

**“PM in Action”**

MGMT14998

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Sheridan College

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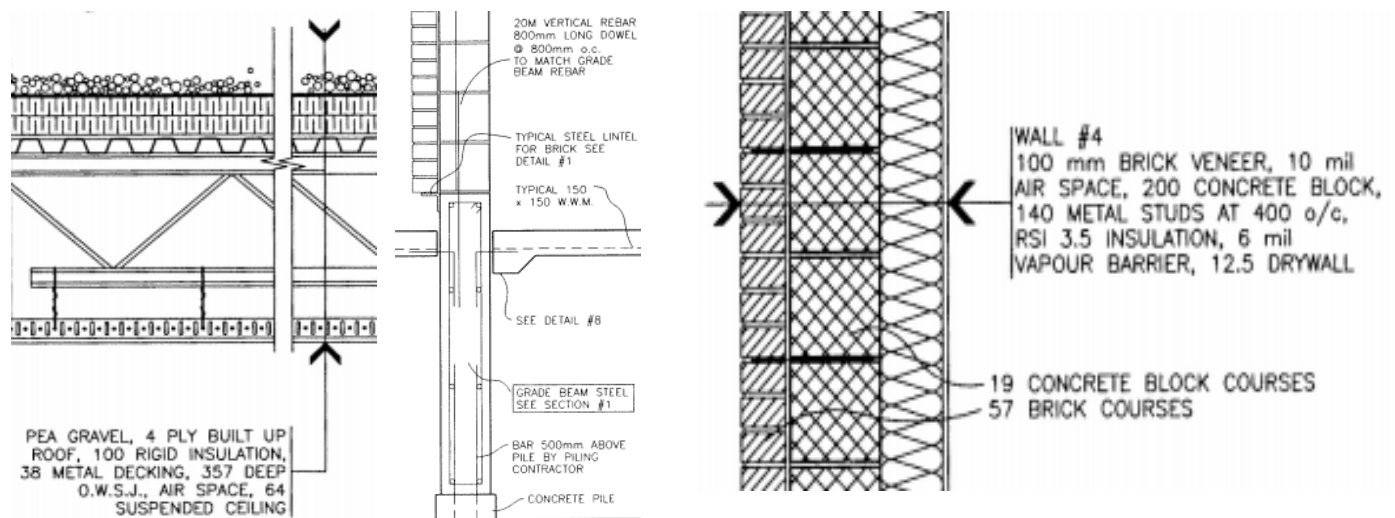
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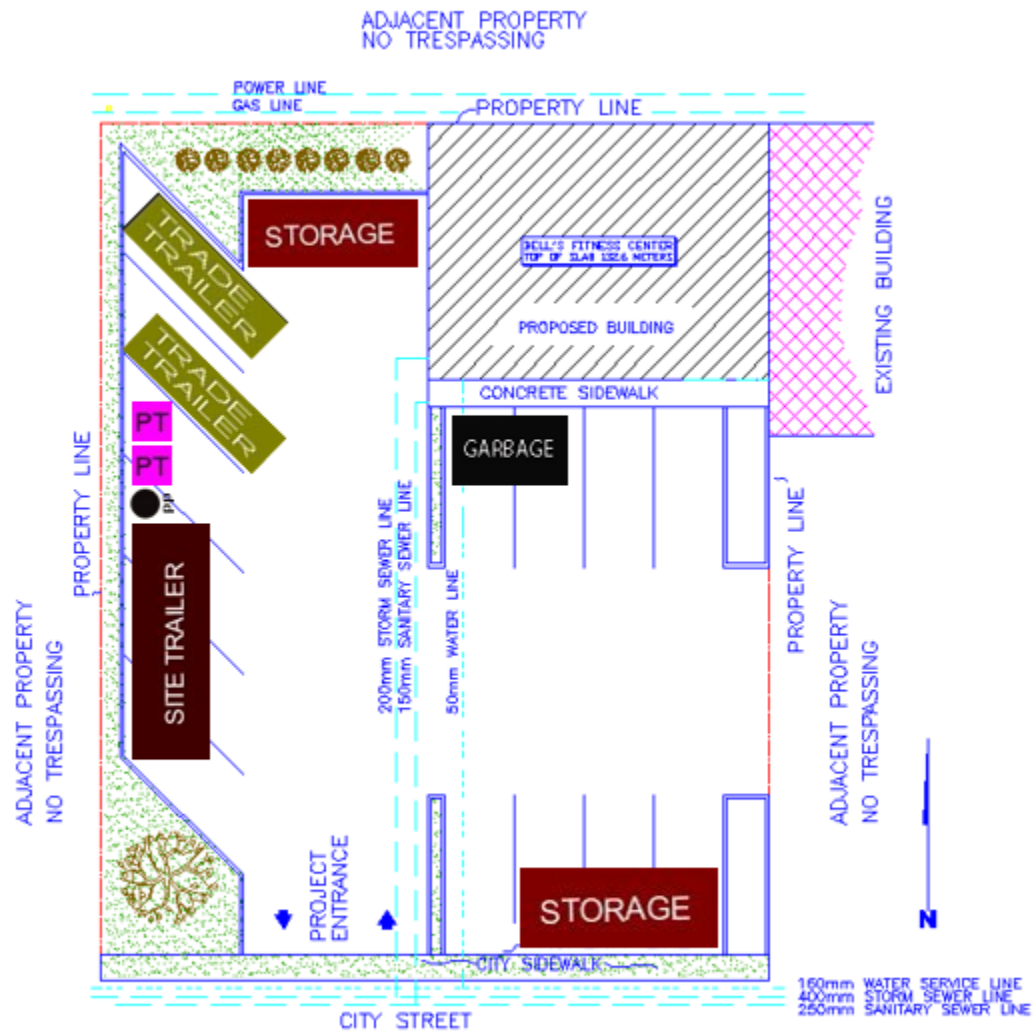
## 11.1 - Pre Construction

- 1) Highland Development Corporation has commissioned GA Architects to create a Fitness Center located in an established area. The proposed building is a 1 storey fitness center with a total GFA of 108 m<sup>2</sup> and is classified as a Class D occupancy (OBC Table 3.1.2.1). The proposed project is to be constructed on a fresh, unoccupied plot of land located in Brockville, Ontario.
- 2) The building's construction is a Concrete/Steel framed structure. The proposed foundation is a shallow foundation assembly slab on grade with concrete piling underneath the pile caps. Brick Veneer can be seen as the exterior buildings cladding material and is fastened onto a Concrete Masonry Unit Block wall. The Assembly is reinforced and insulated using Steel stud framing in the interior. The Roof of the building is a built up flat roof structure with a gravel fill that sits upon a steel OWSJ member.



- 3) Assuming the average bid bond of 10% is required, the bid bond required is \$175,424.90 however, we provided extra with the bond amount being \$185,000. The extra bonding amount is \$9,575.10.
- 4) The Base price of our bid was \$1,754,249.00 with a bid bond amount being \$185,000. The second lowest contractor (Max Construction Ltd.) Base price is \$1,876,310.00 therefore, the difference of the two base price amounts is \$122,061.00. Once we compare the difference by the bid bond amount, we see that we would owe the difference of \$122,061.00 in the event that we refuse to sign the contract. Legally, they cannot take our full bond amount if the difference from the second lowest bidder is lower than the bid bond.

## 11.2 - Construction Site Set-up



### **11.3 - Work Flow - Initial**

**Refer to Excel File for the completed Change Order Document.**

**Refer to Excel File for the completed Progress Claim Document.**

**Refer to the attached table below for Shop Drawings.**

## SHOP DRAWING RECORD LOG SUMMARY

Code: 98

PROJECT NAME: Bells Aerobic and Fitness Center  
 PROJECT MANAGER: Enter Your Project Team Number

Shop Drawing Logs	
Approved	59
Resubmit	11
	0

Drawing #	Description	From The Sub Trade	To Architect For Approval	Returned From Architect	Comments	Status	Approval Time in Days
		Received	Sent	Received	1. Reviewed 2. Reviewed as Noted 3. Revise & Re-Submit		
DIVISION 2 - SITEWORK							
EX4359	Backfill Soil	yes	yes	yes	1	Approved	10
EX555	Pile Foundation	yes	yes	yes	2	Approved	17
DIVISION 3 - CONCRETE							
SD3-89	Concrete Reinforcement	yes	yes	yes	1	Approved	3
SD5a99	Concrete Floor Finish	yes	yes	no	0	Outstanding Item	
SD5-33	Concrete Accessories	yes	yes	yes	1	Approved	6
DIVISION 4 - MASONRY							
VG34-3	Masonry Pcedures	yes	yes	yes	1	Approved	5
SD4354	Brick Masonry	yes	yes	no	0	Outstanding Item	
DIVISION 5 - STRUCTURAL STEEL							
S432	Structural Steel	yes	yes	no	0	Outstanding Item	
S666	Steel Joists	yes	yes	no	0	Outstanding Item	
S321	Steel Deck	yes	yes	no	0	Outstanding Item	
DIVISION 5 - MISCELLANEOUS STEEL							
0	Metal Fabrication	no	no	no	0	Outstanding Item	
0	Embeddments	no	no	no	0	Outstanding Item	
SD32	Loose Lintels	yes	yes	no	1	Approved	
SD55	Plates	yes	yes	no	2	Approved	
DIVISION 6 - WOOD and PLASTICS							
0	Finish Carpentry	no	no	no	0	Outstanding Item	
0	Laminated Plastic	no	no	no	0	Outstanding Item	
0	Architectural Woodwork	no	no	no	0	Outstanding Item	
DIVISION 7 - THERMAL PROTECTION							
SD43	Built-Up Bituminous Roofing	yes	yes	no	0	Outstanding Item	
SD2	Stucco System	yes	yes	no	0	Outstanding Item	
SD6	Sealants	yes	yes	no	0	Outstanding Item	
DIVISION 8 - WINDOWS							
0	Steel Doors and Frames	no	no	no	0	Outstanding Item	
0	Aluminum Doors and Frames	no	no	no	0	Outstanding Item	
0	Wood Doors	no	no	no	0	Outstanding Item	
0	Panel Folding Doors	no	no	no	0	Outstanding Item	
0	Windows	no	no	no	0	Outstanding Item	
0	Finish Hardware	no	no	no	0	Outstanding Item	
DIVISION 9 - FINISHES							
DY255-38	Metal Stud System	yes	yes	no	0	Outstanding Item	
0	Suspension System - Acoustic Ceilings	no	no	no	0	Outstanding Item	
0	Ceramic Tile	no	no	no	0	Outstanding Item	
0	Quarry Tile	no	no	no	0	Outstanding Item	
0	Acoustical Panels and Tiles	no	no	no	0	Outstanding Item	
0	Wood Flooring	no	no	no	0	Outstanding Item	
0	Acoustic Wall Treatment	no	no	no	0	Outstanding Item	
0	Painting	no	no	no	0	Outstanding Item	
DIVISION 10 - SPECIALTIES							
TB23-T67	Louvre and Vents	yes	yes	no	0	Outstanding Item	
TB324	Wall and Corner Guards	yes	no	no	0	Outstanding Item	
W543-98	Lockers	yes	no	no	0	Outstanding Item	
W8897K	Demountable Partitions	yes	no	no	0	Outstanding Item	
0	Metal Storage Shelving	no	no	no	0	Outstanding Item	
0	Toilet and Bath Accessories	no	no	no	0	Outstanding Item	
DIVISION 15 - MECHANICAL PLUMBING							
P234	Dry Sprinkler System	yes	yes	yes	2	Approved	6
P435	Water Supply	yes	yes	no	0	Outstanding Item	
P761	Pipe Fittings and Valves	yes	yes	no	0	Outstanding Item	
P761	Drainage Waste	yes	yes	no	0	Outstanding Item	
P761	Plumbing Fixtures	yes	yes	no	0	Outstanding Item	
P761	Pumps	yes	yes	no	0	Outstanding Item	
DIVISION 15 - MECHANICAL HEATING							
H34-EP	Heat Exchangers	yes	yes	yes	2	Approved	5
H54-EP	Rooftop HVAC AC-Units	yes	yes	no	0	Outstanding Item	
W22-55	Louvres and Vents	yes	yes	no	0	Outstanding Item	
W22-55	Exhaust Hoods	yes	yes	no	0	Outstanding Item	
W22-55	Grilles and Diffusers	no	no	no	0	Outstanding Item	
W22-55	Built-In Vacuflow	no	no	no	0	Outstanding Item	
DIVISION 16 - ELECTRICAL							
EL235-2	Circuit Breakers	yes	yes	yes	1	Approved	10
EL327-8	Lighting Equipment	yes	yes	yes	2	Approved	9
EL327-11	Exit Lights	yes	yes	no	0	Outstanding Item	
EL327-22	Building Entrance Control System	yes	yes	no	0	Outstanding Item	
EL327-33	Emergency Lighting	yes	yes	no	0	Outstanding Item	
EL327-45	Public Address	no	no	no	0	Outstanding Item	
EL327-66	Unit Heaters	no	no	no	0	Outstanding Item	

Nearing framing process,  
Structural Steel is still  
outstanding.

Average Shop Drawing Approval in Days 7.9  
 Average Shop Drawing Approval Days Architect 9.5  
 Average Shop Drawing Approval Days Engineer 6.6

## **11.4 - Work Flow - Structure**

**Refer to Excel File for the completed Change Order Document.**

**Refer to Excel File for the completed Progress Claim Document.**

**Refer to the attached table below for Shop Drawings.**

SHOP DRAWING RECORD LOG SUMMARY						
Code: 75		PROJECT NAME: Bells Aerobic and Fitness Center			Shop Drawing Logs	
PROJECT MANAGER: Enter Your Project Team Number					59	
					Approved	38
					Resubmit	1
Drawing #	Description	From The Sub Trade	To Architect For Approval	Returned From Architect	Comments	Approval Time in Days
		Received	Sent	Received	1. Reviewed 2. Reviewed as Noted 3. Revise & Re-Submit	Status
DIVISION 2 - SITEWORK						
EX4359	Backfill Soil	yes	yes	yes	1	Approved
EX555	Pile Foundation	yes	yes	yes	2	Approved
DIVISION 3 - CONCRETE						
SD3-89	Concrete Reinforcement	yes	yes	yes	1	Approved
SD6a99	Concrete Floor Finish	yes	yes	yes	1	Approved
SD6-33	Concrete Accessories	yes	yes	yes	1	Approved
DIVISION 4 - MASONRY						
VG34-3	Masonry Procedures	yes	yes	yes	1	Approved
SD4354	Brick Masonry	yes	yes	yes	1	Approved
DIVISION 5 - STRUCTURAL STEEL						
S432	Structural Steel	yes	yes	yes	1	Approved
S666	Steel Joists	yes	yes	yes	2	Approved
S321	Steel Deck	yes	yes	yes	2	Approved
DIVISION 6 - MISCELLANEOUS STEEL						
SR34-3	Metal Fabrication	yes	yes	yes	1	Approved
ST64-1	Embedments	yes	yes	yes	2	Approved
SD32	Loose Lintels	yes	yes	no	0	Outstanding Item
SD55	Plates	yes	yes	yes	2	Approved
DIVISION 6 - WOOD AND PLASTICS						
WD33	Finish Carpentry	yes	yes	no	0	Outstanding Item
WD55	Laminated Plastic	no	no	no	0	Outstanding Item
WD66	Architectural Woodwork	yes	no	no	0	Outstanding Item
DIVISION 7 - THERMAL PROTECTION						
SD43	Built-Up Bituminous Roofing	yes	yes	yes	1	Approved
SD2	Stucco System	yes	yes	no	0	Outstanding Item
SD6	Sealants	yes	yes	yes	2	Approved
DIVISION 8 - WINDOWS						
MW23	Steel Doors and Frames	yes	yes	yes	1	Approved
MW43	Aluminum Doors and Frames	yes	yes	yes	2	Approved
MW54	Wood Doors	yes	yes	no	0	Outstanding Item
MW32	Panel Folding Doors	yes	yes	no	0	Outstanding Item
MW51	Windows	no	no	no	0	Outstanding Item
MW9	Finish Hardware	yes	yes	yes	1	Approved
DIVISION 9 - FINISHES						
DY255-38	Metal Stud System	yes	yes	yes	1	Approved
D54	Suspension System - Acoustic Ceilings	yes	yes	yes	2	Approved
FL98	Ceramic Tile	yes	yes	yes	2	Approved
FL74	Quarry Tile	yes	yes	yes	1	Approved
AC45	Acoustical Panels and Tiles	yes	yes	yes	2	Approved
W43	Wood Flooring	yes	yes	no	0	Outstanding Item
AWT33	Acoustic Wall Treatment	yes	yes	no	0	Outstanding Item
P34	Painting	yes	yes	yes	1	Approved
DIVISION 10 - SPECIALTIES						
TB23-T67	Louvre and Vents	yes	yes	yes	1	Approved
TB324	Wall and Corner Guards	yes	yes	yes	2	Approved
W543-98	Lockers	yes	yes	yes	1	Approved
W8897K	Demountable Partitions	yes	yes	yes	1	Approved
Y43	Metal Storage Shelving	no	no	no	0	Outstanding Item
W33	Toilet and Bath Accessories	no	no	no	0	Outstanding Item
DIVISION 11 - PLUMBING						
P234	Dry Sprinkler System	yes	yes	yes	3	Resubmit
P435	Water Supply	yes	yes	yes	1	Approved
P761	Pipe Fittings and Valves	yes	yes	yes	1	Approved
P761	Drainage Waste	yes	yes	yes	2	Approved
P761	Plumbing Fixtures	yes	yes	no	0	Outstanding Item
P761	Pumps	no	no	no	0	Outstanding Item
DIVISION 12 - MECHANICAL HEATING						
H34-EP	Heat Exchangers	yes	yes	yes	2	Approved
H54-EP	Roof-top HVAC AC-Units	yes	yes	no	0	Outstanding Item
W22-55	Louvers and Vents	yes	yes	yes	1	Approved
W22-55	Exhaust Hoods	yes	yes	yes	1	Approved
W22-55	Grilles and Diffusers	yes	yes	no	0	Outstanding Item
W22-55	Built-In Vacuflow	no	no	no	0	Outstanding Item
DIVISION 16 - ELECTRICAL						
EL235-2	Circuit Breakers	yes	yes	yes	1	Approved
EL327-8	Lighting Equipment	yes	yes	yes	2	Approved
EL327-11	Exit Lights	yes	yes	no	0	Outstanding Item
EL327-22	Building Entrance Control System	yes	yes	no	0	Outstanding Item
EL327-33	Emergency Lighting	yes	yes	yes	2	Approved
EL327-45	Public Address	yes	yes	yes	1	Approved
EL327-66	Unit Heaters	yes	yes	no	0	Outstanding Item

Average Shop Drawing Approval in Days 14.3  
Average Shop Drawing Approval Days Architect 11.8  
Average Shop Drawing Approval Days Engineer 16.4

Nearing framing process,  
loose lintels and stucco  
system is still outstanding.



## **11.5 - Work Flow - Finish**

**Refer to Excel File for the completed Change Order Document.**

**Refer to Excel File for the completed Progress Claim Document.**

**Refer to the attached table below for Shop Drawings.**

SHOP DRAWING RECORD LOG SUMMARY					Shop Drawing Logs	
PROJECT NAME: <b>Bells Aerobic and Fitness Center</b> PROJECT MANAGER: <b>Enter Your Project Team Number</b>					59	
					Approved	51
					Resubmit	2
		From The Sub Trade	To Architect For Approval	Returned From Architect	Comments	Approval Time in Days
Drawing #	Description	Received	Sent	Received	1. Reviewed 2. Reviewed as Noted 3. Revise & Re-Submit	Status
<b>DIVISION 2 - SITEWORK</b>						
EX4359	Backfill Soil	yes	yes	yes	1	Approved 10
EX555	Pile Foundation	yes	yes	yes	2	Approved 17
<b>DIVISION 3 - CONCRETE</b>						
SD3-89	Concrete Reinforcement	yes	yes	yes	1	Approved 3
SD5-99	Concrete Floor Finish	yes	yes	yes	1	Approved 25
SD5-33	Concrete Accessories	yes	yes	yes	1	Approved 6
<b>DIVISION 4 - MASONRY</b>						
VG34-3	Masonry Procedures	yes	yes	yes	1	Approved 5
SD4354	Brick Masonry	yes	yes	yes	1	Approved 21
<b>DIVISION 5 - STRUCTURAL STEEL</b>						
S432	Structural Steel	yes	yes	yes	1	Approved 9
S666	Steel Joists	yes	yes	yes	2	Approved 14
S321	Steel Deck	yes	yes	yes	2	Approved 15
<b>DIVISION 6 - MISCELLANEOUS STEEL</b>						
SR34-3	Metal Fabrication	yes	yes	yes	1	Approved 2
ST54-1	Embedments	yes	yes	yes	2	Approved 3
SD32	Loose Lintels	yes	yes	no	0	Outstanding Item
SD55	Plates	yes	yes	yes	2	Approved 15
<b>DIVISION 6 - WOOD AND PLASTICS</b>						
WD33	Finish Carpentry	yes	yes	yes	1	Approved 28
WD55	Laminated Plastic	yes	yes	yes	2	Approved 14
WD66	Architectural Woodwork	yes	yes	yes	1	Approved 6
<b>DIVISION 7 - THERMAL PROTECTION</b>						
SD43	Built-Up Bituminous Roofing	yes	yes	yes	1	Approved 5
SD2	Stucco System	yes	yes	yes	2	Approved 13
SD6	Sealants	yes	yes	yes	2	Approved 19
<b>DIVISION 8 - WINDOWS</b>						
MW23	Steel Doors and Frames	yes	yes	yes	1	Approved 8
MW43	Aluminum Doors and Frames	yes	yes	yes	2	Approved 15
MW54	Wood Doors	yes	yes	yes	1	Approved 15
MW32	Panel Folding Doors	yes	yes	yes	1	Approved 21
MW51	Windows	yes	yes	yes	2	Approved 6
MW8	Finish Hardware	yes	yes	yes	1	Approved 9
<b>DIVISION 9 - FINISHES</b>						
DY255-38	Metal Stud System	yes	yes	yes	1	Approved 5
D54	Suspension System - Acoustic Ceilings	yes	yes	yes	2	Approved 11
FL98	Ceramic Tile	yes	yes	yes	2	Approved 8
FL74	Quarry Tile	yes	yes	yes	1	Approved 5
AC45	Acoustical Panels and Tiles	yes	yes	yes	2	Approved 11
W43	Wood Flooring	yes	yes	yes	2	Approved 18
AWT33	Acoustic Wall Treatment	yes	yes	yes	1	Approved 21
P34	Painting	yes	yes	yes	1	Approved 7
<b>DIVISION 10 - SPECIALTIES</b>						
TB23-T67	Louvre and Vents	yes	yes	yes	1	Approved 23
TB324	Wall and Corner Guards	yes	yes	yes	2	Approved 17
W543-98	Lockers	yes	yes	yes	1	Approved 20
W8897K	Demountable Partitions	yes	yes	yes	1	Approved 19
Y43	Metal Storage Shelving	yes	yes	yes	2	Approved 8
W33	Toilet and Bath Accessories	no	no	no	0	Outstanding Item
<b>DIVISION 11 - MECHANICAL PLUMBING</b>						
P234	Dry Sprinkler System	yes	yes	yes	3	Resubmit 9
P435	Water Supply	yes	yes	yes	1	Approved 19
P761	Pipe Fittings and Valves	yes	yes	yes	1	Approved 24
P761	Drainage Waste	yes	yes	yes	2	Approved 25
P761	Plumbing Fixtures	yes	yes	no	0	Outstanding Item
P761	Pumps	yes	yes	yes	3	Resubmit 24
<b>DIVISION 12 - MECHANICAL HEATING</b>						
H34-EP	Heat Exchangers	yes	yes	yes	2	Approved 5
H54-EP	Rooftop HVAC AC-Units	yes	yes	no	0	Outstanding Item
W22-55	Louvers and Vents	yes	yes	yes	1	Approved 37
W22-55	Exhaust Hoods	yes	yes	yes	1	Approved 22
W22-55	Grilles and Diffusers	yes	yes	no	0	Outstanding Item
W22-55	Built-In Vacuum	no	no	no	0	Outstanding Item
<b>DIVISION 13 - ELECTRICAL</b>						
EL235-2	Circuit Breakers	yes	yes	yes	1	Approved 10
EL327-8	Lighting Equipment	yes	yes	yes	2	Approved 34
EL327-11	Exit Lights	yes	yes	yes	2	Approved 56
EL327-22	Building Entrance Control System	yes	yes	yes	1	Approved 48
EL327-33	Emergency Lighting	yes	yes	yes	2	Approved 38
EL327-45	Public Address	yes	yes	yes	1	Approved 8
EL327-66	Unit Heaters	yes	yes	yes	2	Approved 40
Average Shop Drawing Approval in Days						16.5
Average Shop Drawing Approval Days Architect						12.8
Average Shop Drawing Approval Days Engineer						20.5

Loose lintels outstanding, required for exterior cladding systems.

Nearing project completion, plumbing/plumbing fixtures still outstanding.

Nearing project completion, HVAC components still outstanding.

\*Acceptable industry standard for architect to approve shop drawings is **10 working days\***  
Average is close, keep an eye on approval times.

## 11.6 - Project Wrap-up

### CLOSE OUT STAGE

#### **STEP 1: Completion**

Final touches of the project and outstanding finishes have been completed. The construction is now 100% completed.

#### **STEP 2: Documentation**

All text and pictorial information regarding the project deliverables have been filled out to completion to assist the client for future development and maintenance.

#### **STEP 3: Project Systems Closure**

All project systems have been successfully closed including any financial or work orders. All records have been completed to the current date. Formal letter stating that the project is complete has been sent out to the team.

#### **STEP 4: Project Review**

Reviewal of the completed project was a success and many lessons were taken from the experience to apply to our future projects. Client and team feedback has also been taken for future reference.

#### **STEP 5: Disband The Project Team**

Reflection of the project timeline has taken place and many lessons have been learnt, despite some minor setbacks and conflicts, the team worked really well together.

#### **STEP 6: Stakeholder Satisfaction**

The project was completed on time and met all the customers' requirements. The project followed the proposed timeline very well, minor setbacks on architect's approval but overall was completed by the proposed date. The end contract value with the change orders was a total of \$1,858,640.

**The project is now complete and ready for occupancy.**

