea.	21428.96	lbs	10.7145	ton	W 14X38		
--	LF	0.83	LF	32.47	LF	--	LF	--	SF	43.00	PLF	76.00	ea.	106111.96	lbs	53.0560	ton	W 14X43		
--	LF	0.83	LF	11.44	LF	--	LF	--	SF	48.00	PLF	38.00	ea.	20866.56	lbs	10.4333	ton	W 14X48		
--	LF	0.83	LF	14.22	LF	--	LF	--	SF	48.00	PLF	38.00	ea.	25937.28	lbs	12.9686	ton	W 14X48		
--	LF	0.83	LF	18.00	LF	--	LF	--	SF	48.00	PLF	38.00	ea.	32832.00	lbs	16.4160	ton	W 14X48		
--	LF	0.83	LF	21.34	LF	--	LF	--	SF	48.00	PLF	76.00	ea.	77848.32	lbs	38.9242	ton	W 14X48		
--	LF	0.83	LF	25.13	LF	--	LF	--	SF	48.00	PLF	76.00	ea.	91674.24	lbs	45.8371	ton	W 14X48		
--	LF	0.83	LF	26.00	LF	--	LF	--	SF	48.00	PLF	19.00	ea.	23712.00	lbs	11.8560	ton	W 14X48		
--	LF	0.83	LF	12.68	LF	--	LF	--	SF	53.00	PLF	38.00	ea.	25537.52	lbs	12.7688	ton	W 14X53		
--	LF	0.83	LF	32.47	LF	--	LF	--	SF	53.00	PLF	38.00	ea.	65394.58	lbs	32.6973	ton	W 14X53		
--	LF	0.83	LF	35.56	LF	--	LF	--	SF	61.00	PLF	38.00	ea.	82428.08	lbs	41.2140	ton	W 14X61		
--	LF	0.83	LF	10.00	LF	--	LF	--	SF	90.00	PLF	38.00	ea.	34200.00	lbs	17.1000	ton	W 14X90		
--	LF	0.83	LF	36.80	LF	--	LF	--	SF	120.00	PLF	38.00	ea.	167808.00	lbs	83.9040	ton	W 14X120		
--	LF	0.83	LF	78.10	LF	--	LF	--	SF	132.00	PLF	19.00	ea.	195874.80	lbs	97.9374	ton	W 14X132		
--	LF	0.83	LF	62.46	LF	--	LF	--	SF	176.00	PLF	38.00	ea.	417732.48	lbs	208.8662	ton	W 14X176		
--	LF	0.83	LF	38.96	LF	--	LF	--	SF	176.00	PLF	38.00	ea.	260564.48	lbs	130.2822	ton	W 14X176		
Sub Total				549.64	LF							798.00	ea.	1752238.90	lbs	876.12	ton			
Page Totals																				
Cubic Yards of Concrete =				1099.81	CY															
Total Tons of Steel =				1176.63	ton															

Sears Centre Planks: 10" Hollow-Core Planks w/ 2" Concrete Topping											
Notes:											
Assume Typical Plank Detail for 10" Hollow Core Unit											
Plank Dimensions											
Length		Width		Thickness		Area		Cubic Feet		Cubic Yd	
8.35	LF	34.00	LF	0.88	LF	283.90	SF	249.83	CF	9.25	CY
Floor Sections											
Above Grade Concourse Area											
46296.00	SF			Number of Floor Planks				Total Cubic Yd			
283.90	SF			164.00	ea			1518.00	CY		
Bridge Level Area											
37839.95	SF			Number of Floor Planks				Total Cubic Yd			
283.90	SF			134.00	ea			1240.00	CY		
Suite Level Area											
37839.95	SF			Number of Floor Planks				Total Cubic Yd			
283.90	SF			134.00	ea			1240.00	CY		
Total Number of 10" Planks											
				432.00	ea			3998.00	CY		
2" Concrete Topping											
		Thickness		Cubic Ft		Cubic Yards					
121975.89	SF	0.88	LF	107338.78	CF	3975.51	CY				
Notes											
Assume Typical Riser Detail				Typical Bay Width =				34.00	LF		
Horizontal Face											
Length		Width		Thickness		Area		Cubic Feet		Cubic Yd	
3.00	LF	34.00	LF	0.57	LF	102.00	SF	58.14	CF	2.15	CY
Vertical Face											
Length		Width		Thickness		Area		Cubic Feet		Cubic Yd	
1.29	LF	34.00	LF	0.72	LF	43.86	SF	31.58	CF	1.17	CY
								Subtotal =		3.32	CY
Upper Bowl											

Estimate Detail - Standard Construction Project

Detail - With Taxes and Insurance ,Indirect Costs are Spread

Estimator :
Project Size : sqft

ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Eqp.Rent.Unit	Temp.Mat.Unit	Other Unit	Tot.UnitCost	TotalCost
02316.100	MACH EXCAV CONTINUOUS FTG	3,818.89	CUYD	8.3176		1.136					9.454	36,102.88
02316.101	HAND EXCAV CONTINUOUS FTG	435.77	CUYD	38.7159							38.716	16,871.30
02316.200	MACH EXCAV GRADE BEAM	681.52	CUYD	10.1661		1.136					11.302	7,702.68
02316.202	MACH BACKFILL GRADE BEAM	530.07	CUYD	10.1661		0.598					10.764	5,705.71
02316.110	MACH EXCAV COLUMN FTG	1,162.37	CUYD	8.3176		1.136					9.454	10,988.76
02316.111	HAND EXCAV COLUMN FTG	686.99	CUYD	38.7159							38.716	26,597.60
02316.140	MACH BACKFILL @ COLUMN FTG	1,162.37	CUYD	10.1661		0.598					10.764	12,511.77
02316.144	EXCESS COLUMN FOOTING SOIL	686.99	CUYD									
03110.602	Grade beam form 2-4' deep	5,452.16	SQFT	2.7398	1.466						4.206	22,932.40
03110.620	GR BM FORM HARDWARE	2,726.08	SQFT		0.122						0.122	333.85
03110.701	FLOOR EDGE FORMS	47,391.00	LNFT	3.6750	1.018						4.693	222,416.32
03111.201	WOOD COLUMN FORMS, 0'-8'	735.24	SQFT	1.5313	1.286						2.818	2,071.72
03111.202	WOOD COLUMN FORMS, 8'-12'	1,794.00	SQFT	1.4507	1.377						2.828	5,073.06
03111.206	WOOD COLUMN FORMS, OVER 20'	17,877.34	SQFT	1.1485	2.021						3.170	56,668.18
03111.470	ISOLATED BEAM SIDE FORMS	26,293.02	SQFT	3.4334	1.229						4.662	122,590.77
03111.624	SLAB EDGE FORM	345.60	SQFT	2.5726	1.020						3.592	1,241.53
03111.630	DROP PANEL EDGE FORMS	3,153.38	SQFT	3.4028	1.018						4.421	13,941.17
03112.120	STAIR FORMS	50,622.00	SQFT	7.4161	2.585						10.001	506,284.23
03150.930	DOVETAIL SLOTTED INSERTS	81,352.90	LNFT	0.7875	0.306						1.094	88,974.45
03150.650	SCREEDS FOR SLAB	14,187.60	LNFT	1.1025	0.383						1.485	21,071.92
03150.652	EXPANSION JOINT	136.00	LNFT	2.0569	0.840						2.897	394.00
03150.900	FORM RELEASING AGENT	20,406.58	SQFT	0.2505	0.028						0.278	5,674.16
03150.900	FORM RELEASING AGENT	3,153.38	SQFT	0.2505	0.028						0.278	876.82
03150.900	FORM RELEASING AGENT	32,090.79	SQFT	0.2505	0.028						0.278	8,923.02
03150.930	DOVETAIL SLOTTED INSERTS	13,146.51	LNFT	0.7875	0.306						1.094	14,378.14
03150.900	FORM RELEASING AGENT	50,622.00	SQFT	0.2505	0.028						0.278	14,075.73
03210.160	WALL REBAR	3,564.47	CWT	39.4216	31.991						71.413	254,548.99
03210.200	CONTINUOUS FOOTING REBAR	0.15	CWT	38.0137	31.991						70.005	10.69
03210.210	COLUMN FOOTING REBAR	11.27	CWT	38.0137	31.991						70.005	789.29
03210.300	GRADE BEAM REBAR	20.79	CWT	38.0137	31.991						70.005	1,455.15
03210.150	COLUMN REBAR	1,272.92	CWT	29.5662	31.991						61.558	78,357.81
03210.902	RE-STEEL @ ISOLATED BEAM	50.25	CWT	38.7049	31.991						70.696	3,552.47
03210.400	RE-STEEL @ STAIRS	2,590.00	CWT	40.1655	31.991						72.157	186,886.08
03310.150	**CONC IN CONTINUOUS FOOTING**		****									
03310.167	4000 PSI DIRECT	423.75	CUYD	13.1661	66.973						80.139	33,958.56
03310.171	5000 PSI DIRECT	12.02	CUYD	13.1661	71.756						84.922	1,021.14
03310.550	**CONCRETE IN WALLS**		****									
03310.580	4000 PSI W/PUMP	2,690.29	CUYD	17.2210	66.973	6.315					90.508	243,492.99
03310.581	5000 PSI DIRECT	206.81	CUYD	17.5548	71.756						89.311	18,470.18
03315.982	* CONCRETE WALL AREA *	80,971.85	SQFT									
03310.250	**CONC IN GRADE BEAMS**		****									
03310.251	3000 PSI DIRECT	151.45	CUYD	15.0469	65.777						80.824	12,240.63
03315.975	* GRADE BEAM LENGTH *	681.52	LNFT									
03310.350	**CONC IN SLAB ON GRADE**		****									
03310.405	4000 PSI DIRECT,LASER SCREED	433.42	CUYD	8.8025	66.973						75.775	32,842.61
03310.406	5000 PSI DIRECT,LASER SCREED	1,470.27	CUYD	8.8025	65.777	6.315					80.894	118,935.55
03315.976	* SOG AREA *	118,230.00	SQFT									
03310.650	**CONCRETE IN COLUMNS**		****									
03310.676	4000 PSI W/CRANE	339.45	CUYD	26.0529	66.973						93.025	31,577.03
03311.150	**CONC IN ISOLATED BEAM**		****									
03311.176	4000 PSI W/CRANE	721.41	CUYD	18.9475	66.973						85.920	61,983.52
03315.984	* NO. OF COLUMNS *	94.00	EACH									
03315.985	* LENGTH OF BEAMS *	4,973.40	LNFT									
03311.500	**CONC IN SUPPORTED SLAB**		****									
03311.530	4000 PSI W/PUMP	782.93	CUYD	15.0685	66.973	6.315					88.356	69,176.47
03315.987	* NO. OF DROP PANELS *	438.00	EACH									
03311.900	**Concrete in stairs and landings**		****									
03311.936	5000 PSI W/PUMP	4,316.67	CUYD	24.1095	71.756	6.315					102.180	441,078.41
03315.992	* NO. OF CONC STAIR RISERS *	1,100.00	EACH									
03350.131	POINT & PATCH	-81,895.97	SQFT	0.1318	0.015						0.147	-12,046.92
03350.133	SCREED FINISH	118,230.00	SQFT	0.2245							0.224	26,539.98
03350.140	LASER SCREED SLAB	118,230.00	SQFT	0.3528		0.658					1.011	119,479.39
03350.131	POINT & PATCH	20,406.58	SQFT	0.1318	0.015						0.147	3,001.82
03350.131	POINT & PATCH	29,792.01	SQFT	0.1318	0.015						0.147	4,382.41
03350.120	RUB CONC STAIRS	42,570.00	SQFT	2.1020							2.102	89,481.30
03350.122	SACK & REMOVE FINIS @ STAIR	69,252.00	SQFT	0.4939							0.494	34,205.11
03350.131	POINT & PATCH	-61,200.00	SQFT	0.1318	0.015						0.147	-9,002.54
03350.144	TROWEL FINISH STAIRS	99,000.00	SQFT	0.6586							0.659	65,201.69
03360.120	SANDBLAST CONCRETE	81,895.97	SQFT	1.3627							1.363	111,595.66
03360.120	SANDBLAST CONCRETE	5,452.16	SQFT	1.3627							1.363	7,429.39
03390.010	PROTECT & CURE	118,230.00	SQFT	0.1318	0.023						0.155	18,296.61
03390.010	PROTECT & CURE	99,000.00	SQFT	0.1318	0.023						0.155	15,320.68
05121.009	CAT#0 - RODS	28,938.62	LBS									
05122.001	GRADE A36 STEEL	28,938.62	LBS		0.299						0.299	8,652.20
05122.199	TOTAL WEIGHT, ALL GRADES	28,938.62	LBS									
05128.330	RR 1-1/4"x	126.00	EACH				34,608.783				36,339.223	4,578,742.04

Estimate Detail - Standard Construction Project

Detail - With Taxes and Insurance ,Indirect Costs are Spread

Estimator :
Project Size : sqft

ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Eqp.Rent.Unit	Temp.Mat.Unit	Other Unit	Tot.UnitCost	TotalCost
05129.101	STEEL BEAMS		****									
05129.102	I BEAMS	24,548.05	CWT	34.3593	41.858	5.980					82.197	2,017,771.06
05129.121	STEEL COLUMNS		****									
05129.122	I SHAPES	2,030.94	CWT	34.3593	41.858	5.980					82.197	166,936.72
05129.304	ASTM A572 50 KSI STEEL ADDER	1,306.18	CWT									
05129.501	SHOP PAINT		****									
05129.502	RED OXIDE	200,321.94	SQFT	0.1184	0.092						0.210	42,116.86
05129.990	* STRUCTURAL STEEL WEIGHT *	1,328.95	TONS									
05210.300	ROD JOIST BRIDGING	87.70	CWT	36.6499	32.888						69.538	6,098.18
05520.011	1-1/2" STEEL STAIR HANDRAIL	4,080.00	LNFT	12.9982	22.962						35.960	146,717.51
05520.022	ALUMINUM STAIR HAND RAIL	4,080.00	LNFT	13.9980	33.678						47.676	194,516.37
05550.011	3" SAFETY NOSING	33,000.00	LNFT	3.6395	3.062						6.701	221,135.59
07210.030	1-1/2" foundation insulation	2,726.08	SQFT	0.7745	0.559						1.333	3,634.50
09970.010	PAINT METAL 3 COATS	244.80	SQS	44.4022	22.962						67.364	16,490.75
09980.011	PAINT CONCRETE 2 COATS	643.11	SQS	48.9955	18.370						67.365	43,323.20
Total Estimate												\$10,734,799

Sears Centre Structural Systems Estimate		Bid date 1/19/2006							
Student Generated Estimate									
Sears Centre									
5353 Prairie Stone Pkwy		sqft							
Hoffman Estates		240,000 SF							
IL									
		Labor	Material	Equipment	Subcontract	Temp Matl	Equip Rental	Other	Totals
Direct costs	%								
Base labor		\$1,804,175	\$2,367,044	\$253,041	\$3,646,266	\$0	\$0	\$0	\$8,070,525
Labor burden	IL%	\$0							\$0
Labor fringes		\$723,213							\$723,213
Labor manhours		89,838							
Material sales tax	0.00%		\$0						\$0
Equipment Surcharge	0.00%			\$0					\$0
Temporary material markup	0.00%					\$0			\$0
Equipment rental markup	0.00%						\$0		\$0
Other markup	0.00%							\$0	\$0
Gross cost		\$1,804,175	\$2,367,044	\$253,041	\$3,646,266	\$0	\$0	\$0	\$8,793,738
Gross receipts tax	0.00%								\$0
Builder's risk insurance	0.00%								\$0
	Overall								
Overhead	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	\$0
Profit	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	\$0
		\$1,758,748	\$0	\$0	\$0	\$0	\$0	\$0	\$1,758,748
Subcontract bond	5.00%								\$182,313
Performance bond	\$63,999								\$63,999
Miscellaneous 1	0.00%								\$0
Miscellaneous 2	0.00%								\$0
Total									\$10,798,798
Cut/Add									\$0
Project total									\$10,798,798

Sears Centre General Conditions Estimate

01700.000.0000 General Conditions									
Cost Code	Type	Job	Quantity	Unit Cost	Chicago, IL Location Factor	Time Unit		Total Line Cost	Factored Cost
01310.700.0000	Field Personal				1.3				
- 0200	T	Project Manager	1	\$2,525.00	1.3	wk	34.	\$85,850	\$111,605
- 0220	T	Senior Project Manager	1	\$2,875.00	1.3	wk	34.	\$97,750	\$127,075
- 0240	L	Assistant Superintendent	1	\$53.75	1.3	hr	3,034.	\$163,078	\$212,001
- 0241	L	Superintendent	0	\$58.13	1.3	hr	2,954.	\$0	\$0
- 0242	L	Senior Superintendent	2	\$66.88	1.3	hr	2,080.	\$278,221	\$361,687
- 0243	L	Ryan Laborer	2	\$40.63	1.3	hr	3,200.	\$260,032	\$338,042
- 0244	L	Field Coordinator	1	\$71.88	1.3	hr	145.	\$10,423	\$13,549
- 0290	A	Project Assistant	2	\$1,288.00	1.3	wk	65.	\$167,440	\$217,672
		Subtotal Field Management						\$1,062,793	\$1,381,631
01510.800.0000	Temporary Utilities				1.3				
- 0100	E	Heating 12/ day	2	\$11.25	1.3	wk	28.	\$630	\$819
- 0350	E	Office Lighting-Electric 23.6 KWH	2	\$16.80	1.3	wk	68.	\$2,285	\$2,970
- 0450	E	Temporary Power Hook Ups	2	\$3.14	1.3	wk	68.	\$427	\$555
- 0650	E	Portable Toilets	5	\$114.00	1.3	ea	0.	\$570	\$741
01520.500.0000	Temporary Construction Facilities				1.3				
- 0550	M	Office Trailer Rent	2	\$1,260.00		mo	17.	\$42,840	\$55,692
01520.550.0000	Temporary Construction Facilities				1.3				
- 0120	M	Office Supplies		\$165.00	1.3	mo	17.	\$2,805	\$3,646
- 0140	M	Office Telephone		\$224.00	1.3	mo	17.	\$3,808	\$4,950
- 0160	M	Field Office		\$108.00	1.3	mo	18.	\$1,944	\$2,527
012020.000.0000	M	Supt/PM Cellular Phone		\$700.00	1.3	mo	16.	\$11,200	\$14,560
015010.000.0000	M	Copy Machine		\$160.00	1.3	mo	34.	\$5,440	\$7,072
015010.000.0000	M	Fax Machine		\$100.00	1.3	mo	34.	\$3,400	\$4,420
012080.000.0000	M	Drinking Water/Ice/Cups		\$20.00	1.3	wk	34.	\$680	\$884
015010.000.0000	M	Furniture		\$600.00	1.3	mo	17.	\$10,200	\$13,260
015010.000.0000	M	Computer Equipment		\$220.00	1.3	mo	17.	\$3,740	\$4,862
01520.800.0000	Site Security				1.3				
- 0120	L	Watchmen	1	\$9.00	1.3	hr	816.	\$7,344	\$9,547
01580.700.0100	M	Project Signs	80	\$16.40	1.3	sf	17.	\$22,304	\$28,995

01580.700.0101	M	Temporary Construction Fence	1000	\$18.95	1.3	lf	17.	\$322,150	\$418,795
		Subtotal Field Offices/Supplies						\$441,767	\$574,297
212020.000.0000		Site Travel Expenses			1.3				
212020.000.0000	M	Travel Expense-Proj Asst	1	\$1,000.00	1.3	wk	104.	\$104,000	\$135,200
212030.000.0000	M	Travel Expense-Proj Mgr	1	\$800.00	1.3	wk	65.	\$52,000	\$67,600
		Subtotal Travel, Housing, Subsistence & Mgmt						\$156,000	\$202,800
		01700.000.0000 General Conditions Subtotal						\$1,660,560	\$2,158,728