The Downtown Family YMCA

Detroit, MI

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Construction Management
Technical Report 1
October 5, 2005

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Executive Summary

It has been over 90 years since Detroit has had a YMCA to call its own. The Downtown Family YMCA will mark the comeback of a familiar neighborhood icon that Detroit has been missing for nearly a century. This is a project that the citizens of Detroit (as well as surrounding counties) have been monitoring and anxiously waiting for. Its unique design and fresh look is just what Detroit needs in its mission to rejuvenate the city

The architects/engineers for this job are SmithGroup and the construction manager is Barton Malow Co. The project commenced in December of 2003 and the goal is to have the building ready by December 2005. Like any construction project, set-backs are inevitable. However, having great management in all the entities has kept this project running smoothly, and it appears the completion date will be reached.

This report was produced to give the reader a general overview of the key and general aspects of this project. Illustrations and in-depth descriptions are provided to give the person who reads this report more of a personal feel regarding the processes that are involved with this project.

Amongst the contents of this report, one will find all of the following: Site plans showing the location of the project along with existing conditions on that particular site. The local conditions of the site, which includes the preferred methods of construction in the Detroit-metro area, will also be analyzed. Furthermore, there will also be information on the owner of the project; we will take a look at a brief biographical sketch and discuss the goals of the owner. The details of this project's delivery system will also be discussed, as well as illustrations demonstrating the structure of the key players. Lastly, the staffing plan of the construction managers will be shown and evaluated.

Furthermore, I have also included documents that I have produced myself as well as documents that Barton Malow Co. and SmithGroup have provided me with that will help the reader better comprehend the schedule, cost and building systems aspect of the project.

BUILDING SYSTEMS SUMMARY

Demolition
This project is being built over an existing parking lot. When performing the site conditions evaluation, there were remnants of a foundation and pieces of concrete throughout the site. This did not interfere with the process of excavation

Structural Frame
An 80 ton crane was used for the heavier members. Only one crane was used due to the space limitations of the site. There are different spans of beams used for the office areas, open gym areas and especially the theatre. Most of the connections are bolted, but in areas such as the elevated track overlooking the basketball court, there were also full penetration welds. Besides this, the atrium/lobby level has a climbing wall that utilizes cross bracing for support. Steel floor framing is being used with shear studs at 1 per 48" on a 4,000 psi Lightweight slab on deck. No composite beams are used.

Building Envelope
The building envelope consists of decorative CMU and glass panels. The CMU areas are cavity walls for load bearing purposes. The glass façade was installed using a curtain wall system to allow for maximum visibility both inside and out.

Mechanical
Hot water heating generation is used. 2 Firetube boilers at 3200 MBH are installed for this. Med-press, HHW/DX "Intellipak" rooftop air handling units is being used. Both regular and fan-powered VAV boxes with reheat are being used for the circulation of air. Upon observation of the ductwork, one will see that there is a lot of inconsistency to it. What I mean by this is that; due to the half levels, the ductwork is forced to climb up a level at one part of the building then it has to drop again to accommodate another part of the building.

Electrical
The electrical system in this building mainly consists of a medium voltage distribution system along with a secondary distribution. The main transformer of this building is 1500kVA at 480/277V Y - 3Φ. In addition to this, there is a substation at 3-5kV and 1,000kVA transfer (medium dist.) and a MDP 2000 Amp MLO (secondary dist.). In order to provide all the lighting in the building with the appropriate amount of power, (4) 480/277V panels are used along with (9) 208/120V receptacle panels.

PROJECT COST EVALUATION

(See attached sheets in Appendix A)

Actual total construction cost - $25,795,000
Actual adjusted total cost - $29,000,000
Actual cost per SF - $285.07

D4 total building cost - $18,551,164
D4 adjusted total cost - $22,070,554
(Includes site work)
D4 cost per SF - $216.95

RS Means total project cost per Square Foot (3/4 end) - $178.50/SF
(Includes mechanical and electrical work)
RS Means total project cost – $18,158,805

To my surprise the cost estimate that I generated with the D4 software did not stray far from the actual project costs. The difference was over $5 million, but I expected D4 to go way over or way under (~$10 million). The price difference was not too much of a surprise at second glance. After all, the project that I modeled the estimate after is also in Michigan, it took place 2 years earlier, and it is also a recreation center. Besides this, the design fee, money for furniture and the preconstruction/utilities relocation are some costs that D4, to my knowledge, has not included. Looking closer at the RS Means estimate, I began to wonder if the estimate that I calculated using the RS Means data included the price of the natatorium, elevated track, and the theatre.

LOCAL CONDITIONS

Preferred Methods of Construction

In the Detroit metro area, using concrete for buildings is not as preferred as using steel. The main reason for this preference deals with availability of concrete. There are no close or local concrete companies, which makes production and transportation more expensive. Due to this, there is a steel building preference because steel is so much easier to acquire.

Availability for Construction Parking

If any construction is to take place in downtown Detroit, workers usually have to find parking on their own. They usually park in parking decks. The reason for this being that there is not enough free space in downtown to provide parking for all the employees on any particular site.

Soil/Subsurface Water Condition

The soil conditions encountered at the soil boring locations appeared consistent with the boring previously performed at the project site. The soil profile generally consists of sand and clay fill near the surface, overlying low plasticity soft to hard natural silty clays. Beneath the silty clays, dense silty sandy clay (hardpan) was encountered, to the explored

depths of the soil borings. The following gives a generalized summary description of the soils encountered in the current borings performed at the subject site, beginning at the ground surface and proceeding downward:

Stratum 1: Asphaltic and Portland cement concrete and base material. Two to six inches of Asphaltic concrete overlying 5 to 9 inches of crushed slag base material reported at five of the current soil boring locations.

Stratum 2: Various fill materials. At the most recent borings, sand and clay fill with varying amounts of construction debris, was encountered beneath stratum 1 materials, extending to depths of 5.5 to 17 feet. Brick and concrete fill, including possible concrete slabs, were encountered at several of the boring locations.

Stratum 3: Natural silty/sandy clays: 119-121 feet. However, the clays in the upper 20 and 30 feet were hard to stiff. Natural medium dense sands and sandy silts were encountered beneath the fill materials at boring B6, extending to a depth of 16 feet. A single N-value of 29 bpf was obtained in these materials

Stratum 4: Clay hardpan. Dense silty sandy clays (hardpan soils) were encountered beneath the Stratum 3 clays, extending to the explored depths of the soil borings.

Due to wash rotary drilling methods used to advance the deeper soil borings, groundwater levels upon completion of the current borings are not available for the deep soil borings; however, groundwater was encountered at depths of 19.5 to 13 feet during drilling operations, and at a depth of 36 feet below the ground surface upon completion of drilling operations at boring B6. The groundwater levels should be anticipated to fluctuate throughout the year due to variations in precipitation, evaporation, surface runoff and certain construction activities.

CLIENT INFORMATION

Owner's Representative

The client of this project is the metro Detroit YMCA. The client's representative is Mrs. Lorie Uranga. Mrs. Uranga has spent the last 16 years dealing with construction. She has been with the YMCA for the past seven years. This project will be Mrs. Uranga's 3rd new construction building for the YMCA. She completed one in Milford, MI in 2000 and another in Auburn Hills, MI in 2002. She is responsible for all property management.

Why Are They Building This Facility?

The main reason for building a YMCA in downtown Detroit is because there hasn't been one there in almost 90 years, so this is would be a 'revival mission.'

Cost, Quality, Schedule and Safety Expectations

In terms of cost expectations, they do not want the cost of the building to exceed the $29 million budget. However, there are donors and contributors that generously give money, but they want their money going towards something aesthetic and that recognizes the donor/contributor. One good example of this is the fountain that will be placed outside by the main entrance.

One of the big quality/design goals of the YMCA, which can be seen by the design, is to promote high visibility. The want the building to glow at night, that is why there is so

much glass used. The use of glass also gives people a chance to see what is going on from the inside out and vice-versa. The concept of the 'half-levels' is also supposed to promote this visibility issue as well as inspiring high energy.
As for schedule expectations both Mrs. Uranga and Mr. Luedeman (project manager with Barton Malow) are collaboratively working hard to reach the goal of the occupancy date (December 2005). There have been processes all over the schedule that have needed to speed up, this usually means that contractors either have to put in longer hours and/or progress on work during the weekend.
Safety expectations are high for both the YMCA and Barton Malow. Safety issues have been especially strict on this site ever since an incident that occurred this past summer. Safety inspectors from MIOSHA came to examine the site and found that there were some people working at dangerous heights without being tied-off. This was the biggest issue that they found on the site, and needless to say, it produced some hefty fines. Besides being concerned with the safety of their workers, the heavy consequences that come with a situation like this is something that the YMCA and Barton Malow cannot afford.

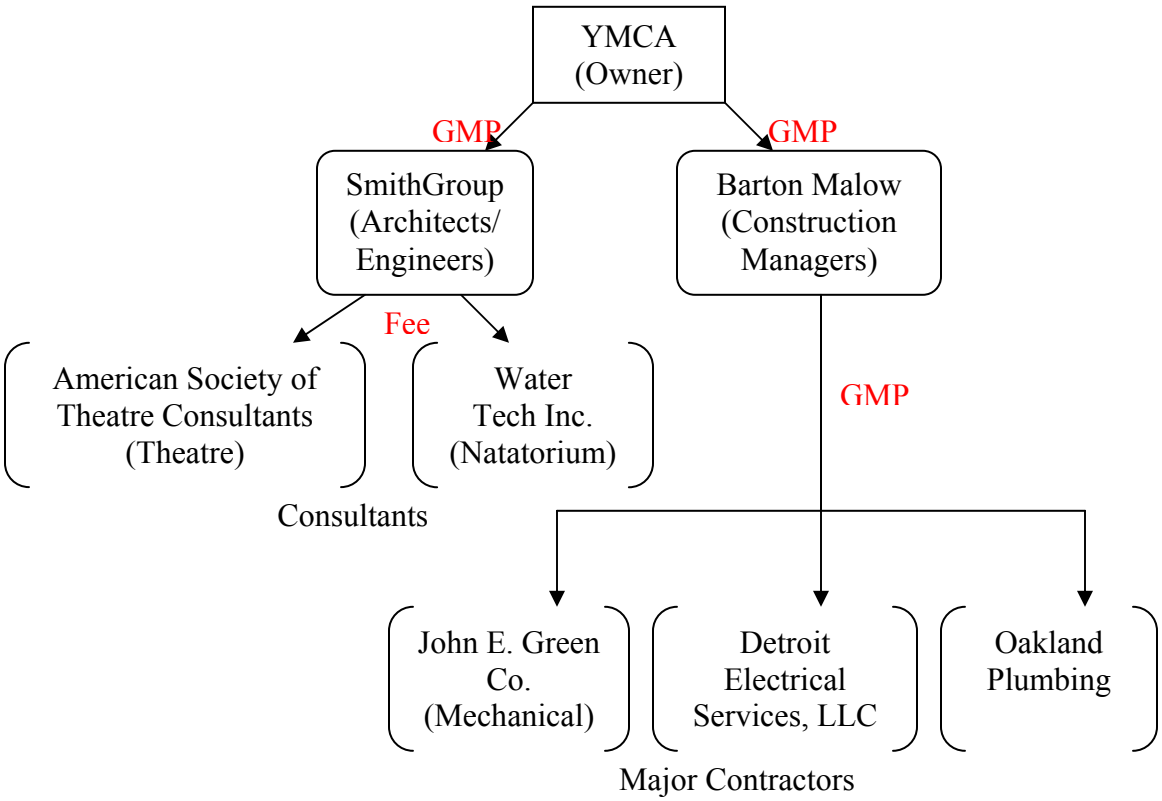
Joint, Dual, or Phased Occupancy Requirements
There are no other tenants in this building. The building is strictly for the YMCA and its members. However, there is a pick-up station for the 'people-mover' on the same site. This station is right outside of the building and it will not be relocated. This station will not be relocated due to the fact that it is a main pick-up point, and also because it will allow members to get dropped off right in front of the Y if they are all the way across town.

Completing Project to Owner's Satisfaction
The main issue that Mrs. Uranga stated is that the project be completed on time. It is very important that they open on the scheduled date to begin welcoming members. Furthermore, the aesthetics of the building must be to the liking of the other members of the metro Detroit YMCA panel as well as the contributors who have donated so much to make this building a reality.

PROJECT DELIVERY SYSTEM

The project started out with Barton Malow Company acting as a construction manager. Once all the subcontracts were awarded, a GMP (Guaranteed Maximum Price) was established and the contract changed to a CM at risk. The CM approach was chosen mainly because of past relationships. Ben Maibach III, President of Barton Malow, is one of the head board members on the YMCA committee and he has been thinking of getting involved with this project for the last 5 years. So, seeing as how Barton Malow already has a direct connection with the YMCA and they are a construction management company, a decision was easily reached.

Organizational Chart of Major Project Players



List of contacts

- YMCA: Lorie Uranga – Luranga@ymcametrodetroit.org (313) 267-5300
- SmithGroup: Kevin Shultis – Kevin.Shultis@smithgroup.com (313) 442-8318
- Barton Malow: Loren Luedeman – Loren.Luedeman@bartonmalow.com (313) 963-4175
- John E. Green Co.: Mark Jones – (313) 868-2400
- Detroit Electrical Services, LLC: Grace Tache – (313) 223-2800
- Oakland Plumbing: Mike Scott – (586) 731-3535

Contractual Agreements

The contracts held with the subs reflected just about all the same requirements that Barton Malow was held to with the owner minus the CM part of things. The subcontract was GC/guaranteed maximum price contract. In essence the contract stated that the sub has to complete their scope of work for the contract price and by the scheduled completion dates. Also, they must complete their work without interfering with the other trades work (make it so that another trade cannot complete their work by the scheduled completion date).

Contractor Selection

In terms of how a contractor is selected; in Detroit, all public jobs require a certain percentage of minority owned companies and women-owned businesses be involved in projects. Since the YMCA wasn't a considered a public job, they didn't have to follow

this rule of having a certain percentage, but they did it anyway to demonstrate good deed. After the YMCA confirmed that they wanted a percentage of minority and woman-owned businesses, Barton Malow prepared a bid list and the YMCA went on to approve it.

Bonds and Insurance

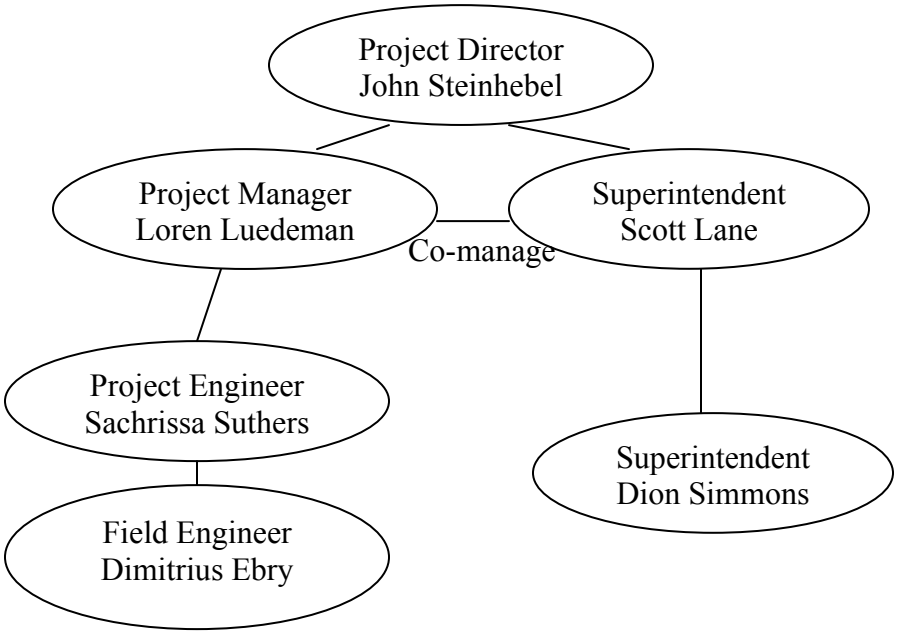
Performance and payment bonds were needed for this job in order for a contractor to commence work. In terms of insurance, each contractor was required to have the following:

-commercial general liability
-automotive liability
-umbrella/excess
-worker's compensation
-employer's liability

Contract Types and Delivery System Analysis

I believe that even though there weren't different types of contracts used amongst the major players, keeping it simple was the best way to go. I definitely believe that by limiting the variety, simplicity was maintained. This is especially true since the budget was a very critical issue for this project. In terms of the project delivery method, I thought it was interesting how Barton Malow went from a construction manager to construction manager at risk – after the subcontracts were awarded. I believe that the delivery method is working out well, but I would like to have seen how a Design-Build method would have worked out for this project. I say this mainly because I know that the D-B method provides faster project delivery (to ensure the occupancy date), a fixed cost – lump sum contract (ensuring price predictability), and more competitive prices from the contractors. Besides this, I think it would have been interesting to see what value engineering concepts would have been implemented.

STAFFING PLAN



The Barton Malow staffing structure is traditionally simple. As you can see on the flowchart, Mr. John Steinheble is the Project Director for the YMCA project and everyone else falls under him. Something that is a little less traditional can be seen in the second row: Scott Lane, a superintendent, is co-managing the job with the project manager, Loren Luedeman. Even though Mr. Lane's official title on this job is as a superintendent, he takes on some project manager duties to help Mr. Luedeman with the progress of the job. Dion Simmons is the only person underneath Mr. Lane; while Mr. Luedeman has a project engineer (Mrs. Suthers) and field engineer (Mr. Ebry) that report directly to him.

PROJECT SUMMARY REPORT

YMCA of Metropolitan Detroit
Downtown YMCA
Detroit, Michigan
Post Bid Summary Revision
December 20, 2004

Base Summary

Description	Quantity		Unit Cost		Total Cost
CONSTRUCTION COST					
Project Component					
01 - New YMCA Facility including:	101,730	SQFT	$193.41	$	19,675,232
Theater items					
Gymnasium items					
Pool slide & water features					
02 - New YMCA Facility Site Items	2	ACRE	$529,750.00		$1,059,500
Contingencies					
Design Contingency	1.5%	OF	20,734,732		$311,021
Construction Contingency	5.0%	OF	$20,734,732		$1,036,737
Schedule Acceleration Contingency	0.0%	OF	$20,734,732		$0
Preconstruction Services / CM General Conditions	1	LPSM	$2,961,200		$2,961,200
CM Fee	3.0%	OF	25,043,689		$751,311
TOTAL CONSTRUCTION COST					**25,795,000**
Owner Cost					
FF&E Budget (less the items below)	1	LPSM	$1,500,000		**$1,355,000**
Climbing wall			$145,000		
TOTAL OWNER COST					**$1,355,000**
ADJUSTED TOTAL COST					**27,150,000**
Smith Group Design Fees	1	LPSM	$1,850,000		**$1,850,000**
TOTAL COST					**29,000,000**

ISO 9001:2000 Barton Malow CERTIFIED

Barton Malow
Design-Construction Services

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
FP-4: Base Plate Grout	12 SQFT	37.21	446	
EPS Protection Board	14,699 SQFT	1.70	25,025	
Drain Board	14,699 SQFT	2.42	35,620	
Elastomeric Waterproofing	15,560 SQFT	9.92	154,389	
Bentonite Panels @ Wall Lower Basement	1,375 SQFT	4.86	6,684	
Subtotal Basement walls			**$969,000**	**$9.53**
Total Basements Construction			**$1,726,700**	**$16.97**
Superstructure				
Floor construction				
Surge Tank Concrete Top	162 SQFT	14.60	2,365	
4,000 psi Lightweight Slab-on-Deck	1,135 CUYD	182.52	207,164	
Steel Floor Framing	475 TON	2,100.00	997,500	
Miscellaneous Structural Framing	50 TON	4,000.00	200,000	
Shear Studs @ 1 per 48"	18,750 EACH	1.50	28,125	
Moment Connections Allowance	40 EACH	560.00	22,400	
Cellular Deck @ Wellness Premium	6,200 SQFT	3.25	20,150	
Misc. Embed Iron Allowance	4 TONS	1,970.00	7,880	
Misc. Red Iron Allowance	10 TONS	1,970.00	19,700	
Structural Steel Building Columns	191 TON	2,347.82	448,434	
2" Metal Floor Deck	63,468 SQFT	1.35	85,682	
Aluminum Walk-On Air Intake Grating	200 SQFT	28.15	5,629	
Building Floor Exp. Joint Allowance	150 LNFT	38.19	5,728	
Slab Waterproofing @ Terrace	350 LNFT	3.18	1,115	
Basement Level Area 1 Steel Fireproofing	7,800 SQFT	1.77	13,806	
Basement Level Area 2 Steel Fireproofing	16,400 SQFT	1.77	29,029	
1st Level Area 1 Steel Fireproofing	12,000 SQFT	1.77	21,241	
1st Level Area 2 Steel Fireproofing	10,300 SQFT	1.77	18,232	
2nd Level Area 1 Steel Fireproofing	9,400 SQFT	1.77	16,639	
2nd Level Area 2 Steel Fireproofing	750 SQFT	1.77	1,328	
2nd Level / Under Track Steel Fireproofing	5,000 SQFT	11.47	57,375	
2nd A Level Area 1 Steel Fireproofing	4,000 SQFT	1.77	7,080	
3rd Level Area 1 Steel Fireproofing	9,400 SQFT	1.77	16,639	
3rd Level Area 2 / Above Track Steel Fireproofing	5,000 SQFT	11.48	57,408	
Exposed Truss Trowel-On Fire Proofing	1 LSUM	4,500.00	4,500	
Wellness Columns / Intumescent	8 EACH	2,100.00	16,800	
Terrace Pavers	350 SQFT	20.82	7,286	
Subtotal Floor construction			**$2,319,200**	**$22.80**
Roof construction				
Steel Roof Framing	175 TON	2,000.00	350,000	
1-1/2" Metal Roof Deck	32,422 SQFT	1.65	53,496	
Vulcraft Acoustical Roof Deck Premium	32,422 SQFT	1.15	37,285	
Subtotal Roof construction			**$440,800**	**$4.33**
Total Superstructure			**$2,760,000**	**$27.13**
Exterior enclosure				
Exterior walls				
Column Enclosure: Re-Steel @ Columns	4 TON	1,763.33	6,531	
Column Enclosure: **Concrete in Columns**	****			
Column Enclosure: 3500 PSI W/Pump	21 CUYD	151.60	3,209	
Column Enclosure: Column Architectural Finish	1,143 SQFT	0.94	1,075	
Brick Special Shapes Premium Allowance	1 LSUM	13,780.00	13,780	

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
Pool Equip. Room Plumbing	1 LSUM	7,880.04	7,880	
4" VTR	4 EACH	65.00	260	
Accomodation For Warm-up Kitchen	972 SQFT	5.01	4,875	
Subtotal Sanitary waste and vent pipe systems			**$309,900**	**$3.05**
Storm piping system				
Cast Iron Service Weight B&S - underground	****			
Pipe,12"	20 LNFT	91.41	1,828	
Excavation and Backfill	20 LNFT	15.01	300	
Cast Iron Service Weight No-hub - aboveground	****			
Pipe,3"	130 LNFT	25.02	3,252	
Pipe,4"	220 LNFT	28.94	6,367	
Pipe,6"	1,410 LNFT	39.37	55,516	
Pipe,8"	935 LNFT	56.93	53,229	
Pipe,10"	20 LNFT	85.73	1,715	
25% Fittings	1 LSUM	30,000.00	30,000	
Pipe Identification	2,845 LNFT	0.25	706	
Cast Iron Service Weight B&S - aboveground	****			
Pipe,12"	20 LNFT	107.05	2,141	
25% Fittings	1 LSUM	582.07	582	
6" Drain Tile piping- PVC Perforated	1,700 LNFT	13.50	22,949	
Submersible Duplex Sump Pump, 1 1/2 Hp	1 EACH	2,254.08	2,254	
Cleanout	30 EACH	300.00	9,000	
Subtotal Storm piping system			**$189,800**	**$1.87**
Natural gas system				
Schedule 40 Black Steel T&C	****			
Pipe,1-1/4"	320 LNFT	13.96	4,466	
Pipe,2"	300 LNFT	19.49	5,846	
Schedule 40 Black Steel PE	****			
Pipe,3"	60 LNFT	33.67	2,020	
Pipe,4"	290 LNFT	39.99	11,597	
20% Fittings and Valves	1 LSUM	5,000.00	5,000	
Pool Heater (hook-up only)	2 EACH	650.00	1,300	
Whirl Pool (hook-up only)	1 EACH	650.00	650	
Pipe Identification	970 LNFT	0.25	241	
Valve Tags	3 EACH	14.27	43	
PRV	6 EACH	450.00	2,700	
Accomodation For Warm-up Kitchen	972 SQFT	1.59	1,548	
Subtotal Natural gas system			**$35,400**	**$0.35**
Total Plumbing			**$1,071,700**	**$10.53**
HVAC				
Heating generation				
Hot Water Heating Generation	****			
Firetube Boiler	****			
3200 MBH	2 EACH	53,000.00	106,000	
4" Boiler Piping Assembly	2 EACH	5,300.00	10,600	
Boiler Breeching	1 LSUM	39,304.80	39,305	
Pumps	****			
In-line Circulation	****			
Bronze, 3 Hp	6 EACH	2,584.40	15,506	
4" Pump Piping Assembly- Inline	6 EACH	1,500.00	9,000	
Base Mounted, End Suction	****			

YMCA of Metropolitan Detroit

Downtown YMCA
Detroit, Michigan

Project GSF: 101730 SQFT
Estimate Type: Design Development 0
Estimate Date: 9/30/2003

New YMCA Facility — **101,730 SQFT**

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
Bronze, 20 Hp	2 EACH	5,813.82	11,628	
4" Pump Piping Assembly	2 EACH	6,450.47	12,901	
Air Seperator, 2"	1 EACH	534.06	534	
Bladder Type Expansion Tank	****			
200 Gallon, Vertical	1 EACH	5,658.41	5,658	
Pump Variable Speed Drive, 20 Hp	2 EACH	6,837.18	13,674	
Chemical Shot Feeder	1 EACH	3,195.34	3,195	
Subtotal Heating generation			**$228,000**	**$2.24**
Air handling equipment				
Air Handling Units, Rooftop, "Intellipak"	****			
Med-press, HHW/DX	****			
AHU-1, 32,000 Cfm, 93 Ton, w/Supply/Return Fans	1 EACH	105,000.00	105,000	
AHU-2,3,4 - 25,000 Cfm, 64 Ton w/ Supply/Return Fans	3 EACH	75,000.00	225,000	
AHU-5, 4,800 Cfm, 25 Ton - Laundry	1 EACH	26,048.80	26,049	
Dehumidification Unit, 16,000 Cfm	****			
W/ 40 ton Cond. Unit - Pool Pack	1 EACH	181,436.52	181,437	
Condensing Unit, 25 Tons	1 EACH	15,285.20	15,285	
Subtotal Air handling equipment			**$552,800**	**$5.43**
Fans				
Roof Exhaust Fan	****			
1000 Cfm	5 EACH	1,221.31	6,107	
2000 Cfm, MER Ventilation	1 EACH	1,784.58	1,785	
50,000 Cfm - Atrium Smoke	2 EACH	24,562.06		
Substation Ventilation Fan	2 EACH	1,637.70	3,275	
Sauna Exhaust Fan	1 EACH	873.44	873	
Subtotal Fans			**$12,000**	**$0.12**
Sheetmetal and air distribution				
Supply Ductwork	80,000 LBS	6.00	479,976	
Return/ Exhaust Ductwork	10,000 LBS	6.00	59,997	
Fabric Duct	700 LNFT	116.93	81,852	
Supply	****			
Diffuser	350 EACH	110.00	38,500	
Flexible Duct to Diffuser	350 EACH	35.00	12,250	
Spin in Collar	350 EACH	35.00	12,250	
Return	****			
Grille	100 EACH	100.00	10,000	
Grille W/ Lined Boot	50 EACH	250.00	12,500	
Exhaust	****			
Register	40 EACH	95.00	3,800	
Louvers	100 SQFT	50.00	5,000	
Damper	****			
Damper	****			
Fire	26 EACH	500.00	13,000	
Combination Fire/Smoke	5 EACH	750.00	3,750	
Subtotal Sheetmetal and air distribution			**$732,900**	**$7.20**
Heating hot water piping				
Copper Type L	****			
Pipe,3/4"	2,000 LNFT	8.73	17,456	
Pipe,1"	800 LNFT	10.25	8,198	
Pipe,1-1/4"	800 LNFT	12.31	9,851	
Pipe,1-1/2"	1,000 LNFT	14.16	14,157	

YMCA of Metropolitan Detroit

Downtown YMCA
Detroit, Michigan
New YMCA Facility

Project GSF: 101730 SQFT
Estimate Type: Design Development 0
Estimate Date: 9/30/2003

101,730 SQFT

Description	Quantity		Unit Cost	Total Cost	Dollars / SF
Pipe,2"	250	LNFT	18.60	4,651	
25% Fittings and Valves	1	LSUM	13,448.15	13,448	
Pipe Identification	4,850	LNFT	0.25	1,203	
Valve Tags	18	EACH	14.27	257	
Schedule 40 Black - Welded		****			
Pipe 3"	550	LNFT	35.00	19,250	
Pipe 4"	300	LNFT	40.12	12,035	
Pipe 6"	350	LNFT	70.00	24,500	
25% Fittings and Valves	1	LSUM	13,843.72	13,844	
Pipe Identification	1,100	LNFT	0.25	273	
Valve Tags	4	EACH	14.27	57	
Subtotal Heating hot water piping				**$139,200**	**$1.37**
Heating hot water piping insulation					
Fiberglass Insulation		****			
All Service Jacket, 1-1/2" Thick		****			
Pipe, 3/4"	2,000	LNFT	8.01	16,012	
Pipe, 1"	800	LNFT	8.37	6,694	
Pipe, 1-1/4"	800	LNFT	8.89	7,113	
Pipe, 1-1/2"	1,000	LNFT	9.10	9,103	
Pipe, 2"	250	LNFT	9.73	2,432	
Pipe, 3"	550	LNFT	10.95	6,021	
Pipe, 4"	300	LNFT	12.94	3,882	
Pipe, 6"	350	LNFT	15.69	5,491	
25% Fittings	1	LSUM	13,201.26	13,201	
Subtotal Heating hot water piping insulation				**$69,900**	**$0.69**
Duct Insulation					
1 1/2" Thick Duct Insulation	65,000	SQFT	2.00	130,097	
Subtotal Duct Insulation				**$130,100**	**$1.28**
Terminal units					
Fin Tube Radiation	1,000	LNFT	30.00	30,001	
Fin Tube Piping Assembly	20	EACH	624.87	12,497	
12" High Fin Tube Radiation Enclosure	1,200	LNFT	38.00	45,601	
Unit Heater	5	EACH	1,052.71	5,264	
Unit Heater Piping Assembly	5	EACH	624.63	3,123	
Cabinet Unit Heater	6	EACH	1,582.77	9,497	
Cabinet Unit Heater Piping Assembly	6	EACH	624.63	3,748	
VAV Box w/ Reheat	40	EACH	928.03	37,121	
Fan Powered VAV Box w/ Reheat	60	EACH	1,146.39	68,783	
VAV Piping Assembly	100	EACH	624.63	62,463	
Flexible Duct to VAV Box	100	EACH	41.50	4,150	
Subtotal Terminal units				**$282,200**	**$2.77**
Temperature control system					
Controls		****			
Total Allowance	1	LSUM	300,000.00	300,000	
Subtotal Temperature control system				**$300,000**	**$2.95**
Testing and balancing					
Test & Balance		****			
Total Allowance	1	LSUM	33,000.00	33,000	
Subtotal Testing and balancing				**$33,000**	**$0.32**
Total HVAC				**$2,480,200**	**$24.38**

Johnson Controls

YMCA of Metropolitan Detroit

Downtown YMCA
Detroit, Michigan
New YMCA Facility

Project GSF: 101730 SQFT
Estimate Type: Design Development 0
Estimate Date: 9/30/2003

101,730 SQFT

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
Fire protection				
Sprinklers heads & piping				
Sprinkler Heads & Piping	850 HEAD	220.00	187,000	
Center of Tiles - 75%	640 HEAD	46.69	29,879	
Concealed Sprinkler Heads	640 HEAD	41.44	26,519	
Fire Pump, Incl Controller, Fittings & Relief Valve	****			
Electric, 750 Gpm, 50 HP	1 EACH	34,668.68	34,669	
Jockey Pump, 3 HP w/ Control	1 EACH	3,974.58	3,975	
Subtotal Sprinklers heads & piping			**$282,000**	**$2.77**
Total Fire protection			**$282,000**	**$2.77**
Electrical				
Medium voltage distribution				
48x36x12 Screw Cover Box	1 EACH	1,069.40	1,069	
Plywood Backboard	1 EACH	142.13	142	
C/T Cabinet FBO	1 EACH	137.84	138	
1-1/2" GRS	30 LNFT	11.61	348	
4" GRS	20 LNFT	34.39	688	
4" GRS Ninety	8 EACH	143.95	1,152	
4" PVC Schedule 40	20 LNFT	5.19	104	
#2 15 kV EPR Cu	90 LNFT	1.56	140	
15 kV Termination	6 EACH	343.88	2,063	
Substation 3-5kV Sw's, 1000 kVA Transf	1 EACH	75,243.13	75,243	
Housekeeping Pad	1 EACH	685.92	686	
Fire Pump Transf 150 kVA	1 EACH	6,107.44	6,107	
Housekeeping Pad	1 EACH	437.88	438	
Subtotal Medium voltage distribution			**$88,300**	**$0.87**
Secondary distribution				
Fault Current And Coordination Study	1 LUMP	6,201.66	6,202	
Feeder 3W + Grd EMT / Cu	118 KAF	128.87	15,207	
Feeder 4W + Grd EMT / Cu	366 KAF	163.98	60,018	
Add Compression Ftg's Feeder (EMT)	484 KAF	7.69	3,721	
Enc CB 800A	1 EACH	7,595.68	7,596	
MDP 2000 Amp MLO	1 EACH	38,722.52	38,723	
Housekeeping Pad	1 EACH	685.92	686	
Dry Type Transf 300 kVA	1 EACH	8,494.28	8,494	
Housekeeping Pad	1 EACH	437.88	438	
RDP-BA 1200 Amp MCB	1 EACH	15,034.70	15,035	
Housekeeping Pad	1 EACH	685.92	686	
MCC-BA 800A	1 EACH	17,515.10	17,515	
MCC-3A 400A	1 EACH	12,027.76	12,028	
Housekeeping Pad	2 EACH	437.88	876	
200A Shunt Trip Breaker	1 EACH	4,867.24	4,867	
Lighting Panel 480/277V	4 EACH	2,030.01	8,120	
Receptacle Panel 208/120V	9 EACH	1,781.97	16,038	
Subtotal Secondary distribution			**$216,200**	**$2.13**
Grounding				
Ground Rods	21 EACH	96.82	2,033	
Exothermic Welds	40 EACH	76.36	3,054	
Clamps	2 EACH	44.93	90	
4/0 Bare Copper	2,000 LNFT	19.92	39,834	
2" Copper Bar	185 LNFT	36.30	6,715	

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
Pool Grounding	1 LUMP	5,885.49	5,885	
Subtotal Grounding			**$57,600**	**$0.57**
Motor and equipment connections				
Motor Conn w/Starter	414 HP	169.12	70,018	
Motor Conn no Starter	335 HP	117.28	39,290	
Subtotal Motor and equipment connections			**$109,300**	**$1.07**
Branch wiring				
Add for 3/4" Min Conduit (EMT)	117 CLFT	42.21	4,939	
Add Comp Ftg's Branch (EMT)	1,542 EACH	0.70	1,081	
Duplex Receptacle 12 ft EMT	243 EACH	132.99	32,317	
Duplex Receptacle GFI 24 ft EMT WP	31 EACH	264.45	8,198	
Duplex Receptacle GFI 24 ft EMT	74 EACH	239.64	17,734	
Duplex Receptacle Floor Mounted 75 ft EMT	9 EACH	635.41	5,719	
Equipment Connection	21 EACH	165.64	3,478	
Single Receptacle 50A 75 ft EMT	4 EACH	620.51	2,482	
Duplex Receptacle 12 ft EMT Safety	61 EACH	136.71	8,339	
Duplex Receptacle GFI 24 ft EMT Safety	13 EACH	244.60	3,180	
Single Receptacle 20A 75 ft EMT	6 EACH	538.06	3,228	
Connect O'Head Door	2 EACH	1,099.86	2,200	
#2 Duct	310 LNFT	18.21	5,647	
#4 Duct	310 LNFT	30.19	9,358	
#2/#4 Combo Support	62 EACH	25.18	1,561	
#2/#4 J-Box	4 EACH	677.32	2,709	
Power/Comm Activation Kit	41 EACH	205.63	8,431	
24x36 Flush Cabinet	1 EACH	759.35	759	
#2 Verticle 90	1 EACH	82.02	82	
#4 Verticle 90	1 EACH	106.58	107	
Conduit Adapter	2 EACH	117.91	236	
Connect Pool Equipment	1 LUMP	12,124.56	12,125	
Unit Heater Connection 75' EMT	26 EACH	165.64	4,307	
Auto Door Connection	2 EACH	414.72	829	
Circ w/NF Disc SW 30 A 75' EMT	6 EACH	766.76	4,601	
Circ w/NF Disc SW 60 A 75' EMT	2 EACH	1,150.86	2,302	
Subtotal Branch wiring			**$145,900**	**$1.43**
Interior lighting				
Fixture Type 2X4 PARA	16 EACH	151.87	2,430	
Fixture Type CANOPY	14 EACH	377.77	5,289	
Fixture Type CF SURF	101 EACH	202.24	20,426	
Fixture Type EM	6 EACH	220.84	1,325	
Fixture Type EXIT	47 EACH	202.24	9,505	
Fixture Type F1 4FT	192 EACH	264.25	50,736	
Fixture Type F10	22 EACH	189.84	4,176	
Fixture Type F11	30 EACH	121.63	3,649	
Fixture Type F2	69 EACH	121.63	8,392	
Fixture Type F4	105 EACH	152.63	16,026	
Fixture Type F5 4FT	267 EACH	313.86	83,800	
Fixture Type F6E	50 EACH	289.05	14,453	
Fixture Type F7	32 EACH	676.75	21,656	
Fixture Type F8	3 EACH	96.82	290	
Fixture Type F9	57 EACH	140.23	7,993	
Fixture Type H1	38 EACH	1,247.81	47,417	
Fixture Type H2	12 EACH	408.78	4,905	

YMCA of Metropolitan Detroit

Downtown YMCA
Detroit, Michigan
New YMCA Facility

Project GSF: 101730 SQFT
Estimate Type: Design Development 0
Estimate Date: 9/30/2003

101,730 SQFT

Description	Quantity	Unit Cost	Total Cost	Dollars / SF
Fixture Type T1	1 EACH	146.43	146	
Fixture Type WALLPACK	6 EACH	470.79	2,825	
Lighting Circ EMT 15FT	978 EACH	138.20	135,158	
Lighting Circ EMT 25FT	46 EACH	197.16	9,069	
Lighting Circ EMT 35FT	6 EACH	269.14	1,615	
Lighting Circ GRS 15FT	38 EACH	217.61	8,269	
Add for 3/4" Min Conduit	181 CLFT	42.21	7,655	
Add compression ftg's Branch	1,757 EACH	0.70	1,232	
Light Switch EMT 12FT	129 EACH	109.87	14,173	
Lobby Lighting	1 LOT	50,000.00	50,000	
Theater Lighting And Dimming	1 LUMP	125,000.00	125,000	
Daylight Controls	1 LUMP	10,000.00	10,000	
Battery Ballasts	124 EACH	118.48	14,691	
Connect Pool Lights FBO	20 EACH	200.86	4,017	
Occupancy Sensor	9 EACH	140.87	1,268	
Subtotal Interior lighting			**$687,600**	**$6.76**
Detection and fire alarms				
Add for 3/4" Min Conduit (EMT)	49 CLFT	42.21	2,077	
Add Comp Ftg's Branch (EMT)	492 EACH	0.70	345	
Manual Station	20 EACH	321.04	6,421	
Audio/Visual Device	73 EACH	599.23	43,743	
Visual Device	33 EACH	562.02	18,547	
Ceiling Smoke Detector	10 EACH	399.91	3,999	
Duct Smoke Detector	12 EACH	633.97	7,608	
Waterflow/Tamper Switch	16 EACH	576.54	9,225	
Fan Shutdowns	13 EACH	382.79	4,976	
Main Equipment Zones	36 EACH	504.88	18,176	
Remote Annunc. Panel Zones	36 EACH	269.95	9,718	
Subtotal Detection and fire alarms			**$124,800**	**$1.23**
Surveillance and security access				
Card Reader/Door Monitor	10 EACH	2,500.00	25,000	
CCTV Camera	20 EACH	3,000.00	60,000	
Head End/Miscellaneous	1 LUMP	15,000.00	15,000	
Subtotal Surveillance and security access			**$100,000**	**$0.98**
Clock and program systems				
Clock	18 EACH	260.15	4,683	
Clock Head End	1 EACH	4,867.24	4,867	
Subtotal Clock and program systems			**$9,500**	**$0.09**
Voice and data systems				
3" EMT	80 LNFT	12.74	1,019	
4" EMT	160 LNFT	16.44	2,630	
30x30x12 Box	1 EACH	569.51	570	
Plywood Backboard	30 EACH	142.13	4,264	
Conduit Sleeves 1"	3 EACH	73.26	220	
Conduit Sleeves 4"	9 EACH	80.70	726	
Ground Bar	4 EACH	109.22	437	
#4/0 Cu	100 LNFT	19.92	1,992	
Tele/Data Outlet 50 FT EMT	45 EACH	299.25	13,466	
Tele/Data Outlet Floor	4 EACH	543.73	2,175	
Subtotal Voice and data systems			**$27,500**	**$0.27**
Public address and music systems				

- FFE

17100 | S.F. & C.F. Costs

				UNIT	UNIT COSTS 1/4	UNIT COSTS MEDIAN	UNIT COSTS 3/4	% OF TOTAL 1/4	% OF TOTAL MEDIAN	% OF TOTAL 3/4	
060	3500	See also division 11020 & 11030									060
130	0010	**CHURCHES**	R17100 -100	S.F.	81.50	103	134				130
	0020	Total project costs		C.F.	5.05	6.40	8.45				
	1800	Equipment		S.F.	1.05	2.34	5.15	1.06%	2.33%	4.50%	
	2720	Plumbing			3.18	4.45	6.55	3.51%	4.96%	6.25%	
	2770	Heating, ventilating, air conditioning			7.45	9.70	14.25	7.50%	10%	12%	
	2900	Electrical			6.90	9.40	12.60	7.30%	8.75%	10.90%	
	3100	Total: Mechanical & Electrical		▼	18.75	27	38	18.25%	21.50%	24%	
	3500	See also division 11040									
150	0010	**CLUBS, COUNTRY**	R17100 -100	S.F.	87.50	106	133				150
	0020	Total project costs		C.F.	7.05	8.60	11.90				
	2720	Plumbing		S.F.	5.65	7.85	17.90	5.60%	7.90%	10%	
	2900	Electrical			6.90	9.85	13	7%	8.95%	11%	
	3100	Total: Mechanical & Electrical		▼	21	36.50	46	19%	26.50%	29.50%	
170	0010	**CLUBS, SOCIAL** Fraternal	R17100 -100	S.F.	70	100	131				170
	0020	Total project costs		C.F.	4.38	6.65	7.90				
	2720	Plumbing		S.F.	4.40	5.50	6.65	5.60%	6.90%	8.55%	
	2770	Heating, ventilating, air conditioning			6.35	7.70	9.85	8.20%	9.25%	14.40%	
	2900	Electrical			5.55	8.65	10.45	6.50%	9.50%	10.55%	
	3100	Total: Mechanical & Electrical		▼	15.55	27	29.50	21%	23%	37%	
180	0010	**CLUBS, Y.M.C.A.**	R17100 -100	S.F.	88	119	145				180
	0020	Total project costs		C.F.	4.05	6.80	10.10				
	2720	Plumbing		S.F.	5.55	11.05	12.40	5.65%	7.60%	10.85%	
	2900	Electrical			6.65	9.10	12.95	6.25%	8.65%	10.20%	
	3100	Total: Mechanical & Electrical		▼	19.70	25	33.50	18.40%	22.50%	29.50%	
190	0010	**COLLEGES** Classrooms & Administration	R17100 -100	S.F.	99	131	175				190
	0020	Total project costs		C.F.	7.15	10.10	15.90				
	0500	Masonry		S.F.	6.50	12.65	14.45	5.65%	8.25%	10.50%	
	2720	Plumbing			4.81	9.65	17.30	5.10%	6.60%	8.95%	
	2900	Electrical			8.05	12.40	14.90	7.70%	9.85%	12%	
	3100	Total: Mechanical & Electrical		▼	19.80	35.50	49	24%	28%	31.50%	
210	0010	**COLLEGES** Science, Engineering, Laboratories	R17100 -100	S.F.	165	193	239				210
	0020	Total project costs		C.F.	9.45	13.80	15.70				
	1800	Equipment		S.F.	9.20	21	23	2%	6.45%	12.65%	
	2900	Electrical			13.60	19.30	29.50	7.10%	9.40%	12.10%	
	3100	Total: Mechanical & Electrical		▼	50.50	60	93	28.50%	31.50%	41%	
	3500	See also division 11600									
230	0010	**COLLEGES** Student Unions	R17100 -100	S.F.	105	148	173				230
	0020	Total project costs		C.F.	5.90	7.70	9.95				
	3100	Total: Mechanical & Electrical		S.F.	27.50	42.50	50.50	23.50%	26%	29%	
250	0010	**COMMUNITY CENTERS**	R17100 -100	"	82.50	107	144				250
	0020	Total project costs		C.F.	5.70	8.10	10.50				
	1800	Equipment		S.F.	2.18	3.72	6.05	1.87%	3.12%	6%	
	2720	Plumbing			4.22	7.20	10.50	4.94%	7%	9.10%	
	2770	Heating, ventilating, air conditioning			6.95	10	13.75	6.95%	10.65%	13.05%	
	2900	Electrical			6.95	9.40	14.30	7.35%	9.10%	10.85%	
	3100	Total: Mechanical & Electrical		▼	26	31	44.50	22.50%	26.50%	32.50%	
280	0010	**COURT HOUSES**	R17100 -100	S.F.	124	144	166				280
	0020	Total project costs		C.F.	9.60	11.50	14.50				
	2720	Plumbing		S.F.	5.95	8.35	12	5.95%	7.45%	8.20%	
	2900	Electrical			11.70	14	17.50	8.55%	9.95%	11.50%	
	3100	Total: Mechanical & Electrical		▼	30	34	46.50	22.50%	29.50%	30.50%	

17100 | S.F. & C.F. Costs

				UNIT	UNIT COSTS 1/4	UNIT COSTS MEDIAN	UNIT COSTS 3/4	% OF TOTAL 1/4	% OF TOTAL MEDIAN	% OF TOTAL 3/4	
850	2720	Plumbing		S.F.	3.19	4.10	4.67	5.40%	6%	7.45%	850
	2770	Heating, ventilating, air conditioning			4.69	6.25	7.60	8.60%	8.65%	9.60%	
	2900	Electrical			7.15	8.20	9.70	10.40%	12.45%	13.60%	
	3100	Total: Mechanical & Electrical		▼	18.35	19.95	28	20.50%	26.50%	31%	
860	0010	**SWIMMING POOLS**	R17100 -100	S.F.	92.50	155	305				860
	0020	Total project costs		C.F.	7.40	9.25	10.05				
	2720	Plumbing		S.F.	8.55	9.75	13.60	4.80%	9.70%	20.50%	
	2900	(+) Electrical			6.95	11.25	16.40	6.50%	7.25%	7.60%	
	3100	Total: Mechanical & Electrical		▼	16.95	43	58.50	11.15%	14.10%	23.50%	
870	0010	**TELEPHONE EXCHANGES**	R17100 -100	S.F.	123	180	228				870
	0020	Total project costs		C.F.	7.65	12.25	16.85				
	2720	Plumbing		S.F.	5.20	8.20	11.70	4.52%	5.80%	6.90%	
	2770	Heating, ventilating, air conditioning			12	24	30	11.80%	16.05%	18.40%	
	2900	Electrical			12.50	19.80	35	10.90%	14%	17.85%	
	3100	Total: Mechanical & Electrical		▼	37	70	99	29.50%	33.50%	44.50%	
910	0010	**THEATERS**	R17100 -100	S.F.	77	99	146				910
	0020	Total project costs		C.F.	3.56	5.25	7.75				
	2720	Plumbing		S.F.	2.57	2.79	11.40	2.92%	4.70%	6.80%	
	2770	(+) Heating, ventilating, air conditioning			7.50	9.10	11.25	8%	12.25%	13.40%	
	2900	Electrical			6.75	9.10	18.55	8.05%	9.95%	12.25%	
	3100	Total: Mechanical & Electrical		▼	17.35	26	53.50	23%	26.50%	27.50%	
940	0010	**TOWN HALLS** City Halls & Municipal Buildings	R17100 -100	S.F.	90.50	116	153				940
	0020	Total project costs		C.F.	7.85	9.70	13.25				
	2720	Plumbing		S.F.	3.60	6.75	12.40	4.31%	5.95%	7.95%	
	2770	Heating, ventilating, air conditioning			6.50	12.90	18.85	7.05%	9.05%	13.45%	
	2900	Electrical			8.20	11.95	15.95	8.05%	9.50%	12.05%	
	3100	Total: Mechanical & Electrical		▼	27.50	32.50	42.50	22%	26.50%	31%	
970	0010	**WAREHOUSES** And Storage Buildings	R17100 -100	S.F.	34	49.50	68.50				970
	0020	Total project costs		C.F.	1.85	2.63	4.36				
	0100	Site work		S.F.	3.32	6.60	9.95	6.05%	12.95%	19.85%	
	0500	Masonry			2.01	4.57	9.85	3.73%	7.40%	12.30%	
	1800	Equipment			.52	1.11	6.25	.91%	1.82%	5.55%	
	2720	Plumbing			1.07	1.92	3.67	2.90%	4.80%	6.55%	
	2730	Heating, ventilating, air conditioning			1.29	3.45	4.63	2.41%	5%	8.90%	
	2900	Electrical			2.03	2.69	5.95	5.15%	7.20%	10.10%	
	3100	Total: Mechanical & Electrical		▼	5.30	8.15	17.80	12.75%	18.90%	26%	
990	0010	**WAREHOUSE & OFFICES** Combination	R17100 -100	S.F.	39.50	52.50	73				990
	0020	Total project costs		C.F.	2.02	2.94	4.34				
	1800	Equipment		S.F.	.69	1.33	2.05	.52%	1.21%	2.40%	
	2720	Plumbing			1.53	2.71	4.07	3.74%	4.76%	6.30%	
	2770	Heating, ventilating, air conditioning			2.41	3.77	5.30	5%	5.65%	10.05%	
	2900	Electrical			2.65	3.93	6.20	5.85%	8%	10%	
	3100	Total: Mechanical & Electrical		▼	7.30	10.45	17.25	14.40%	19.95%	24.50%	

For information about Means Estimating Seminars, see yellow pages 12 and 13 in back of book

For expanded coverage of these items see *Means Square Foot Costs 2005*

Downtown Family YMCA

Case Number	AGZ103
Project Name	Downtown Family YMCA
Project Cost	18551164
Site Size	746183
Building Use	Recreational
Bid Date	8/15/2001
Num Floors	4
Read Only	False
Historic	False
Base Month	Dec
Base Year	2003
Base Location	MI - Detroit
Projected Month	Dec
Projected Year	2003
Projected Location	MI - Detroit
Building Size	110000
Auto Calc	True
Num Buildings	1
Project Height	40
1st Floor Height	10
1st Floor Size	27500
Foundation	CON
Exterior Wall	CMU
Interior Wall	DRY
RoofType	SPL
Floor Type	CON
Project Type	NEW
By Contact	
By Firm	Neumann/Smith & Associates
By Street	400 Galleria Officentre Ste 555
By City	Southfield
By State	MI
By Zip	48034
By Phone	
By Fax	
For Contact	
For Firm	
For Street	
For City	
For State	
For Zip	
For Phone	
For Fax	
Base Currency	
Projected Currency	
Exchange Rate	
User Defined 1	
User Defined 2	
User Defined 3	
User Defined 4	
User Defined 5	
User Defined 6	
User Defined 7	
User Defined 8	

Code	Division Name	%	Sq. Cost	Projected
00	**Bidding Requirements**	**1.20**	**2.02**	**222,006**
	Bidding Requirements	1.20	2.02	222005.85
01	**General Requirements**	**10.16**	**17.13**	**1,884,680**
	General Requirements	10.16	17.13	1884680.29
03	**Concrete**	**5.38**	**9.07**	**997,338**
	Concrete	5.38	9.07	997338.46
04	**Masonry**	**10.14**	**17.11**	**1,881,875**
	Masonry	10.14	17.11	1881874.64
05	**Metals**	**9.25**	**15.60**	**1,715,740**
	Metals	9.25	15.60	1715740.38
06	**Wood & Plastics**	**2.01**	**3.39**	**373,279**
	Wood & Plastics	2.01	3.39	373279.08
07	**Thermal & Moisture Protection**	**5.10**	**8.60**	**946,393**
	Thermal & Moisture Protection	5.10	8.60	946393.23
08	**Doors & Windows**	**5.67**	**9.56**	**1,051,088**
	Doors & Windows	5.67	9.56	1051088.50
09	**Finishes**	**6.80**	**11.47**	**1,261,596**
	Finishes	6.80	11.47	1261595.54
10	**Specialties**	**1.60**	**2.70**	**296,998**
	Specialties	1.60	2.70	296997.64
11	**Equipment**	**2.33**	**3.93**	**431,771**
	Equipment	2.33	3.93	431770.52
12	**Furnishings**	**0.00**	**0.00**	**0**
13	**Special Construction**	**12.93**	**21.81**	**2,399,396**
	Special Construction	12.93	21.81	2399395.90
14	**Conveying Systems**	**0.23**	**0.38**	**42,060**
	Elevators	0.23	0.38	42059.52
15	**Mechanical**	**17.77**	**29.97**	**3,296,679**
	Mechanical	17.77	29.97	3296679.16
16	**Electrical**	**9.43**	**15.91**	**1,750,266**
	Electrical	9.43	15.91	1750265.50
	Total Building Costs	**100.00**	**168.65**	**18,551,164**

Code	Division Name	%	Sq. Cost	Projected
02	**Site Work**	**100.00**	**4.72**	**3,519,390**
	Site Work	100.00	4.72	3519390.00
	Total Site Costs	**100.00**	**471.65**	**3,519,390**
				18,551,164
			Grand Total	**$22,070,554**

Building Division Notes

00	**Bidding Requirements**	Instructions to bidders, information available to bidders, bid forms, bonds & certificates, general conditions, supplementary conditions.
01	**General Requirements**	Summary of work, allowances, measurement and payment, alternates/alternatives, modification procedures, coordination, field engineering, regulatory rquirements, identification systems, references, special project procedures, project meetings, submittals, quality control, construction facilities and temporary controls, material and equipment, facility startup/commissioning, contract closeout, maintenance.
03	**Concrete**	Formwork, reinforcement, accessories, cast-in-place, curing, precast, cementitious decks and toppings, grout, mass.
04	**Masonry**	Grout, accessories, unit, restoration and cleaning, corrosion resistant.
05	**Metals**	Materials, coatings, fastening, structural framing, joists, decking, cold formed framing, fabrications, sheet metal fabrications, ornamental, expansion control.
06	**Wood & Plastics**	Fasteners and adhesives, rough carpentry, finished carpentry, architectural woodwork, plastic fabrications, solid polymer fabrications.
07	**Thermal & Moisture Protection**	Waterproofing, water repellents, air barriers, insulation, EIFS, fireproofing, manufactured roofing and siding, membrane roofing, flashing and sheet metal, skylights, joint sealers.
08	**Doors & Windows**	Metal doors and frames, wood and plastic doors, door opening assemblies, special doors, entrances and storefronts, hardware, glazing, glazed curtainwalls.
09	**Finishes**	Metal support systems, lath and plaster, gypsum board, tile, acoustical treatment, special wall surfaces, wood flooring, resilient flooring, carpet, special flooring, special coatings, painting, wall coverings.
10	**Specialties**	Visual display board, identifying devices, lockers, operable partitions, toilet and bath accessories, wardrobe and closet.
11	**Equipment**	Audio-visual, food service, athletic, recreational and therapeutic, navigation.
13	**Special Construction**	Pre-engineered structures, aquatic facilities.
14	**Elevators**	One.
15	**Mechanical**	Basic materials and methods, insulation, fire protection, plumbing, HVAC, heat generation, refrigeration, heat transfer, air distribution, controls, testing, adjusting and balancing.
16	**Electrical**	Basic materials and methods, power generation - built-up systems, medium voltage distribution, service and distribution, lighting, special systems, electric resistance heating, controls, testing.

Site Division Notes

02	**Site Work**	Demolition, preparation, dewatering, shoring and underpinning, excavation support systems, earthwork, paving and surfacing, utility piping materials, sewerage and drainage, restoration of underground pipe, ponds and reservoirs, power and communications, improvement, landscaping.

Project Notes

Estimate Based On Case: RC050102 - Community Recreation Center
Location: MI - Other
Date: Mar 2001
Building Size: 130,244

* Livonia, Michigan
** Construction Period: Jul 2001 to Mar 2003

Special Project Notes

The City wanted to build an addition and renovate the 56-year-old Bentley High School into a community recreation center. After touring the existing facilities and observing obsolete M/E/P and pool systems, building code deficiencies, barrier free access limitations, energy inefficiencies, hazardous materials, and a dated exterior and interior appearance, Neumann/Smith proposed a brand new building with bright colors, open spaces, ease of movement and a sense of community interaction -- all within the City's original fixed budget.

The physically beautiful building catches the eye of motorists with its walls of patterned and glazed masonry and a dramatic glass cylinder. An undulating landscape provides additional visual interest as well as a variety of spaces for people to congregate, a ½ mile jogging trail, an outdoor spray park, and areas for outdoor concerts.

The new building is composed of three separate blocks arranged around an expansive commons that offers sweeping views to the fitness center, rock climbing wall, gymnastics center, gymnasia, adult/senior lounge, day-care center and soft indoor play area, and concession area.

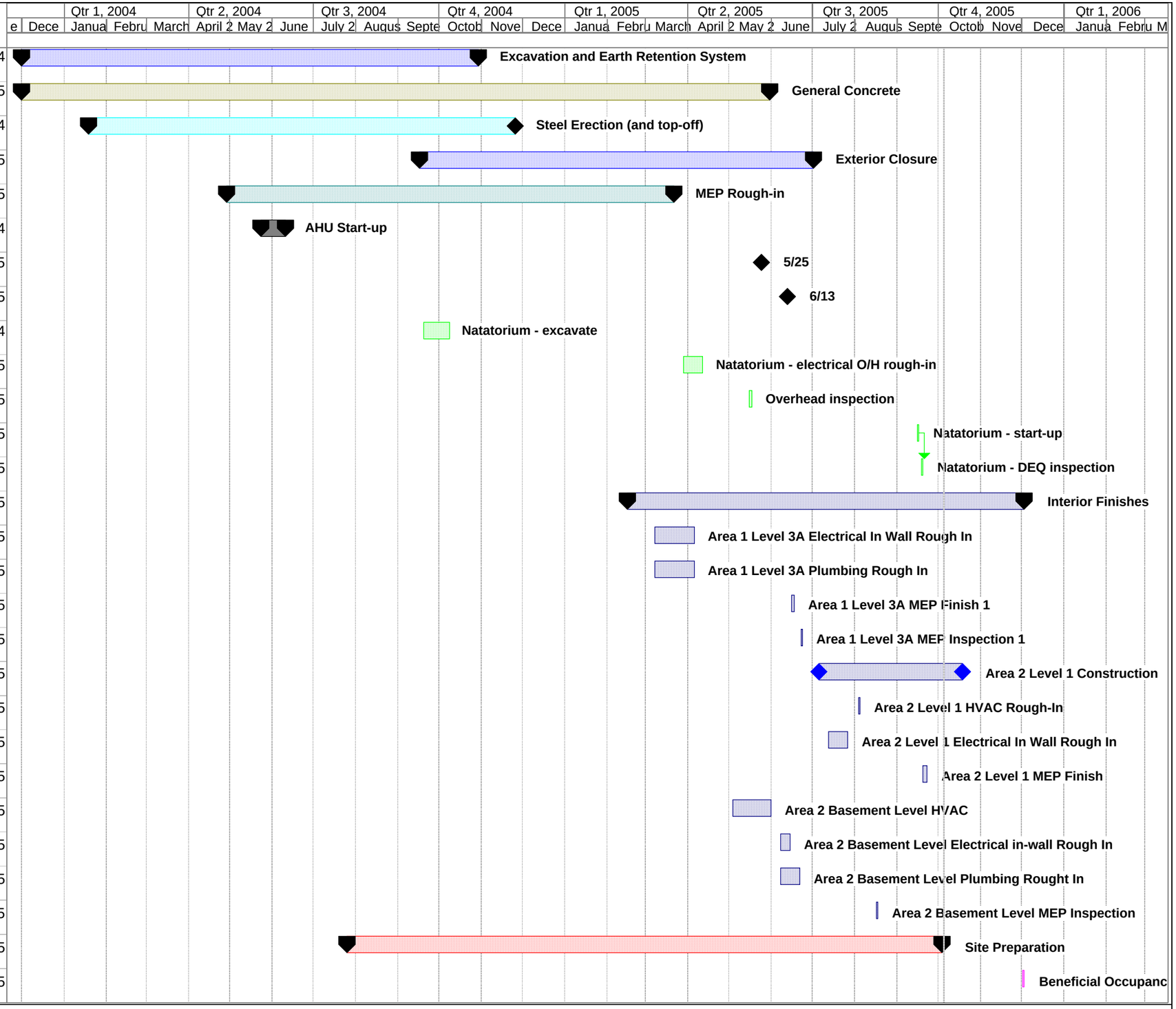
From the entry plaza, visitors can see into the aquatics center. The 250-Foot long water flume is encased by a cylindrical tower, which is the Center's defining structure and focal point. In addition to the leisure pool with a zero depth section and water toys for young kids, vortex pools, and a lazy river for aerobic exercise, the aquatics center includes a competition, 8-lane, stretch 25-meter pool. The pool has several state-of-the-art features including an adjustable floor which can either fold down flat to the pool bottom for deep-water competitive swimming or move upward for shallow water activities, such as aquatic therapy or swimming lessons for young children. The competitive pool also has a moveable bulkhead to convert the pool to either a 25-yard or 25-meter length for different seasonal competitions.

From the atrium, patrons can go up the monumental stair and access the upper fitness balcony, aerobic/dance studio, multi-purpose room and the 3-lane, 1/10-mile walking/jogging track that enters and exits the gym, energizing the central atrium or common areas. Also located on the upper mezzanine level is the spectator gallery, which can accommodate up to 400 people

Virtually all of the building is wall-bearing brick and block masonry to reduce cost and allow continuous construction while the steel roof members were fabricated. Limited glass areas and well-insulated masonry walls enhance energy performance. Fire-troll steel jacketed concrete encased columns were utilized to save on fireproofing and finishes. Additional savings were achieved by incorporating a metal panel in lieu of a glass clerestory above a one-story office wing along a 2-story atrium. By challenging ourselves and our client to look beyond the original project parameters, we were able to create a 135,000 sf "mall of fun" meeting all of the original program criteria. Our careful evaluation of alternatives resulted in more net space for less gross, improved control and security, reduced staffing requirements, substantial life cycle cost savings, and shorter construction time.

Photos Courtesy of Justin Maconuchie

ID	Task Name	Duration	Start	Finish
1	**Excavation and Earth Reten**	240 days	Mon 12/1/03	Fri 10/29/04
2	**General Concrete**	391 days	Mon 12/1/03	Mon 5/30/05
3	**Steel Erection (and top-off)**	224 days	Mon 1/19/04	Thu 11/25/04
4	**Exterior Closure**	206 days	Fri 9/17/04	Fri 7/1/05
5	**MEP Rough-in**	233 days	Thu 4/29/04	Mon 3/21/05
6	**AHU Start-up**	14 days	Mon 5/24/04	Thu 6/10/04
7	**A1 AHU Start-up**	0 days	Wed 5/25/05	Wed 5/25/05
8	**A2 AHU Start-up**	0 days	Mon 6/13/05	Mon 6/13/05
9	**Natatorium - excavate**	15 days	Mon 9/20/04	Fri 10/8/04
10	**Natatorium - electrical O/H r**	10 days	Tue 3/29/05	Mon 4/11/05
11	**Overhead inspection**	2 days	Mon 5/16/05	Tue 5/17/05
12	**Natatorium - start-up**	1 day	Fri 9/16/05	Fri 9/16/05
13	**Natatorium - DEQ inspectior**	1 day	Mon 9/19/05	Mon 9/19/05
14	**Interior Finishes**	208 days	Wed 2/16/05	Fri 12/2/05
15	**Area 1 Level 3A Electrical In**	21 days	Tue 3/8/05	Tue 4/5/05
16	**Area 1 Level 3A Plumbing R**	21 days	Tue 3/8/05	Tue 4/5/05
17	**Area 1 Level 3A MEP Finish**	2 days	Thu 6/16/05	Fri 6/17/05
18	**Area 1 Level 3A MEP Inspec**	1 day	Thu 6/23/05	Thu 6/23/05
19	**Area 2 Level 1 Construction**	75 days	Wed 7/6/05	Tue 10/18/05
20	**Area 2 Level 1 HVAC Rough**	1 day	Thu 8/4/05	Thu 8/4/05
21	**Area 2 Level 1 Electrical In V**	10 days	Wed 7/13/05	Tue 7/26/05
22	**Area 2 Level 1 MEP Finish**	3 days	Tue 9/20/05	Thu 9/22/05
23	**Area 2 Basement Level HVA**	20 days	Wed 5/4/05	Tue 5/31/05
24	**Area 2 Basement Level Elec**	5 days	Wed 6/8/05	Tue 6/14/05
25	**Area 2 Basement Level Plun**	10 days	Wed 6/8/05	Tue 6/21/05
26	**Area 2 Basement Level MEP**	1 day	Wed 8/17/05	Wed 8/17/05
27	**Site Preparation**	311 days	Mon 7/26/04	Mon 10/3/05
28	**Beneficial Occupancy**	1 day	Fri 12/2/05	Fri 12/2/05



Project: Tech1 Schedule
Date: Wed 10/5/05

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

ARCHITECTURAL SURVEY

OF PROPERTY LOCATED IN THE BLOCK BOUNDED BY BROADWAY AVENUE, JOHN R STREET, FARMER STREET AND GRAND RIVER AVENUE, BEING LOTS 11 THROUGH 15, SECTION 7, INCLUSIVE, AND LOTS 63 THROUGH 66, SECTION 7, INCLUSIVE, INCLUDING ADJACENT VACATED STREETS AND ALLEYS OF "GOVERNOR AND JUDGES PLAN SUBDIVISION" (L. 34, DEEDS, P. 543-550, W.C.R.)
CITY OF DETROIT, WAYNE COUNTY, MICHIGAN.

FEBRUARY 8, 2000

REVISED OCTOBER 2, 2000
TO SHOW TRACK ELEVATIONS

SCALE: 1" = 20'

SURVEY NO. 18960-REVISED

FOR: YMCA OF METROPOLITAN DETROIT

N

– ARCHITECTURAL SURVEY LEGEND –

DESC.	DESCRIBED
M.	MEASURED
R.	RECORDED
CALC.	CALCULATED
L	LIBER
P.	PAGE
W/	WITH
MH	MANHOLE
CB	CATCH BASIN
AMT	AMERITECH TELEPHONE
DE	DETROIT EDISON
G.P.	GUARD POST
T	TOP OF CURB
G	GUTTER
TR	TOP OF RAIL
TW	TOP OF WALL
*	UNABLE TO OPEN STRUCTURE
	UTILITY POLE
	CHAIN LINK FENCE
	OVERHEAD UTILITY LINE
	WIRE FENCE
	BUILDING SETBACK LINE
CTV	UNDERGROUND CABLE TELEVISION LINE
	SIGN
	PARKING METER
	PUBLIC TELEPHONE

– ARCHITECTURAL SURVEY NOTES –

THE LOCATION OF ALL UTILITY MANHOLES SHOWN HEREON ARE FROM FIELD MEASUREMENTS. THE PIPE DIAMETERS, AND IN SOME CASES THE DIRECTION OF LINES RUNNING FROM MANHOLES, HAVE BEEN TAKEN FROM MUNICIPAL AND PUBLIC UTILITY COMPANY RECORDS, WHEN NO SURFACE CHECK WAS POSSIBLE. WE HAVE SHOWN UNDERGROUND UTILITY LINES RUNNING DIRECTLY FROM SURFACE MANHOLE TO SURFACE MANHOLE, IN MOST CASES. THIS MAY NOT BE THE ACTUAL ROUTE OF THESE LINES. WE ASSUME NO RESPONSIBILITY AS TO THE SIZE OR LOCATION OF UNDERGROUND UTILITIES.

THE GRID SYSTEM AND BEARINGS SHOWN HEREON HAVE BEEN BASED ON THE MICHIGAN STATE PLANE COORDINATE SYSTEM (SOUTH ZONE)

CITY OF DETROIT BENCH MARK 29-254: ELEVATION 123.28' – TOP OF MONUMENT IN HAND HOLE, 3 FEET SOUTH OF THE NORTH LINE OF ELIZABETH AVENUE AND 4 FEET WEST OF THE EAST LINE JOHN R. AVENUE.

AUXILIARY BENCH MARK NO. 1: ELEVATION 123.62' – TOP OF ARROW ON TOP OF HYDRANT LOCATED ON THE SOUTHWESTERLY CORNER OF BROADWAY AVENUE AND GRAND RIVER AVENUE.

AUXILIARY BENCH MARK NO. 2: ELEVATION 122.28' – TOP OF ARROW ON TOP OF HYDRANT LOCATED ON THE SOUTHEASTERLY CORNER OF BROADWAY AVENUE AND JOHN R STREET.

PEOPLE MOVER CONTROL POINT NO. 9: ELEVATION 119.98' – TOP OF CONCRETE MONUMENT IN MONUMENT BOX LOCATED ON THE NORTHWESTERLY CORNER OF FARMER STREET AND GRAND RIVER AVENUE. (N. 306,986.79 ; E. 1,347,983.54)

PEOPLE MOVER CONTROL POINT NO. 10: ELEVATION 118.83' – TOP OF CONCRETE MONUMENT IN MONUMENT BOX LOCATED ON THE SOUTHEASTERLY CORNER OF BROADWAY AVENUE AND JOHN R. STREET (N. 307,387.12 ; E. 1,347,832.75)

DUE TO THE UNAVAILABILITY OF RECORDS, UNDERGROUND TELEPHONE COMPANY LINES AND STEAM LINES HAVE NOT BEEN SHOWN.

UNDERGROUND CABLE TELEVISION LINES ARE SHOWN FROM FIELD MARKINGS.

BECAUSE A CURRENT TITLE COMMITMENT WAS NOT SUPPLIED WITH THE SURVEY ORDER, THERE MAY BE EASEMENTS OR OTHER ENCUMBRANCES WHICH HAVE NOT BEEN SHOWN.

ASTERISK DENOTES STRUCTURES WHICH WERE UNABLE TO BE OPENED.

CONCRETE WHEEL BUMPERS HAVE NOT BEEN SHOWN.

Entrance to Site

Entrance to Site

S — SEWER LINE
W — WATER MAIN
G — GAS MAIN
E — UNGRND ELECTRIC LINE

DAVID C. ADAMS & SON
PROFESSIONAL LAND SURVEYORS, INC.

IF THE SURVEYOR'S SIGNATURE IS NOT IN A CONTRASTING COLOR, THE PLAN IS A COPY THAT SHOULD BE ASSUMED TO CONTAIN UNAUTHORIZED ALTERATIONS.

by:
PAUL J. KRETSCH
PROFESSIONAL LAND SURVEYOR NO. 30066

DAVID C. ADAMS & SON
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