

**Change Order Request No. 01**

November 12, 2019

To: Ms. Lisa Cummins, CPPB  
Purchasing Manager  
City of Rochester Hills  
1000 Rochester Hills Dr.  
Rochester Hills, MI 48309

**Reference:** City of Rochester Hills, Masonry Screen Wall and Gate Replacement Project  
Auch Project No. 8943

**Subject:** Change Order Number 01

Dear Ms. Cummins,

Following is description of work affecting our contract with City of Rochester Hills as (x) Addition to or ( ) Subtraction from contract prices. Kindly advise immediately if something does not meet with your approval or understanding.

CHANGE ORDER NO. 01

**Bulletin No. 1 - Soil Stabiliation Revisions for Masonry Screen Wall Footing and Foundation  
Due to Unforeseen Field Conditions per TEC Soil Boring Report**

6K Construction Add: \$70,930.00

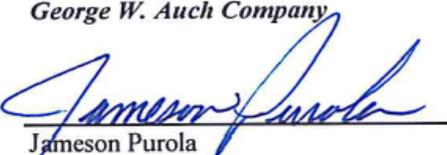
**Extended General Conditions Cost for Onsite Project Supervision Onsite**

Auch Construction Add: \$10,320.00

**Total Contract Change Order No. 1:** \$81,250.00

Please contact me if you have any questions.

Sincerely,  
*George W. Auch Company*

  
Jameson Purola  
Senior Project Engineer

Approved By:  
*City of Rochester Hills*

By: City of Rochester Hills

Date:

Attachments  
File 8843: 1.1

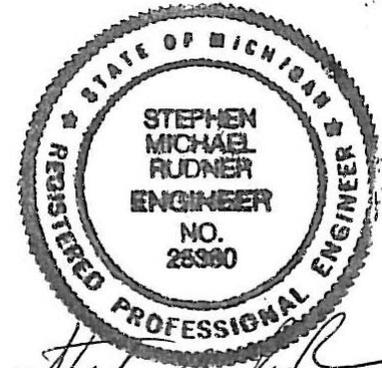
# TRANSMITTAL



**TO:** Jameson P. Purola  
Auch Construction  
65 University Drive  
Pontiac, MI 48342

**PROJECT:** Rochester Hills City Hall – Screen Wall  
Project #18-270

**DATE:** November 7, 2019



November 08, 2019

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## **DESCRIPTION:**

Electronic issue Bulletin 01 - Drawings and calculations sealed and signed.

File 01 RHSW Bulletin 01 iss 2019 11 07. PDF (16,010 KB)

**NOTES:** (3) sets - Hard copy to be delivered to RH Building Department

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**BY:** Aaron Wawrzynaik  
Project Designer

**COPIES TO:** H2A File



**BULLETIN #1**

Project: Rochester City Hall Masonry Screen Wall Replacement and Compound Gate Replacement

Owner: City of Rochester Hills  
1000 Rochester Hills Drive  
Rochester Hills MI 48309

Architect: H2A Architects Inc.  
9100 Lapeer Road, Suite B  
Davison MI 48423  
810-412-5640

Issue Date: November 7, 2019

**GENERAL NOTES**

This bulletin is a request for change in prices. It is not an order for work. These prices will be evaluated and a Change Order written for those accepted.

The Contractor of the work required by this bulletin shall be the same as originally identified and all incidentals required in connection with the work described here shall be included even though not specifically noted.

The Contractor shall be held responsible to include and adjust the work of all trades involved as required to complete the work described within this bulletin.

**BREAKDOWN OF QUOTATION**

For the purpose of evaluation, the Contractor shall quote each individual item listed in this bulletin and shall provide a breakdown of the costs for each items. The breakdown shall include itemized cost of profit and overhead.

**TIME OF CONSTRUCTION**

The Contractor shall state any change (increase or decrease) of the time in days of construction required for each item. If no time change is quoted, the time change shall be zero days.

**ITEMS INCLUDE**

- Item #1: Refer to attached
- a. Drawing C101 and C102 sealed and signed for foundation adjustments due to poor soil conditions.
  - b. Structural calculations.

H2A Architects

A handwritten signature in black ink, appearing to read 'George Ananich', is written over a light blue horizontal line.

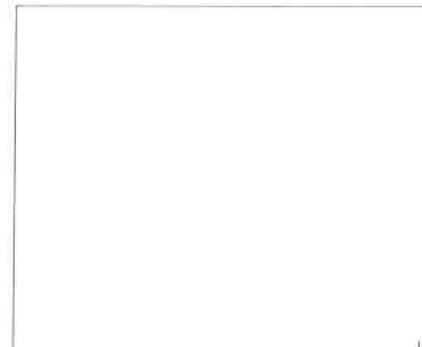
George Ananich, AIAProject Manager

**Criteria**

Retained Height	=	1.00 ft
Wall height above soil	=	13.00 ft
Slope Behind Wall	=	0.00 : 1
Height of Soil over Toe	=	12.00 in
Water height over heel	=	0.0 ft

**Soil Data**

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	32.0 psf/ft
	=	
Passive Pressure	=	150.0 psf/ft
Soil Density, Heel	=	110.0 pcf
Soil Density, Toe	=	0.00 pcf
Footing  Soil Friction	=	0.250
Soil height to ignore for passive pressure	=	12.00 in



**Surcharge Loads**

Surcharge Over Heel	=	0.0 psf
NOT Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0 psf
NOT Used for Sliding & Overturning		

**Axial Load Applied to Stem**

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

**Lateral Load Applied to Stem**

Lateral Load	=	0.0 #/ft
...Height to Top	=	13.00 ft
...Height to Bottom	=	0.00 ft
The above lateral load has been increased by a factor of		1.00
Wind on Exposed Stem	=	30.0 psf

**Adjacent Footing Load**

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

**Design Summary**

<b>Wall Stability Ratios</b>		
Overturning	=	2.62 OK
Sliding	=	3.23 OK
Total Bearing Load	=	4,195 lbs
...resultant ecc.	=	10.87 in
Soil Pressure @ Toe	=	1,754 psf OK
Soil Pressure @ Heel	=	0 psf OK
Allowable	=	2,000 psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	2,105 psf
ACI Factored @ Heel	=	0 psf
Footing Shear @ Toe	=	0.0 psi OK
Footing Shear @ Heel	=	1.4 psi OK
Allowable	=	82.2 psi
<b>Sliding Calcs (Vertical Component NOT Used)</b>		
Lateral Sliding Force	=	586.0 lbs
less 100% Passive Force	= -	843.8 lbs
less 100% Friction Force	= -	1,048.8 lbs
Added Force Req'd	=	0.0 lbs OK
....for 1.5 : 1 Stability	=	0.0 lbs OK

**Stem Construction**

<b>Design Height Above Ftg</b>		ft =	0.00	Stem OK
<b>Wall Material Above "Ht"</b>		=	Concrete	
<b>Thickness</b>		=	12.00	
<b>Rebar Size</b>		=	# 5	
<b>Rebar Spacing</b>		=	16.00	
<b>Rebar Placed at</b>		=	Edge	
<b>Design Data</b>				
<b>fb/FB + fa/Fa</b>		=	0.452	
<b>Total Force @ Section</b>		lbs =	649.6	
<b>Moment....Actual</b>		ft-# =	4,688.5	
<b>Moment....Allowable</b>		=	10,371.6	
<b>Shear.....Actual</b>		psi =	5.3	
<b>Shear.....Allowable</b>		psi =	75.0	
<b>Wall Weight</b>		=	150.0	
<b>Rebar Depth 'd'</b>		in =	10.19	
<b>LAP SPLICE IF ABOVE</b>		in =	23.40	
<b>LAP SPLICE IF BELOW</b>		in =		
<b>HOOK EMBED INTO FTG</b>		in =	9.59	

**Top Stem**

**Load Factors**

Building Code	IBC 2006,ACI
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.600
Seismic, E	1.000

**Masonry Data**

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Use Half Stresses	=	
Modular Ratio 'n'	=	
Short Term Factor	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	Medium Weight
Masonry Design Method	=	ASD

**Concrete Data**

f'c	psi =	2,500.0
Fy	psi =	60,000.0

**Footing Dimensions & Strengths**

Toe Width	=	2.00 ft
Heel Width	=	3.00
Total Footing Width	=	5.00
Footing Thickness	=	30.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft
f'c =	3,000 psi	Fy = 60,000 psi
Footing Concrete Density	=	150.00 pcf
Min. As %	=	0.0018
Cover @ Top	2.00	@ Btm.= 3.00 in

**Footing Design Results**

	=	Toe	Heel
Factored Pressure	=	2,105	0 psf
Mu' : Upward	=	3,623	416 ft-#
Mu' : Downward	=	1,164	1,164 ft-#
Mu: Design	=	2,459	748 ft-#
Actual 1-Way Shear	=	0.00	1.41 psi
Allow 1-Way Shear	=	82.16	82.16 psi
Toe Reinforcing	=	# 4 @ 18.00 in	
Heel Reinforcing	=	# 4 @ 18.00 in	
Key Reinforcing	=	None Spec'd	
<b>Other Acceptable Sizes &amp; Spacings</b>			
Toe:	Not req'd, Mu < S * Fr		
Heel:	Not req'd, Mu < S * Fr		
Key:	No key defined		

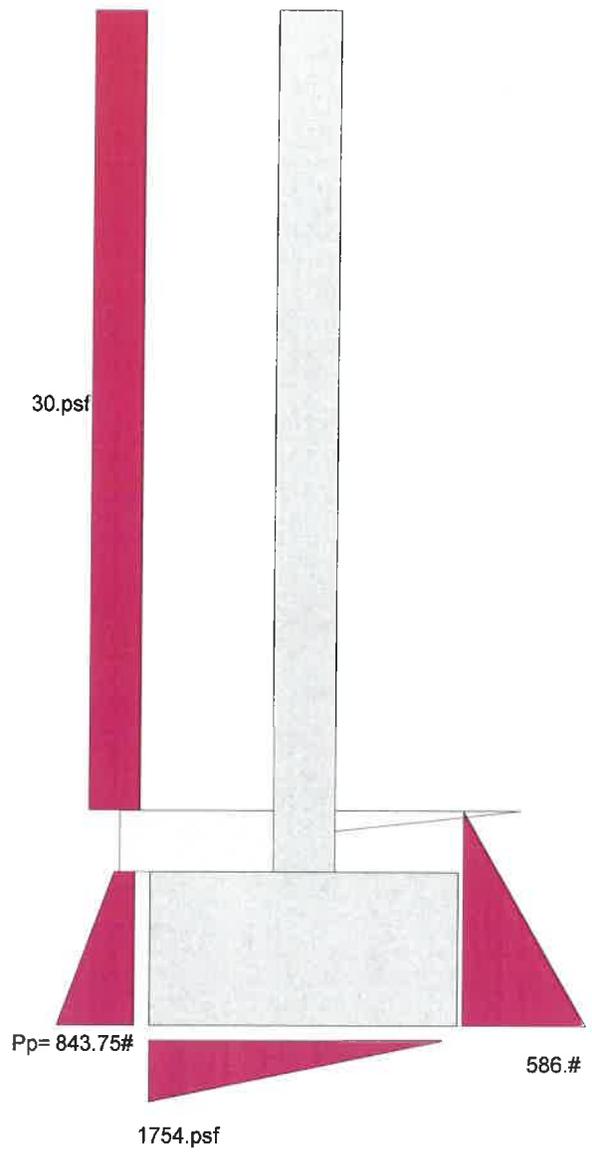
**Summary of Overturning & Resisting Forces & Moments**

Item	.....OVERTURNING.....			.....RESISTING.....					
	Force lbs	Distance ft	Moment ft-#	Force lbs	Distance ft	Moment ft-#			
Heel Active Pressure	=	196.0	1.17	228.7	Soil Over Heel	=	220.0	4.00	880.0
Surcharge over Heel	=				Sloped Soil Over Heel	=			
Surcharge Over Toe	=				Surcharge Over Heel	=			
Adjacent Footing Load	=				Adjacent Footing Load	=			
Added Lateral Load	=				Axial Dead Load on Stem	=			
Load @ Stem Above Soil	=	390.0	10.00	3,900.0	* Axial Live Load on Stem	=			
	=				Soil Over Toe	=		1.00	
					Surcharge Over Toe	=			
<b>Total</b>		<b>586.0</b>	<b>O.T.M.</b>	<b>4,128.7</b>	Stem Weight(s)	=	2,100.0	2.50	5,250.0
	=		=		Earth @ Stem Transitions	=			
<b>Resisting/Overturning Ratio</b>				<b>2.62</b>	Footing Weight	=	1,875.0	2.50	4,687.5
Vertical Loads used for Soil Pressure	=			4,195.0 lbs	Key Weight	=			
					Vert. Component	=			
					<b>Total</b>	=	<b>4,195.0 lbs</b>	<b>R.M.=</b>	<b>10,817.5</b>

\* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

DESIGNER NOTES:





### CB1 EXISTING CURB CATCH BASIN

RIM = 746.34  
 6" PLASTIC INV SOUTH = 740.59  
 6" PLASTIC INV NORTH = 740.59

NOTE  
 ALL INTERNAL GATE REINFORCING TO BE AS DESIGNED BY GATE MANUFACTURER. THESE DRAWINGS ARE DIAGRAMMATICAL ONLY

NOTE  
 CONSUMERS ENERGY REP  
 "DEONDRA HALE-KINGS" - (248) 433-5898  
 CONSUMERS ENERGY EMERGENCY - (800) 477-5050  
 ELECTRICAL DTE REP - (586) 947-2224  
 DTE EMERGENCY - (800) 477-4747



November 08, 2019



NO.	DESCRIPTION	DATE
6		
5	BULLETIN #1	11/7/19
4	CLARIFICATION #1	10/7/19
3	FOR BIDS	5/22/19
2	OWNER REVIEW	5/21/19
1	OWNER REVIEW	4/30/19

CITY OF ROCHESTER HILLS  
 MASONRY SCREEN WALL  
 REPLACEMENT AND  
 COMPOUND GATE REPLACEMENT  
 1000 ROCHESTER HILLS DRIVE  
 ROCHESTER HILLS, MI 48309

DRAWING TITLE  
**FOUNDATION SITE PLAN,  
 SITE PLAN AND ELEVATION**

PROJECT NO. 18-270

DATE MAY 20, 2019

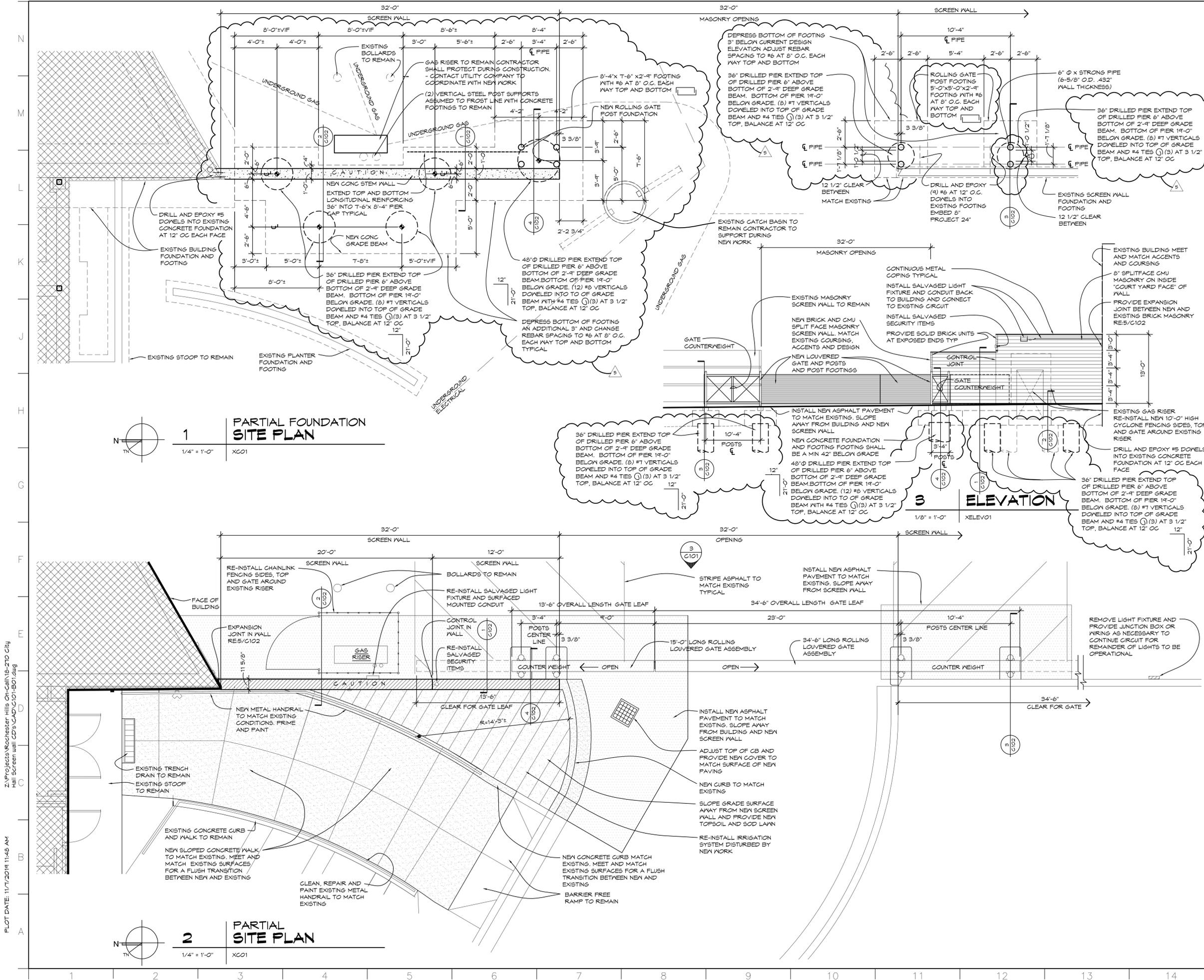
DRAWN KAM, AJM

CHECKED JSH

## C101

CAD FILE NO. C101

SCALE 1/4"=1'-0" SHEET 3 OF 4



Z:\Projects\Rochester Hills On-Call\18-270 City Hall Screen wall CD\3\CAD\C101-BO1.dwg  
 PLOT DATE: 11/7/2019 11:48 AM

## DESIGN LOADS

**General**  
 Masonry Design:..... ASD  
 Occupancy Category:..... I

**Wind Load**  
 Basic Wind Speed:..... 115 mph  
 MWFRS Exposure:..... B  
 Wind Importance Factor:..... 1.0  
 Solid Freestanding Wall (A+B):..... 18.1 psf  
 Solid Freestanding Wall (C):..... 57.9 psf

**Earthquake Load**  
 Seismic Site Class:..... D  
 Seismic Importance Factor:..... 1.00  
 Seismic Coefficient - SDS:..... 0.092  
 Seismic Coefficient - SD1:..... 0.072  
 Seismic Design Category:..... B  
 Ordinary Reinf. Masonry Shear Wall (R):..... 2.0  
 Seismic Response Coefficient:..... 0.044

### REQUIRED VERIFICATION AND INSPECTION OF SOILS

VERIFICATION AND INSPECTION	MINIMUM REQUIREMENTS	
	CONTINUOUS	PERIODIC
Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
Verify excavations are extended to proper depth and have reached proper material.	-	X
Perform classification and testing of compacted fill materials	-	X
Verify use of proper materials, densities, and lift thicknesses during placement and compaction of compacted fill.	X	-
Prior to placement of compacted fill, observe subgrade and verify that the site has been prepared properly.	-	X

### REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

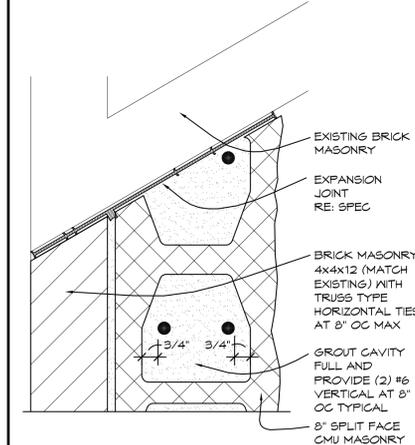
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
Inspection of reinforcing steel and placement.	-	X	ACI 318: 3.5, 7.1-7.7	1910.4
Verify use of required design mix.	-	X	ACI 318: Ch. 4, 5.2-5.4	1904.2, 1910.2, 1910.3
At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1910.10
Inspection for maintenance of specified curing temperature and techniques.	-	X	ACI 318: 5.11-5.13	1910.9

### Level B Quality Assurance

**MINIMUM TESTS**  
 Verification of Slump Flow and Visual Stability Index (VSI) as delivered to the site in accordance with Specification Article 1.5 B.1.b.3 for self-consolidating grout  
 Verification of fm and FAAC in accordance with Specification Article 1.4B prior to construction, except where specifically exempted by this code (Building Code Requirements and Specification for Masonry Structures)

### MINIMUM INSPECTION

INSPECTION TASK	FREQUENCY		REFERENCED STANDARD	
	CONTINUOUS	PERIODIC	TMS 402/ACI 530/ASCE5	TMS 602/ACI 530.1/ASCE6
Verify compliance with the approved submittals	X	-	Art. 1.5	-
As masonry construction begins, verify that the following are in compliance:				
Proportions of site-prepared mortar	-	X	-	Art. 2.1, 2.6A
Construction of mortar joints	-	X	-	Art. 3.3 B
Location of reinforcement, connectors, and anchorages	-	X	-	Art. 3.4, 3.6 A
Prior to grouting, verify that the following are in compliance:				
Grout space	-	X	-	Art. 3.2 D, 3.2 F
Grade, type, and size of reinforcement and anchor bolts	-	X	Sec. 1.16	Art. 2.4, 3.4
Placement of reinforcement, connectors, and anchorages	-	X	Sec. 1.16	Art. 3.2 E, 3.4, 3.6A
Proportions of site-prepared grout	-	X	-	Art. 2.6 B, 2.4 G.1.b
Construction of mortar joints	-	X	-	Art. 3.3 B
Verify during construction:				
Size and location of structural elements	-	X	-	Art. 3.3 F
Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction	-	X	Sec. 1.16.4.3, 1.17.1	-
Preparation, construction, and protection of masonry during cold weather (temperature below 40°F (4.4°C)) or hot weather (temperature above 90°F (32.2°C))	-	X	-	Art. 1.8 C, 1.8 D
Placement of grout	X	-	-	Art. 3.5, 3.6 c
Observe preparation of grout specimens, mortar specimens, and/or prisms	-	X	-	Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4



### 5 EXPANSION JOINT DETAIL

3'-11" O" W/DET1



November 08, 2019

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CITY OF ROCHESTER HILLS  
**MASONRY SCREEN WALL REPLACEMENT AND COMPOUND GATE REPLACEMENT**  
 1000 ROCHESTER HILLS DRIVE  
 ROCHESTER HILLS, MI 48309

### DRAWING TITLE DESIGN LOADS, SPECIAL INSPECTIONS AND WALL SECTION

PROJECT NO. 18-210

DATE MAY 20, 2019

DRAWN AJM

CHECKED JSH

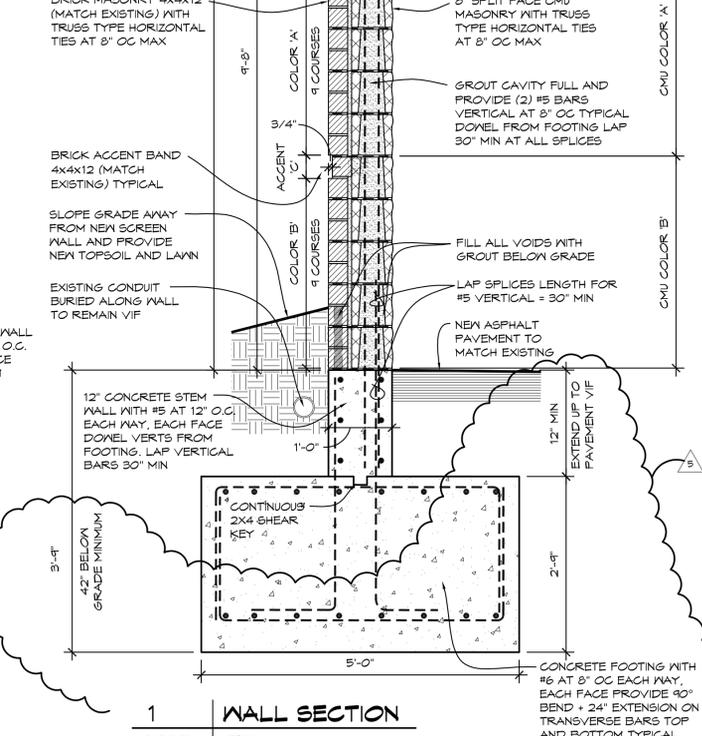
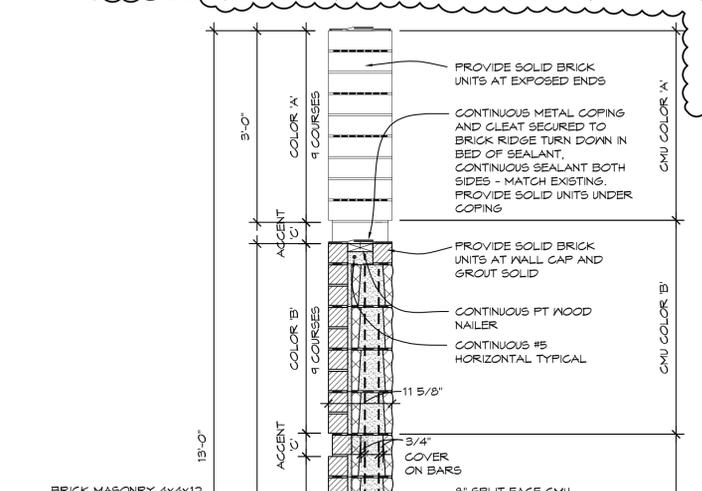
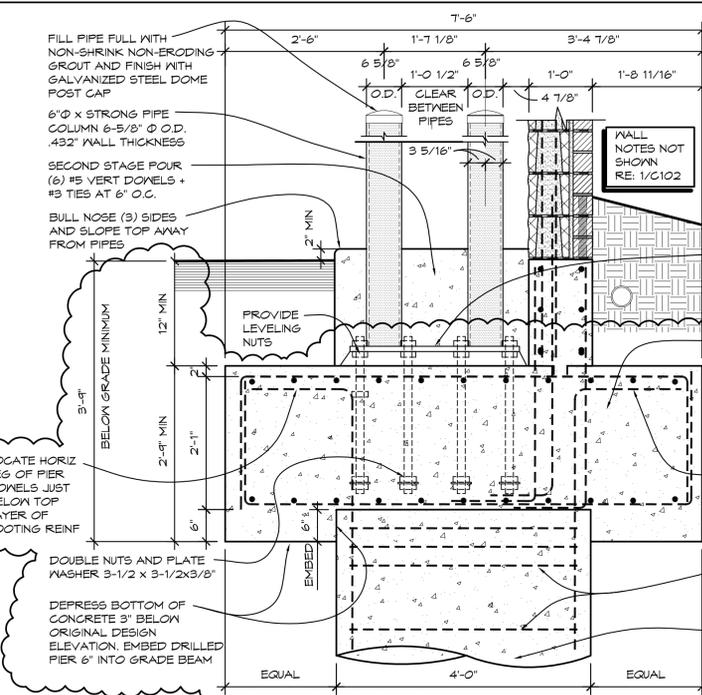
# C102

CAD FILE NO. C102

SCALE 3/4"=1'-0" SHEET 4 OF 4

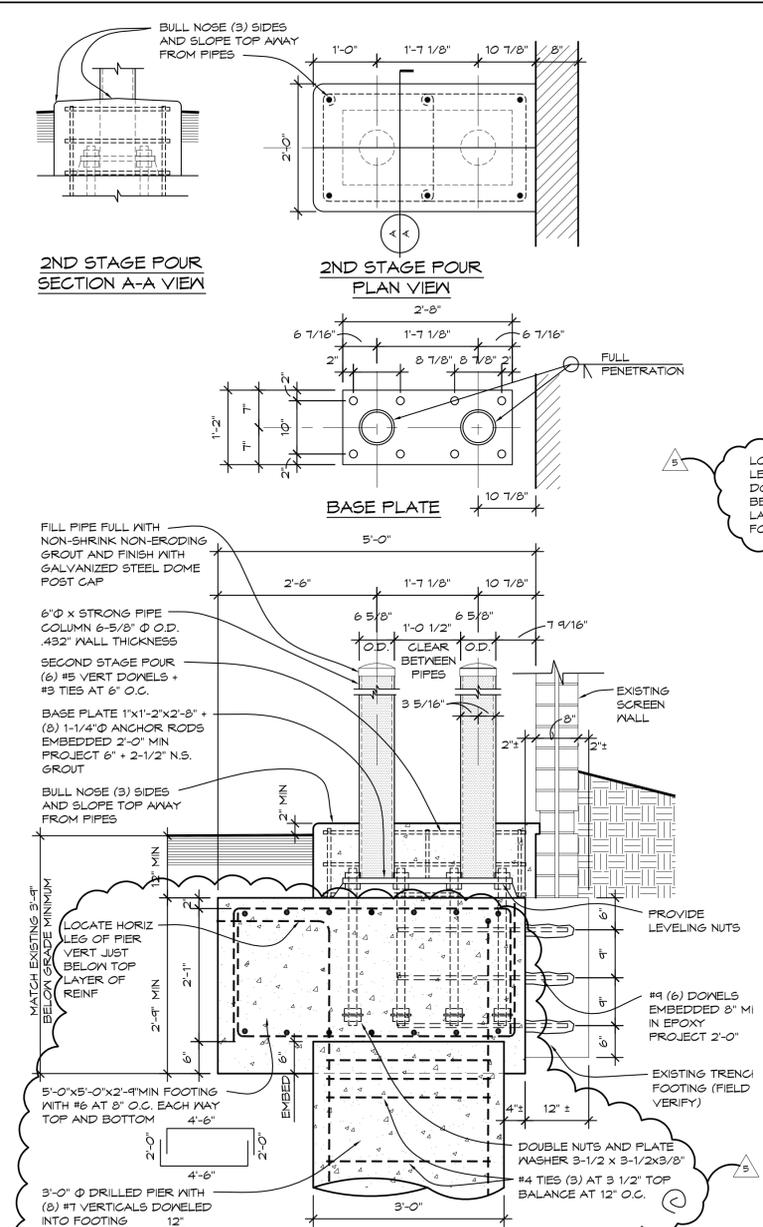
### 4 WALL SECTION

3/4"=1'-0" N/SEC02



### 3 WALL SECTION

3/4"=1'-0" N/SEC02



robert darvas associates  
consulting structural engineers

440 south main street  
ann arbor, mi 48104



November 08, 2019

Ms Jackie Hoist  
H2A Architects  
9100 Lapeer Road Suite B  
Davison Michigan 48423

Via email: [jackie@H2AARCHITECTS.NET](mailto:jackie@H2AARCHITECTS.NET)

**Re: Rochester Hills City Hall Screen-wall Revised Foundation Design**

Dear Ms. Hoist:

Due to recent construction activity at the above project including removal of pre-existing drilled pier foundations, there has been significant disturbance to the existing bearing soil. Also, the contractor has been having difficulty with excess water causing the bearing soil to become very disturbed. Carey Suhan of TEC, our project Geotechnical Engineer, has recommended that the foundations be re-designed to utilize drilled straight shaft concrete piers bearing 19 feet below grade and he has assigned 5,000psf safe allowable soil bearing capacity at that strata. No down-drag forces need be deducted from the drilled pier capacity according to Carey Suhan. I agree with Carey's assessment of the situation and I accept his solution.

Therefore I have re-designed the screen-wall foundation as a grade beam supported on drilled piers and have transmitted that design to H2A for final drafting as can be seen on the attached drawings.

Sincerely,

**Robert Darvas Associates, P.C.**

**Robert Darvas Associates, P.C.**

A handwritten signature in black ink, appearing to read 'Stephen M. Rudner'.

Stephen M. Rudner, P.E.

Enc.





## Testing Engineers & Consultants, Inc.

1343 Rochester Road • PO Box 249 • Troy, Michigan 48099-0249  
(248) 588-6200 or (313) T-E-S-T-I-N-G • Fax (248) 588-6232  
www.testingengineers.com

TEC Report: 60445

Date Issued: October 28, 2019

Mr. Scott Cope  
City of Rochester Hills  
1000 Rochester Hills Drive  
Rochester Hills, Michigan 48309-3033

**Re: Geotechnical Investigation  
Masonry Screen Wall & Gate, City Hall  
1000 Rochester Hills Drive  
Rochester Hills, Michigan**

Dear Mr. Cope:

The contractor began excavation for the new foundations for the above referenced project. The soils were found to be soft and wet. Furthermore, it was discovered that the gate structure had been supported on 2 ½ foot diameter concrete piers with an outer corrugated metal casing. The piers were pulled out and they were about 15 feet long. To address the questionable soil conditions we performed three soil borings. Two borings were drilled to 25-foot depth, and one boring was drilled to 15-foot depth. The boring locations are shown on the attached drawing.

Fill was encountered in two of the borings. In Boring No. 1, on the north side of the gate, about 1 ½ feet of fill was encountered. The fill consisted of clayey sand with some crushed concrete and asphalt. At Boring No. 3, on the southern end of the gate, the fill extended to about 4 ½ feet and was primarily sand with ½ foot layer of pea gravel at the bottom.

The underlying native soils are primarily clay with some silt. The clays range from plastic to stiff. A layer of wet silt was encountered in Boring Nos. 1 and 2 at 5 ½ and 6 feet below existing ground surface and extends to about 8 feet below existing grade. Thin silt layers were also found in Boring No. 3. A layer of compact sand was encountered in Boring Nos. 1 and 2 at 14 ½ feet and is about 2 ½ to 3 feet thick.

Moisture contents range from 7.9 percent to 35.5 percent with most of the moisture contents of samples tested over 20 percent.

We recommend that the screen wall and gate foundation be designed for a net allowable bearing capacity of 2000 psf, rather than 2500 psf as shown on the drawing.

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CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION  
OFFICES IN ANN ARBOR, DETROIT, AND TROY  
FOUNDED IN 1966



**Testing Engineers & Consultants, Inc.**

Mr. Scott Cope  
City of Rochester Hills  
October 28, 2019

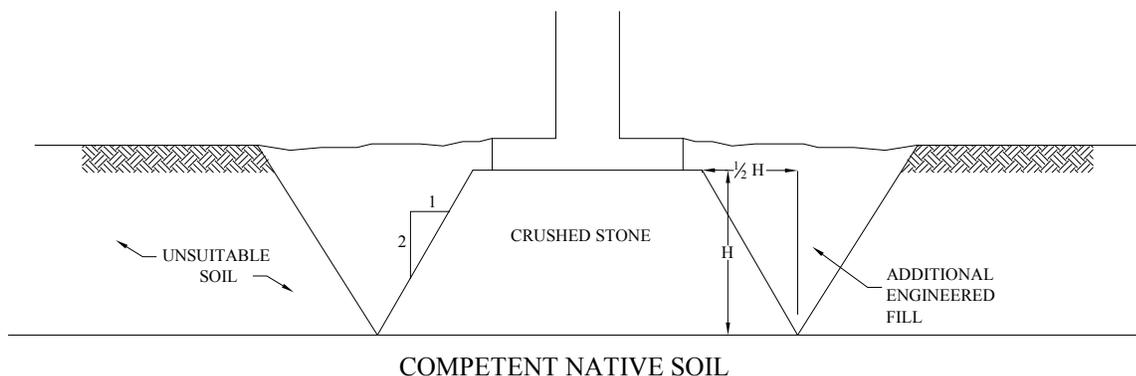
TEC Report: 60445

We recommend that any standing water be pumped from the excavations then the remaining “holes”, from where the existing concrete piers were pulled out, be opened up with an auger or conventional excavation and backfilled with natural 6A aggregate to the full depth. The aggregate should be placed in lifts about 12 inches with each lift compacted with the backhoe bucket or auger. The upper 6 inches below foundation invert should be choked off with compacted 21AA aggregate. Based upon recent excavation efforts water continues to enter the excavations. On the south side groundwater appears to be emanating from the west side of the screen wall. On the south side the excavation is about 6 feet deep and some undermining of the existing screen wall foundation is occurring.

The wet silt layer and accumulated groundwater appears to be the most significant constructability issue. We recommend as a minimum that properly prepared sumps be constructed on either side of the existing screen wall and at the north side excavation as well. Continuous pumping should be employed to control the groundwater. Since the water bearing soils are silt they will be difficult to dewater. A closely spaced well point system may be required.

If the excavation to fill the voids created from the pier removal is augered, a casing could be employed to support the wet silts. The casing would need to extend into the underlying clays encountered at about 8 feet below existing grade. Less comprehensive dewatering would be required for this method and the excavation is smaller and controlled with minimal potential for undermining adjacent structures.

Once the voids are filled with the 6A aggregate the foundation area should then be cut to design grade and the bearing capacity at invert level confirmed by TEC. If the subgrade is soft and does not meet the required bearing capacity the contractor should be prepared to undercut about one foot and replace it with 9 inches of lightly compacted 1x3 inch crushed aggregate choked off on the top with 3 inches of compacted 21AA aggregate. The compacted aggregate should extend outside the foundation dimensions at least one half the thickness of the aggregate thickness below the foundation where possible as shown in the sketch below.



We recommend not undercutting more than 12 inches without additional direction from TEC to avoid getting into a wet silt layer and potentially undermining the existing screen wall and

**Testing Engineers & Consultants, Inc.**

Mr. Scott Cope  
City of Rochester Hills  
October 28, 2019

TEC Report: 60445

natural gas pad. We understand that the excavation is already this deep on the south side. Any undermining should be backfilled with concrete and the resulting excavation stabilized and backfilled with 1x3 inch crushed aggregate (not crushed concrete). The crushed aggregate should be placed in 12 inch lifts with each lift lightly compacted until it is stable. The upper 6 inches beneath the foundation should be choked off with compacted MDOT 21AA aggregate.

To minimize the constructability issues discussed above a deep foundation could be used. This could be a drilled pier or augered cast in place (ACIP) pile. The drilled pier would require a temporary casing through the silt layer and lower sand layer found between about 14 ½ and 17 feet. We recommend that either foundation type be at least 24 inches in diameter since there will be minimal lateral support in proximity of the voids from the existing pier removal. Accordingly, the design should not count on lateral capacity of the ACIP or drilled piers. The deep foundations should extend to a depth of 19 feet and may be designed for a net allowable bearing capacity of 5000 psf.

Please let us know if you have any questions or need additional information.

Respectfully submitted,

**TESTING ENGINEERS & CONSULTANTS, INC.**



William J. West, P.E.  
Manager, Construction Services



Carey J. Suhan, P.E.  
Vice President, Geotechnical  
& Environmental Services

CJS/In/nmr  
Attachments

cc: Auch Construction, Attn: Mr. Jameson Purola, CM-LEAN  
cc: City of Rochester Hills, Attn: Mr. Tim Hollis  
cc: City of Rochester Hills, Attn: Mr. Jay Fakhoury

**Testing Engineers & Consultants, Inc.**

Mr. Scott Cope  
City of Rochester Hills  
October 28, 2019

TEC Report: 60445

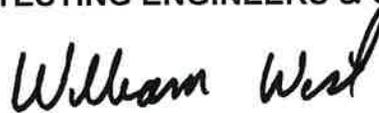
natural gas pad. We understand that the excavation is already this deep on the south side. Any undermining should be backfilled with concrete and the resulting excavation stabilized and backfilled with 1x3 inch crushed aggregate (not crushed concrete). The crushed aggregate should be placed in 12 inch lifts with each lift lightly compacted until it is stable. The upper 6 inches beneath the foundation should be choked off with compacted MDOT 21AA aggregate.

To minimize the constructability issues discussed above a deep foundation could be used. This could be a drilled pier or augered cast in place (ACIP) pile. The drilled pier would require a temporary casing through the silt layer and lower sand layer found between about 14 ½ and 17 feet. We recommend that either foundation type be at least 24 inches in diameter since there will be minimal lateral support in proximity of the voids from the existing pier removal. Accordingly, the design should not count on lateral capacity of the ACIP or drilled piers. The deep foundations should extend to a depth of 19 feet and may be designed for a net allowable bearing capacity of 5000 psf.

Please let us know if you have any questions or need additional information.

Respectfully submitted,

**TESTING ENGINEERS & CONSULTANTS, INC.**



William J. West, P.E.  
Manager, Construction Services

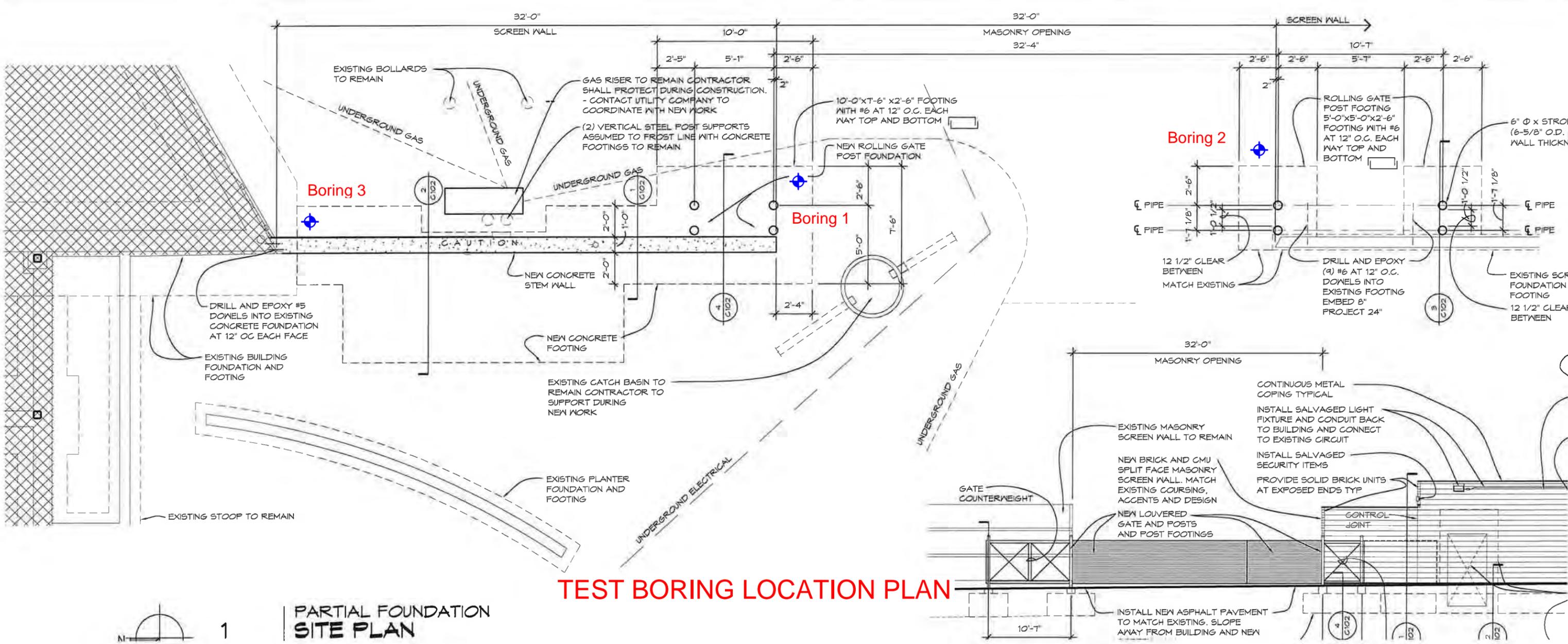


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Vice President, Geotechnical  
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CJS/In/nmr  
Attachments

cc: Auch Construction, Attn: Mr. Jameson Purola, CM-LEAN  
cc: City of Rochester Hills, Attn: Mr. Tim Hollis  
cc: City of Rochester Hills, Attn: Mr. Jay Fakhoury



**TEST BORING LOCATION PLAN**



**PARTIAL FOUNDATION SITE PLAN**



# Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249  
 (248) 588-6200 or (313) T-E-S-T-I-N-G  
 Fax (248) 588-6232

<b>Boring No.:</b> 1	<b>Job No.:</b> 60445	<b>Project:</b> Masonry Screen Wall At City Hall
<b>Client:</b> City of Rochester Hills		<b>Location:</b> Rochester Hills, Michigan
<b>Type of Rig:</b> Truck		<b>Drilled By:</b> I. Mickle
<b>Drilling Method:</b> Solid Stem Augers		<b>Started:</b> 10/18/2019
<b>Ground Surface Elevation:</b>		<b>Completed:</b> 10/18/2019

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	5 4 5	1.5	Loose Moist Brown Clayey Sand With Some Crushed Concrete & Asphalt-FILL	7.9	105	
5.0	LS	5 7 7	5.5	Firm Moist Brown Oxidized CLAY With Some Silt & Silt Layers	25.3	134	6430
7.5	LS	4 6 6	8	Medium Compact Wet Variegated SILT	24.7	109	1650
10.0	LS	2 2 3	8	Plastic Moist Gray CLAY With Some Silt	29.8	121	1900
15.0	LS	2 4 23	14.5	Compact Moist Brown Fine SAND With Trace Of Gravel	24.2	131	5110
20.0	LS	4 7 9	17.5	Stiff Moist Gray CLAY With Some Silt	20.5	137	7500
22.5	LS	11 15 17	22	Compact Moist Brown SAND With Trace Of Gravel	6.1	136	
			24.5 25				

"N" - Standard Penetration Resistance  
 SS - 2" D. Split Spoon Sample  
 LS - Sectional Liner Sample  
 ST - Shelby Tube Sample  
 AS - Auger Sample  
 w - H<sub>2</sub>O, % of dry weight  
 d - Bulk Density, pcf  
 qu - Unconfined Compression, psf  
 DP - Direct Push  
 RC - Rock Core

**Water Encountered:** 5'6"

**At Completion:** None

**Boring No. 1**



# Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249  
 (248) 588-6200 or (313) T-E-S-T-I-N-G  
 Fax (248) 588-6232

<b>Boring No.:</b> 1	<b>Job No.:</b> 60445	<b>Project:</b> Masonry Screen Wall At City Hall
<b>Client:</b> City of Rochester Hills		<b>Location:</b> Rochester Hills, Michigan
<b>Type of Rig:</b> Truck		<b>Drilled By:</b> I. Mickle
<b>Drilling Method:</b> Solid Stem Augers		<b>Started:</b> 10/18/2019
<b>Ground Surface Elevation:</b>		<b>Completed:</b> 10/18/2019

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
27.5				Extremely Stiff Moist Gray CLAY With Some Silt Bottom of Boring at 25'			
30.0							
32.5							
35.0							
37.5							
40.0							
42.5							
45.0							
47.5							

<p>"N" - Standard Penetration Resistance          SS - 2" D. Split Spoon Sample          LS - Sectional Liner Sample          ST - Shelby Tube Sample          AS - Auger Sample</p>	<p>w - H<sub>2</sub>O, % of dry weight          d - Bulk Density, pcf          qu - Unconfined Compression, psf          DP - Direct Push          RC - Rock Core</p>	<p><b>Water Encountered:</b> 5/6"</p> <p><b>At Completion:</b> None</p> <p><b>Boring No.</b> 1</p>
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# Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249  
 (248) 588-6200 or (313) T-E-S-T-I-N-G  
 Fax (248) 588-6232

<b>Boring No.:</b> 2	<b>Job No.:</b> 60445	<b>Project:</b> Masonry Screen Wall At City Hall
<b>Client:</b> City of Rochester Hills		<b>Location:</b> Rochester Hills, Michigan
<b>Type of Rig:</b> Truck		<b>Drilled By:</b> I. Mickle
<b>Drilling Method:</b> Solid Stem Augers		<b>Started:</b> 10/18/2019
<b>Ground Surface Elevation:</b>		<b>Completed:</b> 10/18/2019

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.54				
	LS	10	1.5	ASPHALT (6 1/2")	11.1	121	
2.5		6					
		6	3	Medium Compact Moist Brown SAND With Trace Of Gravel			
	LS	3					
		3		Firm Moist Brown Oxidized CLAY With Some Silt	35.5	119	3380
5.0		5					
			6	Plastic Moist Brown Oxidized CLAY With Some Silt			
	LS	3					
		4		Medium Compact Wet Variegated SILT	23.0	115	
7.5		6					
	LS	2	8	Plastic Moist Gray CLAY With Some Silt	26.9	121	1070
10.0		2					
		2					
		3					
12.5			13				
	LS	4		Stiff Moist Brown CLAY With Some Silt	21.0	125	3630
15.0		14	14.5	Compact Moist Brown Fine SAND			
		34					
			17	Stiff Moist Variegated CLAY With Some Silt			
17.5							
	LS	4					
		4			26.6	114	3630
20.0		10					
			22				
22.5	LS	15		Dense Moist Gray Clayey SAND	7.9	173	
		36/6"					
			25				

Bottom of Boring at 25'

"N" - Standard Penetration Resistance  
 SS - 2" D. Split Spoon Sample  
 LS - Sectional Liner Sample  
 ST - Shelby Tube Sample  
 AS - Auger Sample

w - H<sub>2</sub>O, % of dry weight  
 d - Bulk Density, pcf  
 qu - Unconfined Compression, psf  
 DP - Direct Push  
 RC - Rock Core

**Water Encountered:** 6'0"

**At Completion:** None

**Boring No. 2**



# Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249  
 (248) 588-6200 or (313) T-E-S-T-I-N-G  
 Fax (248) 588-6232

<b>Boring No.:</b> 3	<b>Job No.:</b> 60445	<b>Project:</b> Masonry Screen Wall At City Hall
<b>Client:</b> City of Rochester Hills		<b>Location:</b> Rochester Hills, Michigan
<b>Type of Rig:</b> Truck		<b>Drilled By:</b> I. Mickle
<b>Drilling Method:</b> Solid Stem Augers		<b>Started:</b> 10/18/2019
<b>Ground Surface Elevation:</b>		<b>Completed:</b> 10/18/2019

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	3 2 2	.33	Moist Brown Sand & Gravel-FILL (4")	13.4	125	
				Loose Moist Brown Fine Sand-FILL			
5.0	LS	2 3 6	4 4.5	Loose Wet Pea Gravel-FILL (6")	21.5	104	
				Firm Moist Brown Oxidized CLAY With Some Silt			
7.5	LS	5 7 9	8	Stiff Moist Gray CLAY With Some Silt & Wet Silt Layers	21.3	123	4780
				Firm Moist Gray CLAY With Some Silt			
15.0	LS	3 4 5	15	Bottom of Boring at 15'	31.8	112	

"N" - Standard Penetration Resistance  
 SS - 2" D. Split Spoon Sample  
 LS - Sectional Liner Sample  
 ST - Shelby Tube Sample  
 AS - Auger Sample  
 w - H<sub>2</sub>O, % of dry weight  
 d - Bulk Density, pcf  
 qu - Unconfined Compression, psf  
 DP - Direct Push  
 RC - Rock Core

**Water Encountered:** 4'0"

**At Completion:** None

**Boring No. 3**



2862 Stanwood Place  
 Brighton, Michigan 48114  
 Tel: 810.225.3314 Fax: 810.588.4437  
 Adam Pietryka  
 Estimator/Project Manager  
[construction6k@gmail.com](mailto:construction6k@gmail.com)  
 248-296-1698

## Bulletin #1 Change Order

11/11/2019

CLIENT: AUCH

CLIENT CONTACT: Jameson Purola

ADDRESS: 65 University Dr

CITY: Pontiac STATE: MI ZIP: 48150

PHONE NO.: 248-334-2000 FAX NO: 248-334-3404

PROJECT NAME: Rochester Hills City Hall Masonry Wall Bulletin #1 Change Order

### SCOPE OF WORK FOR 6-K CONSTRUCTION:

1. Labor, material, and equipment necessary to complete the installation of 7 caissons per Bulletin #1, Foundations, Masonry wall construction including Winter Conditions.
2. Installing 7 Caissons per Bulletin #1 revised blueprints including winter conditions
3. **\$32,500 X 10% Markup = \$35750**
4. 6K performing Layout for caissons, assisting in installing, and clearing spoils while caissons are being installed breakdown  
 Estimated 2 1/2 days **2 machines and operators @ \$130per hour X 8 hours = \$5200**  
**2 laborers @ \$56per hour X 8 hours = \$2240**
5. Caisson spoils hauled out estimated 84 yards @ \$32 per yard **\$2688**
6. Concrete Footings and Foundations winter conditions protection charges **Not to exceed \$5500**
7. Masonry winter condition protection charges **Not to exceed**. This includes building scaffolding on both sides of new masonry wall, enclosing and heating it for the entire duration of the installation, then the disassembly and removal. **\$11000**
8. Extra steel rebar per Bulletin #1 **\$1078**
9. Additional Mobilization and cost increase in spring 2020 for asphalt patch paving **\$500**
10. All extra charges are based on Redesign/Winter Conditions per Bulletin #1 scope changes
11. All applicable sales and use tax for work and material

**TOTAL Pricing for Bulletin #1 Change Order: \$63,956**

### Masonry Wall bad soils T&M Incurred

1. Labor, material, and equipment necessary to excavate and remove bad soils and add stone in place of
2. Extra Time Bad Soils Breakdown of Costs for T&M work
3. Pumping Water **\$175 a day x 2 = \$350**
4. Labor 2 days **4 men @ \$56per hour 8-hour day = \$3584**
5. Move In/Out 312 Excavator for excessive digging/pour soils **= \$800**
6. 28 Ton of 1" x 3" hauled in @ **\$38/Ton = \$1064**
7. 28 Ton of 6A Natural Stone IN @ **\$42 A Ton = \$1176**
8. All applicable sales and use tax for work and material

**TOTAL for Incurred work for bad soils = \$6974**

**TOTAL FOR COMBINED IS \$70,930**

**This proposal does not include winter conditions and costs.**

**PAYMENT:** Net 30

All material is guaranteed to be as specified. All work to be completed in a workman like manner according to standard practices. Any alteration or deviation from the specifications involving extra cost will be executed only upon written orders, and will be become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado, and other necessary insurances.

This proposal pricing to be valid for 30 days

Adam Pietryka  
Estimator/Project Manager  
[construction6k@gmail.com](mailto:construction6k@gmail.com)  
248-296-1698





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(248) 437-2005 • Fax (248) 437-9670

"SUPPORTING THE CONSTRUCTION INDUSTRY  
WITH ROCK SOLID FOUNDATIONS SINCE 1959"

November 8, 2019 – R2

6k Construction  
Attention: Adam Pietryka  
Email: construction6k@gmail.com

Reply To:  
Cameron Rohrscheib

Project: Rochester Hills City Hall  
Masonry Wall Caissons  
Rochester Hills, Michigan

Architect/Engineer:  
H2A

Gentlemen:

We propose to furnish all necessary labor, material, and equipment for the installation of 7 caisson foundations for the referenced project. Caissons will be installed in accordance with the plans and specifications prepared by the referenced architect/engineer on November 7, 2019, except for variations from such plans and specifications as noted herein.

The base price for the performance of the work described above is: **\$32,500.00**  
**(Thirty-Two Thousand Five Hundred and 00/100 Dollars)**

The terms and conditions of this proposal shall be deemed part of the final caisson contract.

For variations in depth from design the following unit prices will apply.

	Add	Deduct	
A. Shaft Excavation	\$18.00	\$6.00	per Cu. Ft.
B. Concrete (In Place)	\$6.60	\$2.20	per Cu. Ft.
C. Resteel (In Place)	\$1.25	\$0.00	per Lb
D. Obstruction Removal / Delay	\$950.00/hr./rig + Material		

**The following work is included in our base price:**

1. One mobilization.
2. Caisson shaft excavation.
3. Furnishing and placing concrete by free fall method with a 28 day compressive strength of 3,000 PSI and a slump of 5 to 7 inches.
4. Furnishing, tying and placing resteel cages.
5. Stockpiling spoils on-site adjacent to drill rig.
6. Schedule based on crew availability.

**The following work is *NOT* included in our base price:**

1. Providing clearance and suitable all weather access to each caisson location to permit drill rig and ready mix concrete trucks to move under their own power.
2. Engineering layout including baselines, benchmarks, caisson center points, and as-built drawings.

3. Removing and disposing of spoils off site.
4. Furnishing and placing of all anchor bolts and templates.
5. Forming caisson above working grade.
6. Permanent steel casing.
7. Costs associated with artesian water conditions and gases within the drilled piers.
8. Site restoration and site dewatering.
9. Concrete and soil testing services.
10. Hand excavation for location of existing utilities.
11. **Identifying (marked in the field), relocating and protecting all utilities and adjoining structures which may be affected by the caisson work. You shall have, and indemnify us against, liability for damage to utilities and adjoining structures which are not relocated and adequately protected.**
12. Traffic control including barricades, fences, signs, flagmen, and street sweeping.
13. Bonds and permits.
14. Working closer than OSHA approved distance to electrical power lines.
15. Hazardous or contaminated soil excavation. ROHRSCHEIB SONS CAISSON, INC. must be notified prior to site mobilization about any environmental reports regarding such.
16. Roadway repair and cleaning.
17. Tremie mix and tremie placed concrete.
18. Obstructions and downtime, the removal of any and all concrete, boulders, piling or other obstructions which interfere with the drill shaft work is excluded from this proposal. Obstructions are defined as any material which cannot reasonably be drilled with a conventional earth auger and requires the use of special rock augers, core barrels, air tools, or other methods of excavation. Belling which cannot be accomplished with conventional under reaming tools and methods. Obstruction removal and downtime for equipment and crew will be at **\$950.00/hour/rig + Materials.**
19. Mobilization during seasonal weight restrictions (frost laws).

#### **GENERAL CONDITIONS:**

1. We shall not agree to additional insured's, waivers of subrogation on workers comp, or broad form indemnification.
2. We shall have no responsibility for foundations design, or for the determination of bearing values of caissons or bearing values of soil or rock upon which caisson bottoms are founded.
3. Construction Tolerances:

Plumbness	1.5% of shaft length
Location	Within 3" of plan center location
Concrete cut off	+1" to -3"
4. Unless expressly stated herein to the contrary, the quoted base price shall govern only where material encountered drilling the caisson is such as can be readily drilled and removed with normal earth augers, or mechanical belling tools. Where obstructions are encountered such as concrete, boulders and rock strata or any other materials not susceptible of being drilled and removed as above stated, we shall, in addition to the base price, be entitled to receive additional compensation equal to our cost of labor and equipment (including costs incurred while necessary equipment changes are being made) necessary to remove such materials plus 25% of such costs for overhead and profit.
5. We shall be entitled to rely, as accurate and sufficient, upon any boring and other sub-surface analysis

- and information which we may be given or referred to by or on behalf of you, the architect, engineers, and or the owner.
6. Terms of payment will be as follows:
    - a. Payments shall be made within ten (10) days of the dates on which progress estimates are rendered on our invoices, and shall be for the proportion of the contract price represented by work performed during the preceding month, less retention of 10%, until 50% of the base contract work has been completed. No retention shall be held from the remaining portion of work so that at the conclusion of all work under the original contract, the retention will be equal to 5% of the contract price. Additional work necessitated by field conditions, design changes, etc. will be invoiced and paid without additional retention.
    - b. Final payment of all retention shall be made within thirty (30) days after the work included herein has been completed.
    - c. A service charge of one and one half percent (1½%) per month will be added to all amounts, which remain unpaid for a period of thirty (30) days beyond the times specified for payment in (a) and (b) above.
    - d. A disputed item of billing shall not be a cause for delay in payment of the invoice of which it is a part. You shall promptly pay the undisputed portion of said billing.
    - e. We shall have the right to discontinue all work and remove our equipment if default in any payment continues for thirty (30) days beyond the payment dates provided above and you shall reimburse us in full for all extra costs which may incur because cessation of the work arising from failure to receive payments as herein provided. Such discontinuance shall not be deemed a breach of contract by us and we shall be entitled to recover costs of labor, material, and equipment furnished to the date of discontinuance plus a sum equal to 12½% of the base price for profit, less amount previously paid.
  7. We will not be responsible for any costs incurred by others in the performance of this contract, including services, materials, and equipment furnished by you, unless previously agreed to in writing.
  8. All claims disputed, and other matters in questions arising out of the performance of This contract which cannot be mutually resolved shall be submitted to the American Arbitration Association to be resolved in accordance with Construction Industry Arbitration rules, and judgment on any arbitration award may be entered in any court of competent jurisdiction.
  9. This proposal is made for your acceptance within THIRTY (30) days from date of this proposal. After such time, it shall be void unless extended by us in writing.
  10. No item of this proposal shall be waived or amended except in writing signed by us.
  11. You may elect to treat this proposal as an offer and indicate your acceptance on line below and return a signed copy to us within the time specified in Section 8 above. Thereupon the terms and conditions hereof, together with the applicable plans and specifications referenced above, shall constitute the complete contract between us.

My Regards,

ROHRSCHEIB SONS CAISSONS, INC.

Cameron Rohrscheib  
Project Manager

ACCEPTED BY:

*CK CONSTRUCTION*  
*[Signature]*

Date 11-8-2019