



City of Franklin

109 3rd Ave S
Franklin, TN 37064
(615)791-3217

Meeting Agenda Capital Investment Committee

Thursday, January 24, 2019

4:00 PM

Board Room

Call To Order

1. [19-0093](#) Consideration of Minutes from November 29, 2018.
2. [18-1245](#) Consideration of a Request for Sanitary Sewer Availability Approval for 4034 Clovercroft Road (MAP 79 PARCEL 56.01) (01/24/19 CIC 4-0)

Sponsors: Eric Stuckey, Paul Holzen and Michelle Hatcher

Attachments: [4034 Clovercroft Road.PDF](#)
[MAP.pdf](#)
3. [19-0087](#) Consideration of a Variance from Title 18 for the 1215 Hillsboro Road (MAP 052, PARCEL 00700), Christ Community Church. (01/24/19 CIC 4-0)

Sponsors: Michelle Hatcher

Attachments: [Water Background Letter](#)
[Waterline Exhibit #2](#)
[Christ Community Church - Approved Water & Sewer Availability Letter](#)
[WMD Suggestion - Waterline Exhibit #1 Christ community church](#)
4. [18-1028](#) Consideration of Final Change Order to the Construction Contract (COF Contract No. 2015-0062) for the Water Treatment Plant Modifications Project with Judy Construction, Inc. for a Cost DECREASE of \$79,790.00 and a Time Reduction of 15 days (01/24/19 CIC 4-0)

Sponsors: Michelle Hatcher

Attachments: [2015-0062 WTP Final Reconciling Change Order](#)
5. [19-0036](#) Consideration of Final Reconciling Change Order to Construction Contract (COF Contract No. 2017-0198) with Civil Constructors, LLC for the Goose Creek Inn Sanitary Sewer Extension Project for a Decrease in the Amount of \$89,195.80 and a Time Extension Through August 24, 2018. (01/24/19 CIC 4-0)

Sponsors: Michelle Hatcher and Patricia McNeese

Attachments: [2017-0198 Final Reconciling Change Order](#)

6. [19-0037](#) Consideration of the Final Reconciling Change Order to the Construction Contract (COF Contract No. 2014-0288) with Revere Control Systems, Inc. for the Water Distribution and Collection System SCADA Improvements Project for a Decrease in the Amount of \$116,828.98 and a Time Extension of 297 calendar days. (01/24/19 CIC 4-0)
- Sponsors:** Michelle Hatcher
- Attachments:** [2018 11 02 Revere Change Order 2 SCADA Project \(Signed\)](#)
[2018 10 31 Signed Work Order 20 Closeout Credits](#)
7. [19-0017](#) Consideration of Resolution 2019-01, "A Resolution Directing Staff to Proceed with the Flood Insurance Rate Mapping Associated with Ralston Branch". (Referred to 2/12/19 WS from 1/24/19 CIC 4-0; 2/12/19 WS, 05/19/19 WS)
- Sponsors:** Paul Holzen
- Attachments:** [Res 2019-01 - Ralston Branch_with Exhibit A.Law Approved.pdf](#)
[BOMA Exhibits.pdf](#)
[153-050 Liberty Hills Feasibility Study Summary Revised 20190424_combine..](#)
8. [19-0028](#) Consideration of Resolution 2019-02, "A Resolution Approving the Preliminary Design of the East Main Street/Franklin Road Bridge Over the Harpeth River". (01/24/19 CIC 4-0)
- Sponsors:** Paul Holzen
- Attachments:** [19-0028 Res 2019-02_TDOT_Franklin Road Bridge.Law Approved.pdf](#)
[Res2019-02 East Main St-Franklin Rd Bridge EXHIBIT 1](#)
9. [19-0054](#) Consideration of Change Order No. 2 (FINAL) to the Construction Contract (COF Contract No. 2017-0006) for the SR-96 East Sidewalk Project with Civil Constructors, LLC for a Cost Increase of \$208,684.31 and a Time Extension of 68 Days. (01/24/19 CIC 4-0)
- Sponsors:** Engineering
- Attachments:** [Signed Change Order 2 Final.pdf](#)
10. [19-0100](#) Consideration of Amendment No. 3 to the Professional Services Agreement (COF Contract No. 2017-0007) with Barge Design Solutions, Inc. for the Design of Intersection Improvements at East McEwen Drive and Cool Springs Boulevard for a Cost Increase Not-to-Exceed \$15,950.00 (01/24/19 CIC 4-0)
- Sponsors:** Engineering
- Attachments:** [C2017-0007_Amend3_EMcEwenRndabt_with Attachment A.Law Approved.pdf](#)

11. [19-0101](#) Capital Projects Status Report

Sponsors: Engineering

Attachments: [Capital Projects Status Report.pdf](#)

12. [19-0088](#) Water and Sewer Project Status

Attachments: [January 2019 CIC](#)

Other Business

Adjournment

ANYONE REQUESTING ACCOMMODATIONS DUE TO DISABILITIES SHOULD CONTACT A.D.A. COORDINATOR, AT 791-3277 AT LEAST 10 DAYS PRIOR TO THE MEETING, IF POSSIBLE.



Please fill in the following information & return this form with the site plan per directions below. Incomplete forms will result in the request being returned until all of the information is included. Refer to the attached memo for fees and additional information.

MUST SUBMIT A LOCATION MAP (FOR EX: GOOGLE MAP)

Email Application to: EngineeringMBX@franklin.tn.gov

For additional information or questions please call: 615-791-3218

Date Submitted:

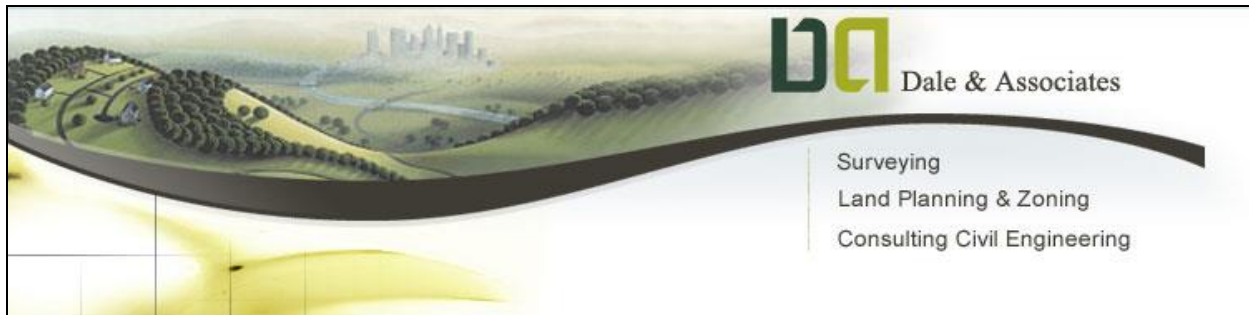


**SEWER REQUEST
MAP 79 PARCEL 56.01**



**SEWER REQUEST
MAP 79 PARCEL 56.01**





January 9, 2019

City of Franklin Water Management
Attn: Michelle Hatcher
109 3rd Ave. S.
Franklin, TN 37064

RE: Water Service, Christ Community Church, COF # 6858

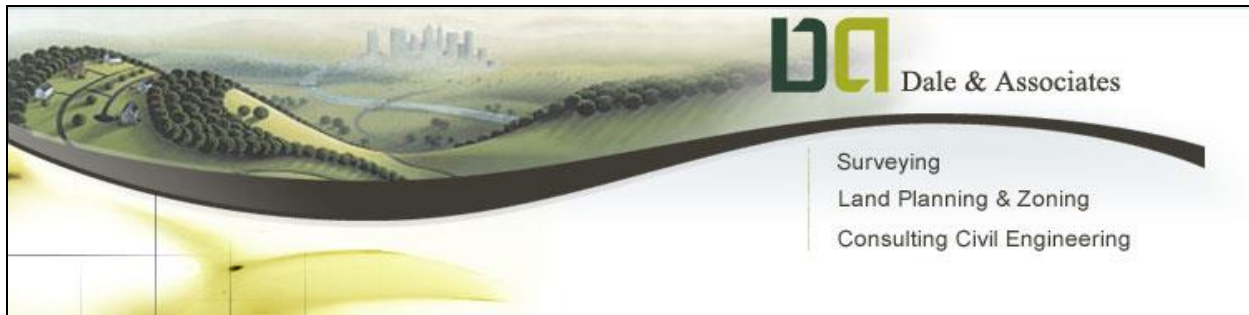
Michelle,

As a follow up to our meeting on Monday, January 7, 2019, I am sending you this letter to provide a brief summary of the project and the water line configuration we would like to propose.

Christ Community Church was originally built around 2000-2001. At that time, it is our understanding that a capacity letter was issued for 22.9 SFUE, or 8,015 GPDs. While the full build-out of the facility was not completed, the church has been in operation since that time, with an approximate congregation fluctuating from about 1,000 – 3,000 people at any given time over the last 18 years. The church offices have been keeping track of meter readings and bills since 2005, and I will attach a copy of their spreadsheet for your reference. With the exception of 2012 – 2014, it appears the facility operates with a total gallon usage of about 750,000 – 1,500,000 gallons per year. That equates to about 2,000 – 4,000 GPD in actual usage. (Rounding the numbers for the sake of this letter). Therefore, it appears the church has not operated within half of its allotted usage from the original capacity letter issued. I don't know if this matters in the case of the water service configuration, but I thought it worth pointing out.

The church is now intending to move forward on expanding their current facilities. We recently completed a rezone and PUD Development Plan process through Franklin. Part of this expansion includes a new youth facility that will be housed in a new separate building immediately north of the existing building. In order to go through that process we obtained a new capacity letter for this youth building only for approximately 13 SFUEs. As stated in our meeting, it is our opinion that the new building is simply a continuation of the overall church facility and would be considered the same 'premise'. We also understand that Franklin has its own policies and interpretations within the water regulations, and we certainly respect that. In prior conversations with Franklin staff, it is our understanding that staff's position is that this new building would be considered a new 'premise' and therefore would need a new separate water meter and service. This is the item we wish to discuss with the appropriate board.

The existing water lines serving the church tap off of the main in Hillsboro Road, are routed through an existing meter and RPBP, and then are routed through the church campus. There are



two water lines running directly in front of the proposed youth building. These consist of one 8" fire line, and one 6" domestic line. It is our proposal to tie the youth building service line into this existing 6" domestic line. The 6" domestic line is more than enough to provide adequate flows/pressures to the new building and this line is already metered and on the church's side of the backflow preventer. Therefore, all domestic flows to this new building would be metered and be safe from backflow. Furthermore, because this 6" line is so large, it would be prudent to pull more flow from this line so that it does not become too stagnant.

If we were to install a new meter, backflow, and line to the proposed youth building, this would result in an additional cost that we believe to be unnecessary considering there is already an active line directly in front of the building. The new service would be approximately 550 linear feet from the potential location of the new meter at Hillsboro Road.

Finally, when dealing with any interpretations or potential variances we understand the challenge of setting a precedent. The proposed youth building is unique from other projects in that it is not a separate building with a separate use, or a new component to the existing campus. If this were a new project and Franklin required separate taps, then the water configuration on site could be adjusted accordingly in that design. In this instance, the youth building is a continuation of an overall plan that was in existence since 2001. This is evident by the fact the water line is looping far around the existing building in preparation for future additions, and also that building pads were prepared for future expansion. Furthermore, the size of the 6" domestic line can only be assumed to be installed because it was intended to have additional usage accessing it. The youth building is exactly what was intended from the start – an extension of the current overall church facility.

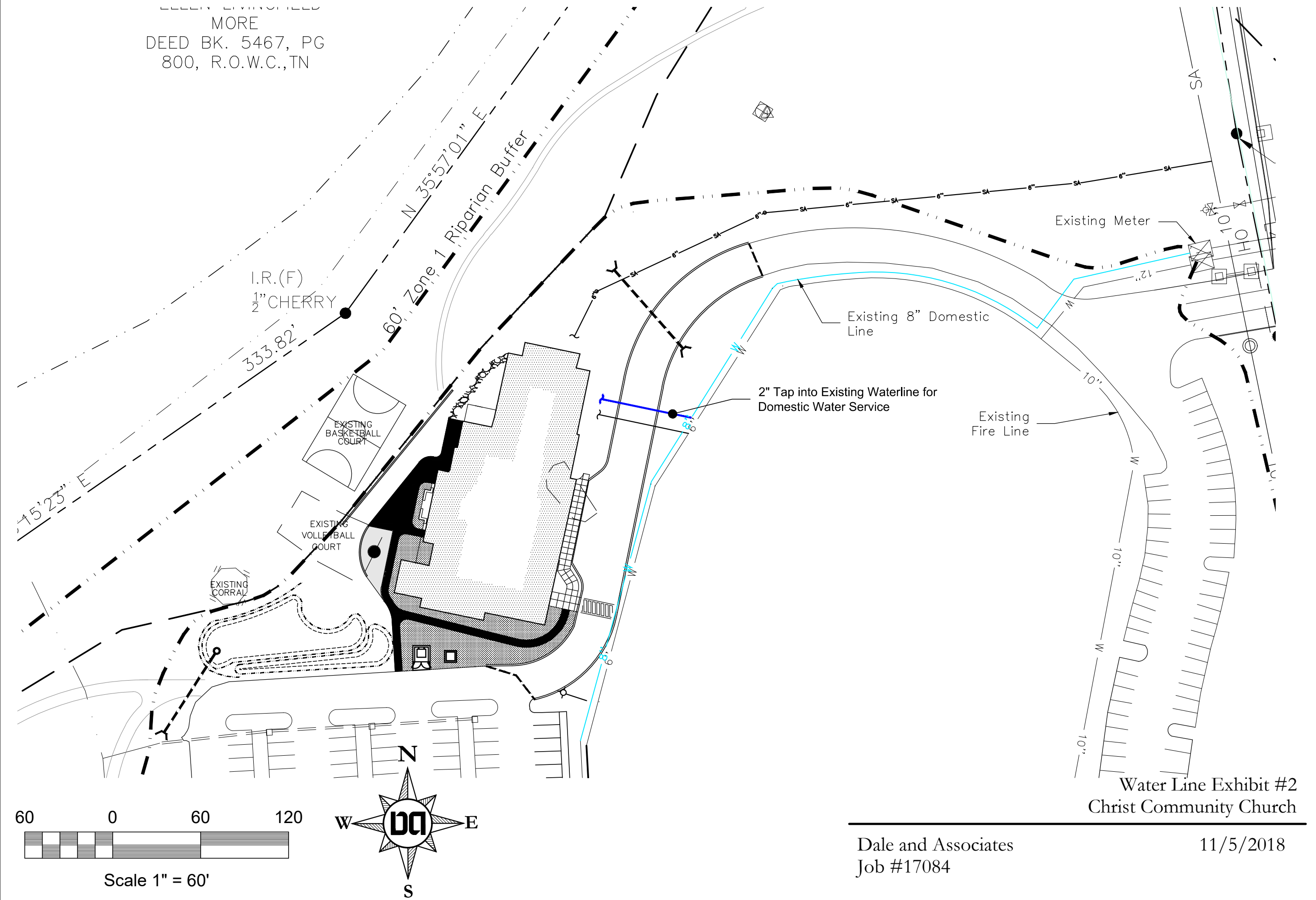
We greatly appreciate staff's time to listen to our position and consider solutions. It is our opinion that the new youth building should be considered the same 'premise' as the church since it is actually a continuation of the same use. However, should Franklin determine that the youth building is actually a new 'premise', then we would also like the opportunity to seek any necessary variances to allow us to tie onto the existing domestic line for the reasons above.

Sincerely,

Adam Seger

Adam Seger, PE

LEEN LIVING FEE
MORE
DEED BK. 5467, PG
800, R.O.W.C.,TN



Water Line Exhibit #2
Christ Community Church

Dale and Associates
Job #17084

11/5/2018



HISTORIC
FRANKLIN
TENNESSEE

6/7/18

Hunter Dale
Dale & Associates
516 Heather Place
Nashville, TN 37204
hunter@daleandassociates.net

Re: **WATER & SANITARY SEWER AVAILABILITY**
Christ Community Church - 1215 Hillsboro Rd
MAP & PARCEL(S): 052---00700
COF # NA
Domestic Water Meter Size(s): 1 - 1"

Dear Mr. Dale

We have received and reviewed your request for the above referenced property and project. Based on the information we received availability for up to 13 SFUE (single family unit equivalents) will be available. Sanitary sewer service for this project is to be provided through the Central Franklin Basin **Interceptor**. The development is responsible for any extensions required for connection to the City's systems. All extensions shall be completed per the appropriate approved Sanitary Sewer Drainage Basin Plans. In addition it shall be the developer's responsibility to ensure that adequate water for both domestic use and fire protection will be provided. The developer must show, on the proposed plans, how water will be supplied and must demonstrate through a capacity analysis that the existing systems will provide adequate service for the proposed water demands and sanitary sewer loads.

This approval of availability is contingent upon the proposed development meeting the requirements as established October 13, 2015, for extensions of facilities inside the City's Boundaries, the payment of all required fees, and any required extension to the City's water and/or sanitary sewer systems to serve the site as per the City's established standards with associated required public water and/or sanitary sewer line easements. The October 13, 2015, conditions for availability are as follows:



6/7/18
Mr. Dale
Page 2

1. The City has available capacity in its collection and/or distribution systems and the treatment facilities required to handle the additional expected sanitary sewage discharge and/or water demand for the proposed projects (s); and
2. The developer(s) or owner(s) shall pay all costs associated in providing the extensions and/or necessary upgrades of the water and/or sanitary sewer systems for the proposed project(s) and shall dedicate the improvements to the City of Franklin along with any necessary easements; and
3. Any availability granted for a project is subject to a one (1) year time limit for the submission of construction plans and a one and one half (1 ½) year time limit for the start of construction on the project; and
4. Annexation shall be required as a condition of approval for all properties outside the City Limits whether within the City's Urban Growth Boundary, or not, in order to be granted sanitary sewer availability. Annexation shall occur at such time the property becomes contiguous to the City's corporate limits or when not contiguous to the City's corporate limits, as determined by the Board of Mayor and Aldermen; and
5. The Board of Mayor and Aldermen determines that such extension(s) of water and/or sanitary sewer service is in the best interest of the water and sanitary sewer customers of the City and in the public interest generally.

For a determination of the fees (Access Fee, System Development Fee, etc.) required for the water and/or sanitary sewer services please review the City of Franklin Municipal Code Title 22 – Comprehensive Fees and Penalties.

Should you have any questions concerning this matter, please feel free to call.

Sincerely,

Paul P. Holzen, P.E.
Director of Engineering

cc: Eric Stuckey, City Administrator
Mark Hilty, Director of Water Management Department
Building & Neighborhood Services Department



Request for Water and/or Sewer Availability & Associated Costs

Please fill in the following information & return this form with the site plan per directions below. Incomplete forms will result in the request being returned until all of the information is included. Refer to the attached memo for fees and additional information.

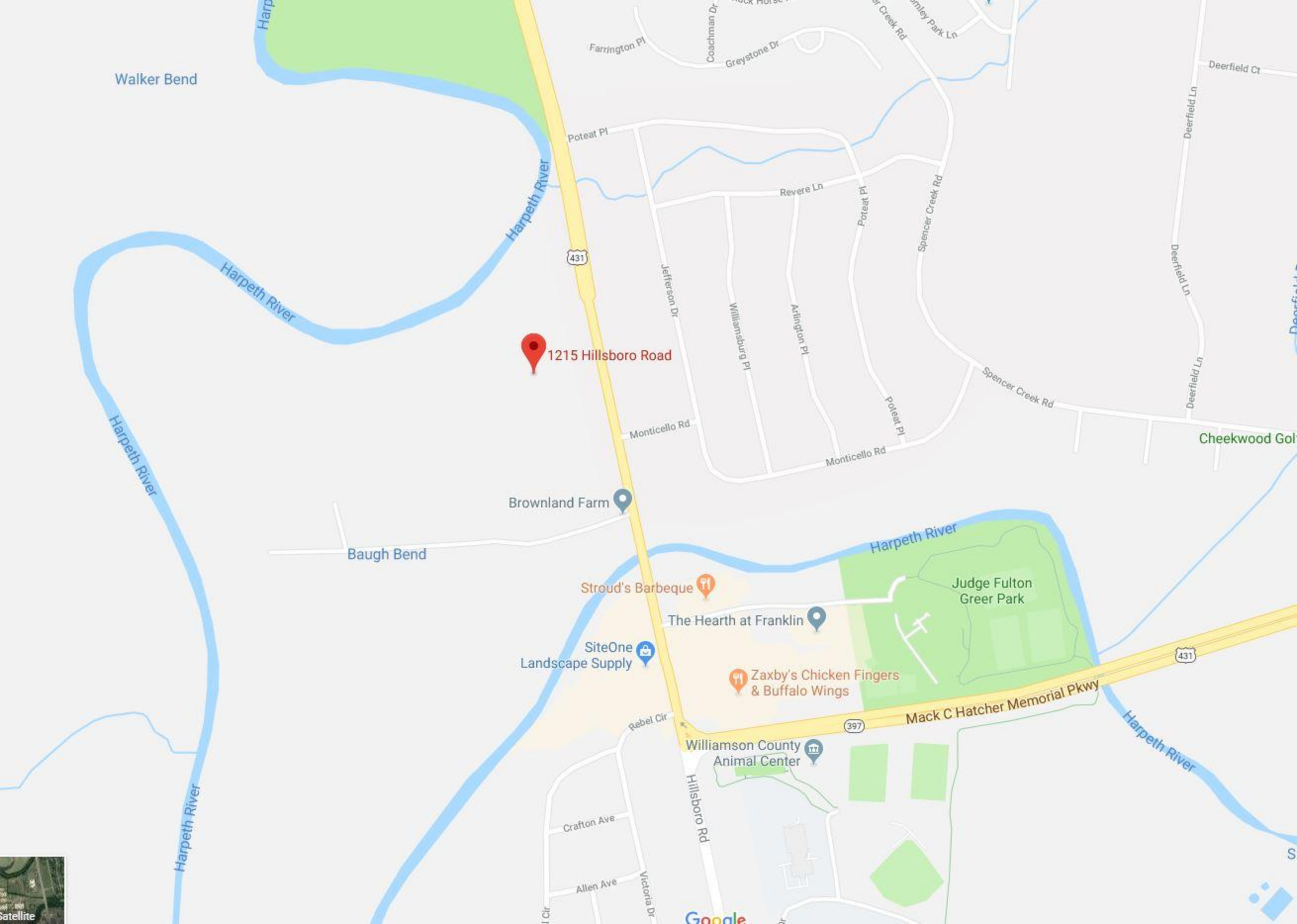
Type of Availability Requested:		CHECK ALL THAT APPLY: ☒ Water ☒ Sewer	
Project Name & Subdivision, Section, Lot #	Christ Community Church		
Map & Parcel(s) #	Parcel 7, Map 52		
Property Address:	1215 Hillsboro Road		
City Project # (If Applicable)			
# of Dwelling Units (If Residential)			
Applicant's Name & Company	Hunter Dale		
Applicant's Address	516 Heather Place Nashville, TN 37204		
Applicant's Email & Phone #	hunter@daleandassociates.net, 615-297-5166x103		
Anticipated Water Meter Size(s) (see chart on pg. 3).	1" for New Tap		
Water District:	Franklin		
Sewage Flow Calculations: Use the City of Franklin projected flow examples sheet -pg.4 Existing Sanctuary Improvements to be served by Existing Tap & Meter Proposed Youth Facility (School) 200 Students = 4000 GPD = 12 SFU			
<i>use additional sheets as necessary</i>			
Anticipated sewage flows: Information Required for Sewer Service		4000 GPD = 12 SFU	
If County is requiring this request please indicate if you are requesting an approval or denial:	☐ DENY my Request ☐ APPROVE my request <i>*approval or denial is approved by BOMA, indication here is not a guarantee for approval or denial*</i>		

MUST SUBMIT A LOCATION MAP (FOR EX: GOOGLE MAP)

Email Application to: EngineeringMBX@franklintn.gov

For additional information or questions please call: 615-791-3218

Date Submitted: 4/20/18



Walker Bend

Harpeth River

Harpeth River

431

1215 Hillsboro Road

Poteat Pl

Farrington Pl

Coachman Dr

Greystone Dr

Spencer Creek Rd

Deerfield Ln

Deerfield Ct

Deerfield Ln

Revere Ln

Poteat Pl

Jefferson Dr

Williamburg Pl

Arlington Pl

Poteat Pl

Spencer Creek Rd

Deerfield Ln

Deerfield Ln

Monticello Rd

Monticello Rd

Brownland Farm

Baugh Bend

Stroud's Barbeque

The Hearth at Franklin

SiteOne
Landscape Supply

Zaxby's Chicken Fingers
& Buffalo Wings

Judge Fulton
Greer Park

Williamson County
Animal Center

397

Mack C Hatcher Memorial Pkwy

431

Harpeth River

Crafton Ave

Allen Ave

Victoria Dr

Google



Satellite



1" = 200'

(15.02)
ELLEN LIVINGFIELD
MORE
DEED BK. 5467, PG
800, R.O.W.C., TN

FLOOD WAY
APPROXIMATE LOCATION
SCALED PER FIRM MAP
NO. 47187C0184 G
EFFECTIVE DATE: 12/22/2016

WELL
CAPPED
ICV

ZONE "AE"
New Tap

100 YEAR FLOOD PLAIN
APPROXIMATE LOCATION
SCALED PER FIRM MAP
NO. 47187C0184 G
EFFECTIVE DATE: 12/22/2016

ZONE "X"

New Youth Facility

EXISTING
BUILDING

EXISTING
BUILDING

100 YEAR FLOOD PLAIN
APPROXIMATE LOCATION
SCALED PER FIRM MAP
NO. 47187C0184 G
EFFECTIVE DATE: 12/22/2016

15" RCP
INV.: 623.51'

15" RCP
INV.: 623.58'

12" RCP (OVAL)
INV.: 621.26'

12" RCP (OVAL)
INV.: 620.30'

FLOOD WAY

S 85°29'44" E

I.R.(F)
1/2" ORANGE CAP

662.06'

I.R.(F)
1/2" CHERRY

(2)
ANDERTON FAMILY
PARTNERSHIP
DEED BK. 6686,
P. 805, R.O.W.C., TN

HILLSBORO ROAD
(R.O.W. VARIES)

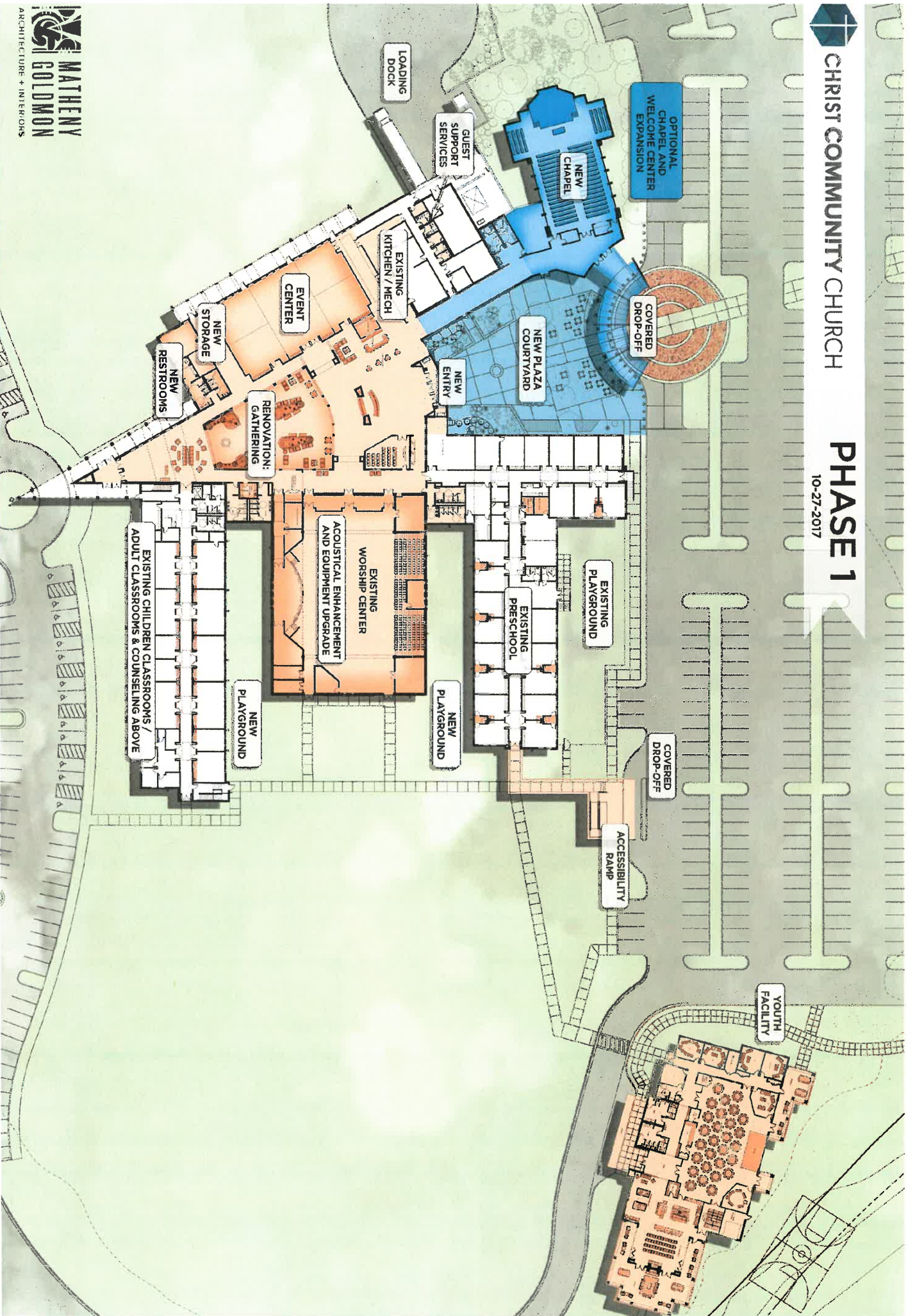
MONTICELLO ROAD
(70' R.O.W.)

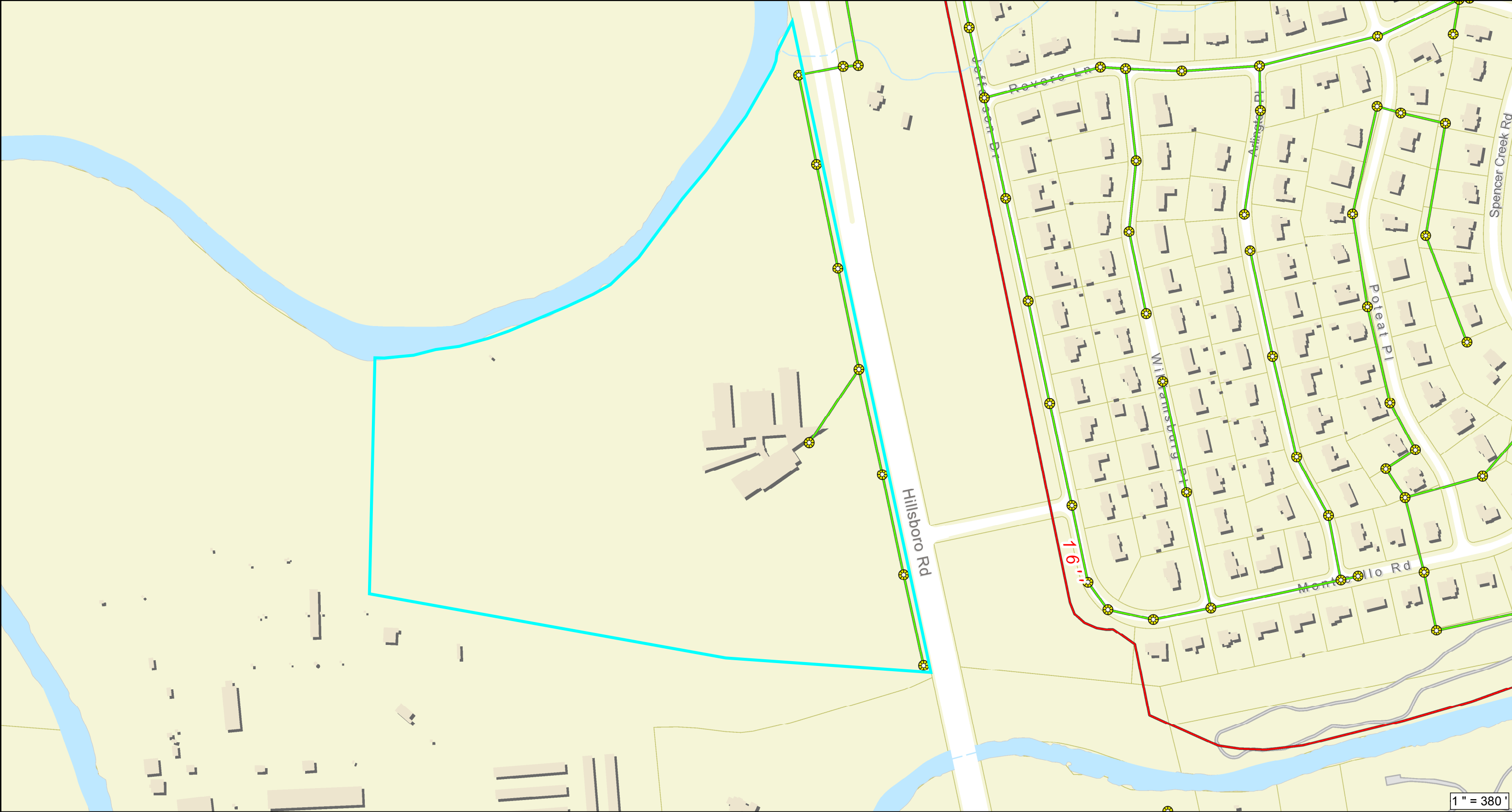


CHRIST COMMUNITY CHURCH

PHASE 1

10-27-2017







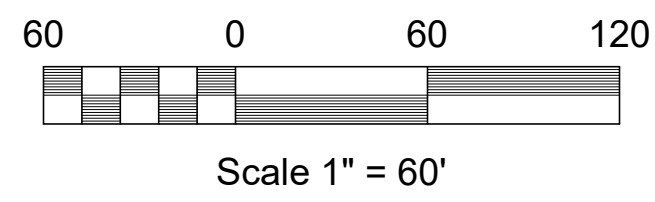
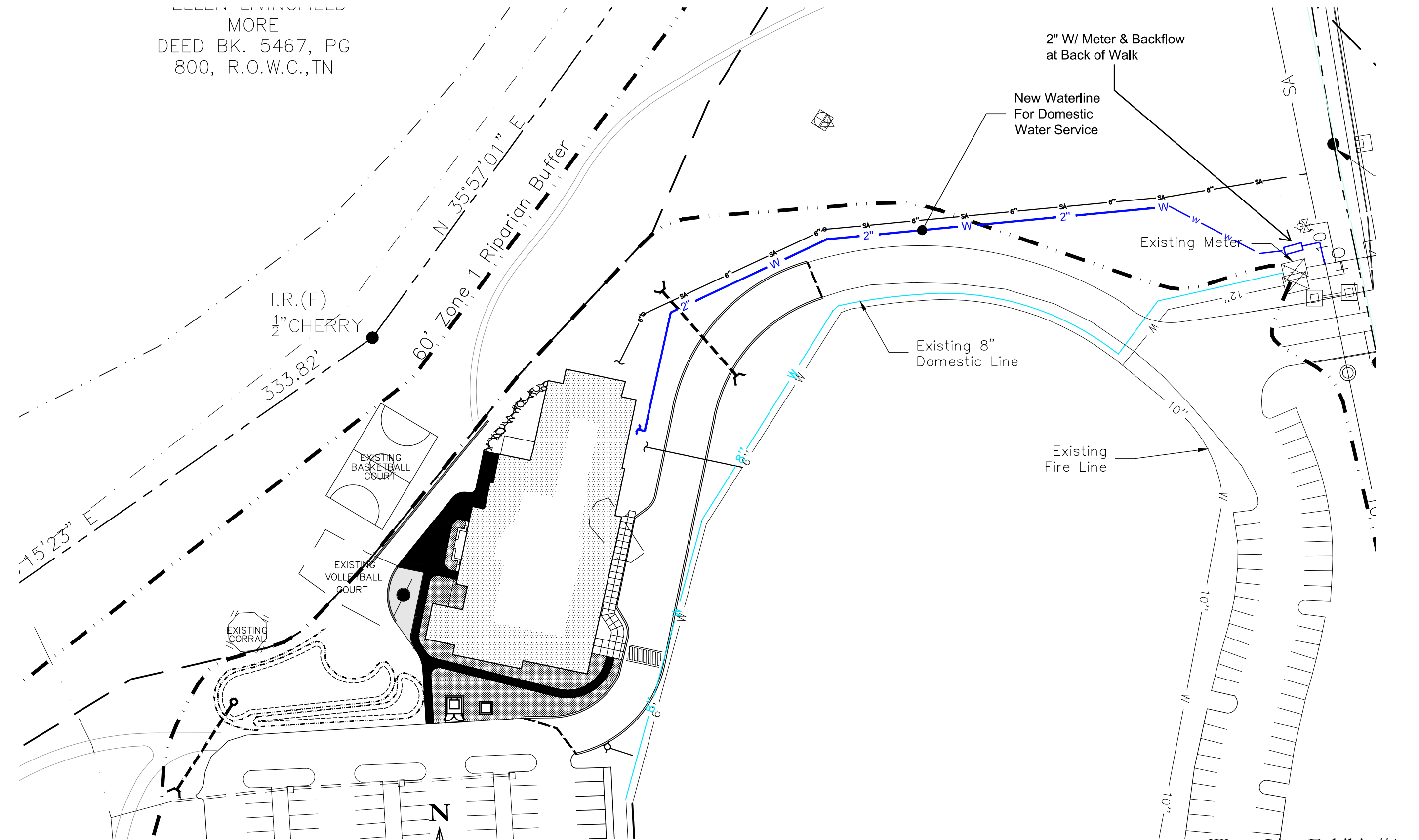
Sewer Lift Station	Sewage Treatment Plant	Sewer Gravity Pipe
 Existing	 Water Reclamation Facility	 Private
 Proposed	 Sewer System Valve	 Interceptor
 Manholes	Sewer Pressurized Pipe	 Collector
 Flow Monitor	 Abandoned Force	 Abandoned Interceptor
	 Sewer Force	

 Abandoned Collector

FRANKLIN DISCLAIMER
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LEEN LIVING FEE
MORE
DEED BK. 5467, PG
800, R.O.W.C.,TN



Water Line Exhibit #1
Christ Community Church

Dale and Associates
Job #17084

11/5/2018

**Request for Construction Change
Final Change Order**

City of Franklin
Engineering Office
109 Third Avenue South
Franklin, TN 37064

Contract No. 2015-0062
Project Water Treatment Plant Modifications

Whereas, we **Judy Construction, Inc.** entered into a contract with the CITY OF FRANKLIN, on September 22, 2015, for the construction by said Contractor of the above designated contract; and Whereas, certain items of construction encountered are not covered by the original contract, we desire to submit the following additional items of construction to be performed by the Contractor and paid by the City at the prices scheduled therefore below:

Reason for Change Order:

- Closeout for the project
- Decrease days to the total contract for final acceptance date

Attachments (List documents supporting change):

- Final pay request
- Final quantities spreadsheet
- Letter from engineer dated June 15, 2018

				CONTRACT		Total	
#	Name	Qty	Unit	Unit Price	Cost	Quantity	Cost
1	ALLOWANCE - MATERIALS TESTING	1	LS	\$60,000.00	\$60,000.00	35.00%	\$21,073.00
2	ALLOWANCE - CONCRETE REPAIR	1	LS	\$40,000.00	\$40,000.00	13.00%	\$5,047.00
3	ALLOWANCE - SPARE PARTS	1	LS	\$25,000.00	\$25,000.00	86.00%	\$21,572.00
4	ALLOWANCE - CONSTRUCTION CONTINGENCIES	1	LS	\$750,000.00	\$750,000.00	100.00%	\$749,582.00
5	ALLOWANCE - EXISTING FILTER BUILDING	1	LS	\$50,000.00	\$50,000.00	96.00%	\$47,936.00
6	ALLOWANCE - UTILITY RELOCATION WORK	1	LS	\$30,000.00	\$30,000.00	100.00%	\$30,000.00
7	MOBILIZATION	1	LS	\$154,000.00	\$154,000.00	100.00%	\$154,000.00
8	BONDS & INSURANCE	1	LS	\$138,000.00	\$138,000.00	100.00%	\$138,000.00
9	GENERAL CONDITIONS	1	LS	\$592,800.00	\$592,800.00	100.00%	\$592,800.00

10	EROSION AND SEDIMENTATION CONTROL	1	LS	\$42,300.00	\$42,300.00	100.00%	\$42,300.00
11	DEMOLITION - SITE	1	LS	\$15,300.00	\$15,300.00	100.00%	\$15,300.00
12	DEMOLITION - RAW WATER INTAKE	1	LS	\$40,000.00	\$40,000.00	100.00%	\$40,000.00
13	DEMOLITION - FLOCC/SETTLING BASINS	1	LS	\$23,500.00	\$23,500.00	100.00%	\$23,500.00
14	DEMOLITION - FILTER BUILDINGS	1	LS	\$23,800.00	\$23,800.00	100.00%	\$23,800.00
15	DEMOLITION - HIGH SERVICE PUMPS	1	LS	\$3,100.00	\$3,100.00	100.00%	\$3,100.00
16	RAW WATER PUMP STATION CONCRETE SLAB	1	LS	\$50,600.00	\$50,600.00	100.00%	\$50,600.00
17	RAW WATER PUMP STATION CONCRETE WALLS	1	LS	\$150,600.00	\$150,600.00	100.00%	\$150,600.00
18	RAW WATER PUMP STATION CONCRETE SHORED SLAB	1	LS	\$14,200.00	\$14,200.00	100.00%	\$14,200.00
19	MEMBRANE BUILDING CONCRETE SLABS	1	LS	\$349,800.00	\$349,800.00	100.00%	\$349,800.00
20	MEMBRANE BUILDING CONCRETE WALLS	1	LS	\$252,800.00	\$252,800.00	100.00%	\$252,800.00
21	MEMBRANE BUILDING CONCRETE MISCELLANEOUS	1	LS	\$32,300.00	\$32,300.00	100.00%	\$32,300.00
22	HYDROGEN PEROXIDE STORAGE BUILDING CONCRETE	1	LS	\$12,400.00	\$12,400.00	100.00%	\$12,400.00
23	SITE CONCRETE	1	LS	\$73,200.00	\$73,200.00	100.00%	\$73,200.00
24	HOLLOWWARE PANELS - HYDROGEN BUILDING	1	LS	\$7,000.00	\$7,000.00	100.00%	\$7,000.00
25	MASONRY - SITE	1	LS	\$2,000.00	\$2,000.00	100.00%	\$2,000.00
26	MASONRY - TREATMENT BUILDING	1	LS	\$129,100.00	\$129,100.00	100.00%	\$129,100.00
27	MASONRY - HYDROGEN PEROXIDE BUILDING	1	LS	\$22,400.00	\$22,400.00	100.00%	\$22,400.00
28	MISCELLANEOUS METALS	1	LS	\$425,300.00	\$425,300.00	100.00%	\$425,300.00
29	FRP GRATING	1	LS	\$9,300.00	\$9,300.00	100.00%	\$9,300.00
30	METAL TRUSSES	1	LS	\$75,700.00	\$75,700.00	100.00%	\$75,700.00
31	ROUGH CARPENTRY	1	LS	\$43,500.00	\$43,500.00	100.00%	\$43,500.00
32	TREATMENT BUILDING - METAL ROOFING	1	LS	\$149,900.00	\$149,900.00	100.00%	\$149,900.00
33	TREATMENT BUILDING - MEMBRANE ROOFING	1	LS	\$59,500.00	\$59,500.00	100.00%	\$59,500.00
34	TREATMENT BUILDING - METAL WALL PANELS	1	LS	\$126,000.00	\$126,000.00	100.00%	\$126,000.00

35	HYDROGEN BUILDING - ROOFING	1	LS	\$2,700.00	\$2,700.00	100.00%	\$2,700.00
36	JOINT SEALERS	1	LS	\$13,500.00	\$13,500.00	100.00%	\$13,500.00
37	METAL DOORS, FRAMES, & HARDWARE	1	LS	\$23,300.00	\$23,300.00	100.00%	\$23,300.00
38	OVERHEAD DOOR	1	LS	\$2,600.00	\$2,600.00	100.00%	\$2,600.00
39	SLIDING BARN DOOR	1	LS	\$2,200.00	\$2,200.00	100.00%	\$2,200.00
40	ALUMINUM WINDOWS	1	LS	\$14,600.00	\$14,600.00	100.00%	\$14,600.00
41	DRYWALL	1	LS	\$106,000.00	\$106,000.00	100.00%	\$106,000.00
42	INSULATION	1	LS	\$77,700.00	\$77,700.00	100.00%	\$77,700.00
43	PAINTING	1	LS	\$282,000.00	\$282,000.00	100.00%	\$282,000.00
44	BUILDING SPECIALTIES/SIGNAGE	1	LS	\$21,600.00	\$21,600.00	100.00%	\$21,600.00
45	CANOPIES	1	LS	\$23,800.00	\$23,800.00	100.00%	\$23,800.00
46	FIRE SUPPRESSION SPRINKLER SYSTEM	1	LS	\$33,600.00	\$33,600.00	100.00%	\$33,600.00
47	PLUMBING	1	LS	\$179,400.00	\$179,400.00	100.00%	\$179,400.00
48	SMALL PIPING	1	LS	\$326,300.00	\$326,300.00	100.00%	\$326,300.00
49	HVAC	1	LS	\$275,100.00	\$275,100.00	100.00%	\$275,100.00
50	ELECTRICAL - GENERAL CONDITIONS	1	LS	\$101,400.00	\$101,400.00	100.00%	\$101,400.00
51	ELECTRICAL - TREATMENT BUILDING	1	LS	\$855,500.00	\$855,500.00	100.00%	\$855,500.00
52	ELECTRICAL - RAW WATER PUMP STATION	1	LS	\$178,100.00	\$178,100.00	100.00%	\$178,100.00
53	ELECTRICAL - CLEARWELL STRUCTURE	1	LS	\$80,200.00	\$80,200.00	100.00%	\$80,200.00
54	ELECTRICAL - HYDROGEN PEROXIDE BUILDING	1	LS	\$30,700.00	\$30,700.00	100.00%	\$30,700.00
55	ELECTRICAL - SITE / SETTLING BASINS	1	LS	\$296,600.00	\$296,600.00	100.00%	\$296,600.00
56	CLEAR AND GRUBB	1	LS	\$19,800.00	\$19,800.00	100.00%	\$19,800.00
57	STRIP TOPSOIL / SITE EXCAVATION	1	LS	\$14,000.00	\$14,000.00	100.00%	\$14,000.00
58	SPREAD TOPSOIL / FINISH DRESS	1	LS	\$23,300.00	\$23,300.00	100.00%	\$23,300.00
59	SEEDING / SITE RESTORATION	1	LS	\$34,600.00	\$34,600.00	100.00%	\$34,600.00
60	COFFERDAM AT INTAKE	1	LS	\$250,900.00	\$250,900.00	100.00%	\$250,900.00
61	STRUCTURE EXCAVATION - RAW WATER PS & VV	1	LS	\$170,500.00	\$170,500.00	100.00%	\$170,500.00
62	BACKFILL - RAW PS & VV	1	LS	\$74,000.00	\$74,000.00	100.00%	\$74,000.00

63	STRUCTURE EXCAVATION - TREATMENT BUILDING	1	LS	\$68,500.00	\$68,500.00	100.00%	\$68,500.00
64	BACKFILL - TREATMENT BUILDING	1	LS	\$79,300.00	\$79,300.00	100.00%	\$79,300.00
65	STRUCTURE EXC./BACKFILL - HYDROGEN BLDG.	1	LS	\$2,000.00	\$2,000.00	100.00%	\$2,000.00
66	ROCK ANCHORS - RAW WATER PS	1	LS	\$7,500.00	\$7,500.00	100.00%	\$7,500.00
67	ROCK ANCHORS - INTAKE SCREEN	1	LS	\$6,700.00	\$6,700.00	100.00%	\$6,700.00
68	ROCK ANCHORS - TREATMENT BUILDING	1	LS	\$97,700.00	\$97,700.00	100.00%	\$97,700.00
69	ASPHALT PAVING	1	LS	\$93,700.00	\$93,700.00	100.00%	\$93,700.00
70	CHAIN LINK FENCE	1	LS	\$16,700.00	\$16,700.00	100.00%	\$16,700.00
71	FLANGED DUCTILE IRON PIPE	1	LS	\$337,500.00	\$337,500.00	100.00%	\$337,500.00
72	BURIED DUCTILE IRON PIPE	1	LS	\$197,100.00	\$197,100.00	100.00%	\$197,100.00
73	BORE AND JACK PIPE UNDER ROADWAY	1	LS	\$386,700.00	\$386,700.00	100.00%	\$386,700.00
74	PVC PIPE	1	LS	\$76,000.00	\$76,000.00	100.00%	\$76,000.00
75	STAINLESS STEEL PIPE	1	LS	\$95,600.00	\$95,600.00	100.00%	\$95,600.00
76	RCP/HEADWALLS	1	LS	\$15,300.00	\$15,300.00	100.00%	\$15,300.00
77	VALVES	1	LS	\$237,700.00	\$237,700.00	100.00%	\$237,700.00
78	RCP / HEADWALLS	1	LS	\$9,900.00	\$9,900.00	100.00%	\$9,900.00
79	RAW WATER INTAKE VALVE VAULT	1	LS	\$37,900.00	\$37,900.00	100.00%	\$37,900.00
80	PRECAST STRUCTURES	1	LS	\$56,200.00	\$56,200.00	100.00%	\$56,200.00
81	INSTRUMENTATION AND CONTROLS	1	LS	\$425,100.00	\$425,100.00	100.00%	\$425,100.00
82	RAW WATER PUMPS	1	LS	\$179,500.00	\$179,500.00	100.00%	\$179,500.00
83	RAW WATER INTAKE SCREEN	1	LS	\$70,600.00	\$70,600.00	100.00%	\$70,600.00
84	HIGH SERVICE PUMPS	1	LS	\$194,600.00	\$194,600.00	100.00%	\$194,600.00
85	SLUDGE PUMPS	1	LS	\$13,600.00	\$13,600.00	100.00%	\$13,600.00
86	CHEMICAL PUMPS	1	LS	\$58,000.00	\$58,000.00	100.00%	\$58,000.00
87	SUBMERSIBLE MIXERS @ FLOCCULATION BASIN	1	LS	\$119,600.00	\$119,600.00	100.00%	\$119,600.00
88	FLOATING MECHANICAL MIXER	1	LS	\$65,200.00	\$65,200.00	100.00%	\$65,200.00
89	TUBE SETTLERS	1	LS	\$42,400.00	\$42,400.00	100.00%	\$42,400.00
90	SLUDGE COLLECTOR UNIT	1	LS	\$181,200.00	\$181,200.00/	100.00%	\$181,200.00
91	GRANULAR ACTIVATED CARBON PRESSURE CONTACTORS	1	LS	\$1,008,600.00	\$1,008,600.00	100.00%	\$1,008,600.00

92	MEMBRANE FILTRATION EQUIPMENT	1	LS	\$1,535,300.00	\$1,535,300.00	100.00%	\$1,535,300.00
93	ULTRAVIOLET DISINFECTION SYSTEM	1	LS	\$692,000.00	\$692,000.00	100.00%	\$692,000.00
94	INLINE STATIC MIXERS	1	LS	\$35,400.00	\$35,400.00	100.00%	\$35,400.00
95	FACILITY ONLINE TRAINING	1	LS	\$87,500.00	\$87,500.00	100.00%	\$87,500.00
	STORED MATERIALS						
TOTAL AMOUNT (calculated)					\$14,018,000.00		\$13,938,210.00
DIFFERENCE				(\$79,790.00)			

CHANGE IN CONTRACT PRICE:
Original Contract Price
\$14,018,000.00
Net Decrease from previous Change Orders No. 0 to Final:
(\$193,637.53)
Contract Price prior to this Change Order:
\$13,824,362.47
Net decrease of this Change Order:
(\$79,790.00)
Contract Price with all approved Change Orders:
\$13,744,572.47

CHANGE IN CONTRACT TIMES:
Original Contract Times:
Substantial Completion: 10/25/17
Ready for final payment: 11/24/17
Net change from previous Change Orders No. 0 to 3 to:
Substantial Completion: 196 days
Ready for final payment: 60 days
Contract Times prior to this Change Order:
Substantial Completion: 5/9/18
Ready for final payment: 7/9/18
Net change this Change Order:
Substantial Completion: -15 days
Ready for final payment: 60 days
Contract Times with all approved Change Orders:
Substantial Completion: 4/24/18
Ready for final payment: 6/23/18

Now, Therefore, We, Judy Construction, Inc., hereby agree to this Supplemental Agreement consisting of the above mentioned items and prices, and agree that this Supplemental Agreement is hereby made a part of the original contract and will be performed by this Contractor in accordance with specifications thereof, and that the original contract remain in full force and effect, except in so far as specifically modified by this supplemental Agreement.

RECOMMENDED FOR APPROVAL BY:

By: _____
ENGINEER
DATE: _____

By: _____
CITY PROJECT MANAGER
DATE: _____

By: _____
WATER DEPARTMENT DIRECTOR
DATE: _____

ACCEPTED:

By: _____
CONTRACTOR
DATE: _____

APPROVED:

By: _____
OWNER (Authorized Signature)
DATE: _____



June 15, 2018

Mrs. Michelle Hatcher – Director
Franklin Water Management Department
124 Lumber Drive
Franklin, Tennessee 37064

Re: Franklin Water Treatment Plant Modifications
COF Contract Number: 2015-0062
Change Order No. 004 – FINAL

Dear Michelle,

Please find the attached Change Order No. 004 form for the Water Treatment Plant project contracted to Judy Construction. The purpose of this change is to balance out the contract as we have found the work complete on 6/14/2018. This change order will be included in the final payment application for the project. This Change includes:

- 1) A Decrease in the Contract Value of \$79,790.00 to close out remaining balances within the project line items and allowances included in the schedule of values.
- 2) A Decrease in the Completion Dates of 15 days, representing the approval of Substantial Completion on April 24, 2018, and Final Completion required by June 23, 2018.

This Final Contract price for the project following this final change order is \$13,744,572.47. This represents a Decrease of \$273,427.53 from the initial Bid Value of \$14,018,000.00.

Please review the information as your earliest convenience and do not hesitate to contact us should you have any questions.

Sincerely,

SMITH SECKMAN REID, INC.

A handwritten signature in blue ink, appearing to read "A. Johnson", is written over a white background.

Andrew Johnson, P.E.

cc: Patricia McNeese - FWMD
JAG, KDM – SSR
File (7)



SMITH
SECKMAN
REID, INC.

CHANGE ORDER NO. 004

Date Issued:	06/09/2018	Effective Date:	
Project:	WTP Modifications	Contract No.:	2015-0062
Owner:	City of Franklin	Owner's Project No.:	2015-0062
Engineer:	Smith Seckman Reid, Inc.	SSR Project No.:	12-41-013.0
Contractor:	Judy Construction Co.	Government Project No.:	N/A

The contractor is hereby authorized and directed to make the changes described below, and agrees to furnish all labor, materials, and equipment to accomplish the changes in accordance with the applicable portions of the Contract Documents for this project.

Description of Change (Including Location and Reasons Therefore)

This change order balances the contract value to the value of the work performed. The contract value is reduced by crediting the amounts remaining in unused allowance funds back to the City of Franklin.

This Change also recognizes the Substantial Completion Date of 4/24/2018, thus revising the Final Completion date to 60 days after this date, or 6/23/2018.

In executing this change order, it is mutually agreed that the amounts provided for herein will be accepted by the contractor as full compensation for all known costs associated in the work, including all direct and indirect costs, and any and all known costs associated with delays or additional time, if any, which may be required as a result of said changes.

	AMOUNT		CONTRACT TIME
Original Contract Price	\$14,018,000.00	Substantial Completion Date Prior to Change Order	5/9/2018
Contract Price Prior to Change Order	\$13,824,362.47	Final Payment Date Prior To Change Order	7/9/2018
Net Amount This Change Order	(\$79,790.00)	Net Time This Change Order	Decrease 15 Days
Revised Contract Price	\$13,744,572.47	Granted Substantial Completion Date	4/24/2018
		Revised Final Payment Date (60 days)	6/23/2018

Recommended By:

Engineer

6/15/18

Date

Accepted By:

Contractor

6/9/18

Date

Approved By:

Owner

Date

PARTIAL PAYMENT ESTIMATE

CONTRACT NO. COF 2015-0062

PARTIAL PAYMENT ESTIMATE NO. 30

PAGE 1 OF 10

OWNER:
City of Franklin
124 Lumber Drive
Franklin, TN 37064

CONTRACTOR:
Judy Construction Company
P. O. Box 457
Cynthiana, KY. 41031

PERIOD OF ESTIMATE
FROM: 04/29/18
TO: 06/09/18

CONTRACT CHANGE ORDER SUMMARY

ESTIMATE

No.	Agency Approval Date	Amount			
		Additions	Deductions		
1	27-Aug-16	\$8,174.02	\$180,111.55	1. Original Contract	\$14,018,000.00
2	12-Dec-17		\$21,700.00	2. Change Orders	(\$193,637.53)
3	06-Mar-18			3. Revised Contract (1 + 2)	\$13,824,362.47
				4. Work Completed*	\$13,938,210.00
				5. Change Orders Completed	(\$193,637.53)
				6. Stored Material*	\$0.00
				7. Subtotal (4 + 5 + 6)	\$13,744,572.47
				8. Retainage	\$687,228.62
				9. Previous Payments	\$12,875,160.45
				10. AMOUNT DUE THIS APPLICATION (7-8-9) ..	\$182,183.40
TOTALS		\$8,174.02	\$201,811.55	* Detailed breakdown attached	
NET CHANGE			(\$193,637.53)		

Original (days) 760
Revised 986
Remaining 14

Starting Date: October 26, 2015
Projected Final Completion: June 23, 2018

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that to the best of their knowledge, information, and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates was issued and payments received from owner, and that current payment shown herein is now due.

Contractor: Judy Construction CompanyBy John WhelanDate 6/4/18

ARCHITECT OR ENGINEER'S CERTIFICATION:

The undersigned certifies that the work has been carefully inspected and to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents.

Architect or Engineer: Smith Seckman Reid, Inc.By Joseph GiffordRPR Herby RaduDate 6/15/18

ACCEPTED BY AGENCY:

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the contract documents.

APPROVED BY OWNER:

Owner: City of Franklin, Tennessee

By _____

By _____

Title _____

Date _____

Date _____

CONTRACTOR: JUDY CONSTRUCTION COMPANY
 OWNER: CITY OF FRANKLIN, TENNESSEE
 LOCATION: FRANKLIN, TN
 ENGINEERS: SMITH SECKMAN REID, INC.

PAGE 2 OF 10
 PAYMENT ESTIMATE NO. 30
 FOR PERIOD BEGINNING 29-Apr-18
 AND ENDING 09-Jun-18

ITEM NO.	DESCRIPTION OF ITEM	CONTRACT				PREVIOUS ESTIMATE		THIS ESTIMATE		TOTAL TO DATE	
		QUAN.	UNIT	UNIT COST	TOTAL AMT.	QUAN.	AMOUNT	QUAN.	AMOUNT	QUAN.	AMOUNT
1	ALLOWANCE - MATERIALS TESTING	1	L.S.	\$60,000.00	\$60,000.00	35%	\$21,073.00	0%	\$0.00	35%	\$21,073.00
2	ALLOWANCE - CONCRETE REPAIR (Page 7)	1	L.S.	\$40,000.00	\$40,000.00	13%	\$5,047.00	0%	\$0.00	13%	\$5,047.00
3	ALLOWANCE - SPARE PARTS (Page 8)	1	L.S.	\$25,000.00	\$25,000.00	86%	\$21,572.00	0%	\$0.00	86%	\$21,572.00
4	ALLOWANCE - CONSTRUCTION CONTINGENCIES (Page 9)	1	L.S.	\$750,000.00	\$750,000.00	78%	\$587,586.00	22%	\$161,996.00	100%	\$749,582.00
5	ALLOWANCE - EXISTING FILTER BUILDING (Page 10)	1	L.S.	\$50,000.00	\$50,000.00	92%	\$45,758.00	4%	\$2,178.00	96%	\$47,936.00
6	ALLOWANCE - UTILITY RELOCATION WORK	1	L.S.	\$30,000.00	\$30,000.00	100%	\$30,000.00	0%	\$0.00	100%	\$30,000.00
7	MOBILIZATION	1	L.S.	\$154,000.00	\$154,000.00	100%	\$154,000.00	0%	\$0.00	100%	\$154,000.00
8	BONDS & INSURANCE	1	L.S.	\$138,000.00	\$138,000.00	100%	\$138,000.00	0%	\$0.00	100%	\$138,000.00
9	GENERAL CONDITIONS	1	L.S.	\$592,800.00	\$592,800.00	100%	\$592,800.00	0%	\$0.00	100%	\$592,800.00
10	EROSION AND SEDIMENTATION CONTROL	1	L.S.	\$42,300.00	\$42,300.00	100%	\$42,300.00	0%	\$0.00	100%	\$42,300.00
11	DEMOLITION - SITE	1	L.S.	\$15,300.00	\$15,300.00	100%	\$15,300.00	0%	\$0.00	100%	\$15,300.00
12	DEMOLITION - RAW WATER INTAKE	1	L.S.	\$40,000.00	\$40,000.00	100%	\$40,000.00	0%	\$0.00	100%	\$40,000.00
13	DEMOLITION - FLOCC / SETTLING BASINS	1	L.S.	\$23,500.00	\$23,500.00	100%	\$23,500.00	0%	\$0.00	100%	\$23,500.00
14	DEMOLITION - FILTER BUILDING	1	L.S.	\$23,800.00	\$23,800.00	100%	\$23,800.00	0%	\$0.00	100%	\$23,800.00
15	DEMOLITION - HIGH SERVICE PUMPS	1	L.S.	\$3,100.00	\$3,100.00	100%	\$3,100.00	0%	\$0.00	100%	\$3,100.00
16	RAW WATER PUMP STATION CONCRETE SLAB	1	L.S.	\$50,600.00	\$50,600.00	100%	\$50,600.00	0%	\$0.00	100%	\$50,600.00
17	RAW WATER PUMP STATION CONCRETE WALLS	1	L.S.	\$150,600.00	\$150,600.00	100%	\$150,600.00	0%	\$0.00	100%	\$150,600.00
18	RAW WATER PUMP STATION CONCRETE SHORED SLAB	1	L.S.	\$14,200.00	\$14,200.00	100%	\$14,200.00	0%	\$0.00	100%	\$14,200.00
19	MEMBRANE BUILDING CONCRETE SLABS	1	L.S.	\$349,800.00	\$349,800.00	100%	\$349,800.00	0%	\$0.00	100%	\$349,800.00
20	MEMBRANE BUILDING CONCRETE WALLS	1	L.S.	\$252,800.00	\$252,800.00	100%	\$252,800.00	0%	\$0.00	100%	\$252,800.00
21	MEMBRANE BUILDING CONCRETE MISCELLANEOUS	1	L.S.	\$32,300.00	\$32,300.00	100%	\$32,300.00	0%	\$0.00	100%	\$32,300.00
22	HYDROGEN PEROXIDE STORAGE BUILDING CONCRETE	1	L.S.	\$12,400.00	\$12,400.00	100%	\$12,400.00	0%	\$0.00	100%	\$12,400.00
23	SITE CONCRETE	1	L.S.	\$73,200.00	\$73,200.00	100%	\$73,200.00	0%	\$0.00	100%	\$73,200.00
24	HOLLOWCORE PANELS - HYDROGEN BUILDING	1	L.S.	\$7,000.00	\$7,000.00	100%	\$7,000.00	0%	\$0.00	100%	\$7,000.00
25	MASONRY - SITE	1	L.S.	\$2,000.00	\$2,000.00	100%	\$2,000.00	0%	\$0.00	100%	\$2,000.00
26	MASONRY - TREATMENT BUILDING	1	L.S.	\$129,100.00	\$129,100.00	100%	\$129,100.00	0%	\$0.00	100%	\$129,100.00
27	MASONRY - HYDROGEN PEROXIDE BUILDING	1	L.S.	\$22,400.00	\$22,400.00	100%	\$22,400.00	0%	\$0.00	100%	\$22,400.00
28	MISCELLANEOUS METALS	1	L.S.	\$425,300.00	\$425,300.00	100%	\$425,300.00	0%	\$0.00	100%	\$425,300.00
29	FRP GRATING	1	L.S.	\$9,300.00	\$9,300.00	100%	\$9,300.00	0%	\$0.00	100%	\$9,300.00
30	METAL TRUSSES	1	L.S.	\$75,700.00	\$75,700.00	100%	\$75,700.00	0%	\$0.00	100%	\$75,700.00
31	ROUGH CARPENTRY	1	L.S.	\$43,500.00	\$43,500.00	100%	\$43,500.00	0%	\$0.00	100%	\$43,500.00
32	TREATMENT BUILDING - METAL ROOFING	1	L.S.	\$149,900.00	\$149,900.00	100%	\$149,900.00	0%	\$0.00	100%	\$149,900.00
33	TREATMENT BUILDING - MEMBRANE ROOFING	1	L.S.	\$59,500.00	\$59,500.00	100%	\$59,500.00	0%	\$0.00	100%	\$59,500.00
34	TREATMENT BUILDING - METAL WALL PANELS	1	L.S.	\$126,000.00	\$126,000.00	100%	\$126,000.00	0%	\$0.00	100%	\$126,000.00
35	HYDROGEN BUILDING - ROOFING	1	L.S.	\$2,700.00	\$2,700.00	100%	\$2,700.00	0%	\$0.00	100%	\$2,700.00
36	JOINT SEALERS	1	L.S.	\$13,500.00	\$13,500.00	100%	\$13,500.00	0%	\$0.00	100%	\$13,500.00
37	METAL DOORS, FRAMES, & HARDWARE	1	L.S.	\$23,300.00	\$23,300.00	100%	\$23,300.00	0%	\$0.00	100%	\$23,300.00
SUBTOTAL					\$4,012,900.00		\$3,768,936.00		\$164,174.00		\$3,933,110.00
TOTAL					\$4,012,900.00		\$3,768,936.00		\$164,174.00		\$3,933,110.00

CONTRACTOR: JUDY CONSTRUCTION COMPANY
 OWNER: CITY OF FRANKLIN, TENNESSEE
 LOCATION: FRANKLIN, TN
 ENGINEERS: SMITH SECKMAN REID, INC.

PAGE 3 OF 10
 PAYMENT ESTIMATE NO. 30
 FOR PERIOD BEGINNING 29-Apr-18
 AND ENDING 09-Jun-18

ITEM NO.	DESCRIPTION OF ITEM	CONTRACT				PREVIOUS ESTIMATE		THIS ESTIMATE		TOTAL TO DATE	
		QUAN.	UNIT	UNIT COST	TOTAL AMT.	QUAN.	AMOUNT	QUAN.	AMOUNT	QUAN.	AMOUNT
38	OVERHEAD DOOR	1	L.S.	\$2,600.00	\$2,600.00	100%	\$2,600.00	0%	\$0.00	100%	\$2,600.00
39	SLIDING BARN DOOR	1	L.S.	\$2,200.00	\$2,200.00	100%	\$2,200.00	0%	\$0.00	100%	\$2,200.00
40	ALUMINUM WINDOWS	1	L.S.	\$14,600.00	\$14,600.00	100%	\$14,600.00	0%	\$0.00	100%	\$14,600.00
41	DRYWALL	1	L.S.	\$106,000.00	\$106,000.00	100%	\$106,000.00	0%	\$0.00	100%	\$106,000.00
42	INSULATION	1	L.S.	\$77,700.00	\$77,700.00	100%	\$77,700.00	0%	\$0.00	100%	\$77,700.00
43	PAINTING	1	L.S.	\$282,000.00	\$282,000.00	100%	\$282,000.00	0%	\$0.00	100%	\$282,000.00
44	BUILDING SPECIALTIES / SIGNAGE	1	L.S.	\$21,600.00	\$21,600.00	90%	\$19,440.00	10%	\$2,160.00	100%	\$21,600.00
45	CANOPIES	1	L.S.	\$23,800.00	\$23,800.00	100%	\$23,800.00	0%	\$0.00	100%	\$23,800.00
46	FIRE SUPPRESSION SPRINKLER SYSTEM	1	L.S.	\$33,600.00	\$33,600.00	100%	\$33,600.00	0%	\$0.00	100%	\$33,600.00
47	PLUMBING	1	L.S.	\$179,400.00	\$179,400.00	100%	\$179,400.00	0%	\$0.00	100%	\$179,400.00
48	SMALL PIPING	1	L.S.	\$326,300.00	\$326,300.00	100%	\$326,300.00	0%	\$0.00	100%	\$326,300.00
49	HVAC	1	L.S.	\$275,100.00	\$275,100.00	100%	\$275,100.00	0%	\$0.00	100%	\$275,100.00
50	ELECTRICAL - GENERAL CONDITIONS	1	L.S.	\$101,400.00	\$101,400.00	100%	\$101,400.00	0%	\$0.00	100%	\$101,400.00
51	ELECTRICAL - TREATMENT BUILDING	1	L.S.	\$855,500.00	\$855,500.00	100%	\$855,500.00	0%	\$0.00	100%	\$855,500.00
52	ELECTRICAL - RAW WATER PUMP STATION	1	L.S.	\$178,100.00	\$178,100.00	100%	\$178,100.00	0%	\$0.00	100%	\$178,100.00
53	ELECTRICAL - CLEARWELL STRUCTURE	1	L.S.	\$80,200.00	\$80,200.00	100%	\$80,200.00	0%	\$0.00	100%	\$80,200.00
54	ELECTRICAL - HYDROGEN PEROXIDE BLDG.	1	L.S.	\$30,700.00	\$30,700.00	100%	\$30,700.00	0%	\$0.00	100%	\$30,700.00
55	ELECTRICAL - SITE / SETTLING BASINS	1	L.S.	\$296,600.00	\$296,600.00	100%	\$296,600.00	0%	\$0.00	100%	\$296,600.00
56	CLEAR AND GRUBB	1	L.S.	\$19,800.00	\$19,800.00	100%	\$19,800.00	0%	\$0.00	100%	\$19,800.00
57	STRIP TOPSOIL / SITE EXCAVATION	1	L.S.	\$14,000.00	\$14,000.00	100%	\$14,000.00	0%	\$0.00	100%	\$14,000.00
58	SPREAD TOPSOIL / FINISH DRESS	1	L.S.	\$23,300.00	\$23,300.00	93%	\$21,669.00	7%	\$1,631.00	100%	\$23,300.00
59	SEEDING / SITE RESTORATION	1	L.S.	\$34,600.00	\$34,600.00	93%	\$32,178.00	7%	\$2,422.00	100%	\$34,600.00
60	COFFERDAM AT INTAKE	1	L.S.	\$250,900.00	\$250,900.00	100%	\$250,900.00	0%	\$0.00	100%	\$250,900.00
61	STRUCTURE EXCAVATION - RAW WATER PS & VV	1	L.S.	\$170,500.00	\$170,500.00	100%	\$170,500.00	0%	\$0.00	100%	\$170,500.00
62	BACKFILL - RAW WATER PS & VV	1	L.S.	\$74,000.00	\$74,000.00	100%	\$74,000.00	0%	\$0.00	100%	\$74,000.00
63	STRUCTURE EXCAVATION - TREATMENT BUILDING	1	L.S.	\$68,500.00	\$68,500.00	100%	\$68,500.00	0%	\$0.00	100%	\$68,500.00
64	BACKFILL - TREATMENT BUILDING	1	L.S.	\$79,300.00	\$79,300.00	100%	\$79,300.00	0%	\$0.00	100%	\$79,300.00
65	STRUCTURE EXC. / BACKFILL - HYDROGEN BLDG.	1	L.S.	\$2,000.00	\$2,000.00	100%	\$2,000.00	0%	\$0.00	100%	\$2,000.00
66	ROCK ANCHORS - RAW WATER PS	1	L.S.	\$7,500.00	\$7,500.00	100%	\$7,500.00	0%	\$0.00	100%	\$7,500.00
67	ROCK ANCHORS - INTAKE SCREEN	1	L.S.	\$6,700.00	\$6,700.00	100%	\$6,700.00	0%	\$0.00	100%	\$6,700.00
68	ROCK ANCHORS - TREATMENT BUILDING	1	L.S.	\$97,700.00	\$97,700.00	100%	\$97,700.00	0%	\$0.00	100%	\$97,700.00
69	ASPHALT PAVING	1	L.S.	\$93,700.00	\$93,700.00	95%	\$89,015.00	5%	\$4,685.00	100%	\$93,700.00
70	CHAIN LINK FENCE	1	L.S.	\$16,700.00	\$16,700.00	0%	\$0.00	100%	\$16,700.00	100%	\$16,700.00
71	FLANGED DUCTILE IRON PIPE	1	L.S.	\$337,500.00	\$337,500.00	100%	\$337,500.00	0%	\$0.00	100%	\$337,500.00
72	BURIED DUCTILE IRON PIPE	1	L.S.	\$197,100.00	\$197,100.00	100%	\$197,100.00	0%	\$0.00	100%	\$197,100.00
73	BORE AND JACK PIPE UNDER ROADWAY	1	L.S.	\$386,700.00	\$386,700.00	100%	\$386,700.00	0%	\$0.00	100%	\$386,700.00
74	PVC PIPE	1	L.S.	\$76,000.00	\$76,000.00	100%	\$76,000.00	0%	\$0.00	100%	\$76,000.00
TOTAL					\$4,843,900.00		\$4,816,302.00		\$27,598.00		\$4,843,900.00
					\$8,856,800.00		\$8,585,238.00		\$191,772.00		\$8,777,010.00

CONTRACTOR: JUDY CONSTRUCTION COMPANY
 OWNER: CITY OF FRANKLIN, TENNESSEE
 LOCATION: FRANKLIN, TN
 ENGINEERS: SMITH SECKMAN REID, INC.

PAGE 4 OF 10
 PAYMENT ESTIMATE NO. 30
 FOR PERIOD BEGINNING 29-Apr-18
 AND ENDING 09-Jun-18

ITEM NO.	DESCRIPTION OF ITEM	CONTRACT				PREVIOUS ESTIMATE		THIS ESTIMATE		TOTAL TO DATE	
		QUAN.	UNIT	UNIT COST	TOTAL AMT.	QUAN.	AMOUNT	QUAN.	AMOUNT	QUAN.	AMOUNT
75	STAINLESS STEEL PIPE / HDPE PIPE	1	L.S.	\$95,600.00	\$95,600.00	100%	\$95,600.00	0%	\$0.00	100%	\$95,600.00
76	RCP / HEADWALLS	1	L.S.	\$15,300.00	\$15,300.00	100%	\$15,300.00	0%	\$0.00	100%	\$15,300.00
77	VALVES	1	L.S.	\$237,700.00	\$237,700.00	100%	\$237,700.00	0%	\$0.00	100%	\$237,700.00
78	SLIDE GATE	1	L.S.	\$9,900.00	\$9,900.00	100%	\$9,900.00	0%	\$0.00	100%	\$9,900.00
79	RAW WATER INTAKE VALVE VAULT	1	L.S.	\$37,900.00	\$37,900.00	100%	\$37,900.00	0%	\$0.00	100%	\$37,900.00
80	PRECAST STRUCTURES	1	L.S.	\$56,200.00	\$56,200.00	100%	\$56,200.00	0%	\$0.00	100%	\$56,200.00
81	INSTRUMENTATION AND CONTROLS	1	L.S.	\$425,100.00	\$425,100.00	100%	\$425,100.00	0%	\$0.00	100%	\$425,100.00
82	RAW WATER PUMPS	1	L.S.	\$179,500.00	\$179,500.00	100%	\$179,500.00	0%	\$0.00	100%	\$179,500.00
83	RAW WATER INTAKE SCREEN	1	L.S.	\$70,600.00	\$70,600.00	100%	\$70,600.00	0%	\$0.00	100%	\$70,600.00
84	HIGH SERVICE PUMPS	1	L.S.	\$194,600.00	\$194,600.00	100%	\$194,600.00	0%	\$0.00	100%	\$194,600.00
85	SLUDGE PUMPS	1	L.S.	\$13,600.00	\$13,600.00	100%	\$13,600.00	0%	\$0.00	100%	\$13,600.00
86	CHEMICAL PUMPS	1	L.S.	\$58,000.00	\$58,000.00	100%	\$58,000.00	0%	\$0.00	100%	\$58,000.00
87	SUBMERSIBLE MIXERS @ FLOCCULATION BASIN	1	L.S.	\$119,600.00	\$119,600.00	100%	\$119,600.00	0%	\$0.00	100%	\$119,600.00
88	FLOATING MECHANICAL MIXER	1	L.S.	\$65,200.00	\$65,200.00	100%	\$65,200.00	0%	\$0.00	100%	\$65,200.00
89	TUBE SETTLERS	1	L.S.	\$42,400.00	\$42,400.00	100%	\$42,400.00	0%	\$0.00	100%	\$42,400.00
90	SLUDGE COLLECTOR UNIT	1	L.S.	\$181,200.00	\$181,200.00	100%	\$181,200.00	0%	\$0.00	100%	\$181,200.00
91	GRANULAR ACTIVATED CARBON PRESSURE CONTACTORS	1	L.S.	\$1,008,600.00	\$1,008,600.00	100%	\$1,008,600.00	0%	\$0.00	100%	\$1,008,600.00
92	MEMBRANE FILTRATION EQUIPMENT	1	L.S.	\$1,535,300.00	\$1,535,300.00	100%	\$1,535,300.00	0%	\$0.00	100%	\$1,535,300.00
93	ULTRAVIOLET DISINFECTION SYSTEM	1	L.S.	\$692,000.00	\$692,000.00	100%	\$692,000.00	0%	\$0.00	100%	\$692,000.00
94	INLINE STATIC MIXERS	1	L.S.	\$35,400.00	\$35,400.00	100%	\$35,400.00	0%	\$0.00	100%	\$35,400.00
95	FACILITY ONLINE TRAINING	1	L.S.	\$87,500.00	\$87,500.00	100%	\$87,500.00	0%	\$0.00	100%	\$87,500.00
SUBTOTAL					\$5,161,200.00		\$5,161,200.00		\$0.00		\$5,161,200.00
TOTAL					\$14,018,000.00		\$13,746,438.00		\$191,772.00		\$13,938,210.00

SHEET	5	OF	10
ESTIMATE NO.	30		
FOR PERIOD	04/29/18		
AND ENDING	06/09/18		

CONTRACTOR: JUDY CONSTRUCTION COMPANY
 OWNER: CITY OF FRANKLIN, TENNESSEE
 LOCATION: FRANKLIN, TN
 ENGINEERS: SMITH SECKMAN REID, INC.

SHEET 6 OF 10
 PAYMENT ESTIMATE NO. 30
 FOR PERIOD BEGINNING 29-Apr-18
 AND ENDING 09-Jun-18

SUMMARY OF CHANGE ORDERS

CHANGE NO.	ORDERS DATE	DESCRIPTION	CHANGE ORDER TOTAL VALUE	COMPLETED TO DATE %/UNIT	COST
1	27-Aug-16	CCF002 - Owner elects to use JMS Sludge Collectors	(\$60,000.00)	100%	(\$60,000.00)
1	27-Aug-16	CCF003 - Delete the Facility Online Training	(\$119,275.00)	100%	(\$119,275.00)
1	27-Aug-16	CCF005 - Credit for unused portion of utility allowance	(\$836.55)	100%	(\$836.55)
1	27-Aug-16	CCF006 - Cost of AT&T relocation work	\$2,639.02	100%	\$2,639.02
1	27-Aug-16	CCF009 - Relocate existing MCC for the High Service Pumps	\$3,117.00	100%	\$3,117.00
1	27-Aug-16	CCF010 - Additional tree trimming and removal	\$2,418.00	100%	\$2,418.00
2	12-Dec-17	CCF026 - Change airline from 3" Stainless Steel to 4" HDPE	(\$21,700.00)	100%	(\$21,700.00)
NET TOTAL CHANGE TO DATE:			(\$193,637.53)		(\$193,637.53)

CONTRACTOR: JUDY CONSTRUCTION COMPANY
OWNER: CITY OF FRANKLIN, TENNESSEE
LOCATION: FRANKLIN, TN
ENGINEERS: SMITH SECKMAN REID, INC.

SHEET 7 OF 10
PAYMENT ESTIMATE NO. 30
FOR PERIOD BEGINNING 29-Apr-18
AND ENDING 09-Jun-18

**Concrete Repair
Allowance Items Allocation**

ITEM NO.	DATE	DESCRIPTION	TOTAL VALUE	COMPLETED TO DATE %/UNIT	COST
1	23-Jan-18	CCF051 - Concrete Repair Work in the Existing Filter Building Clearwell	\$5,047.00	100%	\$5,047.00
NET TOTAL CHANGE TO DATE:			\$5,047.00		\$5,047.00

CONTRACTOR: JUDY CONSTRUCTION COMPANY
OWNER: CITY OF FRANKLIN, TENNESSEE
LOCATION: FRANKLIN, TN
ENGINEERS: SMITH SECKMAN REID, INC.

SHEET 8 OF 10
PAYMENT ESTIMATE NO. 30
FOR PERIOD BEGINNING 29-Apr-18
AND ENDING 09-Jun-18

Spare Parts
Allowance Items Allocation

ITEM NO.	DATE	DESCRIPTION	TOTAL VALUE	COMPLETED TO DATE %/UNIT	COST
1	27-Feb-18	CCF047 - Add Hydrogen Peroxide Monitor	\$10,475.00	100%	\$10,475.00
2	28-Apr-18	CCF059 - Trojan Replacement Parts needed at Commissioning	\$11,097.00	100%	\$11,097.00
NET TOTAL CHANGE TO DATE:			\$21,572.00		\$21,572.00

CONTRACTOR: JUDY CONSTRUCTION COMPANY
 OWNER: CITY OF FRANKLIN, TENNESSEE
 LOCATION: FRANKLIN, TN
 ENGINEERS: SMITH SECKMAN REID, INC.

SHEET 9 OF 10
 PAYMENT ESTIMATE NO. 30
 FOR PERIOD BEGINNING 29-Apr-18
 AND ENDING 09-Jun-18

Construction Contingencies
 Allowance Items Allocation

ITEM NO.	DATE	DESCRIPTION	TOTAL VALUE	COMPLETED TO DATE %/UNIT	COST
1	24-Sep-16	CCF004 - Revised site electrical plan	\$25,679.00	100%	\$25,679.00
2	30-Apr-16	CCF011 - Piping changes at existing 21" sanitary line	\$41,361.00	100%	\$41,361.00
3	24-Sep-16	CCF013 - Lighting changes at GAC Room / UV System electrical changes	\$6,390.00	100%	\$6,390.00
4	24-Sep-16	CCF015 - Additional 16" DIP Permeate line	\$18,258.00	100%	\$18,258.00
5	24-Sep-16	CCF016 - Relocate conduits at the Hydrogen Peroxide Building Pad	\$16,998.00	100%	\$16,998.00
6	31-Dec-16	CCF018 - Replace pipe, add valve at Sodium Permanganate Vault	\$29,925.00	100%	\$29,925.00
7	24-Sep-16	CCF021 - C2i control changes for GAC valves	\$924.00	100%	\$924.00
8	31-Dec-16	CCF024 - Hydrogen Peroxide Building HVAC	\$24,564.00	100%	\$24,564.00
9	24-Sep-16	CCF027 - C2i additional programming for the fire protection system	\$2,360.00	100%	\$2,360.00
10	27-Aug-16	CCF028 - Pre-assembly (by GE Factory) and testing of six (6) membrane racks	\$15,000.00	100%	\$15,000.00
11	28-Jan-17	CCF029 - Treatment Building Structure Modifications	\$35,890.00	100%	\$35,890.00
12	15-Jun-17	CCF030 - Replace deteriorated sludge collection piping	\$61,491.00	100%	\$61,491.00
13	15-Jun-17	CCF031 - Add wireless occupancy sensors at the Treatment Building	\$2,417.00	100%	\$2,417.00
14	28-Jan-17	CCF032 - Fire Alarm System Upgrade	\$16,100.00	100%	\$16,100.00
15	26-Aug-17	CCF033 - Alum Bulk Tank Changes	\$129,114.00	100%	\$129,114.00
16	15-Jun-17	CCF035 - Add neutral wire for the secondary feed	\$5,180.00	100%	\$5,180.00
17	15-Jun-17	CCF036 - Add for metal framing work	\$22,374.00	100%	\$22,374.00
18	26-Aug-17	CCF038 - Replace steel handrail with new aluminum handrail at the Settling Basins	\$19,500.00	100%	\$19,500.00
19	26-Aug-17	CCF039 - Replace Electrical Room door hardware with a lockable panic set	\$2,291.00	100%	\$2,291.00
20	12-Dec-17	CCF040 - Additional Paving	\$72,209.00	100%	\$72,209.00
21	23-Jan-18	CCF043 - Add LED Light Fixture at the Treatment Building	\$1,529.00	100%	\$1,529.00
22	23-Jan-18	CCF044 - Add Check Valve and Flap Valve at MH outside Treatment Building	\$2,600.00	100%	\$2,600.00
23	27-Feb-18	CCF045 - Additional Painting and EIFS Work	\$63,600.00	100%	\$63,600.00
24	27-Feb-18	CCF048 - Changes to the High Service Pump Electrical	\$3,665.00	100%	\$3,665.00
25	27-Feb-18	CCF049 - Add (1) Turbidimeter	\$2,718.00	100%	\$2,718.00
26	26-Mar-18	CCF050 - Add (2) air actuated butterfly valves and controls	\$48,901.00	100%	\$48,901.00
27	26-Mar-18	CCF053 - Remove / Replace existing chemical load cells and transmitters	\$48,691.00	100%	\$48,691.00
28	27-Feb-18	CCF054 - Paint Steel Cover Plates at Trenches	\$1,750.00	100%	\$1,750.00
29	02-Jun-18	CCF057 - Additional Sidewalk at Flash Mixer	\$2,513.00	100%	\$2,513.00
30	26-Mar-18	CCF058 - Hydrogen Peroxide System changes including eyewashes	\$24,564.00	100%	\$24,564.00
31	28-Apr-18	CCF060 - Add CAT5 drop to Membrane PLC, electrical changes	\$3,020.00	100%	\$3,020.00
32	02-Jun-18	CCF061 - Replace Existing Gate Operator	\$6,809.00	100%	\$6,809.00
33	02-Jun-18	CCF062 - Survey Existing Easement	\$697.00	100%	\$697.00
34	02-Jun-18	CCF063 - Hydrogen Peroxide	(\$9,500.00)	100%	(\$9,500.00)
NET TOTAL CHANGE TO DATE:			\$749,582.00		\$749,582.00

CONTRACTOR: JUDY CONSTRUCTION COMPANY
OWNER: CITY OF FRANKLIN, TENNESSEE
LOCATION: FRANKLIN, TN
ENGINEERS: SMITH SECKMAN REID, INC.

SHEET 10 OF 10
PAYMENT ESTIMATE NO. 30
FOR PERIOD BEGINNING 29-Apr-18
AND ENDING 09-Jun-18

Existing Filter Building
Allowance Items Allocation

ITEM NO.	DATE	DESCRIPTION	TOTAL VALUE	COMPLETED TO DATE %/UNIT	COST
1	12-Dec-17	CCF041 - Additional Pipe Removal in the Existing Filter Building Clearwell	\$2,130.00	100%	\$2,130.00
2	23-Jan-18	CCF042 - Heater Relocation at the Existing Filter Building	\$1,081.00	100%	\$1,081.00
3	23-Jan-18	CCF046 - Remove Existing Filter Media	\$18,584.00	100%	\$18,584.00
4	23-Jan-18	CCF052 - Pipe Gallery Demo Work	\$7,468.00	100%	\$7,468.00
5	26-Mar-18	CCF055 - Remove / Replace light fixtures in the existing Filter Building	\$14,520.00	100%	\$14,520.00
6	23-Jan-18	CCF056 - Remove and Dispose of Baskwash Troughs and Surface Wash	\$4,153.00	100%	\$4,153.00
NET TOTAL CHANGE TO DATE:			\$47,936.00		\$47,936.00

**Request for Construction Change
Final Change Order**

City of Franklin
Engineering Office
109 Third Avenue South
Franklin, TN 37064

Contract No. 2017-0198
Project Goose Creek Inn Sanitary Sewer Extension

Whereas, we **Civil Constructors, LLC** entered into a contract with the CITY OF FRANKLIN, on October 10, 2017, for the construction by said Contractor of the above designated contract; and Whereas, certain items of construction encountered are not covered by the original contract, we desire to submit the following additional items of construction to be performed by the Contractor and paid by the City at the prices scheduled therefore below:

Reason for Change Order:

- Closeout for the project
- Add days to the total contract for final acceptance date

Attachments (List documents supporting change):

- Final pay request for retainage release
- Final quantities spreadsheet
- Letter from Brian Goodwin dated 6/14/18 concerning liquidated damages
- Letter from Michelle Hatcher dated 8/2/18 concerning substantial completion
- Letter from Brian Goodwin dated 10/25/18 concerning final acceptance, liquidated damages and change order request for milling and cleanup of Five Mile Crossing

Item No.	Description of Work	Schd. Amnt	Unit	Unit Price	Scheduled Value	Final Quantity	Final Value
G1	TEMPORARY FACILITIES AND CONTROLS	1	LS	\$28,300.00	\$28,300.00	1	\$28,300.00
G2	TOPSOIL & SEEDING WITH MULCH	835	LF	\$ 14.00	\$ 11,690.00	835	\$ 11,690.00
G3	EROSION & SEDIMENT CONTROL	1	LS	\$ 13,100.00	\$ 13,100.00	1	\$ 13,100.00
G4	TEMPORARY SILT FENCE (WITHOUT BACKING)	1253	LF	\$ 2.20	\$ 2,756.60	1253	\$ 2,756.60
G5	OVERDEPTH EXCAVATION AND GRAVEL BACKFILL	20	CY	\$ 45.00	\$ 900.00	20	\$ 900.00
G6	DECOMMISSIONING & DISPOSAL OF EXISTING GOOSE CREEK INN WWTP	1	LS	\$ 42,510.00	\$ 42,510.00	1	\$42,510.00
G7	REMOVE & RESET EXISTING FENCE (B&G EQUIPMENT & SUPPLY AND MAPCO)	1	LS	\$ 2,890.00	\$ 2,890.00	1	\$ 2,890.00
G8	CONTINGENCY (AS APPROVED BY THE CITY OF FRANKLIN)	1	LS	\$ 50,000.00	\$ 50,000.00		
S1	8-INCH SDR 26 GRAVITY SEWER	125	LF	\$ 168.00	\$ 21,000.00	125	\$ 21,000.00

S2	8-INCH CL DIP GRAVITY SEWER	710	LF	\$ 280.00	\$198,800.00	710	\$198,800.00
S3	8-INCH DIP GRAVITY SEWER CREEK CROSSING, STA. 00+62 TO 01+07	1	LS	\$ 54,980.00	\$ 54,980.00	1	\$ 54,980.00
S4	CONCRETE CHECK DAMS (STREAM CROSSING)	2	EA	\$ 6,130.00	\$ 12,260.00	2	\$ 12,260.00
S5	STANDARD 4-FOOT DIAMETER PRECAST CONCRETE MANHOLE, 0- 6' DEPTH (RIM TO INVERT)	7	EA	\$ 4,680.00	\$ 32,760.00	7	\$ 32,760.00
S6	ADDITIONAL MANHOLE SIDEWALL (MEASURED TO INVERT)	57	VF	\$ 435.00	\$ 24,795.00	57	\$ 24,795.00
S7	6-INCH GRAVITY SEWER SERVICE LINE	3	EA	\$ 5,310.00	\$ 15,930.00	3	\$ 15,930.00
S8	MANHOLE VENT ASSEMBLY	1	EA	\$ 3,630.00	\$ 3,630.00	0	\$
S9	WATERTIGHT MANHOLE CASTING	2	EA	\$ 425.00	\$ 850.00	2	\$ 850.00
S10	CONNECT TO EXISTING MANHOLE	1	EA	\$ 5,730.00	\$ 5,730.00	1	\$ 5,730.00
S11	NEW EXTERIOR DROP ASSEMBLY ON PROPOSED MANHOLE	1	EA	\$ 5,270.00	\$ 5,270.00	1	\$ 5,270.00
S12	CCTV INSPECTION OF NEW GRAVITY SEWER	832.0	LF	\$ 3.00	\$ 2,496.00	832	\$ 2,496.00
S13	SEWER FLOW CONTROL	1	LS	\$ 17,205.00	\$ 17,205.00	1	\$ 17,205.00
R1	TRAFFIC CONTROL	1	LS	\$ 4,860.00	\$ 4,860.00	1	\$ 4,860.00
R2	REMOVAL & RESET GUARDRAIL AND POSTS	1	LS	\$ 2,890.00	\$ 2,890.00	1	\$ 2,890.00
R3	MINERAL AGGREGATE, TYPE A BASE, GRADING D (TDOT ITEM 303-01)	130	TON	\$ 32.00	\$ 4,160.00	130	\$ 4,160.00
R4	ACS (PG70-22) GRADING D (TDOT ITEM 411-02.10)	25	TON	\$ 246.00	\$ 6,150.00	37.92	\$ 9,328.32
R5	ASPHALT CONCRETE MIX (PG70- 22) (BPMB-HM) GRADING B-M2 (TDOT ITEM 307-02.08)	70	TON	\$ 184.00	\$ 12,880.00	22.23	\$ 4,090.32
R6	CONCRETE CURB & GUTTER (TDOT ITEM 702-03)	25	LF	\$ 29.00	\$ 725.00	40	\$ 1,160.00
R7	CONCRETE SIDEWALK (4-INCH CONCRETE AND 4-INCH BASE STONE)	100	SF	\$ 8.70	\$ 870.00	245	\$ 2,131.50
CCA 1	SILT FENCE WITH WIRE BACKING	750	LF	\$ 3.00		750	\$ 2,250.00
CCA 1	FILTREXX SILTSOXX	650	LF	\$ 3.00		650	\$ 1,950.00
	ADDITIONAL MILLING AND CLEANING FOR ROADWAY CROSSING	1	EA	\$ 5,414.50		1	\$ 5,414.50
	ASPHALT ADJUSTMENT	37.92	TON	\$ 7.00		37.92	\$ (265.44)

	TOTAL BID PRICE	\$580,387.60		
	TOTAL CONSTRUCTION COST	\$532,191.80		
	CHANGE IN TOTAL BID PRICE AND TOTAL CONSTRUCTION COST	\$(48,195.80)		
	LIQUIDATED DAMAGES (82 DAYS AT \$500/DAY)	\$(41,000.00)		
	TOTAL CHANGE IN CONTRACT PRICE	\$(89,195.80)		
	FINAL CONTRACT AMOUNT	\$491,191.80		

CHANGE IN CONTRACT PRICE:
Original Contract Price:
\$580,387.60
Net Increase (Decrease) from previous Change Orders No. 0 to Final:
\$0
Contract Price prior to this Change Order:
\$580,387.60
Net decrease of this Change Order:
-\$89,195.80
Contract Price with all approved Change Orders:
\$491,191.80

CHANGE IN CONTRACT TIMES:
Original Contract Times:
Substantial Completion: N/A
Ready for final payment: 5/6/18
Net change from previous Change Orders No. 0 to 1to:
Substantial Completion: N/A
Ready for final payment: 6/3/18
Contract Times prior to this Change Order:
Substantial Completion: N/A
Ready for final payment: 6/3/18
Net increase this Change Order:
Substantial Completion: 82 days
Ready for final payment: 25 days
Contract Times with all approved Change Orders:
Substantial Completion: 7/30/18
Ready for final payment: 8/24/18

Now, Therefore, We, Civil Constructors, LLC, hereby agree to this Supplemental Agreement consisting of the above mentioned items and prices, and agree that this Supplemental Agreement is hereby made a part of the original contract and will be performed by this Contractor in accordance with specifications thereof, and that the original contract remain in full force and effect, except in so far as specifically modified by this supplemental Agreement.

RECOMMENDED FOR APPROVAL BY:

By: _____ PROJECT MANAGER
DATE: _____

By: _____ RESIDENT PROJECT REPRESENTATIVE
DATE: _____

By: _____
WATER DEPARTMENT DIRECTOR
DATE: _____

ACCEPTED:

By: _____
CONTRACTOR
DATE: _____

APPROVED:

By: _____
OWNER (Authorized Signature)
DATE: _____

APPLICATION FOR PAYMENT

CAP702

Page: 1 of 4

To:

City of Franklin
109 Third Ave South
Franklin, TN 37064

PROJECT:

181202
GOOSE CREEK INN SEWER EXTENSION

From Contractor:

Civil Constructors, LLC.
425 Downs Blvd.
Franklin, Tn 37064

VIA ARCHITECT:

CONTRACT FOR:

Application No.: Application Date: Period To: Contract Date:

8 DEC 4,2018 DEC 4,2018 FEB 28,2018
Project Nos:

Distribution List: ☐ Owner ☐ Construction Mgr
☐ Architect ☐ Field
☐ Contractor ☐ Other

Contractor's Application for Payment

Application is made for payment as shown below, with attached Continuation Sheet.

1. Original Contract Amount: \$ 580,387.60
2. Net of Change Orders: \$ -89,195.80
3. Net Amount of Contract: \$ 491,191.80
4. Total Completed & Stored to Date: \$ 491,191.80
5. Retainage Summary:
 - a. 5.00 % of Completed Work \$ 0.00
 - b. 0.00 % of Stored Material \$ 0.00Total Retainage: \$ 0.00
6. Total Completed Less Retainage: \$ 491,191.80
7. Less Previous Applications: \$ 464,582.18

8. Current Payment Due, This Application: \$ 26,609.62

9. Contract Balance (Including Retainage): \$ 0.00

CHANGE ORDER Activity	Additions	Subtractions
Total previously approved:	2,500.00	-41,000.00
Total approved this Month:	0.00	-48,195.80
Sub Totals:	2,500.00	-89,195.80
NET of Change Orders:	-89,195.80	

CONTRACTOR'S CERTIFICATION:

The Contractor's signature here certifies that, to the best of their knowledge, this document accurately reflects the work completed in this Application for Payment. The Contractor also certifies that all payments have been made for work on previous Applications for Payment and also that the Current Payment is Due.

(Authorizing Signature)

Civil Constructors, LLC.

Date: DEC 4,2018

State Authorized: Tennessee

County of:

Subscribed and sworn to before
me this 4 day of december

Notary Public:

My Commission expires: 2020



MY COMMISSION EXPIRES:

ARCHITECT'S CERTIFICATION:

The Architect's signature here certifies that, based on their own observations, the Contract Documents and the information contained herein, this document accurately reflects the work completed in this Application for Payment. The Architect also certifies the Contractor is entitled to the amount certified for payment.

AMOUNT CERTIFIED:

(Architects Signature)

Date:

APPLICATION FOR PAYMENT - CONTINUATION SHEET - UNIT PRICING

CAP703up

PAGE 2 OF 4 PAGES

TO:

City of Franklin
109 Third Ave South
Franklin, TN 37064

FROM:

Civil Constructors. LLC.
425 Downs Blvd.
Franklin, Tn 37064

PROJECT

181202
GOOSE CREEK INN SEWER EXTENSION

Application No.: 8

Application Date: DEC 4, 2018

Period To: DEC 4, 2018

Contract Date: FEB 28, 2018

Architects Project#:

Orig ES Quan	Unit Rev	Rev Quan	Orig Contr Am	ITEM NO.	ITEMS / Description	UNIT PRICE	Work done in past month		Estimate to Date		% Comp	Retainage
							QUANTITY	AMOUNT	QUANTITY	AMOUNT		
0.00		0.00	0.00	1	GENERAL	0.00	0.00	0.00	0.00	0.00	0	0.00
1.00	LS.	0.00	28,300.00	2	TEMP FACILITIES & CONTROLS	28,300.00	0.00	0.00	1.00	28,300.00	100	0.00
835.00	LF.	0.00	11,690.00	3	TOPSOIL & SEEDING W/MULCH	14.00	0.00	0.00	835.00	11,690.00	100	0.00
1.00	LS.	0.00	13,100.00	4	EROSION & SEDIEMENT CONTROL	13,100.00	0.00	0.00	1.00	13,100.00	100	0.00
1,253.00	LF.	0.00	2,756.60	5	TEMPORARY SILT FENCE (WITHOUT BACKING)	2.20	0.00	0.00	1,253.00	2,756.60	100	0.00
20.00	C,Y,	0.00	900.00	6	OVERDEPTH EXCAVATION & GRAVEL BACKFILL	45.00	0.00	0.00	20.00	900.00	100	0.00
1.00	LS.	0.00	42,510.00	7	DECOMMISSIONING & DESPOSAL OF EXISTING GOOSE CREEK INN WWTP	42,510.00	0.00	0.00	1.00	42,510.00	100	0.00
1.00	LS.	0.00	2,890.00	8	REMOVE & RESET EXISTING FENCE B&G EQUIPMENT & SUPPLY	2,890.00	0.00	0.00	1.00	2,890.00	100	0.00
1.00	LS.	0.00	35,510.68	9	AND MAPCO	35,510.68	0.00	0.00	1.00	35,510.68	100	0.00
			137,657.28		SUBTOTALS			0.00		137,657.28		0.00
0.00		0.00	0.00	10	SANITARY SEWER	0.00	0.00	0.00	0.00	0.00	0	0.00
125.00	LF.	0.00	21,000.00	11	8-INCH SDR 26 GRAVITY SEWER	168.00	0.00	0.00	125.00	21,000.00	100	0.00
710.00	LF.	0.00	198,800.00	12	8-INCH CL DIP GRAVITY SEWER	280.00	0.00	0.00	710.00	198,800.00	100	0.00
1.00	LS.	0.00	54,980.00	13	8-INCH DIP SEWER CREEK CROSSING, STA 00+64 TO 01+07	54,980.00	0.00	0.00	1.00	54,980.00	100	0.00
2.00	EACH	0.00	12,260.00	14	CONCRETE CHECK DAMS STREAM CROSSING	6,130.00	0.00	0.00	2.00	12,260.00	100	0.00
					STANDARD 4-FOOT DIAMETER PRECAST CONCRETE MANHOLE							
			424,697.28					0.00		424,697.28		0.00

APPLICATION FOR PAYMENT - CONTINUATION SHEET - UNIT PRICING

CAP703up

PAGE 3 OF 4 PAGES

TO:
City of Franklin
109 Third Ave South
Franklin, TN 37064

FROM:
Civil Constructors. LLC.
425 Downs Blvd.
Franklin, Tn 37064

PROJECT
181202
GOOSE CREEK INN SEWER EXTENSION

Application No.: 8
Application Date: DEC 4, 2018
Period To: DEC 4, 2018
Contract Date: FEB 28, 2018
Architects Project#:

Orig ES Quan	Unit Rev	Rev Quan	Orig Contr Am	ITEM NO.	ITEMS / Description	UNIT PRICE	Work done in past month		Estimate to Date		% Comp	Retainage
							QUANTITY	AMOUNT	QUANTITY	AMOUNT		
7.00	EACH	0.00	32,760.00	15	0-6' DEPTH (RIM TO INVERT)	4,680.00	0.00	0.00	7.00	32,760.00	100	0.00
57.00	V.F.	0.00	24,795.00	16	ADDITIONAL MANHOLE SIDEWALL	435.00	0.00	0.00	57.00	24,795.00	100	0.00
3.00	EACH	0.00	15,930.00	17	6-INCH GRAVITY SEWER SERVICE	5,310.00	0.00	0.00	3.00	15,930.00	100	0.00
1.00	EACH	0.00	3,630.00	18	MANHOLE VENT ASSEMBLY	3,630.00	0.00	0.00	1.00	3,630.00	100	0.00
2.00	EACH	0.00	850.00	19	WATER TIGHT MANHOLE CASTING	425.00	0.00	0.00	2.00	850.00	100	0.00
1.00	EACH	0.00	5,270.00		NEW EXTERIOR DROP ASSEMBLY	5,270.00	0.00	0.00	1.00	5,270.00	100	0.00
				20	ON PROPOSED MANHOLE							
1.00	EACH	0.00	5,730.00	21	CONNECT TO EXISTING MANHOLE	5,730.00	0.00	0.00	1.00	5,730.00	100	0.00
					CCTV INSPECTION OF NEW GRAVITY							
832.00	L.F.	0.00	2,496.00	22	SEWER	3.00	0.00	0.00	832.00	2,496.00	100	0.00
1.00	L.S.	0.00	17,205.00	23	SEWER FLOW CONTROL	17,205.00	0.00	0.00	1.00	17,205.00	100	0.00
			395,706.00		SUBTOTALS			0.00		395,706.00		0.00
0.00		0.00	0.00	24	ROADWAY REPAIR	0.00	0.00	0.00	0.00	0.00	0	0.00
					TRAFFIC CONTROL							
1.00	L.S.	0.00	4,860.00	25	REMOVAL & RESET GUARDRAIL	4,860.00	0.00	0.00	1.00	4,860.00	100	0.00
1.00	L.S.	0.00	2,890.00	26	AND POSTS	2,890.00	0.00	0.00	1.00	2,890.00	100	0.00
					MINERAL AGGREGATE, TYPE A BASE							
130.00	TON	0.00	4,160.00	27	GRADING D	32.00	0.00	0.00	130.00	4,160.00	100	0.00
25.00	TON	0.00	6,150.00	28	ACS (PG70-22) GRADING D	246.00	0.00	0.00	25.00	6,150.00	100	0.00
					ASPHALT CONCRETE MIX (PG70-22)							
70.00	TON	0.00	12,880.00	29	(BPMP-HM) GRADING B-M2	184.00	0.00	0.00	70.00	12,880.00	100	0.00
25.00	L.F.	0.00	725.00	30	CONCRETE CURB & GUTTER	29.00	0.00	0.00	25.00	725.00	100	0.00
100.00	S.F.	0.00	870.00	31	CONCRETE SIDEWALK	8.70	0.00	0.00	100.00	870.00	100	0.00
					4" CONCRETE & 4" BASE STONE							
			565,898.28					0.00		565,898.28		0.00

APPLICATION FOR PAYMENT - CONTINUATION SHEET - UNIT PRICING

CAP703up

PAGE 4 OF 4 PAGES

TO:
City of Franklin
109 Third Ave South
Franklin, TN 37064

FROM:
Civil Constructors. LLC.
425 Downs Blvd.
Franklin, Tn 37064

PROJECT
181202
GOOSE CREEK INN SEWER EXTENSION

Application No.: 8
Application Date: DEC 4, 2018
Period To: DEC 4, 2018
Contract Date: FEB 28, 2018
Architects Project#:

Orig ES Quan	Unit Rev	Rev Quan	Orig Contr Am	ITEM NO.	ITEMS / Description	UNIT PRICE	Work done in past month		Estimate to Date		% Comp	Retainage
							QUANTITY	AMOUNT	QUANTITY	AMOUNT		
750.00	L.F.	0.00	2,250.00	32	SILT FENCE W/WIRE BACKING	3.00	0.00	0.00	750.00	2,250.00	100	0.00
650.00	L.F.	0.00	1,950.00	33	FILTREXX SILT SOXX	3.00	0.00	0.00	650.00	1,950.00	100	0.00
1.00	LS	1.00	0.00	34	STOCKPILED MATERIAL - MARCH	0.00	0.00	0.00	0.00	0.00	0	0.00
1.00	LS	1.00	0.00	35	STOCKPILED MATERIAL - APRIL	0.00	0.00	0.00	0.00	0.00	0	0.00
			36,735.00		SUBTOTALS			0.00		36,735.00		0.00
145.00	S.F.	0.00	1,261.50	36	ADDITIONAL SIDEWALK REPAIR	8.70	0.00	0.00	145.00	1,261.50	100	0.00
15.00	L.F.	0.00	435.00	37	ADDITIONAL CURB REPAIR	29.00	0.00	0.00	15.00	435.00	100	0.00
12.92	TON	0.00	3,178.32	38	ADDITIONAL D MIX ASPHALT	246.00	0.00	0.00	12.92	3,178.32	100	0.00
1.00	LS.	0.00	5,414.50	39	MILLING & CLEANING FOR ROAD CROSSING	5,414.50	0.00	0.00	1.00	5,414.50	100	0.00
1.00	LS.	0.00	-35,510.68	40	REMAINING CONTINGENCY	-35,510.68	0.00	0.00	1.00	-35,510.68	100	0.00
1.00	EACH	0.00	-3,630.00	41	DEDUCT VENT ASSEMBLY	-3,630.00	0.00	0.00	1.00	-3,630.00	100	0.00
47.77	TON	0.00	-8,789.68	42	DEDUCT REMAINING BM BINDER	-184.00	0.00	0.00	47.77	-8,789.68	100	0.00
82	Day	0.00	5,500.00	43	Liquidated damages	\$500.00	0.00	0.00	82	-41,000.00	100	0.00
37.92	TON	0.00	-265.44	44	ASPHALT ADJUSTMENT	-7.00	0.00	0.00	37.92	-265.44	100	0.00
			535,691.80					0.00		535,691.80 \$491,191.80		0.00

WATER MANAGEMENT DEPARTMENT

Michelle Hatcher, P.E.
Director



Dr. Ken Moore
Mayor

Eric S. Stuckey
City Administrator

**HISTORIC
FRANKLIN
TENNESSEE**

June 14, 2018

Civil Constructors
Joe L. Rodgers, President
425 Downs Blvd
Franklin, TN 37064

**RE: COF Contract No. 2017-0198
Goose Creek Inn Sewer Extension**

Dear Mr. Rodgers

This letter is to inform you that Civil Constructors, Inc. has exceeded the allotted Contract Time for the Goosecreek Inn Sewer Extension, Contract No. 2017-0198 with the City of Franklin. The Contract between the City of Franklin (City) and Civil Constructors was entered on October 10th, 2017. A Notice to Proceed (NTP) was issued with a commencement date of February 8th, 2018 with a contract completion date within 90-days of NTP, completing work May 6th, 2018. Work orders that included extending the date have been issued making the new completion date June 3rd, 2018 and will be part of a reconciling change order at the end of the project. As of today, the work is still not complete and submitted contract schedules indicate a completion date of July 6th, 2018.

As you are aware, many conversations have taken place between the City of Franklin Water Management staff and the project manager for Civil Constructors, stressing the importance of completing this contract. More than half of the work still remains to be completed. Notice was provided to the Civil project manager on June 8, 2018, indicating work has been approved for Saturday's and Sunday's until project completion.

Beginning June 3, 2018, the City will be retaining liquidated damages in the sum of \$500.00 per day for each day, including Sundays and holidays, that the Work remains uncompleted. The City will be providing additional project inspection, however, the City will need to be notified if weekend work will take place to be able to provide inspection services. Additionally, experienced project oversight is requested to provide realistic project schedules and direct attention to stormwater controls on the site.

The Project will be considered complete once final acceptance of the Project has been issued to Civil Constructors in accordance with the Technical Specifications of the City's Water Management Department.

Please let me know if you have questions or require clarification on this matter.

Very sincerely,

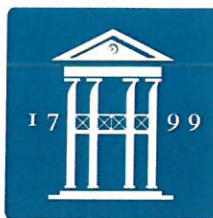
Brian Goodwin, P.E.

Assistant Director of Water Management Department

Office: (615) 794-4554

Brian.goodwin@franklintn.gov

Michelle Hatcher, P.E.
Director



Dr. Ken Moore
Mayor

Eric S. Stuckey
City Administrator

HISTORIC
FRANKLIN
TENNESSEE

August 2, 2018

Civil Constructors
Joe L. Rodgers, President
425 Downs Blvd
Franklin, TN 37064

**RE: COF Contract No. 2017-0198
Goose Creek Inn Sewer Extension**

Dear Mr. Rodgers,

A fourth Substantial Completion Request was received from your Project Manager, Dalton Clark, on July 30th, 2018, for the Goose Creek Inn Sewer Extension project, City of Franklin Contract No. 2017-0198. The contract documents for this project only indicated a date for final completion of the project. This date was initially indicated as May 6, 2018; a time extension was granted at Staff level extending the date to June 3, 2018. This extension must be approved by the Board of Mayor and Aldermen before final approval. The City does recognize the intended use of the project (per TCA § 66-34-204) was received July 30, 2018, thereby meeting the requirements of substantial completion. Under the mentioned TCA, retainage monies will be released 90-days from July 30, 2018, provided project final completion has not been met.

After visiting the site over the past couple of days and observing progress, there are significant items remaining for completion on the project. It appears Civil encroached outside of the temporary construction easement onto the Goose Creek Inn property and has not restored the grade to pre-construction conditions. The grading on the remaining of the site is unacceptable, the rocks that remain will make future maintenance of the site impossible, and the power has still not been disconnected from the pool house.

As requested by Dalton Clark, the City will work to schedule a walkthrough of the site where a final punchlist of items will be developed for final completion. The development of a final punchlist will not alleviate or negate Civil from the completion of the project and liquidated damages will continue to be assessed.

Once these items have been completed, the Project will be considered complete and final acceptance of the Project will be issued to Civil Constructors.

Please let me know if you have questions, I can be reached at (615) 794 – 4554 or via email at michelle.hatcher@franklintn.gov.

Very sincerely,

Michelle Hatcher, P.E.

Director

Water Management Department



October 25, 2018

HISTORIC
FRANKLIN
TENNESSEE

Civil Constructors
Joe L. Rodgers, President
425 Downs Blvd
Franklin, TN 37064

**RE: City of Franklin Contract No. 2017-0198
Goose Creek Inn Sanitary Sewer Extension Project**

Dear Mr. Rodgers,

The City of Franklin Water Management Department (COF WMD) granted Substantial Completion for the Goose Creek Inn Sanitary Sewer Extension Project on July 30, 2018, as stated in the letter from COF WMD Director Michelle Hatcher dated August 2, 2018. The definition of substantial completion set forth in the Contract Documents is “the date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it was intended; or if there be no such certification, the date when final payment is due.” The City agrees that the intended use of the Project was reached by July 30th, 2018; however, the Final Completion date according to the contract documents was to have been achieved by June 3rd, 2018. Civil Constructors failed to achieve Final Completion by June 3rd, 2018. This Final Completion date includes the time extension requested by Civil Constructors that was incorporated into the Change Order #1. COF WMD have discussed internally and decided Final Completion for the Goose Creek Inn Sanitary Sewer Extension Project was achieved on August 24, 2018. This is the date SMH-5 and the cleanout were cleared of the mud and debris that occurred during construction.

Between August 2 and August 24, the following items were completed:

- August 6 – Project Inspection walk thru and a final completion punch list generated.
- August 8 – final grading and topsoil installation completed
- August 10 – Five Mile Crossing Milled and Overlaid
- August 17 – pavement markings installed
- August 24 – SMH-5 cleared of mud and debris

Items on the punch list not completed until after August 24, 2018 were as follows:

- Repair to the B&G Fence (completed August 27, 2018)
- Submittal of as-builts (completed August 31, 2018)
- Power disconnect from the abandoned onsite wastewater plant (Completed September 19, 2018).
- Channelization Stabilization on East Side of Five Mile Creek Crossing (Not complete due to unsuitable weather, to be done as warranty work)
- Sewer pipe warranty letter (not yet completed, Civil Constructors to use 07/30/2018 for warranty start date.)
- Asphalt warranty letter (not yet completed, Civil Constructors to use 07/30/2018 for two year warranty start date.)



Liquidated damages (LDs), in the amount of \$500 per calendar day, will be assessed from June 4, 2018 to August 24, 2018 (82 days). Although the last five items listed above are beyond the 8/24/2018 date the COF WMD has decided not to assess LD's past 8/24/2018. A total liquidated damages amount of \$41,000.00 will be assessed against Civil Constructors. An amount of \$44,500.00 was deducted from Civil Constructors last pay request by the City of Franklin Finance Department and there is a credit of \$3,500.00 owed back to Civil Constructors for over assessment of LD's.

COF WMD has reviewed the change order request for milling of asphalt and cleanup of Five Mile Crossing from Civil Constructors. We have determined COF WMD will pay 50% of the claimed labor/equipment costs and 100% of the milling costs. This will result in an approved amount of \$5,414.50 from COF WMD. With regards to the asphalt overrun on Line Item R4 of the bid form in the amount of 12.92 tons, it will be shown on the final reconciling change order and paid for out of contingency. COF WMD shall receive a credit as agreed to by Civil Constructors due to Civil placing 64-22 pavement mix rather than 70-22 as specified in the Contract Documents. This credit amount must be approved prior to submittal of the final reconciling change order.

In summary, the following charges and credits will be assessed:

- Liquidated damages = \$41,000
- Liquidated damages deducted from last Civil invoice = \$44,500
- Credit owed back to Civil from City = \$3,500
- Change Order item (milling) = \$3,950.00
- Change order item (cleaning) = \$994.50
- Markup= \$470.00
- Change order item (asphalt) = credit amount to COF to be submitted to City before final payment.

Please let me know if you have questions or comments on this matter.

Sincerely,

A handwritten signature in black ink that reads 'Brian C. Goodwin'. The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Brian Goodwin, P.E.

Assistant Director of Water Management Department

Office: (615) 794-4554 Ext. 6863

Brian.goodwin@franklintn.gov

P.O. Box 685
Franklin, Tennessee 37065



Telephone (615) 236-9000
Fax (615) 236-9001

CHANGE ORDER ~~001~~ REQUEST

NAME OF PROJECT: COF Contract No. 2017-0198
Goose Creek Inn Sewer Extension

Description: Milling & Cleanup of Five Mile Crossing

Labor / Equipment - Description	Rate	Hours	Totals
Foreman (w/ Pickup)	\$ 92.00	6.00	\$ 552.00
Skilled Laborer	\$ 38.00	15.00	\$ 570.00
Skid Steer w/ Operator	\$ 75.00	3.00	\$ 225.00
Water Truck w/ Operator	\$ 110.00	3.00	\$ 330.00
Dump Truck w/ Operator	\$ 104.00	3.00	\$ 312.00

Totals \$ ~~1,000.00~~ \$994.50

Sub/Material - Description	Rate	Quantity	Units	Totals
SUB - Huson Milling	\$ 3,950.00	1.00	LS	\$ 3,950.00

Totals \$ 3,950.00

Pay Items - Description	Rate	Quantity	Units	Totals
Item No. 20 - Asphalt B Mix	\$ 240.00	12.02	TON	\$ 0,170.02

Totals \$ 3,178.32

Labor/Equipment	\$ 1,000.00	\$994.50
Subcontractors	\$ 3,950.00	
Subtotal	\$ 5,000.00	\$4,944.50
Markup	\$ 500.00	\$470.00
TOTAL for Above	\$ 6,500.00	
Contract Pay Items	\$ 0,170.02	

TOTAL \$ ~~0,670.32~~ \$5,414.50


By

Dalton Clark, Project Manager


Date

REQUEST FOR CONSTRUCTION CONTRACT CHANGE FINAL RECONCILING CHANGE ORDER

City of Franklin
Engineering Office
109 Third Avenue South
Franklin, Tn 37064

Contract Number: 2014-0288
Project Name: Water Distribution and Collection
System SCADA Improvements

Background

The Board of Mayor and Alderman passed a resolution to award and entered into a contract on September 13, 2016 with Revere Control Systems, Inc. for the Water Distribution System SCADA Improvements project. The amount of the contract entered into by the City of Franklin and Revere Control Systems, Inc. was for \$1,949,980.00 (which included an Owner's contingency of \$400,000). A substantial completion date of October 5, 2017, and a final completion date of January 3rd, 2018 were requirements in the contract.

The SCADA system improvements included, among other scope, replacement of remote telemetry units and associated routers and modems at each of the remote stations (i.e., wastewater pump stations, potable water booster pump stations, etc.). The remote telemetry unit included two modes of communication: 1} Radio (the primary mode), and 2} Cellular phone (the failover or backup mode).

Reason for Change Order:

The reason for this change order is to perform final reconciling of contract amount and to modify the contractual substantial and final completion dates. A total of 19 Task Orders were written against the Owner's Contingency for a total dollar amount of \$283,171.02. Thus \$116,828.98 of the Owner's Contingency will be unused and the total dollar amount of the contract will be reduced by that amount. A Task Order Summary Sheet and each of the Task Orders are included in Attachment A.

In addition to the change in the contract amount, the substantial and final completion dates had to be moved due to challenges encountered in working out issues in the system. This change will modify the substantial completion date from October 5th, 2017 to March 30, 2018 and will modify the final completion date from January 3rd, 2018 to October 27th, 2018.

Attachments (List documents supporting change):

Attachment A - Task Order Summary Sheet and Task Orders

CHANGE IN CONTRACT PRICE:	
Original Contract Price:	\$1,949,980.00
Net Increase in Contract Price From Previous Change Orders:	\$0
Contract Price Prior to This Change Order:	\$1,949,980.00
Net Increase or <Decrease> of This Change Order:	<\$116,828.98>
Contract Price with All Approved Change Orders:	\$1,833,151.02

CHANGE IN CONTRACT TIMES	
Original Contract Times	
Substantial Completion Date	10/5/2017
Final Completion Date	1/3/2018
Net Change From Previous Change Orders	
Substantial Completion	0 Days
Final Completion	0 Days
Contract Times Prior to This Change	
Substantial Completion Date	10/5/2017
Final Completion Date	1/3/2018
Increase in Time This Change Order	
Substantial Completion	175 Days
Final Completion	297 Days
Contract Times with All Approved Change Orders	
Substantial Completion Date	3/29/2018
Final Completion Date	10/27/2018

Now, Therefore, Revere Control Systems, Inc., hereby agrees to this Change Order, consisting of the above mentioned schedule changes, and agrees that this Change Order is hereby made a part of the original contract and will be performed by this Contractor in accordance with specifications thereof, and that the original contract remains in full force and effect, except in so far as specifically modified by this Change Order.

RECOMMENDED FOR APPROVAL BY:

ENGINEER

Name:

Robert P. Huguenard

Signature:

RF P. Hug

Date:

11/7/2018

CITY PROJECT MANAGER

Name: _____

Signature: _____

Date: _____

CITY WATER MANAGEMENT DIRECTOR

Name: _____

Signature: _____

Date: _____

ACCEPTED BY CONTRACTOR:

Name:

Nanette D. Johnson

Title:

Vice President of Municipal Systems

Signature:

Nanette D. Johnson

Date:

11/7/2018

APPROVED BY OWNER:

Name: _____

Title: _____

Signature: _____

Date: _____

ATTACHMENT A

TASK ORDER SUMMARY SHEET AND TASK ORDERS

Table A1
Work Order Summary Sheet

Work Order Number	Description	Work Order Dollar Amount	Work Order Expended Amount	Date Sent to SRF for Review	Date Approved by SRF	Date Signed by Revere
1	Replacement computer for existing system	\$14,105.00	\$14,105.00	1/24/2017	1/25/2017	2/1/2017
2	Addition of remote pump on/off	\$64,004.00	\$64,004.00	5/31/2017	5/31/2017	6/9/2017
3	RTU Installation Changes - Racks	\$56,329.74	\$56,329.74	7/26/2017	7/27/2017	7/31/2017
4	Goose Creek/Red Wing controls modifications	\$19,226.00	\$19,226.00	7/26/2017	7/27/2017	7/31/2017
5	Old Hillsboro Road Strut Hardware	\$4,811.27	\$4,811.27	7/26/2017	7/27/2017	7/31/2017
6	Cradlepoint Part 1 Changes	\$13,046.00	\$13,046.00	9/13/2017	9/14/2017	11/1/2017
7	Cradlepoint Part 2 Changes	\$54,311.00	\$54,311.00	10/20/2017	10/24/2017	11/1/2017
8	Fieldstone Farms 1 Upgrade to AB PLC CPU	\$4,071.00	\$4,071.00	11/15/2017	11/17/2017	11/27/2017
9	Legends Booster Pump Station Control Modifications	\$19,690.87	\$19,690.87	11/15/2017	11/17/2017	11/27/2017
10	Credit for Radio Towers	(\$21,190.76)	(\$21,190.76)	1/16/2018	1/22/2018	1/30/2018
11	Columbia Avenue Tank - New Power Service Cable and Receptacle	\$4,099.10	\$4,099.10	1/16/2018	1/22/2018	1/30/2018
12	Credit for Elimination of Part of Trihedral Training	(\$3,924.80)	(\$3,924.80)	1/16/2018	1/22/2018	1/30/2018
13	Legends Booster Pump Station Additional Control Modifications	\$9,199.40	\$9,199.40	2/14/2018	2/21/2018	3/5/2018
14	Ash Drive Tank RTU Relocation	\$5,921.97	\$5,921.97	2/14/2018	2/21/2018	3/5/2018
15	Fieldstone Farms 2 - Make RTU the Controller	\$12,621.73	\$12,621.73	2/14/2018	2/21/2018	3/5/2018
16	Credit for Old Hillsboro Road Repairs Due to Miswiring	(\$890.92)	(\$890.92)	9/13/2018	9/14/2018	5/21/2018
17	Old Hillsboro Road Antenna and Antenna Cable Replacement	\$1,590.63	\$1,590.63	4/25/2018	5/1/2018	5/18/2018
18	Antenna Replacement and Addition of Mikrotic Devices	\$29,292.84	\$29,292.84	5/3/2018	6/7/2018	6/11/2018
19	Purchase of Additional VTScada Licenses	\$9,026.95	\$9,026.95	6/4/2018	6/7/2018	6/11/2018
20	Credit for Unused Allowance and Elimination of Natches Trace RTU Installation	(\$12,170.00)	(\$12,170.00)	10/11/2018	10/24/2018	10/31/2018
Total Expended		\$283,171.02	\$283,171.02			
Owner's Contingency Amount			\$400,000.00			
Remaining Funds			\$116,828.98			

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: January 25, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 001 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Replacement of existing SCADA system computer **CITY PROJECT NO.:** 2014-0288

REFERENCE: December 5, 2016 Revere Quote Letter

DESCRIPTION:

The purpose of this Work Order is to direct Revere Control Systems to perform the work identified in the attached December 5, 2016 quote. In general the work includes 1) Purchasing and installing a computer to replace the backup computer for the existing SCADA system, 2) Copying and configuring the existing SCADA application to the new computer, 3) Once the new main RTU and antenna are in operation and all sites have been migrated to the new system, moving this computer to the Public Works building, adjacent to the new computer provided under this contract and configuring it to act as a hot backup, 4) Furnish an additional Trihedral VTSCADA license.

Per the attached quote, this work shall be performed for a lump sum amount of \$14,105. Half to be paid upon completion of items 1 and 2 and half to be paid upon completion of items 3 and 4. Work is subject to the terms and conditions of the agreement for project 2014-0288 not the terms and conditions Revere Control Systems attached to their quote.

ATTACHMENTS: December 5, 2016 Revere Quote Letter

CDM SMITH:

By:

Date: 01/25/2017

CONTRACTOR:

By:

Date: 2/1/2017



Master Telemetry Computer Replacement City of Franklin Water Management Department

December 5, 2016

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
Collections and Distribution Telemetry SCADA System

Subj: Proposal to Add a Master SCADA PC to Temporarily Replace Existing PC and Configure as Backup to
New SCADA, Rev 2
COF Contract No. 2014-0288

Mr. Huguenard:

We are pleased to provide a proposal for the above referenced project. Work includes the following:

1. Furnish a new Dell Precision T5810 PC and 24" monitor (see attached datasheet)
2. Furnish an additional Trihedral VTSCADA runtime 10K license w/12-month support (see attached datasheet)
3. Onsite labor and expenses to transfer existing application to new PC and confirm communications per existing status. Note: Work does not include troubleshooting/repair of existing issues.
4. Configure as hot backup when replaced with new computer furnished under contract referenced above.

Labor

Project Management.....	4 Hours	\$148/Hr	\$ 592
Engineering	40 Hours	\$126/Hr	\$ 5,040
(8 hours in office setup, 32 hours onsite, portal-to-portal from Birmingham, AL)			Labor Total: \$ 5,632

Expenses

Mileage.....	372 Miles.....	\$0.54.....	\$ 201
Food and Lodging	4 Days.....	\$174.....	\$ 696
(8 hours in office setup, 32 hours onsite, portal-to-portal from Birmingham, AL)			Subtotal: \$ 897
			15% Profit ¹ : \$ 135
			Expenses Total: \$ 1,032

Materials

Dell T5810 workstation w/24" monitor (as of 12/2/2016) ²	\$ 1,679
Trihedral VT SCADA, Run, 10K Tags, 3 month SupportPlus	\$ 4,095
Trihedral VT SCADA, Run, 10K Tags, 9 months SupportPlus.....	\$ 696
Subtotal: \$ 6,470	
15% Profit ¹ : \$ 971	
Materials Total: \$ 7,441	

Lump Sum Price\$ 14,105



Master Telemetry Computer Replacement City of Franklin Water Management Department

¹Non-labor profit figure based on 01035 1.06 B.6 and 00700 Article 12.01 C and 11.01 A.2

Price excludes applicable taxes

Delivery ARO: 4 weeks

See attached Terms and Conditions

Sincerely,

David Abel

David Abel, PMP

Municipal Project Manager

Revere Control Systems, Inc.

Phone: 615-604-1579

dabel@reverecontrol.com

Attachments:

Terms and Conditions

Dell PC Datasheet

Dell Pricing Summary

VT SCADA Datasheets



Dell Precision Tower 5000 Series (5810)

Big power in a compact, innovative design



Experience the evolution of productivity

Power resource-exhausting, graphics-intensive workloads with ease, featuring:

- Dell Precision Optimizer v 3.5, enhances application performance by optimizing settings, for up to 121 percent application performance improvement
- Intel® Xeon® processor E5-1600 v4 product family, with Intel Turbo Boost Max Technology 3.0 (on select SKUs) delivers the single threaded performance you need to complete complex tasks quickly
- Manage large data sets with ease, with up to 256GB^{1,2} of quad-channel 2400MHz DDR4 ECC RDIMM memory
- Choose from a broad selection of professional grade AMD FirePro™ or NVIDIA® Quadro® graphics
- Optional Intel PCIe SSD drives and M.2 PCIe NVMe SSDs on the actively cooled Dell Precision Ultra-Speed Drive Duo/Quad deliver superb read/write throughput, combined with exceptional reliability.
- Intel CAS-W storage option enables performance that is near solid state drive speeds at a significantly reduced cost versus a full SSD storage solution³

Reduce environmental impact

- Dell Precision Tower 5000 Series is EPEAT®-registered⁴ and offers ENERGY STAR® configurations, including 80 PLUS®-registered Gold power supplies

Reliability you can count on

- Exclusive Reliable Memory Technology (RMT) PRO maximizes uptime by eliminating virtually all memory errors for more stability
- The result of hundreds of rigorous testing, Independent Software Vendor (ISV) certifications ensure your high performance applications run smoothly

Best-in-class chassis design

- Straightforward, clutter-free interior provides superb air flow, easy access to components for serviceability and modifications, and improved acoustics
- The only mainstream tower workstation family to offer an externally accessible tool-less (lockable) power supply for superior serviceability
- Integrated front and rear aluminum handles for easy deployment and moves
- Room for up to (3) 3.5" or (4) 2.5" tool-less hard drives
- 825W PSU option for high wattage graphics cards support in compact chassis.
- Easy rack mounting via 0U rail shelf kit⁵

Exceptional Service & Support

- Rest assured that your Dell Precision workstation will be well protected should an issue arise, with a standard 3 year limited hardware warranty^{6,7,8}

Feature	Precision Tower 5000 Series (5810) Technical Specification					
Processor Options	Intel® Xeon® processor E5-1600 v4 Series, with Intel Turbo Boost Max 3.0 Technology on select SKUs, Select Intel Xeon E5-2600 v4 CPUs with up to 18 cores, Intel Advanced Vector Extensions, Intel Trusted Execution Technology, Intel AES New instructions, optional Intel vPro™ technology					
Operating System Options	Windows® 10 Professional (64 bit) Windows® 8.1 Professional (64-Bit) Windows® 7 Professional (64-Bit)			Red Hat® Enterprise Linux® 7.0 and 7.2 (required for Xeon E5-2600 v4 CPUs), RHEL 6.5 supported, 6.8 for E5-2600 v4 Ubuntu 14.04 NeoKylin 6.0 (China only)		
Chipset	Intel® C612					
Memory Options	Quad channel memory up to 256GB 2133MHz DDR4 RDIMM ECC memory, 8 DIMM Slots. (E5-2600 v4 CPUs ship with 2400MHz memory) Note: memory speed is dependent on specific Intel Xeon E5-1600 v3 or E5-2600 v4 Series processor installed					
Graphics ⁴ Options	Support for 2 PCI Express® x16 Gen 2/Gen 3 graphics cards up to 500W (total graphics in 2 slots, (with 825W PSU)					
	High end 3D cards: AMD FirePro W8100 NVIDIA Quadro M6000 NVIDIA Quadro K6000 NVIDIA Quadro M5000	Mid-range 3D cards: AMD FirePro W7100 AMD FirePro W5100 NVIDIA Quadro M4000 NVIDIA Quadro M2000 NVIDIA Quadro K2200	Entry 3D cards: AMD FirePro W4100 AMD FirePro W2100 NVIDIA Quadro K620 NVIDIA Quadro K420	Professional 2D cards: NVIDIA NVS 510 NVIDIA NVS 315 NVIDIA NVS 310		
Storage Options	Support for up to (4) M.2 PCIe SSDs and up to (3) 3.5" SATA or (4) 2.5" SATA/SAS drives. Optional controller required for SAS.					
	M.2 PCIe SSD (NVMe) Up to (4) 1TB drives on Dell Precision Ultra-Speed Drive Quad. PCIe SSD HH/HL card Up to (2) Intel 1.2TB PCIe SSD NVMe drives	2.5" SATA SSD Up to (4) 1TB drives 2.5" SAS SSD Up to (4) 400GB drives	2.5" SATA 7200 RPM Up to (4) 512GB 7200 RPM	3.5" SATA Up to (3) 4TB 5400 RPM	2.5" SAS 10K RPM 12Gb/s Up to (4) 1.8TB 2.5" SAS 15K RPM 12Gb/s Up to (4) 600GB	2.5" Self Encrypting Drives 512GB 2.5" FIPS SED (OPAL 2.0) SSD
Storage Controller	Integrated: Intel AHCI 6Gb/s SATA controller with six ports, two reserved for optical drives, Intel RSTe supports host based software RAID 0,1,5,10 Optional: LSI MegaRAID® SAS 9341-8i 12Gb/s SAS (6Gb/s SATA) PCIe controller supports software RAID 0,1,5,10. LSI MegaRAID® SAS 9361-8i 12Gb/s SAS (6Gb/s SATA)) PCIe controller (1GB cache with Flash module/Super Cap backup) supports hardware RAID 0,1,5,10					
Communications	Integrated: Intel® i217 Gigabit Ethernet LAN 10/100/1000 Optional: : Intel® i210 10/100/1000 single port PCIe (x1) Gigabit network card, Intel® X540-T2 10GbE dual port PCIe (x8) network card,					
Audio Controller	Integrated Realtek ALC3861 High Definition Audio Codec (2 Channel)					
Speakers	Internal Speaker; Optional Dell 2.0 stereo speaker systems available and Dell sound bar for select flat-panel displays					
Add-in cards	Optional: Dell Precision Ultra-Speed Drive Duo (HH/HL,x8) & Ultra-Speed drive Quad (FH/FL,x16) with active cooling. Support for up to 2 and 4 M.2 PCIe NVMe SSDs respectively. Optional 1394 a/b PCIe Card (3 Ports – 2x 1394b + 1x 1394a)				Optional dual & quad display Teradici PCoIP remote workstation host PCIe cards Optional Thunderbolt 2 PCIe Card Optional Serial Port PCIe Card	
I/O Ports	Front 3 – USB 2.0 1 – USB 3.0 1 – Microphone 1 – Headphone	Internal 1 – USB 2.0 1 2x5 USB 2.0 header. (Requires 3 rd party splitter cable to support 2 x USB 2.0 Type A ports) 4 – SATA 6Gb/s		Rear 3 – USB 2.0 3 – USB 3.0 2 – PS2	1 – RJ45 Network Connector 1 – Serial 1 – Audio Line in/Microphone 1 – Audio Line out	
Chassis	HxWxD: 16.30 x 6.79 x 18.54"; 41.40cm x 17.25cm x 47.09cm Bays: (1) external slimline optical bay; (2) internal 3.5" bays (support total of (2) 3.5" or 2.5" drives); (1) external 5.25" bay Slots: (2) PCIe x16 Gen 3; (1) PCIe x16 Gen 3 (wired x8) half length; (1) PCIe x4 Gen 2; (1) PCIe x1 Gen 2; (1) PCI 32 Power Supply: 825W, 685W, 425W 90% efficient (80PLUS Gold Certified) Externally accessible/removable					
Storage devices	Slimline options: DVD-ROM; DVD+/-RW, Optional 5.25" bay devices: BD, DVD+/-RW; 19-in-1 media reader, 2 x 2.5" HDD/SSD kit					
Monitors	Dell UltraSharp Monitors – Award-winning high-performance monitors with PremierColor (on select models) and ultra-wide viewing, from 21.5"- 34" Dell Monitors (P models) available from 19" – 28".					
Security Options	Trusted Platform Module (TPM 2.0 with Win 10, TPM 1.2 with Win 7/8.1); Chassis Intrusion switch; Setup/BIOS Password; I/O Interface Security; Kensington® lock slot, Padlock ring, lockable power supply; Dell Data Protection (DDP): DDP Security Tools for authentication; DDP Protected Workspace for malware; DDP Encryption for data protection					
Regulatory & Environmental	Energy Star® configurations available including 80 PLUS® registered Gold power supplies; EPEAT® registered (see epeat.net for specific registration rating/status by country); China CECP; GS Mark. For a complete listing of declarations & certifications, see Dell's regulatory & compliance homepage at dell.com/regulatory_compliance					
Warranty & Support Services	3-Year Limited Hardware Warranty and 3-year NBD On-Site Service after Remote Diagnosis Optional: Dell ProSupport is designed to rapidly respond to your business's needs, help protect your investment and sensitive data, and provide enhanced proactive support services to help reduce risk and complexity within your IT environment					
TAA Configurations	Yes					

Some options available only in select regions; ISV certification applies to select configurations 1. A 64-bit operating system is required to support 4GB or more of system memory; 2. GB means 1 billion bytes and TB equals 1 trillion bytes; actual capacity varies with preloaded material and operating environment and will be less. 3. Available in select regions. 4. See epeat.net for specific registration rating/status by country; 5. Available in select countries via S & P. 6. For copy of Ltd Hardware Warranty, write Dell USA LP, Attn: Warranties, One Dell Way, Round Rock, TX 78682 or see www.dell.com/warranty; 7. Remote Diagnosis is determination by online/phone technician of cause of issue; may involve customer access to inside of system and multiple or extended sessions. If issue is covered by Limited Hardware Warranty and not resolved remotely, technician and/or part will be dispatched, usually within 1 business day following completion of Remote Diagnosis. Availability varies. Other conditions apply; 8. Availability and terms of Dell Services vary by region. For more information, visit www.dell.com/servicesdescriptions; Copyright 2016 Dell Inc. All rights reserved. Intel and Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States of America and other countries. Microsoft, and Windows are trademarks or registered trademarks of Microsoft Corporation in the U.S. and other countries. Other trademarks or trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell disclaims proprietary interest in the marks and names of others. Reproduction in any manner whatsoever without express written permission from Dell Inc. is strictly forbidden.



Print Summary



Precision Tower 5000 Series (5810)

Starting Price \$2,663.88

Instant Savings \$984.90

Subtotal \$1,678.98

As low as \$51.00 /month^

Dell Business Credit | Apply

Discount Details

Ships in 3 - 5 Business Days

My Selections All Options

• Precision Tower 5000 Series (5810)

Date	12/2/2016 7:32:39 AM Central Standard Time			
Catalog Number	4 Retail 04			
Evalue Code	CUP5810W7P_2			
Catalog Number / Description	Product Code	Qty	SKU	Id
Dell Precision Tower 5810: Dell Precision Tower 5810 XCTO Base	T5810C	1	[210-ACQM]	1
Processor: Intel® Xeon® Processor E5-1620 v3 (4C, 3.5GHz, Turbo, HT, 10M, 140W)	E51620	1	[338-BFJW][412-AADM]	146
Operating System: Windows 7 Professional English, French, Spanish 64bit (Includes Windows 10 Pro License)	DW10P7M	1	[619-AIKN]	11
Office Productivity Software: Microsoft Office 30 Day Trial	13TMUI	1	[658-BCSB]	1002
Non-Microsoft Application Software: Dell Applications Windows 7	APPW7	1	[421-9982][422-0008][422-0052][444-BBBG][444-BBBS][640-BBDH][640-BBES][640-BBEW][640-BBHR][640-BBHS][658-BBIH]	1003
Video Card: AMD FirePro™ W4100 2GB (4 mDP) (4 mDP-DP adapters)	W4100	1	[490-BCCE]	6
E-Star: No Energy Star	NOESTAR	1	[387-BBBE]	122

Chassis Options: Dell Precision Tower 5810 425W TPM Chassis, BW	425L6BW	1	[321-BCEK]	116
Memory: 16GB (4x4GB) 2133MHz DDR4 RDIMM ECC	16G4R	1	[370-ABUO]	3
HDD Controller: Integrated Intel AHCI chipset SATA controller (6 INTCTL x 6.0Gb/s) - SW RAID 0/1/5/10		1	[403-BBGV]	9
Internal Hard Drive Configuration: C1 SATA 3.5 Inch, 1-2 Hard Drives	C1	1	[449-BBEF]	276
RAID Configuration/Connectivity: No RAID	NORAIID	1	[780-BBCJ]	1009
Boot Hard Drive: 1TB 3.5" Serial-ATA (7,200 RPM) Hard Drive	1THD	1	[400-AIJM]	8
2nd Hard Drive: No Additional Hard Drive	NOHDDA	1	[401-AADF]	637
3rd Hard Drive: No Additional Hard Drive	NOHDDA	1	[401-AADF]	54
4th Hard Drive: No Additional Hard Drive	NOHDDA	1	[401-AADF]	51
Storage Volume: Boot drive or boot volume is less than 2TB	L2TB	1	[411-XXXY]	387
CD ROM/DVD ROM: 8x Slimline DVD-ROM Drive	DVDSL	1	[429-AAPD]	16
Optical Software: PowerDVD Software not included	NOPDVD	1	[429-AABU]	597
Sound: No Add-in Sound Card (Integrated Audio)	NOSND	1	[510-BBBW]	17
Speakers: Internal Speaker	INSPKR	1	[520-AADM]	18
Additional Storage Devices: No Media Card Reader	NMCR	1	[385-BBBL]	10
Network Card: No Network Card (Integrated NIC only)	NONIC	1	[555-BBJO]	13
Thunderbolt Card: Not Selected in this Configuration	NOTHB	1	[817-BBBC]	666
Teradici Remote Workstation Access Host Card: No Dell Tera2 Remote Access host card for the Wyse P25 Zero Client	NOCARD	1	[386-BBBE]	959
Systems Management: No Out-of-Band Systems Management	NOVPRO	1	[631-AAID]	49
Dell Data Security Encryption: No DDPE Encryption Software	NODDPE	1	[954-3465]	156
Protect your PC: No Security Software	NOSECSW	1	[650-AAAJ]	1014
Keyboard: Dell KB216 Wired Keyboard English Black	US216B	1	[580-ADJC]	4
Mouse: Dell MS116 Wired Mouse Black	MS116B	1	[275-BBBW]	12
Adapters: No Accessories	NOACCES	1	[461-AABV]	592
External Speakers: No External Speaker	NOEXSP	1	[520-AABF]	200095

OS Recovery: Recovery media not included	NOME81	1	[620-AAWD]	200013
Dell Backup & Recovery: Dell Developed Recovery Environment	DDRE	1	[658-BCUV]	200076
Resource DVD: Resource DVD not Included	NORDVD	1	[430-XXYU]	50
Quick Reference Guide: Precision Workstation Tower 5810	PLCMT	1	[340-AMCB]	60
Power Cords: US 125V Power Cord	USPWR	1	[470-AAKG]	20
Chassis intrusion switch: Chassis Intrusion Switch	MTISWT	1	[461-AAAB]	289
FGA Module: No FGA	NOFGA	1	[817-BBBB]	572
Packaging: Dell Precision Packaging	SHPMTL	1	[328-BBEO][340-AEYP]	465
Regulatory Label: T5810 Regulatory Label (DAO)	REGLBL	1	[389-BFFO][389-BFJR]	676
UPC Label: No UPC Label	NOUPC	1	[389-BDCE]	292
Processor Branding: Intel® Xeon® Label	IXEON	1	[389-BBRO]	749
TPM Security: TPM	TPM	1	[329-BBJL]	297
Canada Ship Options: Non-Canada orders only	USNONE	1	[332-1286]	111
Hardware Support Services: 3 Year Hardware Service with Onsite/In-Home Service After Remote Diagnosis	NBD3	1	[997-7163][997-7165]	29
Monitors: Dell UltraSharp 24 InfinityEdge Monitor - U2417H	321-0165	1	[321-0165]	5113
Documentation/Disks: Safety/Environment and Regulatory Guide (English/French Multi-language)	EFDOC	1	[340-AGIK]	21
Speakers & Soundbars: Dell USB Stereo Speaker System - AX210	318-2918	1	[318-2918]	6464
Monitor Stands: No Stand	NOSTND	1	[575-BBCH]	558



Print

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[snUS02](#)

VTScada®

Software for Monitoring & Control



Instantly Intuitive.

VTScada removes frustration at every stage of the SCADA/HMI software life cycle; from pricing and licensing, to development and support. Our unique architecture integrates all core SCADA components into one easy-to-use package so you can start creating advanced monitoring and control systems in minutes.

30 years of innovation, one outstanding product.

VTScada AT A GLANCE	PAGES
Unlimited Scalability	2
Transparent Licensing	3
Built For Operators	4
Alarm and Event Management	5
Secure Mobile Access	7
Intuitive Development	8
Industrial-Strength Reliability	11
Historical Data Management	12
Non-Proprietary Connectivity	12
Application Security	13
Support, Renewals, and Upgrades	14
Hardware and OS Requirements	15
Demos and Trials	16

VTScada's unique architecture allows you to easily scale an application from a few hundred tags on a single laptop all the way up to a multi-million tag system spanning distributed synchronized servers. Below are three common application configurations.

SINGLE SERVER



REDUNDANT SERVER (SEE OUR BUNDLE SHEET)



ENTERPRISE / MULTI-PLANT



TRANSPARENT LICENSING

Full installations of VTScada (i.e., Runtime or Development Runtime) are licensed per operating system instance.

Add optional components as needed.

VTScada Thin Clients are licensed by the number of concurrent users. Both full installations and Thin Clients are sized by the number of I/O tags the license will support.

1. CHOOSE A LICENSE AND TAG COUNT			
	Integrated Components Included (single installation)	Runtime	Development Runtime
		☐	☐
RUN AND OPERATE	Application Server (primary or redundant)	☒	☒
	Runtime Client	☒	☒
	Widgets and Graphics Library	☒	☒
	Historian	☒	☒
	Security	☒	☒
	Network and Computer Resource Monitoring with SNMP Agent	☒	☒
	Alarms and Events Database	☒	☒
	Trending and Reporting	☒	☒
	Slippy Maps integration	☒	☒
	Electronic Operator Logbooks	☒	☒
I/O DRIVERS	Common (e.g., Modbus, DF1, OPC Client, Omron, GE, Siemens)	☒	☒
	Advanced (e.g., DNP3, SNMP, Enron Modbus, BSAP)	☒	☒
	Proprietary (e.g., DataFlow Systems, Dexter Fortson, Aquatrol)	☒	☒
	DataLogger (e.g., Campbell Scientific, DF1, SCADAPack)	☒	☒
DEVELOP	Automatic Version Control (system-wide disaster recovery, audit tools)		☒
	Idea Studio Efficient Development Environment (online, offline, multi-developer)		☒
	Change Deployment		☒
	Scripting and Debugging Tools		☒
	ODBC Server, OPC Server, Web Services		☒

2. SELECT AN I/O TAG COUNT	
Only tags that read and write data to external equipment and software are counted against your license tag count. Tag counts include those in all applications running concurrently on the licensed computer.	1,000 ☐
	5,000 ☐
	10,000 ☒
	25,000 ☐
	To 2,500,000 ☐

3. SELECT OPTIONAL COMPONENTS - PRICED BY TAG COUNT		
VTScada Alarm Notification System		☐
OPC, ODBC, Web Services for Runtime Licenses		☐

4. ADD THIN CLIENTS - PRICED BY TAG COUNT	
Select how many users can concurrently connect to your application via networked smartphones, tablets, PCs, and Macs.	Single ☐
	5-Pack ☐
	Unlimited ☐



The Auto-generated Tiled Page Menu.

VTScada REPORT GENERATION STANDARD

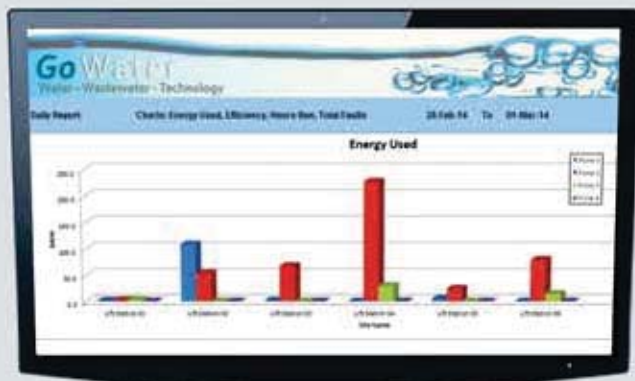
Intuitive reporting tools are part of every application.

SCHEDULED AND AD-HOC REPORTS - The standard Reports Page generates ad-hoc reports while the time-zone aware Report Tag can be triggered on schedule or on event.

PRE-DEFINED REPORTS - The Reports Page includes a suite of standard reports for the water/wastewater industry. The Alarm Page (P. 5) includes new reports for managing nuisance alarms.

OUTPUT OPTIONS - Output to a screen, spreadsheet, database, or email attachment. Add custom script reports and Excel® templates as needed (below).

THIRD-PARTY REPORTING - Reporting products XLReporter® and Dream Report® both have integrated VTScada interfaces.



An Excel template report.

GRAPHIC DISPLAY PAGES STANDARD

Every application includes standard pages for alarms, trends, reports, maps, and Thin Client monitoring.

- Open pages in full screen or windowed.
- 24-bit / 32-bit 'true color' support.
- Dual / quad monitor support.
- Supports consistent display on all screen resolutions.

INTUITIVE PAGE NAVIGATION

- The auto-generated **Page Menu** lets you move easily through your application.
- Monitor multiple live pages at once using the standard **Tiled Page Menu** (left).
- Change pages with custom hotboxes and buttons.
- Users can pin their favorite pages along the bottom.



The standard HDV.

HISTORICAL DATA VIEWER (HDV) STANDARD

Part of every VTScada application, the HDV combines historical and real-time data to display a continuous picture of any number of I/O values. See analog and digital data displayed simultaneously. It even supports square root and logarithmic scaling.

OPERATORS CAN EASILY...

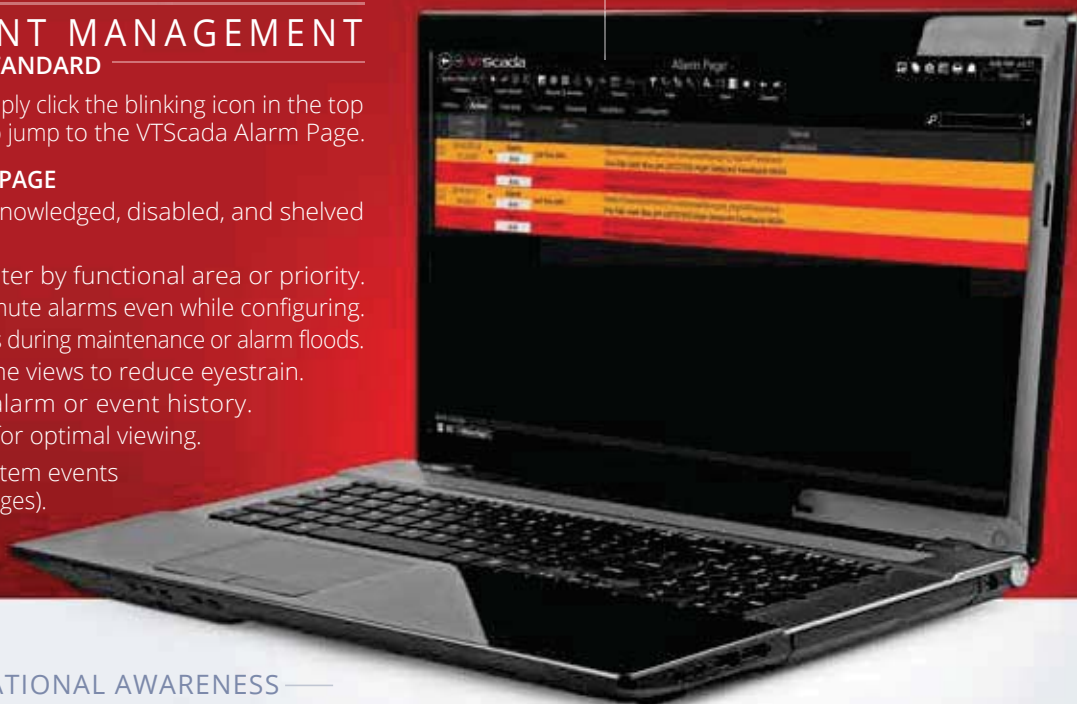
- Add unlimited pens representing individual tag values.
- Adjust each pen's appearance and save as a group.
- Add encrypted notes to explain atypical readings.
- Export any range of data to a file or database.
- Select overlapping, stacked, or tabular views.
- Display min, max, and average values.

ALARM & EVENT MANAGEMENT STANDARD

In the event of an alarm, simply click the blinking icon in the top right corner of every page to jump to the VTScada Alarm Page.

THE RE-IMAGINED ALARM PAGE

- See current, active, unacknowledged, disabled, and shelved alarms.
- Sort by date/time and filter by functional area or priority.
- Acknowledge, silence, or mute alarms even while configuring.
- Shelf alarms to stop alerts during maintenance or alarm floods.
- Use daytime and nighttime views to reduce eyestrain.
- Print any range of the alarm or event history.
- Adjust text and row size for optimal viewing.
- Access time-stamped system events (e.g., logons, setpoint changes).



— ADVANCED SITUATIONAL AWARENESS —

ISA 18.2 COMPLIANT - The enhanced Alarm Page and augmented tools help you enact the best practices of the ISA 18.2-2009 Alarm Management Standard.

- Combine text, symbols, color, and sound to easily convey alarm status and priority for each listed alarm.
- Easily plot an alarm's tag data or open related displays.
- Add encrypted operator notes to alarms.

MULTI-PLANT ARCHITECTURE - Create separate Alarm and Event databases for individual plants and processes for targeted alarm processing.

- New applications include Alarm and Event databases.
- Add more Alarm Database Tags as required.
- Sync distributed databases to protect history.
- Manage alarms even when disconnected from alarm servers.

EASY ALARM CONFIGURATION

- Easily create alarm tags in the VTScada Tag Browser.
- Built-in alarms for Analog Status and Digital Status Tags.
- Embed customized alarm lists into display pages.



New Alarm reporting tools in VTScada 11.2.



VTScada ALARM NOTIFICATION SYSTEM OPTIONAL

ALARMS FIND YOU - Receive and acknowledge alarms anywhere via SMS text messages, emails, pagers, and text-to-voice phone calls.

PHONE ACCESS - Logon from any phone to check levels, manage alarms, change setpoints, or control equipment.

ALARM ROSTERS - Create lists of up to 30 users to contact in sequence until an active alarm is acknowledged. Create any number of rosters for the whole application or specific functional areas. Change rosters by events or on a schedule (recorded as alarm history events).

MOBILE ALARM MANAGEMENT - VTScada Thin Clients (P. 7) allow you to easily manage alarms from any PC, smartphone, tablet, or Mac.



Auto-generated Slippy Maps for PCs and mobile devices.



ENCRYPTED OPERATOR NOTES STANDARD

NO MORE PAPER LOGBOOKS - Are you required to keep a log of users' actions? VTScada includes a searchable electronic operator's notebook.

DISTRIBUTED - Create any number of notebooks. Embed a notebook on multiple pages. Add notes to points on a trend.

SOCIAL - Users can comment on each other's notes providing a useful dialog across shifts and departments.

TAMPER-PROOF - Notes include time-stamps and user names. Once created, they cannot be edited or deleted. Encrypted files cannot be read or altered outside VTScada.

ACCESSIBLE - Authorized users can access notes from any workstation or web client. Search by date. Print any range.

VTScada SLIPPY MAPS STANDARD

PUT YOUR SCADA SYSTEM ON THE MAP

A SIMPLE INTERFACE - Navigate remote sites with a click, toss, or scroll, the same way you use online tools like OpenStreetMap®. Embed dynamic maps into any page or use the standard map page (left).

PICK A PIN TO SEE A SITE - Pins change color based on polling status. Click to open each site. Drag pins into place or position them with lat and long coordinates.

CACHED MAP TILES - Online applications pull map tiles from providers like OpenStreetMap® *. Pre-load tiles for offline applications or load your own custom made tiles. Once displayed, tiles are cached indefinitely.

CONNECT YOUR DOTS - Configure site-to-site connectors that simulate pipes, power lines, or other infrastructure. Appearance can change based on system variables. Add arrows, labels, or customized icons.

MOBILE MAPPING - VTScada Thin Clients (P. 7) support Slippy Maps on mobile devices.

* Map tiles from commercial and open source websites may be subject to terms of license or use agreements, compliance with which is the user's responsibility.

STICKY PAGE NOTES STANDARD

- Leave co-workers temporary messages and reminders.
- Add to any page or every page.
- Cover control elements to discourage use.
- Easy to create, format, and edit.
- Hide/show all notes with one click.



Posting and editing notes is a snap.

SECURE MOBILE ACCESS

VTScada THIN CLIENTS OPTIONAL

Monitor and control your process from any networked Windows PCs or any modern mobile device.

SIMPLE LICENSING - Clients are licensed by concurrent users and require one or more Runtime or Development Runtime licenses. Individual and bundled pricing available.

FULLY INTEGRATED INTERNET SERVER - Eliminates the need for third-party products like Apache® or Microsoft IIS®.

CONFIGURE IN SECONDS - No need to rebuild displays.

MILITARY-GRADE ENCRYPTION - Support for Transport Layer Security (TLS) protects application security data.

THIN CLIENT MONITOR - Displays and logs Thin Client activity. Send messages to clients or force disconnection. Logs user IP, computer name, screens viewed, session length.



See page 15 for OS and hardware requirements.



Choose the display format
that best suits your
device or data plan.



ACCESS CLIENTS IN ONE OF THREE WAYS

VTScada ANYWHERE CLIENT SMARTPHONES, TABLETS, PCS, MACS

A consistent workstation experience across any modern computer, smartphone, and tablet. Monitor and control your process and manage alarms in any HTML5 browser.

EASY ON DATA - 'Push' technology provides real-time data without overloading your mobile data plan.

ZERO-FOOTPRINT - Nothing to install. No Java either.

NOTE: You can run reports and view trends but not export their data to a file. Logged off sessions are not supported.

VTScada INTERNET CLIENT (VIC) PCS AND LAPTOPS

An operational interface identical to a full-installation Runtime License. This includes monitoring, control, security, reports, trends, and alarm acknowledgment. Open connections from a desktop icon or a web link. Uses include:

SECURE REMOTE PORTAL - Log in from any online Windows PC.

FLEXIBLE WORKSTATION - A hassle-free alternative to Thick Clients.

MOBILE INTERNET CLIENT (MIC) SMARTPHONES, TABLETS, PCS, MACS

Perfect for even the smallest screens and data plans, the MIC allows you to control your process and manage alarms with a touch or pinch from any HTML5-compliant browser. Refresh data manually or set a refresh rate that suits your cellular plan.

Easily switch between:

TEXT-BASED - This tactile easy-to-read text-and-trend interface makes the best use of smaller screens and data plans.

FULL GRAPHICS - See full-resolution displays on demand. Pinch to zoom in. Tap to set values, view tool tips, or plot trends.



Example of High Performance Graphics.

HIGH PERFORMANCE OR HIGH IMPACT GRAPHICS

Create muted or dynamic looking displays depending on your design philosophy. Dynamically color grey-scale graphics based on process values.

FAMILIAR RIBBON INTERFACE - Easily customize the context-sensitive toolbar.

OVER 200 GRAPHIC 'WIDGETS' - Recreate your process with photo-realistic meters, switches, and animations.

EXTENSIVE GRAPHIC LIBRARY - Includes over 4,500 industry-specific images, symbols, and polygons. Import JPG, BMP, PNG, WMF, and EMF files right from your desktop.

AUTO ALIGNMENT - Snap points effortlessly align and space your graphics for you.

FLEXIBLE TAG DEVELOPMENT - Lay out graphics first and create tags later or vice-versa. Search and replace any tag referenced by a page.

THE VTScada IDEA STUDIO STANDARD

START CREATING GREAT DISPLAYS IN MINUTES

Many projects lack the budget to create outstanding looking SCADA displays. Often, developers barely have time to get all the data on the screen.

The results can leave end users disappointed.

We designed VTScada to be instantly intuitive with a huge library of built-in drag-and-drop elements that are easily selected and aligned. Zoom in to focus on the fine details.

No more messy screens.



Drag-and-drop lighting effects.

LIGHTING OVERLAY TILES - Add depth to pages and direct the focus of operators.

PHOTO REALISTIC BACKGROUND TILES - Create a consistent look and divide pages into functional areas. Drag-and-drop over 100 patterns.

STYLE SETTINGS TAGS - Create consistent display conventions for groups of Widgets (e.g., red for "off" and green for "on"; or vice-versa).

SIMPLE PIPE DRAWING - Draw 3D pipes with just a few clicks. Use tag values or calculations to change appearance based on calculations or tag values.

BUILD ONCE, VIEW ANYWHERE - Design for multiple monitor resolutions. Choose from full screen or pop-up displays. Configure dual or quad monitors in compatible computers. VTScada Thin Clients (P. 7) support full graphics on mobile devices.



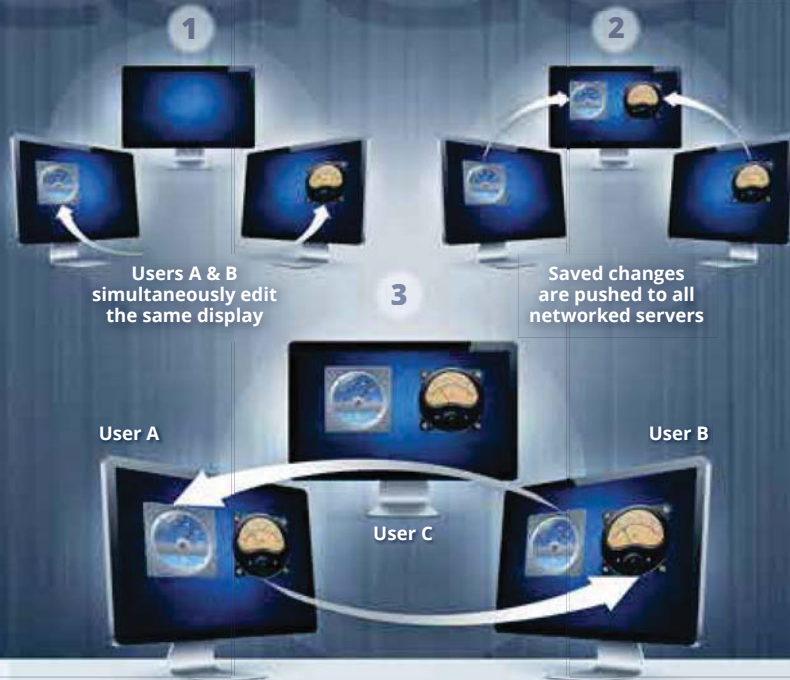
CONFIGURATION MANAGEMENT

VTScada
Software for Monitoring & Control

REAL-TIME CONFIGURATION STANDARD

Edit tags, displays, and application properties without interrupting your monitoring and control process.

- Work with live I/O.
- Apply changes without restarting.
- Multiple users can develop simultaneously.
- No configuration server required.
- Conflicts are resolved automatically.
- Push validated changes to all networked computers.
- Edit tags via VTScada Thin Clients.
- Edit server lists using VTScada Runtime Licenses.



APPLICATION VERSION CONTROL (AVC) STANDARD IN DEVELOPMENT RUNTIME LICENSES

Unique to VTScada, AVC provides change traceability, enhances application management in networked environments, and greatly improves recovery from unexpected effects of configuration.

- See a history of all changes by all users on all servers.
- See side-by-side incremental changes in each version.
- Instantly switch to any previous good version.
- Merge changes in multi-developer environments.
- Undo specific changes without universal rollback.

Version	Time Applied
LAPTOP-D75	Mon May 30, 2016 19:45:10.876
LAPTOP-D74	Mon May 30, 2016 19:44:56.895
LAPTOP-D73	Mon May 30, 2016 19:43:36.169
LAPTOP-D72	Mon May 30, 2016 19:42:16.916
LAPTOP-D71	Mon May 30, 2016 19:40:57.077
LAPTOP-D70	Mon May 30, 2016 19:39:38.884
LAPTOP-D69	Mon May 30, 2016 19:38:19.018
LAPTOP-D68	Mon May 30, 2016 19:37:00.152
LAPTOP-D67	Mon May 30, 2016 19:35:41.552
LAPTOP-D66	Mon May 30, 2016 19:34:22.305
LAPTOP-D65	Wed May 11, 2016 10:16:34.956
LAPTOP-D64	Wed May 11, 2016 10:16:21.257
LAPTOP-D63	Wed May 11, 2016 10:16:11.446
LAPTOP-D62	Wed May 11, 2016 10:16:04.696
LAPTOP-D61	Wed May 11, 2016 10:15:53.635

VTScada Application Version Control.

SIMPLE APPLICATION DEPLOYMENT STANDARD

VTScada ChangeSets - Easily distribute new or updated applications to multiple computers with one file. Easily generate ChangeSet files to share with your support team via email, FTP, or memory stick. Create and apply ChangeSets without system restart.

- Reuse work by cloning existing applications.
- Backup/restore applications with version history.
- Update OEM layers without affecting end user applications.

ADVANCED CUSTOMIZATION

SCRIPTING LANGUAGE - In addition to drag-and-drop tools, VTScada provides a powerful object-oriented scripting language (similar to C++) that allows unlimited customization. Saved code changes are recorded in the Application Version Control system and can only be imported by authorized developers.

Examples include custom services (e.g., to start tasks or watch for events), custom tag types, custom drivers, and custom API calls to third-party software products.

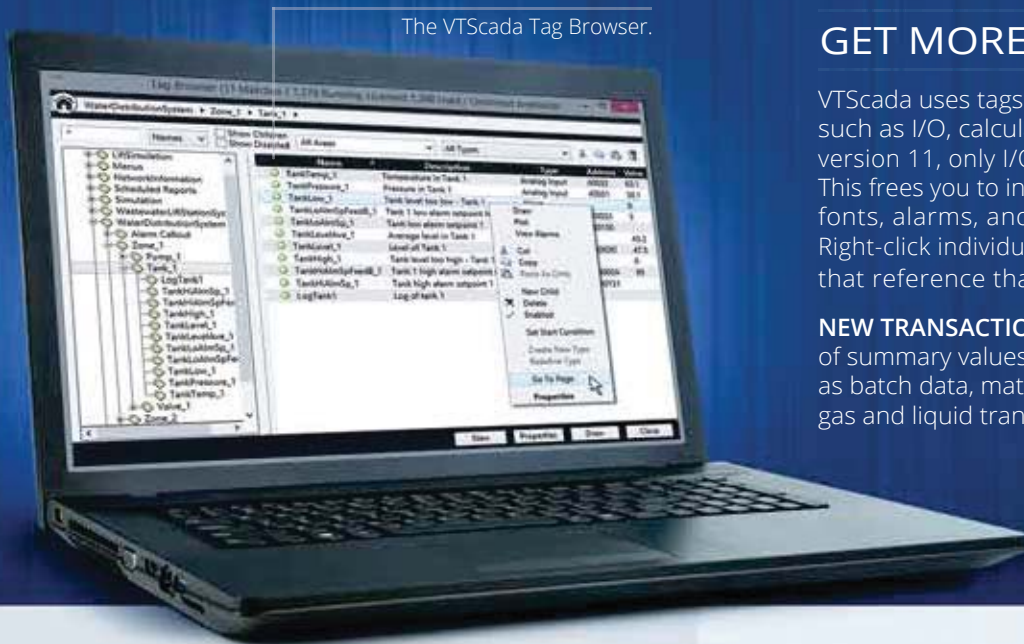
SCRIPTING DEBUGGING TOOLS

- Million thread history with dead thread identification.
- Tracing of all VTScada activities.
- View device driver error stats and sent/received.
- Source Debugger highlights what code has been run/tested.

SOFT LOGIC CONTROL

Alternative data sources for output controls:

- Deadband tags with delay and hysteresis (deadbanding).
- Calculation tags with mathematical and logical functions.
- Expression tags with complex scripting logic.



The VTScada Tag Browser.

GET MORE FROM YOUR TAGS

VTScada uses tags to manage application resources such as I/O, calculations, alarms, and menus. Since version 11, only I/O counts towards your tag count. This frees you to include any number of menu items, fonts, alarms, and other configuration tag types. Right-click individual tags to plot data or view pages that reference that value.

NEW TRANSACTION LOGGER - Records a collection of summary values representing a transaction, such as batch data, material-handling operations, or bulk gas and liquid transfers.

HIGH-EFFICIENCY TAG DEVELOPMENT

- **TAG EXPORT** - Create and edit tags outside of VTScada via Access®, Excel®, SQL Server®.
- **MULTI-WRITE TAG** - Writes up to 50 outputs with one action. Useful for starting HMIs or replacing PLCs.
- **HISTORY STATISTICS TAG** - Displays calculated values.
- **TRIGGER TAG** - Initiates actions based on time or changes.
- **MANUAL TAG VALUES** - Test systems without live I/O.
- **RATE-OF-CHANGE TAG** - Detects rapid value changes (e.g., leaks) or lack of changes (e.g., failed pumps or valves).
- **INTEGRATED ALARMS AND LOGGING** - Built into certain analog and digital tag types.
- **ADVANCED PUMP STATUS TAGS** - Built-in High/Low Alarms. Delays reduce alarms for minor changes.
- **LOG ON CHANGE** - Only save meaningful data to the DB.
- **'QUESTIONABLE' FLAGS** - Flag new I/O while commissioning.

HIERARCHICAL TAG STRUCTURES

VTScada TAG BROWSER (above) - Create and edit tags in this intuitive interface. Configure reusable tag structures that model how real-world elements relate. For example, a pump tag can be an assembly of I/O and communication drivers or a lift station can have multiple pumps.

CLONE WHOLE SUBSYSTEMS - Simply copy the parent tag. Copied tags automatically reference their new scope.

MULTI-TAG SELECTION - Saves time when copying, enabling, disabling, or deleting tags. Rename and reorganize tags without losing their history, page references, or alarms.

REUSABLE TEMPLATES - TAGS & GRAPHICS

REUSABLE PAGE TAG TEMPLATES - Combinations of tag structures and graphics that simplify configuration of applications with similar assets.

BUILT-IN TEMPLATES - Use pre-defined Page templates for these two Remote Telemetry Units (RTU) which have consistent configurations from device to device:

- Xylem MultiSmart®
- MPE Pump Controllers®

Also useful for similar devices or as examples.

TEMPLATES INCLUDE: Alarms, analog and digital inputs, digital controls, analog setpoints, counters and runtime totalizers, data age, communication link status, latitude/longitude with slippery maps support, summary starts/stops.



A Pre-made Lift Station Template.

REDUNDANCY AND AUTOMATIC FAILOVER

Protect your process with the most reliable, comprehensive, and user-friendly approach to SCADA redundancy.

SCADA SERVERS

In seconds, configure any computer running a Runtime or Development Runtime license to be a redundant hot backup server that can take over polling and data logging should the primary server go offline.

INTERNET SERVERS

If a Thin Client server goes offline, client connections seamlessly switch to the next designated server.

HISTORICAL AND CONFIGURATION HISTORY

Each server maintains a synchronized copy of the application's tags, displays, security settings, scripts, networked variables, configuration history, and historical database.

ALARM MANAGEMENT

Applications now support any number of distributed synchronized Alarm and Event databases.

I/O CONNECTIONS

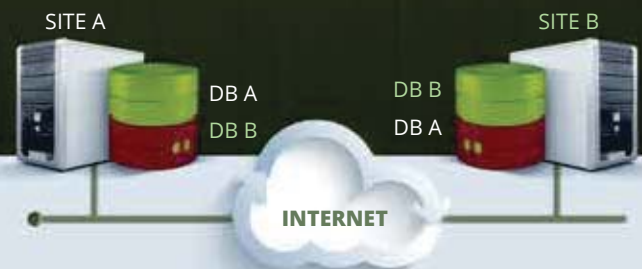
If a communications network or I/O device fails, VTScada's Driver Multiplexer can automatically fail over to a backup.



Automatic Server Failover (Application and Thin Client Servers)



Failover to redundant networks or devices.



Redundant geographically separated Historians.

REAL-TIME SYSTEM BACKUP

HISTORY AND CONFIGURATION

Integrated architecture and fast networking allows every SCADA server to be a real-time copy of the whole application including:

- The latest configuration history.
- Up-to-the-second historical data.
- Alarm, Event, and Tag databases.

Each distributed server is an off-site disaster backup. Requires multiple VTScada Licenses.



An example of distributed backup and synchronization.

SCADA SOFTWARE AS A SERVICE

RUN VTScada WITHOUT A LOGGED-ON WINDOW USER

- Useful when IT policy forbids unattended logged-on Windows users.
- VTScada service automatically starts with Windows®.
- No logged-on user required.

SERVER AND NETWORK HEALTH MONITORING

Monitor and alarm critical computer resources (e.g., CPU usage, virtual memory used, hard drive space) and network status.



An example of a custom Workstation Health Dashboard.



BUILT-IN DATA LOGGING STANDARD

The VTScada Historian is part of every application. Tags receiving data begin logging automatically.

BUILT FOR SPEED - The Historian can log up to 4,000 values/sec. Remote Historians sync across a WAN at up to 160,000 values/sec.

PROTECTING HISTORICAL DATA - Create multiple synchronized historians at multiple sites.

THIRD-PARTY DATABASE SUPPORT - In addition to the native Historian, VTScada also supports other industry standard database formats (left).

EFFICIENT LOGGING - Log on time of day or changes in value. Use deadbands and delays to avoid recording irrelevant changes in values.

ENTERPRISE CONNECTIVITY PACKAGE STANDARD IN DEVELOPMENT RUNTIME LICENSES

OPC SERVER - Allows OPC-compliant programs (including other VTScada applications with OPC clients) to exchange live data to and from a standard VTScada application.

OPC CLIENT - Allows VTScada applications to exchange live data with an OPC-compliant server (including VTScada applications with configured OPC servers).

ODBC SERVER - Use popular software like XLReporter®, Dream Report®, SAP Crystal Reports®, Microsoft Access®, or Excel® to extract system data from your application. VTScada acts as a database where each logged tag represents a table of timestamps and values that reporting software can query to retrieve logged values. XLReporter® and Dream Report® both feature integrated interfaces to VTScada.

VTScada WEB SERVICES - This SOAP (XML) interface allows business systems to request real-time and historical data from VTScada. Supports time/date ranges, min, max, time of min, time of max, average, total, and SQL that include SELECT commands and WHERE clauses.

MODEM MANAGEMENT

- Pool modems across servers for improved efficiency.
- Includes a custom Unimodem driver.
- Supports logging of modem activities.
- Configure dedicated modems for functional areas.
- Data and Alarm Notification routed to appropriate voice/data modem(s) or email servers. No configuration necessary.
- Display modem events, usage stats, and modem status.

NON-PROPRIETARY CONNECTIVITY DEVICE DRIVER LIBRARY STANDARD

CONNECT TO ANY COMBINATION OF HARDWARE

Out-of-the-box, VTScada supports over 100 industry standard and proprietary I/O protocols, each with built-in communications alarms. Use OPC by choice, not necessity. We can also create new drivers to meet specific needs.

- **COMMON PROTOCOLS** - DNP3, DF1, Modbus (serial, TCP/IP, RTU), OPC, SNMP, DDE
- **DATA LOGGER PROTOCOLS** - Enron Modbus, Campbell Scientific Pakbus, Stevens
- **PROPRIETARY DEVICES** - Motorola, GE, Siemens, Omron, BSAP, DFS, Dexter Fortson
- **RADIO DIAGNOSTICS DRIVERS** - MDS, DataRadios®

NATIVE POLLING DRIVER STANDARD

Integrated polling eliminates the need for a master PLC device reducing hardware costs, integration time, and points of failure. VTScada simplifies device communications by automatically organizing scheduled polling cycles and communications channels. Reduce the number of required radios by transmitting multiple protocols on a single communications link.

- Configure any number of polling groups.
- Select 'Fast Polling' rate for specific RTUs.
- Poll by external triggers, on schedule, or on command.
- Enable or disable polling in any polling driver.
- Display min, max, and average values.

SCALABLE APPLICATION SECURITY

VTScada®
Software for Monitoring & Control

MORE CONTROL, LESS COMPLEXITY STANDARD

VTScada makes security management simple, scalable, and infinitely configurable. Authorized users can manage security within the standard operator interface, then instantly deploy their changes across the entire system without restarting.

WINDOWS® SECURITY INTEGRATION (OPTIONAL)

- Configure VTScada to use your Windows log-in account.
- No need to manage Windows and VTScada accounts.

PROXIMITY CARD READERS

- Log on the same way you enter a secured building.
- Configure Operator Notes to require authentication.



A SMARTER APPROACH TO ACCOUNT MANAGEMENT

Each application includes security accounts and settings that control system-wide access to workstations, Thin Clients, and alarm notification. Rather than choosing from an ever-growing list of privileges, VTScada uses 'Rules' and 'Roles' to allow you to quickly generate and manage highly-specialized user accounts.

RULES - A combination of tags, privileges, and locations that allows you to finely tune what users can do and from where. Grant different users access to different areas without creating new privileges.

ROLES - Combinations of Rules and other Roles that match the duties of specific jobs (e.g., Plant 1 Operator).

UNPARALLELED TRACEABILITY

OPERATIONS - Operator activity such as setpoint changes, log on/off, and security modifications are recorded as events in the Alarm Manager (P. 5). This includes actions performed via servers, Thin Clients, and the Alarm Notification System.

CONFIGURATION - Integrated Application Version Control (P. 9) automatically tracks all changes on all workstations. It detects manual changes to configuration files made by unauthorized users or malware, and automatically restores them. Repository includes hash codes to detect attempts to modify it.

REMOTE ACCESS - Thin Client Monitor (P. 7) displays and logs remote activity and allows you to message or disconnect clients. Logs user IP, computer name, screens viewed, and session length.

ADVANCED ENCRYPTION AND NETWORK PROTECTION

- **INDUSTRY-STANDARD SECURITY** - Security Manager complies with industry-standard RFCs for security.
- **MILITARY-GRADE ENCRYPTION** - For the Security Database and security credentials passed between clients and servers.
- **ENCRYPTED NOTES** - Time-stamped operator and trend notes cannot be deleted or modified.
- **HASHED USER PASSWORDS** - Passwords are never held in a form that anyone can decrypt and recover.
- **TLS/VPN SUPPORT** - Thin Clients support Transport Layer Security (TLS), firewalls, and VPN access.
- **TLS EMAIL SUPPORT** - The Alarm Notification System (P. 5) supports SMTP email servers requiring TLS (e.g., Gmail®).
- **BLOCK/ALLOW IP ADDRESSES** - Optionally control which IPs may or may not connect to your application.
- **CODE TAMPERING DETECTION** - On startup, VTScada automatically detects unauthorized changes to source files, and restores the currently approved files from the tamper-proof repository.
- **SERVER AND PORT FAILOVER** - Easily configure automatic failover for SCADA servers and communication ports.



The VTScada Support Team

THE VTScada SUPPORT TEAM

If you have ever been frustrated while trying to access help from a major supplier, you will find our approach to be a refreshing change.

Our team of developers, programmers, and engineers provide the most accessible, reliable, and comprehensive support in the industry.

That is why our customers keep coming back for upgrades, enhancements, and consulting services as their facilities grow and their needs evolve.

Note: Support packages do not include hardware troubleshooting, training, or system design.

CHOOSE THE LEVEL OF SUPPORT YOU NEED

TYPE	COVERAGE	PRICE	INCLUDES
SupportPlus Service	First 90-days Monday to Friday 8 to 4 PM EST	Included with software purchase.	- VTScada software specific (Non-application specific) - Phone, fax, and email support - Seamless version compatibility - Product upgrades and value protection
SupportPlus Service Yearly Renewal	Annual Monday to Friday 8 to 4 PM EST	15% of purchase price so long as support never lapses.	- VTScada software specific (Non-application specific) - Phone, fax, and email support - Seamless version compatibility - Product upgrades and value protection
SupportPlus Service Re-instatement	Annual Monday to Friday 8 to 4 PM EST	15% per lapsed year, cumulative up to 75%, on current license value. Recalculated license value carries forward.	- VTScada software specific (Non-application specific) - Seamless version compatibility - Product upgrades and value protection
SupportPlus 24/7 Emergency Support	Annual 24/7	5% of license value (min \$1,200)	- VTScada software specific (Non-application specific) - Phone, fax, and email support - Requires active SupportPlus contract - Nights, weekends, holidays
SupportPlus Premium 8/5	Annual Monday to Friday 8 to 4 PM EST	Based on application Contact Trihedral	- Dedicated support team trained on your application - Guaranteed response times - Remote application access for hands-on diagnostics - Unlimited email and phone support
SupportPlus Premium 24/7	Annual 24/7	Based on application Contact Trihedral	- Dedicated team trained on your application - Unlimited email and phone support - Guaranteed response times - Remote application access for hands-on diagnostics
Ad-hoc Support	Hourly As contracted Contact Trihedral	Standard hourly rate plus expenses.	- Application-specific support - On-site, email, phone

SOFTWARE TRAINING COURSES

Courses are available at our Bedford and Orlando training facilities or on-site anywhere in North America upon request.

OPERATION & CONFIGURATION - An introduction to VTScada for SIs, OEMs, consultants, operators, maintenance, and IT staff.

INTRODUCTION TO SCRIPTING - Customization and configuration using VTScada Script for advanced developers.

ADVANCED CONFIGURATION AND SCRIPTING

For advanced system integrators and OEMs

Custom courses can be created based upon specific requirements.

See available courses: Trihedral.com/training

HARDWARE AND OS REQUIREMENTS

FOR INSTALLED RUNTIME OR DEVELOPMENT RUNTIME LICENSES

Actual requirements depend upon your specific application. Visit www.trihedral.com for the latest requirements.

MINIMUM REQUIREMENTS

Servers or Workstation PCs

- 32-bit or 64-bit Windows Operating System
- 2GHz dual-core processor
- 20GB free hard drive space
- 8GB RAM

Laptops, Tablet PCs, and Panel PCs

- 32-bit or 64-bit Windows Operating System
- 2GHz dual-core processor
- 20GB free hard drive space
- 4GB RAM

RECOMMENDATIONS

- 64-bit versions of Windows (you can run 32-bit VTScada on 64-bit OS).
- 3GHz dual or quad core processors (higher clock speeds help, more cores don't).
- 16GB or more of RAM for systems over 100,000 tags.
- Use Solid State Drives (SSD) for the highest performance.
- Keep historian on a separate hard drive from VTScada and the OS.
- Windows-compatible printer to print VTScada pages or reports.
- 100MB/1GB Ethernet is required for networking.
- Alarm Notification System needs a voice modem for voice phone notifications.
- Sound card and speakers are required for alarm annunciation.
- RS-232 port if needed for communications with serial I/O devices.
- When running VTScada on a virtual server, avoid running other virtual servers on the same computer.
- WAP was removed in version 11.2. Use VTScada Thin Clients instead.

COMPATIBLE OPERATING SYSTEMS BY VERSION

VTScada Version	Win 10 32 & 64-Bit	Win 8.1 32 & 64-Bit	Win 8.0 32 & 64-Bit	Win 7 64-Bit	Win 7 32-Bit	Vista 64-Bit	Vista 32-Bit	Server 2012 (+R2)	Server 2008 (+R2)	Server 2003	XP
8.X					✓		✓		✓	✓	✓
9.X				✓	✓	✓	✓		✓	✓	✓
10.X		✓	✓	✓	✓	✓	✓	✓	✓ ^{1.}	✓ ^{2.}	✓ ^{3.}
11.X	✓	✓	✓	✓	✓	✓	✓	✓	✓ ^{1.}	Thin Client Only	Thin Client Only

Windows 7 Embedded® has been tested for some Panel PC implementations. Contact us for details.

PLEASE NOTE

- No NetDDE for Windows Vista and higher (removed in XP SP2).
- VTScada 10 uses IANA registered TCP/IP port 5780 (not 1160). Configure your firewall to route RPC traffic accordingly.
- When reusing internal devices like modems or sound cards, ensure the new computer has the correct motherboard slots.
- Make sure the third-party software you use with VTScada (e.g., accounting or reporting) is compatible with the new OS.
- Ensure new operating systems have drivers for your modems.
- Visit www.trihedral.com for recommended modems.

1. Server 2008 computers can require speakers or audio cards for Alarm Notification functionality. Manual modem configuration may be required.

2. Server 2003 requires this hotfix to be installed:

<http://support.microsoft.com/kb/938397>

3. XP requires Service Pack 3 or higher.

FOR THIN CLIENTS ON SMART PHONES, TABLETS, DESKTOPS, AND LAPTOPS

Requires network access to one or more installed VTScada licenses with Thin Client access enabled and configured.

WINDOWS DESKTOP/LAPTOP SYSTEMS

The VTScada Internet Client (VIC)

Access clients from networked computers running Windows Server 2003 or newer (no VTScada installation required).

- Launch from desktop icon - On first connection, download a small program from the VTScada server.
- Launch using a URL in Internet Explorer - Ensure ActiveX is enabled.

OTHER OPERATING SYSTEMS

VTScada Anywhere Client and Mobile Internet Client (MIC)

HTML5-compliant browsers. We recommend the latest versions of:

- Safari® (OS X, iOS)
- Chrome® (Windows®, iOS®, Android®)

Other HTML5-compliant browsers

- Microsoft Edge® (Windows®)
- Opera® (Windows®, iOS®, Android®)
- Firefox® (Windows®, iOS®, Android®)
- Internet Explorer Mobile® (Windows Mobile®)

EASY TO TRY

VTScada TRIALS AND DEMOS

We believe the best way to understand how VTScada is instantly intuitive is to use it.

To get started, we invite you to visit our website.
www.trihedral.com

Press the button on the front page to launch an on-line demo or download our 90-day trial.

You can also use the links below.

If you have any questions, don't hesitate to call.

1-800-463-2783
Toll-free in North America



FULL 90-DAY TRIAL

In just minutes, download a full version of VTScada to install on your Windows PC. One installation provides you with all core SCADA components. Use the instantly intuitive Idea Studio to create professional-looking custom screens.

www.trihedral.com/trial



ONLINE DEMOS

Instantly explore working SCADA applications without installing VTScada. This fully functional Thin Client operator interface includes alarms, trends, maps, and industry-specific displays from real-world applications.

www.trihedral.com/demo



CONTACT US

Visit www.trihedral.com

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Western Canada Office.....
South Eastern USA Office.....
South Western USA Office.....
European Office.....

Write info@trihedral.com

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Houston, Texas, USA.....
Aberdeen, Scotland, UK.....

Call **1.800.463.2783** (North America)

1.902.835.1575
1.403.921.5199
1.407.888.8203
1.800.463.2783
+44 (0) 1224 258910

Updated July 29, 2016



Quotation

Quote Number Q11328
Terms Net 30 Days
Date 12-05-2016
Sales Person Alan Hudson
Valid Until 01-04-2017
Tax Info. Tax ID# 26-0449423

Bill To

Dave Abel
Revere Control Systems - AL
2240 Rocky Ridge Road
Birmingham, AL 35216
USA

Ship To

Dave Abel
Revere Control Systems - AL
2240 Rocky Ridge Road
Birmingham, AL 35216
USA

New License - City of Franklin, TN

#	Qty.	Product	Unit Price	Ext. Price
1	1	VTScada 10K - Runtime - New - Includes Three Months of SupportPlus	\$ 4,095.00	\$ 4,095.00
2	1	VTScada 10K - Alarm Notification - New - Includes Three Months of SupportPlus	\$ 2,095.00	\$ 2,095.00
3	1	SupportPlus - Additional Nine Months	\$ 696.42	\$ 696.42

Proposed Maintenance Expiry Date: Three Months or One Year from Purchase Date
License Value for Renewals: \$6,190.00

Quotation Totals

Currency: US Dollar
Subtotal: \$ 6,886.42
Total: \$ 6,886.42

Terms and Conditions:

VTScada is licensed exclusively in accordance with the VTScada Software License Agreement (Standard Conditions) and the VTScada Software Standard Support Services Agreement (Standard Conditions) available from <https://www.trihedral.com/license-agreement>.

VTScada support and upgrade pricing are in accordance with the previously accepted license agreement terms and any differing purchase order terms proposed will not be accepted without written agreement by Trihedral.

The SupportPlus renewal quote contains grandfathered pricing that is contingent upon the receipt of a purchase order before the quote expiry date (as agreed to under the VTScada license terms of the original license). Purchase orders received with an alteration of previously accepted terms, or after the quote expiry date, will require a re-quote of the renewal price at current pricing.

Quotation Accepted By

Quote Number Q11328

Print Name _____

Title _____

Signature _____

Date _____

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: June 8, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 002 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Modification of Existing Pump Control Panels to Add Remote Pump On/Off Capability **CITY PROJECT NO.:** 2014-0288

REFERENCE: April 26, 2017 Revere Control Proposal (attached)

DESCRIPTION:

The purpose of this Field Order is to direct Revere Control Systems to modify pump control panels at 29 of the existing remote sites to add the ability to turn pumps on and off remotely via the new RTU and VTSCADA application. The scope and the sites that will be modified are identified in the attached proposal.

The work shall be performed for a lump sum price of \$61,004. In addition, an unanticipated conditions allowance of \$3,000 is established. Work under the allowance must be pre-approved by the Engineer. Measurement and payment for the lump sum component shall be as follows:

- Site Investigation and Wiring Diagrams – \$13,578 paid upon completion of all work.
- Site Modifications for Two Pump Sites (27 sites) - \$1,330 to be paid upon completion of each site.
- Site Modifications for Westhaven Site - \$1,468 to be paid upon completion of the work at the Westhaven site.
- Site Modifications for Goose Creek/Red Wing Site - \$1,605 to be paid upon completion of the work at the Goose Creek/Red Wing Site.

- Field Service Portal to Portal Labor and Expenses - \$292 to be paid upon completion of each of the first 28 sites and \$267 to be paid upon completion of the 29th site.

The work under this Work Order must be completed 30 calendar days prior to the contractual final completion date.

ATTACHMENTS: April 26, 2017 Revere Controls Proposal (attached)

CDM SMITH:

By: _____

Date: _____

CONTRACTOR:

By: Paul Hal

Date: 6/9/2017



Existing Pump Controls Remote On-Off Modification City of Franklin Water Management Department

April 26, 2017

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
Collections and Distribution Telemetry SCADA System

Subj: Proposal to Modify Existing Pump Control Panels to Add Remote Pump On Off, Rev 1
COF Contract No. 2014-0288

Mr. Huguenard:

We are pleased to provide a proposal for the above referenced project. Work includes the following:

1. Investigation of pump control panels and any other existing controls at each of the remote sites to determine which sites allow or lack the ability to accommodate remote manual start and stop commands from the new RTU and VTSCADA application.
2. Prepare a general scope and cost for each site to include the materials and labor necessary to modify the controls to allow remote manual control. The modified controls shall allow override start and stop commands whenever the pump controls are neither in HAND or OFF at the local pump control panel.

I. Site Investigation and Wiring Diagrams

Labor

Project Management.....	4 Hours	\$148/Hr	\$ 592
Engineering Lead	72 Hours	\$148/Hr	\$ 10,656
CAD	16 Hours	\$72/Hr	\$ 1,152
(40 hours onsite, 8 hour portal-to-portal from Birmingham, AL, 24 hours diagrams) Labor Total:			\$ 12,400

Expenses

Mileage.....	372 Miles.....	\$0.54.....	\$ 201
Food and Lodging	5 Days.....	\$174.....	\$ 870
(40 hours onsite, 8 hour portal-to-portal from Birmingham, AL)			
Subtotal:			\$ 1,071
10% Profit:			\$ 107
Expenses Total:			\$ 1,178

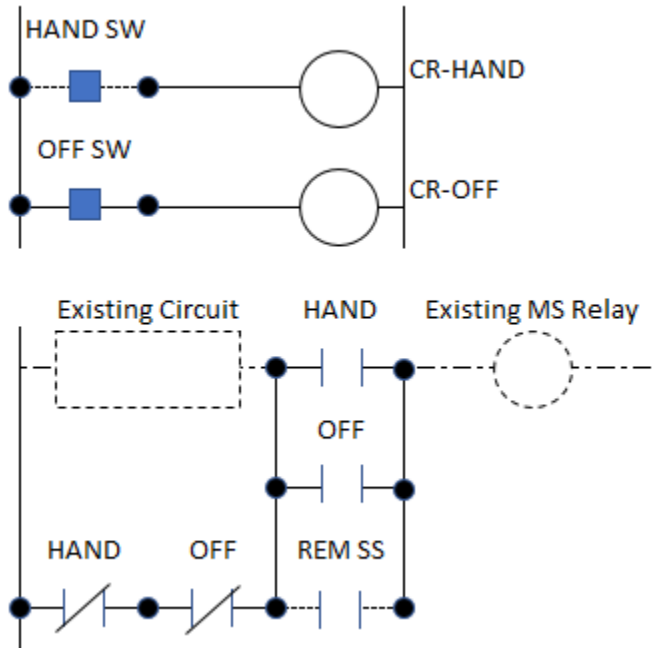
Materials

None		\$ 0
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Lump Sum Price	\$ 13,578
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II. Site Modification

Each pump circuit that can be modified shall be based on the basic circuit shown below:



If possible, contact blocks will be added to the existing H-O-A. If not possible, the existing H-O-A switch will be replaced with a switch that can support multiple blocks. Two (2) relays and wire will be added to the existing circuit. Prior to work, Revere shall coordinate with the City of Franklin for up to one (1) day of downtime to install the switch blocks (or switch), relays and wire to the existing circuit.

Per Site Work (2 Pump Panel – see list of sites on last page):

Labor

Field Service 8 Hours \$108/Hr\$ 864

Material and Expenses

Food and Lodging 1 Days..... \$174.....\$ 174

Switch Bocks, Relays, misc.....\$ 250

Subtotal: \$ 424

10% Profit: \$ 42

M&E Total: \$ 466

Per site price (excluding portal-portal travel hours and expenses)\$ 1,330



Existing Pump Controls Remote On-Off Modification City of Franklin Water Management Department

Per Site Work (3 Pump Panel – Westhaven):

Labor

Field Service 8 Hours \$108/Hr \$ 864

Material and Expenses

Food and Lodging 1 Days \$174 \$ 174

Switch Bocks, Relays, misc..... \$ 375

Subtotal: \$ 549

10% Profit: \$ 55

M&E Total: \$ 604

Per site price (excluding portal-portal travel hours and expenses)\$ 1,468

Per Site Work (4 Pump Panel – Goose Creek/Red Wing):

Labor

Field Service 8 Hours \$108/Hr \$ 864

Material and Expenses

Food and Lodging 1 Days \$174 \$ 174

Switch Bocks, Relays, misc..... \$ 500

Subtotal: \$ 674

10% Profit: \$ 67

M&E Total: \$ 741

Per site price (excluding portal-portal travel hours and expenses)\$ 1,605

Field Service Portal-Portal Expenses (based on average 5 sites per week, est. 8 trips):

Labor

Field Service 64 Hours \$108/Hr \$ 6,912
(8 hour portal-to-portal from Birmingham)

Material and Expenses

Food and Lodging 8 Days \$174 \$ 1,392

10% Profit: \$ 139

Expenses Total: \$ 1,531

Field Service Portal-Portal Travel Expenses\$ 8,443



Existing Pump Controls Remote On-Off Modification City of Franklin Water Management Department

Labor and Material Allowance for Unanticipated Conditions

The material costs and labor included in the estimate for the actual implementation is an estimate based on the information available to Revere at this time. Upon completion of the field investigation, we will be able to determine if additional materials and labor are required to complete the task. Since the exact conditions cannot be predicted until the field investigation is performed, we propose establishing a \$3,000 allowance. Use of allowance funds shall require Engineer preauthorization.

2 Pump Sites (based on submitted I/O List):

Amelia, Avalon 3, Avalon 4, Breezeway 1, Breezeway 2, Carters Creek, Cheekwood, Cotton Lane, Falcon Creek, FieldStone Farms 2, Forest Crossing 1, Forest Crossing 2, Founders Pointe, Hillsboro Road, Holiday Inn, Ivy Glenn, Ladd Park, McKays Mill, Moore's Lane, Old Hillsboro Road, Riverview, Rodgershire, Royal Oaks, SE Corridor, The Meadows, Treemont 1, Treemont 2

III. Price Summary

Engineering Site Investigation and Wiring Diagrams	\$ 13,578
27 2-pump sites, Goose Creek and Westhaven	\$ 38,983
Field Service Travel Labor and Expenses	\$ 8,443
Unanticipated Conditions Allowance	\$ 3,000
	Total: \$ 64,004

If resources allow, site work on the existing pump control panels shall be scheduled to be complete by substantial completion; however, substantial completion is not contingent on completion of this work. Work shall be complete by Final Completion.

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel, PMP
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: July 27, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 003 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: RTU Installation Changes **CITY PROJECT NO.:** 2014-0288

REFERENCE: June 16, 2017 Revere Control Proposal (attached)

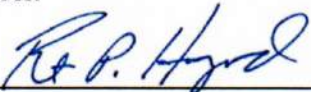
DESCRIPTION:

Stone and Sons, Revere Control Systems electrical subcontractor, has identified several sites where either the existing stands are inadequate to support the new RTU or a new location and stand are required. The purpose of this Field Order is to direct Revere Control Systems to perform certain RTU installation changes. The scope of work for the changes is detailed in the attached proposal dated June 16, 2017. The attached proposal identifies the scope of work for each site along with the associated cost for each site. The work shall be performed for a lump sum price of \$56,329.74. Application for payment for each site may be made when the work for that site is completed.

There will be an impact to the substantial completion date associated with this work, however, the schedule impact associated with this work order overlaps with schedule impacts associated with other work orders. Therefore, assigning a number of days of delay individually for the work orders is not possible. A separate work order will be issued to establish a single change in the substantial completion date. Revere Control will submit a change order request providing justification for a substantial completion date change. No change to the Final completion date will be issued.

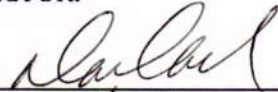
ATTACHMENTS: June 16, 2017 Revere Controls Proposal (attached)

CDM SMITH:

By: 

Date: July 27, 2017

CONTRACTOR:

By: 

Date: 7/31/2017

June 16, 2017

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
CDM Project Number 14915-96594-SCADA
COF Contract No. 2014-0288

Subj: RTU Installation Changes

Mr. Huguenard:

Our electrical subcontractor, Stones and Sons, has identified several sites where either the existing stands are inadequate to support the new RTU or a new location and stand are required. The labor to make these adjustments constitute approximately 550 man hours to their scope of work and may impact meeting the substantial completion date if revising the order of installation cannot accommodate the added work. Below and attached are descriptions of the added work and backup documentation:

1. Fieldstone Farms SW

Add new RTU stand, install new antenna, conduit and wire to existing Horner Control Panel

Labor and Material	\$ 5,831.48
10% Profit:	\$ 583.15
Total:	\$ 6,414.63

2. Avalon Repeater

New RTU stand next to tower

Labor and Material	\$ 4,108.42
10% Profit:	\$ 410.84
Total:	\$ 4,519.26

3. Carter's Creek Pike

Modify strut rack to accommodate new RTU size

Labor and Material	\$ 2,724.16
10% Profit:	\$ 272.42
Total:	\$ 2,996.58

4. Carter's Creek Tank

Existing stand cannot support new RTU; replace in place new stand

Labor and Material	\$ 2,308.29
10% Profit:	\$ 230.83
Total:	\$ 2,539.12

5. Falcon Creek

Replace existing stand in place; RTU will face the opposite direction for proper clearance from fence

Labor and Material	\$ 2,552.09
10% Profit:	\$ 255.21
Total:	\$ 2,807.30

6. Fieldstone Farms 2

Modifying strut rack to accommodate new RTU size

Labor and Material	\$ 1,700.23
10% Profit: \$	<u>170.02</u>
Total:	\$ 1,870.05

7. Forrest Crossing 1

Existing RTU in 480V panel; new RTU stand to the right when entering the gate

Labor and Material	\$ 4,590.80
10% Profit: \$	<u>459.08</u>
Total:	\$ 5,049.88

8. Forrest Crossing 2

Modify strut rack to accommodate new RTU size

Labor and Material	\$ 1,683.71
10% Profit: \$	<u>168.37</u>
Total:	\$ 1,852.081

9. Founders Pointe

Tower will not support new RTU; install new RTU stand next to tower

Labor and Material	\$ 4,019.79
10% Profit: \$	<u>401.98</u>
Total:	\$ 4,421.77

10. Grassland

Existing RTU supports will not accommodate new RTU size; new RTU mounted to tank next to existing RTU

Labor and Material	\$ 1,114.70
10% Profit: \$	<u>111.47</u>
Total:	\$ 1,226.17

11. Ivy Glenn

Existing sun shade and RTU supports too small to accommodate new RTU; demo existing sun shade and RTU supports and install new aluminum stand in place

Labor and Material	\$ 2,147.29
10% Profit: \$	<u>214.73</u>
Total:	\$ 2,362.02

12. Long Lane 2

Existing stand cannot support new RTU; replace in place new stand

Labor and Material	\$ 2,147.29
10% Profit: \$	<u>214.73</u>
Total:	\$ 2,362.02

13. McKay's Mill 2

Existing stand cannot support new RTU; new rack to the right of existing RTU next to the fence

Labor and Material	\$ 3,816.24
10% Profit: \$	<u>381.62</u>
Total:	\$ 4,197.86

14. Moores Lane

Existing stand cannot support new RTU; install new aluminum stand back-to-back with existing rack

Labor and Material	\$ 2,686.58
10% Profit: \$	<u>268.66</u>
Total:	\$ 2,955.24

15. Natchez Trace Metering Vault

Modifying strut rack to accommodate new RTU

Labor and Material	\$ 1,488.57
10% Profit: \$	<u>148.86</u>
Total: \$	1,637.43

16. Riverview

Existing stand cannot support new RTU; new stand to the right at gate entrance

Labor and Material	\$ 4,140.54
10% Profit: \$	<u>414.05</u>
Total: \$	4,554.59

17. Rodgershire

New RTU will not fit on side of pump hut; install new RTU stand to right of RTU next to hut slab

Labor and Material	\$ 4,148.67
10% Profit: \$	<u>414.87</u>
Total: \$	4,563.54

Price Summary

Labor and Materials	\$ 51,208.85
10% Profit.....	<u>\$ 5,120.89</u>
Total: \$	56,329.74

Schedule Impact

Add 4 weeks to current schedule.

Attachments:

Stone and Sons Labor and Material Breakdown

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel

Municipal Project Manager

Revere Control Systems, Inc.

Phone: 615-604-1579

dabel@reverecontrol.com

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-01Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Add New RTU Stand to Fieldstone Farms SWInstall New AntennaConduit and Wire to existing Horner Control PanelWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 2,004.29	ea	\$ 2,004.29	69.10	ea	69.10
8	Project Management per hour	\$ 72.00	ea	\$ 576.00			0.00
78.1	Food and Lodging per hour	\$ 8.00	ea	\$ 624.80			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
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				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$3,205.09State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$3,205.09Labor Rate: \$27.00Labor Total: \$1,865.76Overhead & Profit: 15.00%Overhead & Profit: \$760.63Total: \$5,831.48

Engineer Rep.: _____

Title: _____

Date: _____

Stone and Sons: _____

Title: PMDate: 6/1/2017

Change Order Attachement "A"
Job #772001
Change Order # 772001-01

Qty	Description	Unit Price	Units	Total	Labor	Units	Total
				\$ -			\$ -
5.00	3/4" LT FLEX	\$ 83.60	C	\$ 4.18	3.00	C	\$ 0.15
5.00	1" LT FLEX	\$ 114.86	C	\$ 5.74	4.00	C	\$ 0.20
5.00	1 1/2" LT FLEX	\$ 282.13	C	\$ 14.11	6.00	C	\$ 0.30
1.00	3/4" ALUM LT INSUL STRAIGHT CONN	\$ 1,123.56	C	\$ 11.24	13.00	C	\$ 0.13
1.00	1" ALUM LT INSUL STRAIGHT CONN	\$ 1,867.93	C	\$ 18.68	15.00	C	\$ 0.15
1.00	1 1/2" ALUM LT INSUL STRAIGHT CONN	\$ 4,819.00	C	\$ 48.19	20.00	C	\$ 0.20
1.00	3/4" ALUM LT INSUL 90 DEG CONN	\$ 1,553.34	C	\$ 15.53	15.00	C	\$ 0.15
1.00	1" ALUM LT INSUL 90 DEG CONN	\$ 3,802.00	C	\$ 38.02	18.00	C	\$ 0.18
1.00	1 1/2" ALUM LT INSUL 90 DEG CONN	\$ 7,591.00	C	\$ 75.91	22.00	C	\$ 0.22
15.00	3/4" ARC (AL)	\$ 98.38	C	\$ 14.76	4.00	C	\$ 0.60
25.00	1" ARC (AL)	\$ 143.35	C	\$ 35.84	5.00	C	\$ 1.25
15.00	1 1/2" ARC (AL)	\$ 233.30	C	\$ 35.00	6.40	C	\$ 0.96
1.00	3/4" ARC MYERS HUB	\$ 274.95	C	\$ 2.75	20.00	C	\$ 0.20
1.00	1" ARC MYERS HUB	\$ 326.31	C	\$ 3.26	25.00	C	\$ 0.25
1.00	1 1/2" ARC MYERS HUB	\$ 459.24	C	\$ 4.59	30.00	C	\$ 0.30
2.00	3/4" ARC COUPLING	\$ 211.00	C	\$ 4.22	6.00	C	\$ 0.12
2.00	1" ARC COUPLING	\$ 275.00	C	\$ 5.50	7.00	C	\$ 0.14
2.00	1 1/2" ARC COUPLING	\$ 388.00	C	\$ 7.76	8.00	C	\$ 0.16
2.00	3/4" ARC 90 DEG ELBOW	\$ 583.00	C	\$ 11.66	15.00	C	\$ 0.30
3.00	1" ARC 90 DEG ELBOW	\$ 848.57	C	\$ 25.46	20.00	C	\$ 0.60
2.00	1 1/2" ARC 90 DEG ELBOW	\$ 1,676.00	C	\$ 33.52	30.00	C	\$ 0.60
20.00	#6 BARE COPPER	\$ 317.60	M	\$ 6.35	9.00	M	\$ 0.18
20.00	#2/0 BARE COPPER	\$ 1,610.26	M	\$ 32.21	20.00	M	\$ 0.40
880.00	#14 XHHW	\$ 77.65	M	\$ 68.33	4.32	M	\$ 3.80
160.00	#12 XHHW	\$ 116.68	M	\$ 18.67	5.13	M	\$ 0.82
80.00	#16- 1P TWISTED CBL SHLD	\$ 800.00	M	\$ 64.00	4.50	M	\$ 0.36
56.00	WIRE #	\$ 1.00	EA	\$ 56.00	0.03	EA	\$ 1.68
1.00	ALUMINUM STAND	\$ 600.00	EA	\$ 600.00	6.00	EA	\$ 6.00
8.00	1/2" S.S. STUD ANCHOR	\$ 7.06	EA	\$ 56.48	0.35	EA	\$ 2.80
8.00	#12 WIRE POWER TERM	\$ 0.25	EA	\$ 2.00	0.08	EA	\$ 0.64
2.00	# 6 WIRE POWER TERM	\$ 1.00	EA	\$ 2.00	0.14	EA	\$ 0.28
2.00	# 2/0 WIRE POWER TERM	\$ 1.00	EA	\$ 2.00	0.34	EA	\$ 0.68
4.00	#16 WIRE CONTROL TERM	\$ 0.25	EA	\$ 1.00	0.07	EA	\$ 0.28
44.00	#14 WIRE CONTROL TERM	\$ 0.25	EA	\$ 11.00	0.08	EA	\$ 3.52
2.00	3/4"x10' GALV GRD ROD	\$ 24.17	EA	\$ 48.34	1.00	EA	\$ 2.00
2.00	CADWELD 2/0 CABLE>GRD ROD	\$ 50.00	EA	\$ 100.00	0.25	EA	\$ 0.50
10.00	TRENCH (12"x3' DEEP)	\$ 6.00	EA	\$ 60.00	0.10	EA	\$ 1.00
4.00	POST BASE HAND DIG 3'	\$ -	EA	\$ -	3.00	EA	\$ 12.00
4.00	POUR POST BASE 3'	\$ 30.00	EA	\$ 120.00	2.00	EA	\$ 8.00
1.00	Antenna Pole	\$ 140.00	EA	\$ 140.00	2.00	EA	\$ 2.00
1.00	Antenna Foundation	\$ 200.00	EA	\$ 200.00	5.00	EA	\$ 5.00
25.00	Antenna Cable		EA	\$ -	0.04	EA	\$ 1.00
2.00	Antenna Cable Connector		EA	\$ -	1.00	EA	\$ 2.00
1.00	Antenna Ground Kit		EA	\$ -	1.00	EA	\$ 1.00
1.00	Antenna		EA	\$ -	6.00	EA	\$ 6.00
				\$ -			\$ -
				\$ 2,004.29			\$ 69.10

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Avalon RepeaterNew RTU stand next to towerWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,362.37	ea	\$ 1,362.37	50.75	ea	50.75
6	Project Management per hour	\$ 72.00	ea	\$ 432.00			0.00
51	Food and Lodging per hour	\$ 8.00	ea	\$ 408.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,202.37State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,202.37Labor Rate: \$27.00Labor Total: \$1,370.16Overhead & Profit: 15.00%Overhead & Profit: \$535.88Total: \$4,108.42

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"

Job #772001

Change Order # 772001-01

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Carter's Creek PikeModifying strut rack to accommodate new RTU sizeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,432.41	ea	\$ 1,432.41	20.46	ea	20.46
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
21	Food and Lodging per hour	\$ 8.00	ea	\$ 168.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,816.41State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,816.41Labor Rate: \$27.00Labor Total: \$552.42Overhead & Profit: 15.00%Overhead & Profit: \$355.32Total: \$2,724.16

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Carter's Creek TankExisting stand cannot support RTUReplace in place with new standWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 797.00	ea	\$ 797.00	28.23	ea	28.23
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
29	Food and Lodging per hour	\$ 8.00	ea	\$ 232.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,245.00State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,245.00Labor Rate: \$27.00Labor Total: \$762.21Overhead & Profit: 15.00%Overhead & Profit: \$301.08Total: \$2,308.29

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Falcon CreekNew RTU stand in place of existing standRTU will face the opposite direction for proper clearance from fenceWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 797.00	ea	\$ 797.00	32.23	ea	32.23
4	Project Management per hour	\$ 72.00	ea	\$ 288.00			0.00
33	Food and Lodging per hour	\$ 8.00	ea	\$ 264.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,349.00State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,349.00Labor Rate: \$27.00Labor Total: \$870.21Overhead & Profit: 15.00%Overhead & Profit: \$332.88Total: \$2,552.09

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Fieldstone Farms 2Modifying strut rack to accommodate new RTU sizeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 790.66	ea	\$ 790.66	15.40	ea	15.40
2	Project Management per hour	\$ 72.00	ea	\$ 144.00			0.00
16	Food and Lodging per hour	\$ 8.00	ea	\$ 128.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,062.66State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,062.66Labor Rate: \$27.00Labor Total: \$415.80Overhead & Profit: 15.00%Overhead & Profit: \$221.77Total: \$1,700.23

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Forrest Crossing 1Existing RTU in 480V panelNew RTU stand to the right when entering gateWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,507.63	ea	\$ 1,507.63	58.53	ea	58.53
6	Project Management per hour	\$ 72.00	ea	\$ 432.00			0.00
59	Food and Lodging per hour	\$ 8.00	ea	\$ 472.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,411.63State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,411.63Labor Rate: \$27.00Labor Total: \$1,580.37Overhead & Profit: 15.00%Overhead & Profit: \$598.80Total: \$4,590.80

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Job #772001
Change Order # 772001-01

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Forrest Crossing 2Modifying strut rack to accommodate new RTU sizeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 725.10	ea	\$ 725.10	17.00	ea	17.00
2	Project Management per hour	\$ 72.00	ea	\$ 144.00			0.00
17	Food and Lodging per hour	\$ 8.00	ea	\$ 136.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,005.10State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,005.10Labor Rate: \$27.00Labor Total: \$459.00Overhead & Profit: 15.00%Overhead & Profit: \$219.61Total: \$1,683.71

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Founders PointeTower will not support new RTUInstall new RTU stand next to towerWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,290.70	ea	\$ 1,290.70	50.55	ea	50.55
6	Project Management per hour	\$ 72.00	ea	\$ 432.00			0.00
51	Food and Lodging per hour	\$ 8.00	ea	\$ 408.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,130.70State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,130.70Labor Rate: \$27.00Labor Total: \$1,364.76Overhead & Profit: 15.00%Overhead & Profit: \$524.32Total: \$4,019.79

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"

Job #772001

Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: GrasslandNew RTU mounted to tank next to existing RTUExisting RTU supports will not accommodate new RTU sizeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 444.62	ea	\$ 444.62	10.84	ea	10.84
2	Project Management per hour	\$ 72.00	ea	\$ 144.00			0.00
11	Food and Lodging per hour	\$ 8.00	ea	\$ 88.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$676.62State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$676.62Labor Rate: \$27.00Labor Total: \$292.68Overhead & Profit: 15.00%Overhead & Profit: \$145.40Total: \$1,114.70

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Ivy GlennExisting sun shade and RTU supports not large enough to accommodate new RTUDemo existing sun shade and RTU supports and install new aluminum stand in placeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 797.00	ea	\$ 797.00	24.23	ea	24.23
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
25	Food and Lodging per hour	\$ 8.00	ea	\$ 200.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,213.00State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,213.00Labor Rate: \$27.00Labor Total: \$654.21Overhead & Profit: 15.00%Overhead & Profit: \$280.08Total: \$2,147.29

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Long Lane 2Existing RTU not large enough or physically sound enough to support RTUInstall new aluminum stand in placeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 797.00	ea	\$ 797.00	24.23	ea	24.23
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
25	Food and Lodging per hour	\$ 8.00	ea	\$ 200.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,213.00State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,213.00Labor Rate: \$27.00Labor Total: \$654.21Overhead & Profit: 15.00%Overhead & Profit: \$280.08Total: \$2,147.29

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: McKay's Mill 2Existing rack not large enough to accommodate new RTU sizeNew rack to the right of existing RTU next to the fenceWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,290.70	ea	\$ 1,290.70	47.55	ea	47.55
5	Project Management per hour	\$ 72.00	ea	\$ 360.00			0.00
48	Food and Lodging per hour	\$ 8.00	ea	\$ 384.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,034.70State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,034.70Labor Rate: \$27.00Labor Total: \$1,283.76Overhead & Profit: 15.00%Overhead & Profit: \$497.77Total: \$3,816.24

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Moores LaneExisting RTU stand not structurally sound enough to accommodate new RTUInstall new aluminum stand back to back with existing rackWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,111.60	ea	\$ 1,111.60	28.76	ea	28.76
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
29	Food and Lodging per hour	\$ 8.00	ea	\$ 232.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$1,559.60State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$1,559.60Labor Rate: \$27.00Labor Total: \$776.55Overhead & Profit: 15.00%Overhead & Profit: \$350.42Total: \$2,686.58

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Job #772001
Change Order # 772001-02

Job #772001

Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Natchez Metering VaultModifying strut rack to accommodate new RTU weight and sizeWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 566.21	ea	\$ 566.21	16.60	ea	16.60
2	Project Management per hour	\$ 72.00	ea	\$ 144.00			0.00
17	Food and Lodging per hour	\$ 8.00	ea	\$ 136.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$846.21State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$846.21Labor Rate: \$27.00Labor Total: \$448.20Overhead & Profit: 15.00%Overhead & Profit: \$194.16Total: \$1,488.57

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Change Order Attachment "A"
Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: RiverviewExisting rack not large enough to accommodate new RTUNew stand to the right when you come through the gateWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,290.70	ea	\$ 1,290.70	53.55	ea	53.55
6	Project Management per hour	\$ 72.00	ea	\$ 432.00			0.00
54	Food and Lodging per hour	\$ 8.00	ea	\$ 432.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,154.70State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,154.70Labor Rate: \$27.00Labor Total: \$1,445.76Overhead & Profit: 15.00%Overhead & Profit: \$540.07Total: \$4,140.54

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Job #772001
Change Order # 772001-02

[illegible]

Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-02Date: 6/1/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: RodgershireNew RTU will not fit on side of Pump HutInstall new RTU stand to the right of RTU next to hut slabWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 1,362.37	ea	\$ 1,362.37	51.75	ea	51.75
6	Project Management per hour	\$ 72.00	ea	\$ 432.00			0.00
52	Food and Lodging per hour	\$ 8.00	ea	\$ 416.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$2,210.37State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$2,210.37Labor Rate: \$27.00Labor Total: \$1,397.16Overhead & Profit: 15.00%Overhead & Profit: \$541.13Total: \$4,148.67

Engineer Rep. : _____
Title: _____
Date: _____

Stone and Sons: _____
Title: _____
Date: _____

Job #772001
Change Order # 772001-01

[illegible]

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: July 27, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 004 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Goose Creek/Redwing Booster Pump Station Modifications Changes **CITY PROJECT NO.:** 2014-0288

REFERENCE: June 14, 2017 Revere Control Proposal (attached)
May 31, 2017 RFP No. 3 (attached)
May 31, 2017 RFI (attached)

DESCRIPTION:

A request for proposal for Goose Creek/Red Wing Booster Pump Station control modifications issued on May 31, 2017 (see attached) and included, among other things, removal of the existing pump control panel and programming the new RTU to perform the duties the pump controller is now performing. The existing pump controller is a proprietary controller that is at the end of its life and is no longer being supported by the manufacturer. A request for information was submitted during that same time period that identified a problem with available space, which resulted in guidance to change the shape of the panel (i.e., narrower and higher) to fit the space. This Work Order covers the changes defined in the two documents identified above and the attached Revere Control Systems proposal.

The work shall be performed for a lump sum price of \$19,226.

There will be an impact to the substantial completion date associated with this work, however, the schedule impact associated with this work order overlaps with schedule impacts associated with other work orders. Therefore, assigning a number of days of delay individually for the work orders is not possible. A separate work order will be issued to establish a single change in the substantial completion date. Revere Control will submit a change order request providing justification for a substantial completion date change. No change to the Final completion date will be issued.

ATTACHMENTS: June 14, 2017 Revere Controls Proposal (attached)
May 31, 2017 RFP No. 3 (attached)
May 31, 2017 RFI (attached)

CDM SMITH:

By: 

Date: July 27, 2017

CONTRACTOR:

By: 

Date: 7/31/2017

June 14, 2017

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
CDM Project Number 14915-96594-SCADA
COF Contract No. 2014-0288

Subj: Goose Creek/Red Wing Booster Pump Station Control Modifications
RFP #03

Mr. Huguenard:

We are pleased to provide a proposal for the above referenced project. Work includes the following:

1. Prepare shop drawings and modify testing procedures submittal
2. Re-fabricate new 48" x 36" x 12" RTU using a 48"x 30" x 10" enclosure
3. Add a 10" Panelview 6 Plus OIT into new RTU
4. Add PLC OIT programming per RFP #03 directions
5. Demo existing pump controller
6. Pull or replace power and control wiring into new RTU
7. Field Test

I. Submittals

Labor

Project Management.....	2 Hours	\$148/Hr	\$ 296
Engineering Lead	4 Hours	\$148/Hr	\$ 592
OIT and PLC Programming ...	40 Hours	\$126/Hr	\$ 5,040
CAD	16 Hours	\$72/Hr	\$ 1,152
Documentation	8 Hours	\$77/Hr	\$ 616
Labor Total:			\$ 7,696

Expenses

None \$ 0

Materials

None \$ 0

Lump Sum Price \$ 7,696

II. Production**Labor**

Shop	40 Hours	\$68/Hr	\$ 2,720
QC	4 Hours	\$108/Hr	\$ 432
Programming (Testing)	8 Hours	\$126/Hr	\$ 1,008
Labor Total:			\$ 4,160

Expenses

None	\$ 0
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Materials

Hoffman A48H30CLP enclosure w/subpan	\$ 493
AB Panelview 6 Plus, 10" Color touchscreen OIT 2711P-T10C4*8	\$ 2,422
Shop Materials (Panduit, wire labels, etc.)	\$ 200
Subtotal:	\$ 3,115
10% Profit:	\$ 312
Material Total:	\$ 3,427

Lump Sum Price	\$ 7,587
----------------------	----------

III. Site Modification**Labor**

Engineering	8 Hours	\$148/Hr	\$ 1,184
(ID and tag pump control wiring. Note: the motor starter circuits and local Hand-Off-Auto switches shall remain in place)			
Programming	8 Hours	\$126/Hr	\$ 1,008
(Test Pump Controls)			
Labor Total:			\$ 2,192

Material and Expenses

Electrical (demo pump controller, pull wire)	\$ 1,252
Food and Lodging 2 Days..... \$ 174.....	\$ 348
Subtotal:	\$ 1,600
10% Profit:	\$ 160
M&E Total:	\$ 1,760

Lump Sum Price	\$ 3,952
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IV. Price Summary

Submittals	\$ 7,696
Production	\$ 7,578
Site Work.....	\$ 3,952
Total:	\$ 19,226

V. Schedule Impact

Add 6 weeks to current schedule from time of executed change order to allow for submittals, hardware delivery, production and factory programming.

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com

CONTINUOUS HINGE WITH CLAMPS, TYPE 4



- External wall-mounting brackets
- Formed external flanges around all sides of enclosure opening
- Stainless steel door clamps on three sides of door
- Removable heavy gauge stainless steel continuous hinge pin
- Hasp and staple provided for padlocking
- Data pocket is high-impact thermoplastic
- Collar studs provided for mounting optional panels
- Bonding provision on door

FINISH

ANSI 61 gray polyester powder paint inside and out

ACCESSORIES

See also *Accessories*.

Industrial Corrosion Inhibitors

Fast-Operating Clamp Assembly

Incandescent Light Package

Compact Cooling Fans

Steel and Stainless Steel Window Kits

See also the *Popular Accessories* table for the *Standard Products* table.

INDUSTRY STANDARDS

UL 508A Listed; Type 4, 12, 13; File No. E61997
cUL Listed per CSA C22.2 No. 94; Type 4, 12, 13; File No. E61997

NEMA/EEMAC Type 3, 4, 12, and 13

CSA, File No. 42186: Type 4 and 12

IEC 60529, IP66

APPLICATION

These single-door enclosures feature a hinged door with clamps on three sides to create a secure seal in indoor or outdoor environments. The gray polyester powder finish inside and out provides enhanced corrosion protection in outdoor applications.

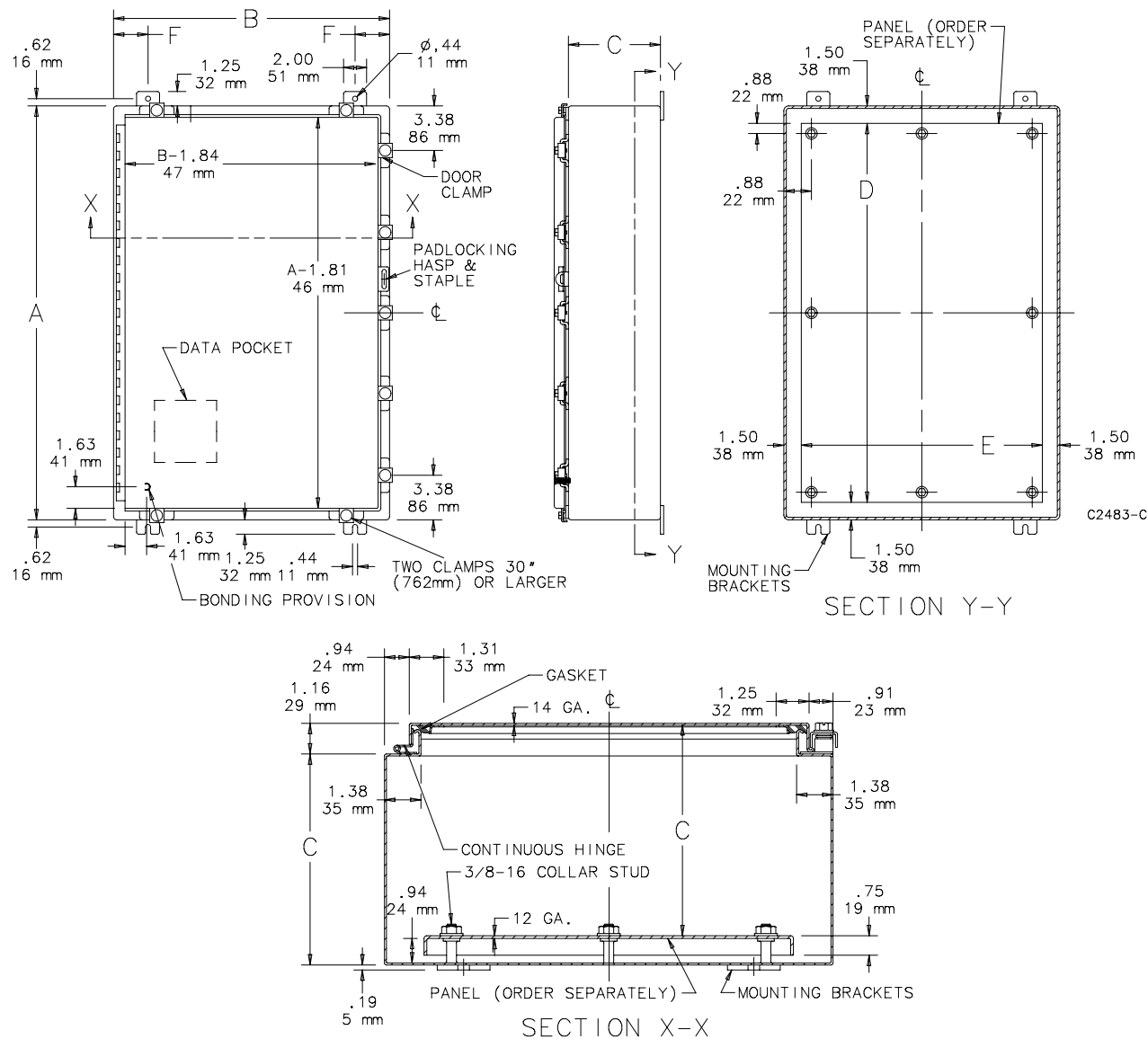
SPECIFICATIONS

- 16 or 14 gauge steel (see table)
- Seams continuously welded and ground smooth

Standard Product

Catalog Number	AxBxC in.	AxBxC mm	Body Gauge	Panel	Conductive Panel	Panel Size D x E (in.)	Panel Size D x E (mm)	F (in.)	F (mm)	Number of Clamps	Data Pocket
A16H12ALP	16.00 x 12.00 x 6.00	406 x 305 x 152	16	A16P12	A16P12G	13.00 x 9.00	330 x 229	1.25	32	4	Small
A16H16ALP	16.00 x 16.00 x 6.00	406 x 406 x 152	16	A16P16	A16P16G	13.00 x 13.00	330 x 330	3.00	76	4	Small
A16H20ALP	16.00 x 20.00 x 6.00	406 x 508 x 152	16	A20P16	A20P16G	17.00 x 13.00	432 x 330	3.00	76	4	Small
A20H16ALP	20.00 x 16.00 x 6.00	508 x 406 x 152	16	A20P16	A20P16G	17.00 x 13.00	432 x 330	3.00	76	4	Small
A20H20ALP	20.00 x 20.00 x 6.00	508 x 508 x 152	16	A20P20	A20P20G	17.00 x 17.00	432 x 432	3.00	76	4	Small
A24H12ALP	24.00 x 12.00 x 6.00	610 x 305 x 152	16	A12P24	A12P24G	9.00 x 21.00	229 x 533	1.25	32	5	Small
A24H16ALP	24.00 x 16.00 x 6.00	610 x 406 x 152	16	A24P16	A24P16G	21.00 x 13.00	533 x 330	3.00	76	5	Small
A24H20ALP	24.00 x 20.00 x 6.00	610 x 508 x 152	16	A24P20	A24P20G	21.00 x 17.00	533 x 432	3.00	76	5	Small
A24H24ALP	24.00 x 24.00 x 6.00	610 x 610 x 152	16	A24P24	A24P24G	21.00 x 21.00	533 x 533	3.00	76	5	Small
A30H20ALP	30.00 x 20.00 x 6.00	762 x 508 x 152	14	A30P20	A30P20G	27.00 x 17.00	686 x 432	3.00	76	5	Small
A30H24ALP	30.00 x 24.00 x 6.00	762 x 610 x 152	14	A30P24	A30P24G	27.00 x 21.00	686 x 533	3.00	76	5	Large
A36H24ALP	36.00 x 24.00 x 6.00	914 x 610 x 152	14	A36P24	A36P24G	33.00 x 21.00	838 x 533	3.00	76	5	Large
A16H12BLP	16.00 x 12.00 x 8.00	406 x 305 x 203	16	A16P12	A16P12G	13.00 x 9.00	330 x 229	1.25	32	4	Small
A20H16BLP	20.00 x 16.00 x 8.00	508 x 406 x 203	16	A20P16	A20P16G	17.00 x 13.00	432 x 330	3.00	76	4	Small
A20H20BLP	20.00 x 20.00 x 8.00	508 x 508 x 203	16	A20P20	A20P20G	17.00 x 17.00	432 x 432	3.00	76	4	Small
A20H24BLP	20.00 x 24.00 x 8.00	508 x 610 x 203	16	A24P20	A24P20G	21.00 x 17.00	533 x 432	3.00	76	4	Small
A24H20BLP	24.00 x 20.00 x 8.00	610 x 508 x 203	16	A24P20	A24P20G	21.00 x 17.00	533 x 432	3.00	76	5	Small
A24H24BLP	24.00 x 24.00 x 8.00	610 x 610 x 203	16	A24P24	A24P24G	21.00 x 21.00	533 x 533	3.00	76	5	Small
A24H30BLP	24.00 x 30.00 x 8.00	610 x 762 x 203	14	A30P24	A30P24G	27.00 x 21.00	686 x 533	3.00	76	7	Small
A30H20BLP	30.00 x 20.00 x 8.00	762 x 508 x 203	14	A30P20	A30P20G	27.00 x 17.00	686 x 432	3.00	76	5	Small
A30H24BLP	30.00 x 24.00 x 8.00	762 x 610 x 203	14	A30P24	A30P24G	27.00 x 21.00	686 x 533	3.00	76	5	Large
A30H30BLP	30.00 x 30.00 x 8.00	762 x 762 x 203	14	A30P30	A30P30G	27.00 x 27.00	686 x 686	3.00	76	7	Large
A36H24BLP	36.00 x 24.00 x 8.00	914 x 610 x 203	14	A36P24	A36P24G	33.00 x 21.00	838 x 533	3.00	76	5	Large
A36H30BLP	36.00 x 30.00 x 8.00	914 x 762 x 203	14	A36P30	A36P30G	33.00 x 27.00	838 x 686	3.00	76	7	Large
A42H30BLP	42.00 x 30.00 x 8.00	1067 x 762 x 203	14	A42P30	A42P30G	39.00 x 27.00	991 x 686	3.00	76	8	Small
A42H36BLP	42.00 x 36.00 x 8.00	1067 x 914 x 203	14	A42P36	A42P36G	39.00 x 33.00	991 x 838	3.00	76	8	Large
A48H36BLP	48.00 x 36.00 x 8.00	1219 x 914 x 203	14	A48P36	A48P36G	45.00 x 33.00	1143 x 838	3.00	76	8	Large
A60H36BLP	60.00 x 36.00 x 8.00	1524 x 914 x 203	14	A60P36	A60P36G	57.00 x 33.00	1448 x 838	3.00	76	9	Large
A20H16CLP	20.00 x 16.00 x 10.00	508 x 406 x 254	14	A20P16	A20P16G	17.00 x 13.00	432 x 330	3.00	76	4	Small
A24H20CLP	24.00 x 20.00 x 10.00	610 x 508 x 254	14	A24P20	A24P20G	21.00 x 17.00	533 x 432	3.00	76	5	Small
A30H24CLP	30.00 x 24.00 x 10.00	762 x 610 x 254	14	A30P24	A30P24G	27.00 x 21.00	686 x 533	3.00	76	5	Large
A36H30CLP	36.00 x 30.00 x 10.00	914 x 762 x 254	14	A36P30	A36P30G	33.00 x 27.00	838 x 686	3.00	76	7	Large
A48H30CLP	48.00 x 30.00 x 10.00	1219 x 762 x 254	14	A48P30	A48P30G	45.00 x 27.00	1143 x 686	3.00	76	8	Small
A48H36CLP	48.00 x 36.00 x 10.00	1219 x 914 x 254	14	A48P36	A48P36G	45.00 x 33.00	1143 x 838	3.00	76	8	Large
A60H36CLP	60.00 x 36.00 x 10.00	1524 x 914 x 254	14	A60P36	A60P36G	57.00 x 33.00	1448 x 838	3.00	76	9	Large
A30H24DLP	30.00 x 24.00 x 12.00	762 x 610 x 305	14	A30P24	A30P24G	27.00 x 21.00	686 x 533	3.00	76	5	Large
A36H30DLP	36.00 x 30.00 x 12.00	914 x 762 x 305	14	A36P30	A36P30G	33.00 x 27.00	838 x 686	3.00	76	7	Large
A48H36DLP	48.00 x 36.00 x 12.00	1219 x 914 x 305	14	A48P36	A48P36G	45.00 x 33.00	1143 x 838	3.00	76	8	Large
A36H30FLP	36.00 x 30.00 x 16.00	914 x 762 x 406	14	A36P30	A36P30G	33.00 x 27.00	838 x 686	3.00	76	7	Large
A48H36FLP	48.00 x 36.00 x 16.00	1219 x 914 x 406	14	A48P36	A48P36G	45.00 x 33.00	1143 x 838	3.00	76	8	Large
A60H36FLP	60.00 x 36.00 x 16.00	1524 x 914 x 406	14	A60P36	A60P36G	57.00 x 33.00	1448 x 838	3.00	76	9	Large

Purchase panels separately. Optional stainless steel, conductive, composite and aluminum panels are available for most sizes.



Popular Accessories

Enclosure Width (B Dimension)	Hole Seals	Window Kits
12 in. (305 mm)	AS050	APWK53NF
16 in. (406 mm)	AS050	APWK53NF
20 in. (508 mm)	AS050	APWK53NF
24 in. (610 mm)	AS050	APWK53NF
30 in. (762 mm)	AS050	APWK53NF
36 in. (914 mm)	AS050	APWK53NF

PanelView Plus 6 Terminals - 700 to 1500

This platform use modular components with value-added options for flexible system configuration. These components are usable across the entire PanelView Plus 6 platform and install with minimal effort:

- Color display modules ranging from 6.5 to 15-inches in size with either key, touch screen, or combination key/touch-screen input
- Windows CE logic modules providing desktop access
- Optional communication modules for network communication



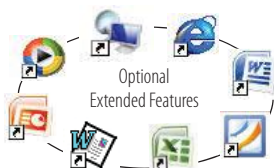
Configured terminals with a display module and logic module can be ordered as a single catalog number or as separate components for field installation.

A high-bright display for outdoor use, plus conformal-coated and marine-certified components, extend this platforms ability to operate in environments with even more stringent and varying requirements.

The core component of this platform is the high-performance logic module that runs a closed or open Windows CE desktop environment with optional, extended features and file viewers. System integrators and OEMs can configure and deploy systems that allow or restrict desktop access.

Logic Module Features

Features	Description
High memory capacity	512 MB nonvolatile memory and 512 MB RAM
Power input	AC or DC
Network interface	For optional DH+, DH-485, or ControlNet communication module
Communication ports	Ethernet, RS-232 serial
USB ports	2 USB host ports for connecting a USB mouse, keyboard, printer, and USB drives that are hot swappable 1 USB device port for connecting a host personal computer
Secure Digital (SD) card slot	Hot-swappable card slot supports 1784-SDx SD cards for transferring files, upgrading firmware, or logging data
Operating system	All terminals run the Windows CE 6.0 operating system (OS) providing OS functionality needed for most users needs: • FTP server • VNC client/server • PDF reader • Active X controls • Third-party device support Additional functionality is available by ordering terminals with optional, extended features: • Internet Explorer web browser • Remote desktop connection • Media player • Microsoft file viewers for PowerPoint, Excel, and Word • WordPad text editor
FactoryTalk View software	• FactoryTalk View Machine Edition Station (runtime) software, version 6.0 or later, is preloaded and activated on each terminal • Single license support for FactoryTalk ViewPoint software, version 1.2 or later, gives remote users access to a terminal's displays via standard web browser • HMI applications are developed with FactoryTalk View Studio for Machine Edition software, which is purchased separately



Product Selections

Bulletin	Input Type	Display Size	Display Type	Communication	Power	Operating System	Special Option
2711P-	K = Keypad T = Touch B = Keypad/Touch	7 = 6.5 in. 10 = 10.4 in. 12 = 12.1 in. 15 = 15 in.	C = Color	4 = Ethernet, RS-232, (2) USB	A = AC D = DC	8 = Windows CE 6.0 9 = Windows CE 6.0 with extended features	K = Conformal-coated

PanelView Plus 6 Terminals without Extended Features

Cat. No.			Display		Communication		Input Power	Memory RAM/Nonvolatile ⁽¹⁾
Keypad	Touch	Keypad/Touch	Size	Type	RS-232	Ethernet		
700 Model								
2711P-K7C4D8	2711P-T7C4D8	2711P-B7C4D8	6.5-in.	Color	•	•	DC	512 MB/512 MB
—	2711P-T7C4D8K	—			•	•	DC	512 MB/512 MB
2711P-K7C4A8	2711P-T7C4A8	2711P-B7C4A8			•	•	AC	512 MB/512 MB
1000 Model								
2711P-K10C4D8	2711P-T10C4D8	2711P-B10C4D8	10.4-in	Color	•	•	DC	512 MB/512 MB
2711P-K10C4A8	2711P-T10C4A8	2711P-B10C4A8			•	•	AC	512 MB/512 MB
1250 Model								
2711P-K12C4D8	2711P-T12C4D8	2711P-B12C4D8	12.1-in	Color	•	•	DC	512 MB/512 MB
—	2711P-T12C4D8K	—			•	•	DC	512 MB/512 MB
2711P-K12C4A8	2711P-T12C4A8	2711P-B12C4A8			•	•	AC	512 MB/512 MB
1500 Model								
2711P-K15C4D8	2711P-T15C4D8	2711P-B15C4D8	15-in.	Color	•	•	DC	512 MB/512 MB
2711P-K15C4A8	2711P-T15C4A8	2711P-B15C4A8			•	•	AC	512 MB/512 MB

(1) All terminals support FactoryTalk View Machine Edition Station software, version 6.0 or later, and the Windows CE 6.0 operating system without extended features and Microsoft file viewers.

PanelView Plus 6 Terminals with Extended Features

Cat. No.			Display		Communication		Input Power	Memory RAM/Nonvolatile ⁽¹⁾
Keypad	Touch	Keypad/Touch	Size	Type	RS-232	Ethernet		
700 Model								
2711P-K7C4D9	2711P-T7C4D9	2711P-B7C4D9	6.5-in.	Color	•	•	DC	512 MB/512 MB
2711P-K7C4A9	2711P-T7C4A9	2711P-B7C4A9			•	•	AC	512 MB/512 MB
1000 Model								
2711P-K10C4D9	2711P-T10C4D9	2711P-B10C4D9	10.4-in	Color	•	•	DC	512 MB/512 MB
2711P-K10C4A9	2711P-T10C4A9	2711P-B10C4A9			•	•	AC	512 MB/512 MB
1250 Model								
2711P-K12C4D9	2711P-T12C4D9	2711P-B12C4D9	12.1-in	Color	•	•	DC	512 MB/512 MB
2711P-K12C4A9	2711P-T12C4A9	2711P-B12C4A9			•	•	AC	512 MB/512 MB
1500 Model								
2711P-K15C4D9	2711P-T15C4D9	2711P-B15C4D9	15-in.	Color	•	•	DC	512 MB/512 MB
2711P-K15C4A9	2711P-T15C4A9	2711P-B15C4A9			•	•	AC	512 MB/512 MB

(1) All terminals support FactoryTalk View Machine Edition Station software, version 6.0 or later, and the Windows CE 6.0 operating system with extended features and Microsoft file viewers.

REQUEST FOR PROPOSAL No. 3

Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
210 25th Avenue North
Suite 1102
Nashville, TN 37203
(615) 320-3161

DATE: May 31, 2017

PROJECT: City of Franklin, Water Management Department
Water Distribution & Collection System SCADA Improvements

PCO NUMBER: N/A **CDM SMITH PROJ. NO.:** 14915-96594-SCADA

ASSOCIATED RFI NUMBER: N/A **COF CONTRACT NO.:** 2014-0288

SUBJECT: Goose Creek/Red Wing Booster Pump Station Control Modifications

REFERENCE: N/A

The purpose of this RFP is to request a proposal for certain control modifications for the Goose Creek/Red Wing Booster Pump Station. The proposed modifications can be defined as follows:

- Remove the existing controller in the Pump Control Panel in the Goose Creek/Red Wing Booster Pump Station. Program the Allen-Bradley CompactLogix PLC that is to be furnished in the new station RTU to serve as the pump station controller. Either re-route or replace all power wiring, I/O wiring, and network cable. Re-route or replace wiring to door-mounted controls.
- Furnish an Allen-Bradley PanelView color touchscreen operator interface terminal (OIT) of 10" nominal size, to replace the existing USFilter OI3000 operator interface. Mount the new OIT in the same location on the panel door. If additional steel plate is required, match the paint color and finish. Securely install power wiring, and an Ethernet network cable to connect to the new RTU PLC.
- Provide application engineering services in accordance with the standards specified in Section 13306. This shall include PLC programming to duplicate the existing as-built control logic and control functionality, and OIT graphic screens that provide an operator with all the control and monitoring functions available.

The control logic shall be as follows:

- The pump controls shall operate one wetwell with two pumps. Provide identical programming and graphics, disabled and hidden, that will operate a future second wetwell with two pumps in parallel.
- The wetwell level will be controlled based on wetwell level sensed by a submersible transducer and programmable setpoints. The set points shall be Lead Pump on and off, Lag Pump on and off, High Level Alarm and Low Level Alarm. Coordinate with the Owner to obtain correct set point values. When the Lead Pump On level is reached, the VFD of the Lead Pump will be started. If the level continues to rise to the Lag Pump On level, the Lag Pump VFD will be started. The Lag and Lead pumps will stop upon level falling to the Lag Off and Lead Off set points respectively.
- Note that there is a hardwired, float-based backup control system that will operate the pumps in a fixed speed mode upon a failure of the primary control system or if the high level float is reached. It has four floats for operation, consisting of all pumps off, lead pump required, lag pump required and high level alarm. If the backup system is engaged by the high level float, both pumps will be required with a staggered start for the first operation and lead/lag alternating operation until the primary system is manually restored. Backup control will be locked out of operation until the High Level Float is reached for the first time. A manual restore push button needs to be pressed to restore to primary control from the backup mode. Provide an interlock to the PLC program to prevent PID windup while the backup control system is in use.
- All running pumps shall run at the same speed, which will be determined by a proportional-only PID loop output, directly proportional to the operating level range of the wetwell. Each VFD will have a NEMA rated full speed bypass starter that can be manually selected for operation instead of the VFD, or will automatically be switched on in the event of a VFD fault.
- The Lead and Lag pumps will be alternated in a first-on first-off scheme of alternation, or on a 24-hour timer, whichever comes first. If a pump fails to run when called, the other pump will start immediately, and the failed pump will be taken out of the alternation sequence until it is returned to service by an operator.
- There will be a Cleaning Cycle operation in the program. It will run once per day on a 24-hour timer, or when manually requested. It will start all pumps at maximum speed, and run them until the Low Level set point is reached. After completion of the clean cycle, normal operation shall resume.
- Provide all available monitoring and control at the local panel-mounted OIT, including the following. Wetwell level, pump status, speed feedback, and alarms shall be displayed on the main graphic screen of the OIT. Run times and pump starts (for each day and for all time) shall be calculated and displayed in a table. Controls shall include: manual override of each pump (start/stop and speed control), level set point configuration, Lead/Lag manual initiate

and timer configuration, PID loop configuration, VFD maximum/minimum speed configuration, Cleaning Cycle manual initiate and timer configuration.

Provide for a separate Operational Readiness Test and Functional Demonstration Test, as per Section 13302, for this portion of the work and provide separate submittal(s) for this portion of the work that conform to the main submittal requirements of Section 13300 and related Sections.

Signed: _____
Robert P. Huguenard

Request for Information

Project Name: City of Franklin Water Management Department- Water Distribution & Collection System SCADA Improvements		
Owner's Project No.: 2014-0288	CDM Smith Project No.: 14915-96594-SCADA	
Contractor: Revere Control Systems	RFI No.: 013	
	Date: 5/31/2017	
Subject: RTU Mounting		
Spec Section:		Detail: E-11

QUESTION:	
This is a replace existing in place site. Mounting the new RTU flush to the ATS with a close nipple leaves 9" of overhang and less than 36" of clearance from the control panel on the adjacent wall (see attached sketch). We think the RTU door will just barely be able to open. Since part of the RTU does not meet the 36" of clearance, please advise on what to do.	
Please Respond by This Date:6/15/2017	
Submitted by Contractor: David Abel, Revere Control Systems	Date:5/31/2017
Received by (CDM Smith):	Date:

RESPONSE:	
The new RTU panel should be located inside the conditioned space in the same location as the existing RTU. A 48"x36"x12" panel as submitted is too large to provide 36" of clearance in front of the door. Therefore furnish a new enclosure that can accommodate the new RTU and appurtenances with adequate door clearance, of NEMA 12 steel construction and no more than 30" wide. Submit proposed revisions, cost and schedule impact for this change and the changes requested in RFP 003 for the same site (Goose Creek/Red Wing BPS).	
By: Scott Whitmore	Date: 6/8/2017
Distribution: Contractor, Owner, File, Field, RFI Notebook	

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: July 27, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 005 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Old Hillsboro Road Strut Hardware **CITY PROJECT NO.:** 2014-0288

REFERENCE: July 11, 2017 Revere Control Proposal (attached)

DESCRIPTION:

Revere Control Systems is directed to furnish new 316 stainless steel struts for mounting in place of the existing wooden posts for mounting of the RTU at the Old Hillsboro Road site. The scope of work and cost for the changes is detailed in the attached proposal dated July 11, 2017. The attached proposal provides costs for both galvanized and stainless-steel struts. Stainless steel shall be used. The work shall be performed for a lump sum price of \$4,811.27. Application for payment may be made when the work for that site is completed.

ATTACHMENTS: July 11, 2017 Revere Controls Proposal (attached)

CDM SMITH:

By:

Date: July 27, 2017

CONTRACTOR:

By:

Date: 7/31/2017

July 11, 2017

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
CDM Project Number 14915-96594-SCADA
COF Contract No. 2014-0288

Subj: Old Hillsboro Road Strut Hardware

Mr. Huguenard:

Per RFI-09, we were directed to furnish new galvanized struts for mounting to replace the existing wooden posts. However, at the progress meeting held on 7/5, we were directed to use 316SS. Below are the prices for using galvanized (per RFI-09) and 316SS per progress meeting notes:

Materials

Option 1: Galvanized Strut	\$ 2,172.24
10% Profit:	<u>\$ 217.22</u>
Material Total:	\$ 2,389.46
Option 2: 316 SS	\$ 4,373.88
10% Profit:	<u>\$ 437.39</u>
Material Total:	\$ 4,811.27

Old Hillsboro Road replacement is currently scheduled to be replaced on 9/11 barring other delays. Please issue a change order for either option within 10 days to avoid impacting substantial completion delays.

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com



Stone & Sons Electrical Contractors, Inc.

2530 Queenstown Rd.
Birmingham, AL 35210
205-833-8494
205-833-9390

Job # 772001Change Order # 772001-03Date: 6/30/2017Job Name: Franklin SCADA ImprovementsLocation: Franklin, TN

County: _____

General Contractor: RevereGC Job # 615-604-1579GC Project Manager: David Abel

Contact Number: _____

Engineer: CDM SmithEngineer Job # 14915-96594-SCADAEngineer Rep: Bob HuguenardContact Number: 615-320-3161Description: Old Hillsboro Rd (RFI #9)Replace existing strut rack with new 316 stainless strut rackWritten By: Caleb JohnsonTitle: Project Manager

Qty.	Description	Unit Price	Units	Total	Labor	Units	Total
1	See Attachment "A"	\$ 2,716.43	ea	\$ 2,716.43	27.73	ea	27.73
3	Project Management per hour	\$ 72.00	ea	\$ 216.00			0.00
28	Food and Lodging per hour	\$ 8.00	ea	\$ 224.00			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
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				\$ -			0.00
				\$ -			0.00
				\$ -			0.00
				\$ -			0.00

Tax Exempt: ☒ YES ☐ NOMaterial SubTotal: \$3,156.43State Tax: 0.00%County Tax: 0.00%Total Tax: 0.00%Material Total: \$3,156.43Labor Rate: \$27.00Labor Total: \$748.71Overhead & Profit: 15.00%Overhead & Profit: \$585.77Total: \$4,490.91

Engineer Rep. : _____

Title: _____

Date: _____

Stone and Sons: _____

Title: _____

Date: _____

Job #772001
Change Order # 772001-03

[illegible]

RESPONSE TO REQUEST FOR INFORMATION

TO: Mr. David Abel
Revere
Rocky Ridge Road
Birmingham, AL 35216
((205) 824-0004

FROM: CDM Smith
3200 Windy Hill Road
Suite 210 West
Atlanta, GA 30339
(404) 720-1400

DATE: 05/18/2017

PROJECT: City of Franklin Water Management Department
Water Distribution & Collection System SCADA Improvements

RFI NUMBER: 9

CDM SMITH PROJ. NO.: 14915-96594

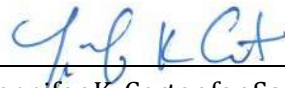
SUBJECT: Old Hillsboro Road BPS

COF CONTRACT NO.: 2014-0288

Response:

Comments attached.

Signed: _____


Jennifer K. Carter for Scott Whitmore

Request for Information

Project Name: City of Franklin Water Management Department- Water Distribution & Collection System SCADA Improvements		
Owner's Project No.: 2014-0288		CDM Smith Project No.: 14915-96594-SCADA
Contractor: Revere Control Systems	RFI No.: 009	
	Date: 4/4/2017	
Subject: Old Hillsboro Road BPS		
Spec Section:		Detail: G-1; I-6

QUESTION:		
1. Per 3/7/17 meeting, we are to provide a new pole, antenna and cable at this site. We understand neighboring land owners may be difficult. Please advise on location to set the pole. 2. The existing RTU is presently located on the back side of the Pump Control Panel – please advise if it is to remain in this location (note: close to the road in a bad location). 3. Note: RTU drawings for this site were decaying in the bottom of the RTU, attempt was made to salvage I/O and markups.		
Please Respond by This Date: 4/14/2017		
Submitted by Contractor: David Abel, Revere Control Systems		Date: 4/4/2017
Received by (CDM Smith):		Date: 4/14/2017

RESPONSE:		
1. Retain the existing mounting configuration. The existing antenna and cable shall be reused if they are functional when the radio link is tested. 2. New RTU shall be mounted in the same location as the old RTU, back to back with the Pump Control Panel. However please furnish new galvanized struts for mounting to replace the existing wooden post. 3. See attached for an additional drawing of the site. From this we believe that Pump 1 & 2 Running & Overload are the points available to be monitored.		
By: Scott Whitmore		Date: 5/17/2017
Distribution: Contractor, Owner, File, Field, RFI Notebook		

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: September 22, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 006 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Conversion to Cradlepoint Routers in the RTUs **CITY PROJECT NO.:** 2014-0288

REFERENCE: August 31, 2017 Revere Proposal (attached)

DESCRIPTION:

The purpose of this Work Order is to authorize proceeding with preparations for replacement of the existing Sierra modems and Moxa routers with Cradlepoint IBR1150LP6-NA devices. The attached proposal identifies three tasks, where the first two are associated with research and testing to verify that the Cradlepoint units are compatible with the Verizon and City systems and the third task includes purchasing of the Cradlepoint units and installation of the units in the RTUs at each site. All indications are that the units are compatible, but we feel it would be prudent to physically verify compatibility prior to purchasing all of the Cradlepoint units. This Work Order authorizes the performance of the first two scope items in the attached proposal. Once compatibility is verified another Work Order will be issued for the third scope item.

The second scope item offers license options of one year, 4 year, or 6 year. A one-year license shall be provided. This work shall be performed for a total lump sum price of \$13,046. It is recognized that impacts to the substantial and final completion will result from this change. Schedule changes will be addressed in a separate Work Order after Revere has the opportunity to evaluate schedule impacts and submit a proposed schedule change.

ATTACHMENTS: September 22, 2017 Revere Proposal (attached)

CDM SMITH:

By:

Date: September 22, 2017

CONTRACTOR:

By:

Date: 11/1/2017

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: November 1, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 007

CDM SMITH PROJ. NO.: 14915-96594

SUBJECT: Conversion to Cradlepoint Routers in the RTUs, Part 2

CITY PROJECT NO.: 2014-0288

REFERENCE: August 31, 2017 Revere Proposal (attached)

DESCRIPTION:

The work under Work Order 006 was completed and it has been shown that the Cradlepoint units are compatible with the City and Verizon systems. The purpose of this Work Order is to authorize the next step, which is to replace the existing Sierra modems and Moxa routers with Cradlepoint IBR1150LP6-NA devices. The attached proposal identifies three tasks, where the first two are associated with research and testing to verify that the Cradlepoint units are compatible with the Verizon and City systems and the third task includes purchasing of the Cradlepoint units and installation of the units in the RTUs at each site. This work order is for the third task.

The third scope item offers license options of one year, 4 year, or 6 year. A one-year license shall be provided. This work shall be performed for a total lump sum price of \$54,311. It is recognized that impacts to the substantial and final completion will result from this change. Schedule changes will be addressed in a separate Work Order after Revere has the opportunity to evaluate schedule impacts and submit a proposed schedule change.

ATTACHMENTS: August 31, 2017 Revere Proposal (attached)

CDM SMITH:

By:

Date: November 1, 2017

CONTRACTOR:

By:

Date: 11/1/2017

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: November 20, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 008 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Fieldstone Farms 1
Upgrade to AB PLC CPU **CITY PROJECT NO.:** 2014-0288

REFERENCE: October 12, 2017 Revere Proposal (attached)

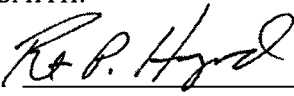
DESCRIPTION:

The existing CPU in the AB PLC at the Fieldstone Farms 1 site will not communicate with the latest version of RS Logix 5000 (the PLC program software used for the upgrades under this project). The purpose of this Work Order is to direct the replacement of the existing CPU with a model 1769-L33ERM CPU, which is the same model used in all other new RTUs. The scope is described in more detail in the attached Revere proposal.

The work under this Work Order shall be performed for a lump sum cost of \$4,071.00. No change in schedule is required for this Work Order.

ATTACHMENTS: October 12, 2017 Revere Proposal (attached)

CDM SMITH:

By: 

Date: November 20, 2017

CONTRACTOR:

By: 

Date: 11/27/2017

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: November 20, 2017

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 009 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Legends Booster Pump Station Control Modifications **CITY PROJECT NO.:** 2014-0288

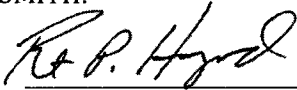
REFERENCE: October 20, 2017 Revere Proposal (attached)

DESCRIPTION:

The existing controller at the Legends Booster Pump Station is obsolete and operates on an obsolete program that is no longer supported. Therefore, necessary modifications to the control logic cannot be made. However, the new RTU PLC, which is being installed at this pump station is capable of performing all of the functions of the controller. Removing the existing controller and programming the RTU to take over control of the system will solve this problem. In addition to the above issue, the existing operator interface terminal (OIT) is obsolete and cannot work with the new system. Removal of the old OIT and installation of a new OIT will solve this problem.

This Work Order directs removal of the old controller and the old OIT, installation of a new OIT, and performing programming necessary to enable the new RTU to control the pump station and to enable use of the new OIT. The scope is described in more detail in the attached Revere proposal. Please note, the attached proposal erroneously identified the OIT as a "6" Panelview 6 OIT" in one location. A 10" Panelview OIT shall be provided as indicated under the Materials cost section. The work under this Work Order shall be performed for a lump sum cost of \$19,690.87. No change in schedule is required for this Work Order.

CDM SMITH:

By: 
Date: November 20, 2017

CONTRACTOR:

By: 
Date: 11/27/2017

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: January 25, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 010 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Credit for Radio Tower Structures **CITY PROJECT NO.:** 2014-0288

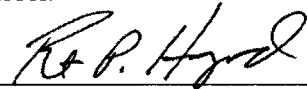
REFERENCE: August 31, 2017 Revere Letter (attached)

DESCRIPTION:

This work order eliminates the three radio tower structures from the contract. Revere Control Systems will provide a \$21,190.76 credit for elimination of the towers and the labor for erection of the towers.

ATTACHMENTS: August 31, 2017 Revere Letter (attached)

CDM SMITH:

By: 
Date: January 25, 2018

CONTRACTOR:

By: 
Date: 1/30/2018

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: January 25, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 011 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Columbia Avenue Tank
New Power Service Cable and
Receptacle **CITY PROJECT NO.:** 2014-0288

REFERENCE: December 15, 2017 Revere Proposal (attached)

DESCRIPTION:

This work order includes addition of new cable from the service entrance to the site (pulled through new conduit installed by the City) and addition of a new receptacle.

The work under this Work Order shall be performed for a lump sum cost of \$4,099.10. No change in schedule is required for this Work Order.

CDM SMITH:

By: 
Date: January 25, 2018

CONTRACTOR:

By: 
Date: 1/30/2018

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: January 25, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 012 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Credit for Elimination of Trihedral Training **CITY PROJECT NO.:** 2014-0288

REFERENCE: August 31, 2017 Revere Letter (attached)

DESCRIPTION:

This work order eliminates a portion of the Trihedral training (see attached letter from Revere Control Systems). Revere Control Systems will provide a \$3,924.80 credit for elimination of the training.

ATTACHMENTS: August 31, 2017 Revere Letter (attached)

CDM SMITH:

By:

Date: January 25, 2018

CONTRACTOR:

By:

Date: 1/30/2018

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: March 5, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 013 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Legends Booster Pump Station **CITY PROJECT NO.:** 2014-0288
Additional Modifications

REFERENCE: January 2, 2018 Revere Proposal (attached)

DESCRIPTION:

While performing work authorized under Work Order 9, which included demolition of the pump controller and replacement with a new RTU, installation changes were agreed to with the City of Franklin to work around some conflicts. The changes included relocation of the transformer and load center then building a stand and rack for the RTU. The revised installation required additional conduit, wire, supports, etc.

The work under this Work Order shall be performed for a lump sum cost of \$9,199.40. No change in schedule is required for this Work Order.

CDM SMITH:

By: _____

Date: March 5, 2018

CONTRACTOR:

By: _____

Date: 3/5/2018

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: March 5, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

**WORK
ORDER
NUMBER:**

011 014 RCR

CDM SMITH PROJ. NO.: 14915-96594

SUBJECT: Ash Drive Tank RTU Relocation

CITY PROJECT NO.: 2014-0288

REFERENCE: December 15, 2017 Revere Proposal (attached)

DESCRIPTION:

This work order includes additional material and labor required to relocate the RTU from the vault to a location on the tank. The new RTU was not able to be installed in the vault due to space constraints. The additional cost is associated with the mounting stand, hardware, conduit, wire, etc.

The work under this Work Order shall be performed for a lump sum cost of \$5,921.97. No change in schedule is required for this Work Order.

CDM SMITH:

By: *R. P. Hynd*

Date: March 5, 2018

CONTRACTOR:

By: *David Chif*

Date: 3/5/2018

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: March 5, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 015 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Fieldstone Farms 2
RTU and Controller
Modifications **CITY PROJECT NO.:** 2014-0288

REFERENCE: January 26, 2018 Revere Proposal (attached)

DESCRIPTION:

The pumping system at the Fieldstone Farms 2 site is currently controlled by two separate controllers, a Gorman Rupp and a MicroLogix controller. This unusual setup makes this station different from the other stations and add challenges in that this configuration will not allow remote override of the pumps. To rectify this issue, this Work Order directs removal of the two existing controllers and programming of the new RTU to become the new pump station controller as well as the telemetry unit. The scope of work is defined on the attached January 26, 2018 proposal from Revere. While the proposal doesn't specifically identify removing unused switches from the panel and installing a plate over the openings, that shall also be included in the scope.

The work under this Work Order shall be performed for a lump sum cost of \$12,621.73. The request for increasing the scheduled final completion by 4 weeks is acknowledged and will be addressed in a change order as this cannot be granted in a Work Order.

CDM SMITH:

By:

Date: March 5, 2018

CONTRACTOR:

By:

Date:



Parkview Towers
210 25th Avenue North, Suite 1102
Nashville, Tennessee 37203
tel: 615-771-2466
fax: 615-778-9733

May 17, 2018

Mr. David Abel
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, Alabama 35216

Subject: Old Hillsboro Road Booster Pump Station Repairs
Franklin SCADA System Improvements

Dear Dave:

As I indicated in a previous communication, the City had to make some repairs at the Old Hillsboro Booster Pump Station (Pump Station) as a result of some miswiring that was performed by your crews. The purpose of this letter is to provide you with the details of the situation and propose a method for compensating the City for their costs. The following paragraphs provide a summary of event, a summary of incurred costs, and a proposed method of compensation.

Summary of Events

On November 29, 2017 Revere Control Systems (RCS) reported that there was no speed feedback or control to Pump Number 1 or the lag pump at the Pump Station. RCS was still in the process of constructing the SCADA system and appurtenances at the Pump Station at that point in time. Upon learning this, Layne Warf with the City of Franklin Water Management Division (City) reported to Harvey Smithson, Service Division's Superintendent, that the Pump had no previous issue with speed feedback or the drive prior to the SCADA construction effort by RCS.

Once RCS had the SCADA system up and running on cellular communication they noted that Pump Number 1 always showed 100% speed reference and attributed this to a bad drive. RCS disabled the speed discrepancy alarm and recommended the City replace the failing drive. At the January 22, 2018 SCADA construction progress meeting the City agreed to investigate the issue further. City Staff observed and confirmed that there was not a signal indicating that Pump Number 1 was running.

On February 9, 2018 the City called their local integrator who helps in emergency situations. The local integrator replaced the board on drive number one, however they were still unable to get a feedback signal. After further troubleshooting, it was discovered that RCS wiring from the drive to the input/output was backward, and as a result the output for the run signal was





Old Hillsboro Road Booster Pump Station Repairs

May 17, 2018

Page 2

damaged. Consequently, the City purchased and installed a new board and the pump has since been sending correct feedback signals.

Summary of Incurred Costs

Resolving the issue required City personnel time as time and materials from the local integrator. The costs incurred by the City are summarized in the following bullets as supported by the attached invoice from the local integrator and the attached spreadsheet detailing the City's cost.

- City Staff and Resources Cost - \$273.42
- Local Integrator Labor/Equipment Cost - \$617.50
- Total Cost Incurred by the City - \$890.92

Proposed Method of Compensation

To compensate the City for their costs, we propose the RCS execute the attached preparing a task order for a credit of \$890.92. Please verify your concurrence with this action by signing the attached task order.

Please feel free to call me if you have any questions.

Very truly yours,

A handwritten signature in blue ink that reads "R. P. Huguenard".

Robert P. Huguenard
Senior Project Manager
CDM Smith

Enclosures

cc: Michelle Hatcher, City of Franklin
Brian Goodwin, City of Franklin
Zack Daniel, CDM Smith

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: May 17, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 016 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Credit for Old Hillsboro Road Repairs Due to Miswiring **CITY PROJECT NO.:** 2014-0288

REFERENCE: May17, 2018 Letter from CDM Smith to RCS (attached)

DESCRIPTION:

This work order provides a credit to compensate the City for work provided to repair damage due to Revere Control Systems (RCS) miswiring from the Pump Number 1 Drive to the input/output point (see attached letter). Revere Control Systems agrees to provide a \$890.92 credit.

ATTACHMENTS: May 17, 2018 Letter from CDM Smith to RCS (attached)

CDM SMITH:

By:

Date: May 17, 2018

CONTRACTOR:

By:

Date: 5/21/2018



Independent Controls

PO Box 1721
White House, TN 37188

Invoice

www.i-controlz.com
jimmyb@i-controlz.com

Cell: 615-879-1653
Fax: 855-260-8231

Bill To:

Franklin TN Water Management
124 Lumber Drive
Franklin TN 37064

Date	Invoice Number	Due Date	Terms	P.O. Number	Project
03/16/18	12023338	03/16/18	Due on receipt		Old Hillsboro Rd BPS

Item	Description	Quantity	Rate	Amount
labor	Troubleshoot VFD analog output to new SCADA panel. Found analog output was producing a very high voltage and was determined to be a damaged main control board.	2.5	95.00	237.50
labor	Installed new main control board to VFD. After board installation the analog output had an extremely high voltage output (the same as the old board). Verified the correct programming to the new board. After all the checks, it was determined that the analog out of the new board was also bad now. Traced the wiring and found the analog input and output to the drive were reversed. The analog input was using the 24vdc from the SCADA panel and was landed on the Analog output of the drive which uses a internal 24vdc. since the two separate voltages were applied to the output of the drive, the result was damaging the analog output #1. Reprogrammed the drive to use the analog output #2.	4	95.00	380.00
Subtotal				\$617.50
Sales Tax (0.0%)				\$0.00
Total				\$617.50

ITEMIZED PROJECT COST

3/16/2018

PROJECT # TBD

Old Hillsboro Booster Station

LABOR

PAYROLL ID	CLASSIFICATION	HOURS	RATE	OVERHEAD RATE	TOTAL
	Maintenance Technician	3	\$ 20.50	\$ 15.00	\$ 106.50
	Maintenance Technician	3	\$ 20.64	\$ 15.00	\$ 106.92
					\$ -
					\$ -
					\$ -
					\$ -
SUB-TOTAL					\$ 213.42

EQUIPMENT

TYPE	HOURS	RATE	TOTAL
1 Ton Pick Up	3	\$ 20.00	\$ 60.00
SUB-TOTAL			\$ 60.00

MATERIALS

MATERIALS	QUANTITY	UNIT PRICE	TOTAL
		\$ -	\$ -
		\$ -	\$ -
		\$ -	\$ -
SUB-TOTAL			\$ -
TOTAL			\$ 273.42

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: May 17, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 017 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Old Hillsboro Road
Antenna and Antenna Cable
Replacement **CITY PROJECT NO.:** 2014-0288

REFERENCE: April 24, 2018 email from David Abel to Bob Huguenard

DESCRIPTION:

There have been repeated communication failures at the Old Hillsboro Road when it is in the radio communication mode. This is the site where the antenna was relocated to point to the Fieldstone Farms 2 repeater station. Per the radio survey, the signal strength is good, but the antenna and cable are the original and have been there a long time and may have degraded over time due to weather related problems or water intrusion. The purpose of the Work Order is to direct replacement of the antenna and antenna cable.

The work under this Work Order shall be performed for a lump sum cost of \$1,590.63. Details are provided in the attached email and associated attachments.

CDM SMITH:

By:

Date: May 17, 2018

CONTRACTOR:

By:

Date: 5/18/2018

Huguenard, Robert

From: David Abel <dabel@reverecontrol.com>
Sent: Tuesday, April 24, 2018 9:24 AM
To: Huguenard, Robert
Cc: Michelle Hatcher (michelle.hatcher@franklintn.gov); Brian Goodwin; Gregg Gray
Subject: W0012: RE: COMM FAIL
Attachments: Old Hillsboro Rd BPS Antenna 009.jpg; IMG_3388.jpg; RE: W0012: COF Hillsboro Road Antenna Placement; W0012 - Radio Survey Test Sheets - Old Hillsboro BPS.pdf; Antenna Repair and Routers Quote.pdf

Hi Bob,

Recapping our phone conversation, I asked the team about this. This is the site where the antenna needed to be relocated to point to the FF2 repeater. Per the radio survey, the signal strength is OK, but it's still the original antenna and cable that Tom states has been there "a long time" and may be susceptible to weather related problems that we've often run into (water, e.g.). We would be happy to replace the hardware. Based on the recent quote for repairs, additional costs would be:

Labor

10 hours @ \$108/hour \$ 1,080.00
(6 hours travel, 4 hours onsite)

Expenses

Mileage (370 @ \$0.54/mile) \$ 199.80
Per Diem \$ 50.00
Expenses Subtotal: \$ 249.80

Materials

Antenna \$ 116.92
Connectors \$ 18.26
Ground kit \$ 23.20
Weather-proofing \$ 12.83
20' Cable \$ 18.20
 \$ 189.41
Shipping \$ 25.00
Material Subtotal: \$ 214.41

Expenses and Materials : \$ 464.21

10% Markup Matl's and Expenses \$ 46.42
 \$ 510.63

Total: \$ 1,590.63

Thanks,

David Abel



(615) 604-1579

From: Huguenard, Robert <HuguenardRP@cdmsmith.com>
Sent: Monday, April 23, 2018 9:17 AM
To: David Abel <dabel@reverecontrol.com>
Cc: Michelle Hatcher (michelle.hatcher@franklintn.gov) <michelle.hatcher@franklintn.gov>; Brian Goodwin <brian.goodwin@franklintn.gov>
Subject: FW: COMM FAIL

Dave – See message about communication fails below.

From: Tom Lamb <Tom.Lamb@ct-eng.net>
Sent: Monday, April 23, 2018 9:36 AM
To: Huguenard, Robert <HuguenardRP@cdmsmith.com>
Subject: FW: COMM FAIL

See below.

From: Chad Hanes <chad.hanes@franklintn.gov>
Sent: Monday, April 23, 2018 7:39 AM
To: Tom Lamb <Tom.Lamb@ct-eng.net>
Subject: COMM FAIL

Saturday 21 I had 2 comm fails at Old Hillsboro Road buster. 30 minutes apart or so. LETTING YOU KNOW. CHAD

Sent from my Verizon, Samsung Galaxy smartphone

This message and all attachments are PRIVATE, and may contain information that is CONFIDENTIAL. If you received this message in error, any disclosure, copy, distribution or use of the contents of this message is prohibited. Please notify the sender by reply e-mail and delete the message and all attachments immediately.







RADIO SURVEY TEST SHEET

Job	W0012, Franklin, TN	Master or Repeater Site	Remote Site
Site Info	Site Name	Fieldstone 2	Old Hillsboro Rd
	Site Location (Long. and Lat.)	35° 58' 01.2 N, 086° 53' 25.2" W	36° 00' 04.5" N, 086° 53' 28.8" W
	Site Elevation (ft. above sea level)	192.9	182.9
Antenna Info	Antenna Height (ft)	80	15
	Antenna Type	Omni	Yagi
	Antenna Gain (dB)	6	9.2
	Antenna Azimuth (degrees)	n/a	200
Radio Info	Radio Manufacturer	GE MDS	GE MDS
	Radio Model	SD01	SD01
	Radio Receiver Sensitivity (dBm)	-112	-112
	Transmit Frequency (MHz)	173.3375	173.3375
	Receive Frequency (MHz)	173.3375	173.3375
	Transmit Power (W)	5	5
	RSSI (dBm)	-86	-84
	Noise Floor (dBm)	-120	-120
	Signal to Noise Ratio (dB)	34	36
	Fade Margin (dB)	26	28
Wattmeter Test	Forward Power (W)	4.5	3.5
	Reverse Power (W)	0.35	0.8
Radio Link Test	Transmitted Packet Count	15	15
	Received Packet Count	15	15
	Total Bits	1000	1000
	Bit Errors	0	0
Radio Ping Test	Packets Transmitted	30	30
	Packet Loss (%)	0	0
	Average Round Trip Time (ms)	807	727
Weather	Sunny, 68 Degrees, 4pm, 4-17-18		

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: June 9, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 018 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Antenna Replacement and
Addition of Mikrotic Devices **CITY PROJECT NO.:** 2014-0288

REFERENCE: April 26, 2018 Revere Control Proposal (attached)

DESCRIPTION:

Each of the remote sites in the SCADA system is designed to operate via radio and fault over to cellular if radio signal is lost. By design, all the remote sites were initially connected into the SCADA system via cellular only, and once all sites were up and operating, they were all switched over to radio with cellular fault over. After startup of the radio system certain stations experienced radio communication failures on a regular basis. Since the radio surveys at these stations show adequate signal strength the problem was determined to be the existing older antennas and cables. One purpose of this work order is to compensate Revere Control Systems for replacement of antennas and cables at the Fieldstone Farms 1, Avalon 3, Avalon 4, and Avalon repeater site.

In addition, the routers/modems at each remote site are designed to transmit operating data to the cloud on a regular basis and this transmission (when multiplied by 41 sites) was overwhelming the radio bandwidth, which was causing the remote sites to fault over to cellular on a full-time basis. The information being transmitted was not needed but could not be turned off in the routers/modems. To rectify this problem, Revere Control Systems added a Mikrotik device to each remote site that screens out most of this data transmission. The second purpose of this work order is to compensate Revere Control Systems for the addition of these devices.

The work under this Task Order shall be performed for a lump sum price of \$29,292.84.

ATTACHMENTS: April 26, 2018 Revere Controls Proposal (attached)

CDM SMITH:

By:

Date: June 9, 2018

CONTRACTOR:

By:

Date: June 11, 2018



Antenna Repairs and Mikrotek Routers City of Franklin Water Management Department

April 26, 2017

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
Collections and Distribution Telemetry SCADA System

Subj: Quote for Antenna Repairs and Mikrotek Routers, Rev 1

Mr. Huguenard:

As you know, antenna repairs were required at the Fieldstone Farms 1, Avalon 3, Avalon 4 and Avalon repeater sites. We also needed to add an additional Mikrotek router at each site. This quote is for compensation for labor and materials we provided in good faith to resolve the issues on a timely basis. There were many other sites where we replaced cable and connectors to improve signal strengths and reliability, but we will waive seeking compensation for those instances.

Labor

Project Management.....	2 Hours	\$148/Hr	\$ 296
Site Services	184 Hours	\$108/Hr	<u>\$ 19,872</u>
(2 techs for 2 weeks onsite including 24 hours portal-to-portal from Birmingham, AL) Labor Total:			\$ 20,168

Expenses

Mileage.....	744 Miles.....	\$0.545.....	\$ 405.48
Meals	20 Days.....	\$ 59.....	\$ 1,180.00
Lodging	20 Days.....	\$ 148.91.....	<u>\$ 2,978.20</u>
Subtotal:			\$ 4,563.68

Materials

Avalon repeater Omni antenna	\$ 670.65
Avalon 3, 4 and Fieldstone Farms 1 Yagi antennas, connectors	\$ 787.80
Mikrotek routers and rail adapters	<u>\$ 2,688.06</u>
Subtotal:	\$ 4,146.51
10% Profit:	<u>\$ 414.65</u>
Material Total:	\$ 4,561.16

Total Price \$ 29,292.84



**Antenna Repairs and Mikrotik Routers
City of Franklin Water Management Department**

Current Terms and Conditions apply

Sincerely,

David Abel

David Abel
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com

Revere Control Systems
 2240 Rocky Ridge Road
 Birmingham, AL 35216
 Phone: 205-824-0004
 Fax: 205-824-0408



Purchase Order W0012120

P.O. #: W0012120	
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Vendor: TESSC001 TESCO TECHNOLOGIES PO BOX 102885 ATLANTA, GA 30368-2885 USA Ph: (410) 229-1076 / Fax: (410) 527-0005 Contact: Dan Miccolupi	Ship To: Stone & Sons Electrical c/o City of Franklin Public W. 124 Lumber Drive Franklin, TN 37064
--	---

P.O. Date: 04/16/18 Ordered By: GREG ODOM Remarks: ORDER: 104725	Delivery Date: 04/19/18 Ship Via: 3RD DAY SELECT Shipping Terms: ShipPoint Prepay & Add Payment Terms: NET 30 DAYS Instructions:
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Seq	Part Number	Description	U/M	Quantity	Unit Cost	Extension
001	!37510	OMNI ANTENNA, ANT150F2, TELEWAVE	EA	1.00	670.6500	670.65
Total:						670.65

Revere Control Systems
 2240 Rocky Ridge Road
 Birmingham, AL 35216
 Phone: 205-824-0004
 Fax: 205-824-0408



Purchase Order W0012115

P.O. #: W0012115	
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Vendor: TESSC001 TESCO TECHNOLOGIES PO BOX 102885 ATLANTA, GA 30368-2885 USA Ph: (410) 229-1076 / Fax: (410) 527-0005 Contact: Dan Miccolupi	Ship To: Stone & Sons Electrical c/o City of Franklin Public W. 124 Lumber Drive Franklin, TN 37064
--	---

P.O. Date: 04/04/18	Delivery Date: 04/09/18
Ordered By: GREG ODOM	Ship Via: Ground Shipping Terms: ShipPoint Prepay & Add Payment Terms: NET 30 DAYS Instructions:
Remarks: ORDER: 077798 & 077799	

Seq	Part Number	Description	U/M	Quantity	Unit Cost	Extension
001	1482695	YAGI ANTENNA, MYA1505KN	EA	3.00	116.9200	350.76
002	338985	N Male Hex/Knurl Combo No Brai	EA	6.00	9.1300	54.78
003	310778	GK-S400TT - GROUND KIT FOR LMR400	EA	3.00	23.2000	69.60
004	18264	Universal Weatherproofing Kit	EA	2.00	12.8300	25.66
005	59520	LMR400 CABLE PER FOOT	EA	200.00	0.9100	182.00
Total:						682.80

Revere Control Systems
 2240 Rocky Ridge Road
 Birmingham, AL 35216
 Phone: 205-824-0004
 Fax: 205-824-0408



Purchase Order W0012116

P.O. #: W0012116	
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Vendor: CITEL001 CITEL, INC. 11381 INTERCHANGE CIRCLE S MIRAMAR, FL 33025 USA Ph: (800) 248-3548 / Fax: (954) 430-7785 Contact: Citel Inc.	Ship To: STONE & SONS ELECTRICAL C/O CITY OF FRANKLIN P.W. 124 LUMBER DRIVE FRANKLIN, TN 37064
--	--

P.O. Date: 04/04/18 Ordered By: GREG ODOM Remarks: JACK SHAW	Delivery Date: 04/09/18 Ship Via: Ground Shipping Terms: ShipPoint Prepay & Add Payment Terms: NET 30 DAYS Instructions:
--	--

Seq	Part Number	Description	U/M	Quantity	Unit Cost	Extension
001	P8AX09-N-FF	CITEL COAXIAL SPD, N-F TO N-F	EA	3.00	35.0000	105.00
Total:						105.00

Jason Johanneson

From: support@roc-noc.com
Sent: Monday, March 19, 2018 1:37 PM
To: Jason Johanneson
Subject: ICD Group, Inc: Order receipt #35238

Follow Up Flag: Follow up
Flag Status: Flagged

You have received this notification from [ICD Group, Inc](#) because you are a registered user or you or some other registered user requested some information for you from our store.

Dear Jason Johanneson,

Thank you for your order. Please come back soon!

Invoice:



roc-noc
Network Operations Center

INVOICE

Date: 03-19-2018 13:36
Order id: #35238
Order status: Queued
Payment method:
Credit Card
Delivery method:
FedEx Priority Overnight
(R)

ICD Group, Inc
121 Hall Street, Rockford
61107, Illinois
United States
CALL US: 888-762-5662
International: 815-209-
2224
Fax: 815-968-6888
Email: support@roc-
noc.com

Email: jjohanneson@reverecontrol.com

First name: Jason

Last name: Johanneson

Company: Revere Control Systems

Billing address

Shipping address

First name: Jason
Last name: Johanneson
Address: 2240 Rocky Ridge Rd
City: Birmingham
State: Alabama
Country: United States
Zip/Postal code: 35216
Phone: 2055686334
Fax:

First name: Jason
Last name: Johanneson
Address: 2240 Rocky Ridge Rd
City: Birmingham
State: Alabama
Country: United States
Zip/Postal code: 35216
Phone: 2055686334
Fax:

Products ordered

SKU	Product	Item price	Quantity	Total
RB750Gr3	Mikrotik RouterBoard hEX RB/750Gr3 RB750Gr3 (was RB750G) 5 port 10/100/1000 switch and/or router in molded plastic case with power supply - New! Options: Power_Supply: includes 12vdc 12 watt US power supply (default)	\$57.00	41	\$2337.00

Subtotal: \$2337.00

Shipping cost: \$287.06

Total: \$2624.06

Thank you for your purchase!

Thank you for using our shopping system

ICD Group, Inc
Phone: 888-762-5662
Fax: 815-968-6888
URL: rOc-nOc.com

Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
Phone: 205-824-0004
Fax: 205-824-0408



Purchase Order W0012118

P.O. #: W0012118	
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Vendor: SOUTH005 SOUTHERN CONTROLS, INC. PO BOX 210399 MONTGOMERY, AL 36121-0399 USA Ph: (205) 424-1979 / Fax: (205) 426-6040 Contact: Debi Dorr Southern C	Ship To: Revere Control Systems, Inc. 2240 Rocky Ridge Road Birmingham, AL 35216
---	---

P.O. Date: 04/11/18	Delivery Date: 04/13/18
Ordered By: GREG ODOM	Ship Via: UPS 2 Day
	Shipping Terms: ShipPoint Prepay & Add
	Payment Terms: NET 25 DAYS
Remarks: DANIEL MOTE	Instructions:

Seq	Part Number	Description	U/M	Quantity	Unit Cost	Extension
001	1201578	PHNX UNIVERSAL RAIL ADAPTER 3	EA	100.00	0.6400	64.00
Total:						64.00

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: June 9, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 019 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Purchase of Additional VTScada Licenses **CITY PROJECT NO.:** 2014-0288

REFERENCE: May 2, 2018 Revere Control Proposal and May 4 clarification letter from Trihedral (attached)

DESCRIPTION:

The City discovered during startup, when the SCADA system was turned over for City operation, that operators were frequently not able to log into the VTScada system due to the limited number of available licenses. The purpose of this Work Order is to purchase additional licenses. It turns out that the Unlimited Thin Client package is the most cost-effective way for the City to obtain the additional licenses that are needed. Please see the attached quote and follow up letter documenting clarifications provided by Trihedral during a conference call with the City, CDM Smith, and Revere.

The work under this Task Order shall be performed for a lump sum price of \$9026.95.

ATTACHMENTS: May 2, 2018 Revere Controls Proposal and May 4 clarification letter from Trihedral (attached)

CDM SMITH:

By: _____

Date: June 9, 2018

CONTRACTOR:

By: _____

Date: June 11, 2018

May 2, 2018

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
CDM Project Number 14915-96594-SCADA
COF Contract No. 2014-0288

Subj: Additional VTScada Thin Client Licenses

Mr. Huguenard:

Trihedral offers to sell a package of licenses that includes unlimited thin clients, additional training and support for \$8,206.32. The price for a single, 10K Thin Client is \$3,295 and \$10,195 for a 5-pack of licenses. I highly recommend purchasing the package.

Unlimited Thin Client package	\$ 8,206.32
10% Profit:	<u>\$ 820.63</u>
Total:	\$ 9,026.95

Schedule Impact

No impact to substantial nor final completion dates.

Attachments:
Package Quote
US Pricing

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com



Quotation

Quote Number Q13814
Terms Net 30 Days
Date 05-01-2018
Sales Person Alan Hudson
Valid Until 05-31-2018
Tax Info. Tax ID# 26-0449423

Bill To

Dave Abel
Revere Control Systems - AL
2240 Rocky Ridge Road
Birmingham, AL 35216
USA

Ship To

Gregg Gray
Revere Control Systems - AL
2240 Rocky Ridge Road
Birmingham, AL 35216
USA

S/N 52050, 52051 - City of Franklin, TN Water Distribution & Collection

#	Qty.	Product	Unit Price	Ext. Price
1	1	~~VTScada 10K Dual Server Premium~~Upgrade	\$ 8,000.00	\$ 8,000.00
1	2	VTScada 10K - Development Runtime		
2	1	VTScada 10K - Thin Client - Unlimited		
3	2	VTScada 10K - Alarm Notification		
4	1	VTScada Operation and Configuration Training Course		
5	1	Bundle SupportPlus		
6	1	Bundle 24/7 Emergency Support		
7	-1	Time-Limited Bundle Discount		
8	-1	Current Bundle Trade-in Value		

Proposed SupportPlus Expiry Date: January 19, 2019
Bundle Value for Renewals: \$30,595.00

Group Totals

Subtotal: \$ 8,000.00
Total: \$ 8,000.00

S/N 51905 - City of Franklin, TN - City of Franklin TN Telemetry Upgrade PC Replacement - Laptop

#	Qty.	Product	Unit Price	Ext. Price
1	1	24/7 Emergency Support - S/N 51905	\$ 206.32	\$ 206.32

24/7 Emergency Support is not discounted if Trihedral is first tier support.

With the addition of 24/7 Emergency Support to your existing SupportPlus Service, help is always available. This service is intended for emergency issues directly associated with VTScada software. It does not cover application specific issues, over the phone training or advanced system design. It cannot replace training or the services of engineers, consultants or integrators.

Emergency Support can only be added to a valid SupportPlus contract and cannot be purchased as a standalone service. The cost of the service is 5% of the calculated software value with a minimum of \$1,200.00 per year.

24/7 support is limited to those licenses on which support has been purchased. Licenses comprised of distributed sub-systems affect system loads in a variety of ways and as such require support to be purchased on all connected components.

Group Totals

Subtotal: \$ 206.32
Total: \$ 206.32

Quotation Totals

Currency:	US Dollar
Subtotal:	\$ 8,206.32
Total:	\$ 8,206.32

Terms and Conditions:

VTScada is licensed exclusively in accordance with the VTScada Software License Agreement (Standard Conditions) and the VTScada Software Standard Support Services Agreement (Standard Conditions) available from <https://www.trihedral.com/license-agreement>.

VTScada support and upgrade pricing are in accordance with the previously accepted license agreement terms and any differing purchase order terms proposed will not be accepted without written agreement by Trihedral.

The SupportPlus renewal quote contains grandfathered pricing that is contingent upon the receipt of a purchase order before the quote expiry date (as agreed to under the VTScada license terms of the original license). Purchase orders received with an alteration of previously accepted terms, or after the quote expiry date, will require a re-quote of the renewal price at current pricing.

Quotation Accepted By

Quote Number Q13814

Print Name _____

Title _____

Signature _____

Date _____

I/O Tags	Development Runtime	Runtime	Alarm Notification (Email, SMS, Voice)	ODBC, OPC, WEB Services For Runtime Licenses	Thin Clients (concurrent PC and Mobile connections)		
					Single	5-Pack	Unlimited
1,000	5,095	2,595	1,095	1,495	2,095	6,495	7,095
5,000	6,595	3,395	2,095	1,995	2,595	8,895	13,295
10,000	8,195	4,095	2,095	2,095	3,295	10,195	19,395
25,000	9,795	4,895	3,295	2,495	4,095	13,295	30,595
Up to 2,500,000	Please refer to Enterprise Pricing Sheet						

Support Options - Single Vendor

90 days SupportPlus Technical Support and Product Updates	Included with software purchase
Annual SupportPlus Technical Support and Product Updates.	15% of total software purchase price
Annual 24/7 Emergency Product Support. Available as extension of annual SupportPlus.	5% (minimum \$1,200)

Integrated Components Included (single installation)		Development Runtime	Runtime
Run and Operate	Application Server - Primary or redundant event-driven execution for any scale	✓	✓
	Runtime Client - Can function as a complete or partial back-up for system operations	✓	✓
	Widgets and Graphics Library - 1,000's for many industries and applications	✓	✓
	Historian - High performance with zero set-up time needed	✓	✓
	Security - Integrated and extensible by both privilege and role-based models	✓	✓
	Network and Computer Resource Monitoring With SNMP Agent - A total system view	✓	✓
	Alarms and Events - Unlimited logging of all user and system actions	✓	✓
	Trending - Automatic and available with no additional set-up	✓	✓
	Reporting - Manual or automatic report creation with extensible options	✓	✓
	Slippy Maps Integration - Available either on-line or off-line with full pan and zoom	✓	✓
	Electronic Operator Logbooks - Tamperproof recording of noteworthy events	✓	✓
I/O Drivers	Common (e.g. Modbus, DF1, CIP/ENIP, Siemens S7, Omron Host Link, OPC)	✓	✓
	Advanced (e.g. DNP3, SNMP, Motorola ACE, CalAmp and MDS radio diagnostics)	✓	✓
	Proprietary (e.g. DataFlow Systems and others)	✓	✓
	DataLogger (e.g. DF1, SCADAPack)	✓	✓
Develop	Automatic Version Control - System-wide disaster recovery and audit tools	✓	
	Idea Studio - Efficient development environment online, offline and multi-developer	✓	
	Change Deployment - Remotely update all computers with a single click	✓	
	Scripting and Debugging Tools - Powerful event-driven language of 700+ functions	✓	
	ODBC Server, OPC Server, Web Services - Sharing process data and services with 3 rd party systems	✓	

Prices in effect as of January 1, 2016. Subject to change without notice.

VTScada and the Idea Studio are registered trademarks of Trihedral Engineering Limited. Allen-Bradley, SCADAPack, DataFlow Systems, Modbus, CIP, ENIP, Siemens S7, Omron Host Link, OPC, DNP3, SNMP, Motorola ACE, CalAmp and MDS are trademarks of their respective owners.

May 4, 2018

Revere Control Systems
2240 Rocky Ridge Road
Birmingham AL 35216

Attn: Dave Abel

Re: Quote #Q13814 - Addition of Thin Clients to the Franklin TN VTScada license

Hello Dave.

Thank you for initiating the teleconference on Friday, May 04, 2018 for the purpose of better understanding Quotation #Q13814. I am sorry that our quote was confusing. Our intent was to help Franklin get the most value out of their existing license and provide them the most economical way to add three additional thin client connections. As we discussed, the option we ended up with would give Franklin an unlimited number of concurrent thin clients.

Here is my summary of our conversation today.

- The existing Franklin VTScada license is the 10K Tag Dual Server Config. It includes licenses for two servers, two developments, two alarm notification systems, and two concurrent thin clients. The original pricing was per the Bundle at a cost of \$22,595.
- The pricing for three additional thin clients would be \$3,295 each; \$9,885 total. (plus SupportPlus to match the existing licensing)
- The better value would be the purchase a five pack of thin clients at \$10,195. (plus SupportPlus to match the existing licensing)
- The best value would be to upgrade the 10K Dual Server Config Bundle to the Dual Server Premium Bundle by simply paying the difference in pricing for the two bundles.
\$30,595 (for the Premium) - \$22,595 (for the Config) = \$8000 difference.
(plus SupportPlus to match the existing licensing)
- This makes the Premium Bundle (with the Unlimited Thin Clients) less expensive by \$1,885 (price for the three additional thin clients) and \$2,195 (price for the five pack of thin clients).
- The cost to synchronize the SupportPlus expiry dates is \$206.32. Since the Premium Bundle offers 24/7 Emergency Support as standard, the SupportPlus would have 24/7 until the expiry date of January 19, 2019.
- Keeping SupportPlus current is an annual cost of 15% of original purchase price, as long as it stays current and does not lapse. Adding 24/7 emergency support would add an additional 5% (for a total of 20% of original purchase price). For this license, the 15% (or 20%) would be based on the total license value of \$30,595, yielding an annual cost of \$4589.25 (or \$6119). Most of our customers carry the normal SupportPlus.

- SupportPlus provides for technical support as well as continual updates of the “latest and greatest” versions of VTScada.
- SupportPlus renewal is optional. Should you choose not to renew, the VTScada license is still valid and will continue to run flawlessly but new versions of the software will not be available.

Hopefully this summary accurately represents our call on Friday. Please make any corrections necessary. Let me know of any other questions or concerns.

Have a wonderful week!

Alan Hudson

VTScada software by Trihedral

alan.hudson@trihedral.com

205-612-6665

Attachments:

- o US Price List, Small and Medium Systems
- o US Price List, Bundles
- o SupportPlus datasheet
- o SupportPlus 24/7 datasheet

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

FROM: CDM Smith
3715 Northside Parkway NW
Building 300, Suite 400
Atlanta, GA 30327
(404) 720-1400

DATE: October 31, 2018

PROJECT: City of Franklin, Tennessee
Water Distribution and Collection Systems SCADA Improvements

WORK ORDER NUMBER: 020 **CDM SMITH PROJ. NO.:** 14915-96594

SUBJECT: Credits for Unused Allowance and Credit for Natchez Trace RTU Installation **CITY PROJECT NO.:** 2014-0288

REFERENCE: October 10, 2018 credit proposal letter from David Abel to Bob Huguenard

DESCRIPTION:

Work Order 002 included an allowance for unforeseen conditions, which was not used. This Work Order credits that allowance back to the Owner. In addition, performance of the Natchez Trace RTU work was dependent upon Harpeth Valley Utilities completing their adjoining work first. That work was not complete in time for the Natchez Trace RTU to be completed under this project. Therefore, this Work Order also credits the amount of the remaining Natchez Trace RTU work. The RTU has been installed, but conduit installation, wire pulling and termination, and field testing must still be completed. The remaining Natchez Trace work will be performed by Revere under a separate maintenance contract, so the same amount credited under this Work Order will be included under the maintenance contract.

Revere Controls agrees to provide a credit of \$3,000 for the unused allowance under Work Order 2 and a credit of \$9,170 for the Natchez Trace RTU work that will no longer be performed under this contract. The total credit provided under the Work Order is \$12,170.

CDM SMITH:

By:

Date: October 31, 2018

CONTRACTOR:

By:

Date: 10/31/2018

October 10, 2018

CDM Smith
3200 Windy Hill Road, S.E.
Suite 210 West
Atlanta, Georgia 30339-5460

Attn: Mr. Robert Huguenard, PE, BCEE

Ref: City of Franklin Water Management Department
CDM Project Number 14915-96594-SCADA
COF Contract No. 2014-0288

Subj: Close Out Changes

Mr. Huguenard:

Below are quotes to close out the remaining two work orders:

1. Credit for unused allowance to Work Order 002 Modification of Existing Pump Control Panels to Add Remote Pump On/Off Capability

Allowance Credit.....< \$ 3,000.00 >

2. Credit for completing the Natchez Trace RTU Installation (ref. Email RE: Revere Maintenance Contract dtd 10/8). Work includes the following: a) completing the conduit entries into the Harpeth Valley Utilities RTU and Revere Control System RTU; b) furnishing, installing and terminating each TSP's between the panels using the existing conduit installed during recent site upgrade; c) completing field testing. This credit will be added to the professional services contract.

Credit from existing contract to be added to services contract.....< \$ 9,170.00 >

Lump Sum Total Credit.....< \$ 12,170.00>

Terms and Conditions from the current contract agreement apply.

Sincerely,

David Abel

David Abel
Municipal Project Manager
Revere Control Systems, Inc.
Phone: 615-604-1579
dabel@reverecontrol.com

CONSTRUCTION CHANGE AUTHORIZATION (WORK ORDER)

TO: Mr. David Abel
Project Manager
Revere Control Systems
2240 Rocky Ridge Road
Birmingham, AL 35216
(205) 824-0004

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3715 Northside Parkway NW
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CDM SMITH:

By:

Date: October 31, 2018

CONTRACTOR:

By:

Date: 10/31/2018

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the **same vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by Williamson County, Tennessee.

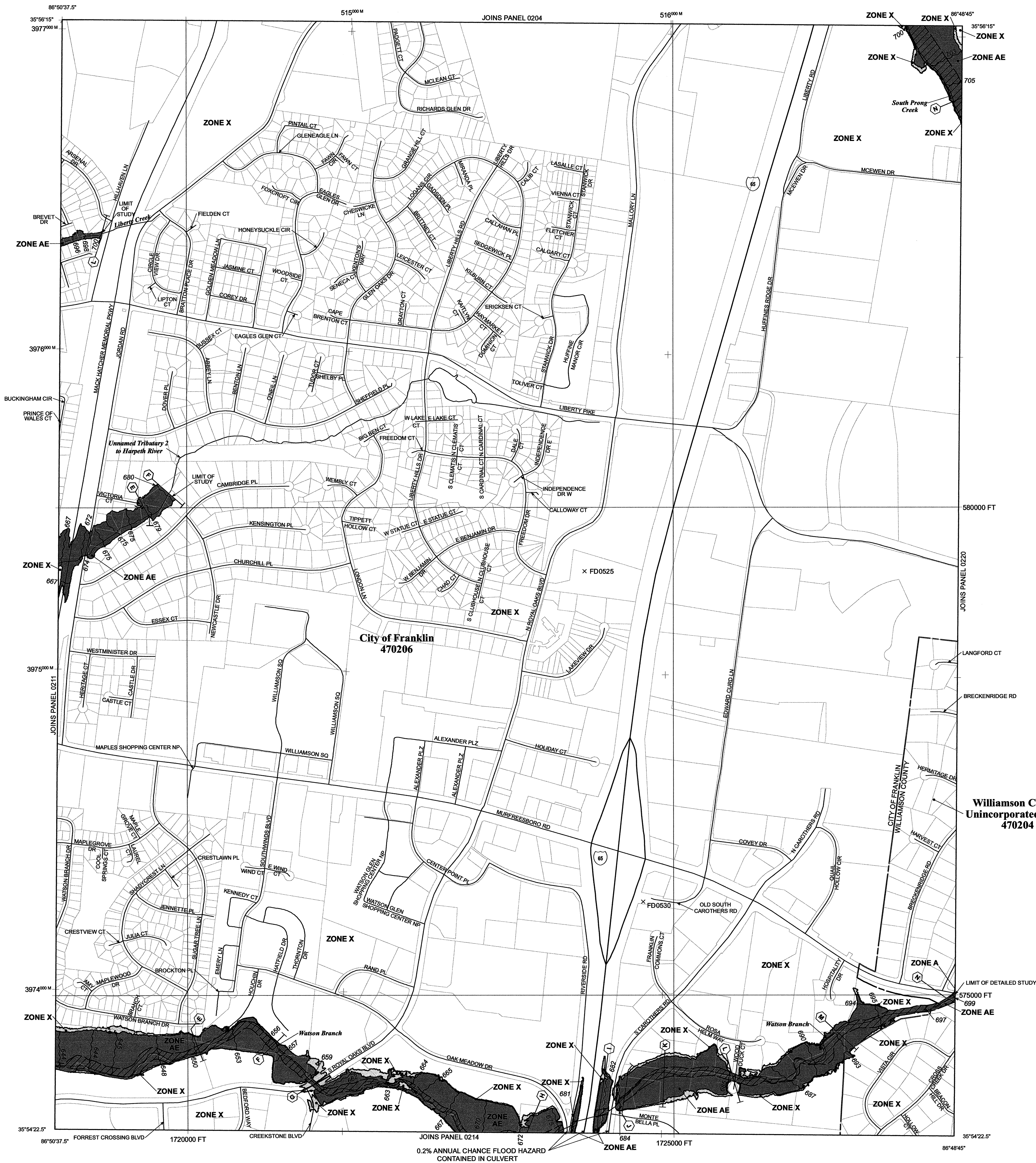
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the *Flood Insurance Study report* (which contains *authoritative hydraulic data*) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a *Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance of greater flood event.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

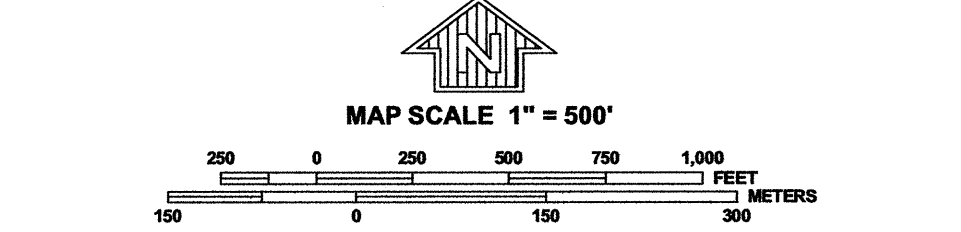
Floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
(EL 987)
* Referenced to the North American Vertical Datum of 1988 (NAVD 88)
Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275°00' M
6000000 FT
DX5510
M 1.5
River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index
EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
JANUARY 16, 2003

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 29, 2006 - to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations and Special Flood Hazard Areas, to change Special Flood Hazard Areas, to add roads and road names, to reflect the incorporation of the Town of Nolensville, and the Town of Thompson's Station, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, to add floodway, and to change floodway.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



PANEL 0212F

FIRM
FLOOD INSURANCE RATE MAP
WILLIAMSON COUNTY, TENNESSEE
AND INCORPORATED AREAS

PANEL 212 OF 485
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	470206	0212	F
WILLIAMSON COUNTY	470204	0212	F

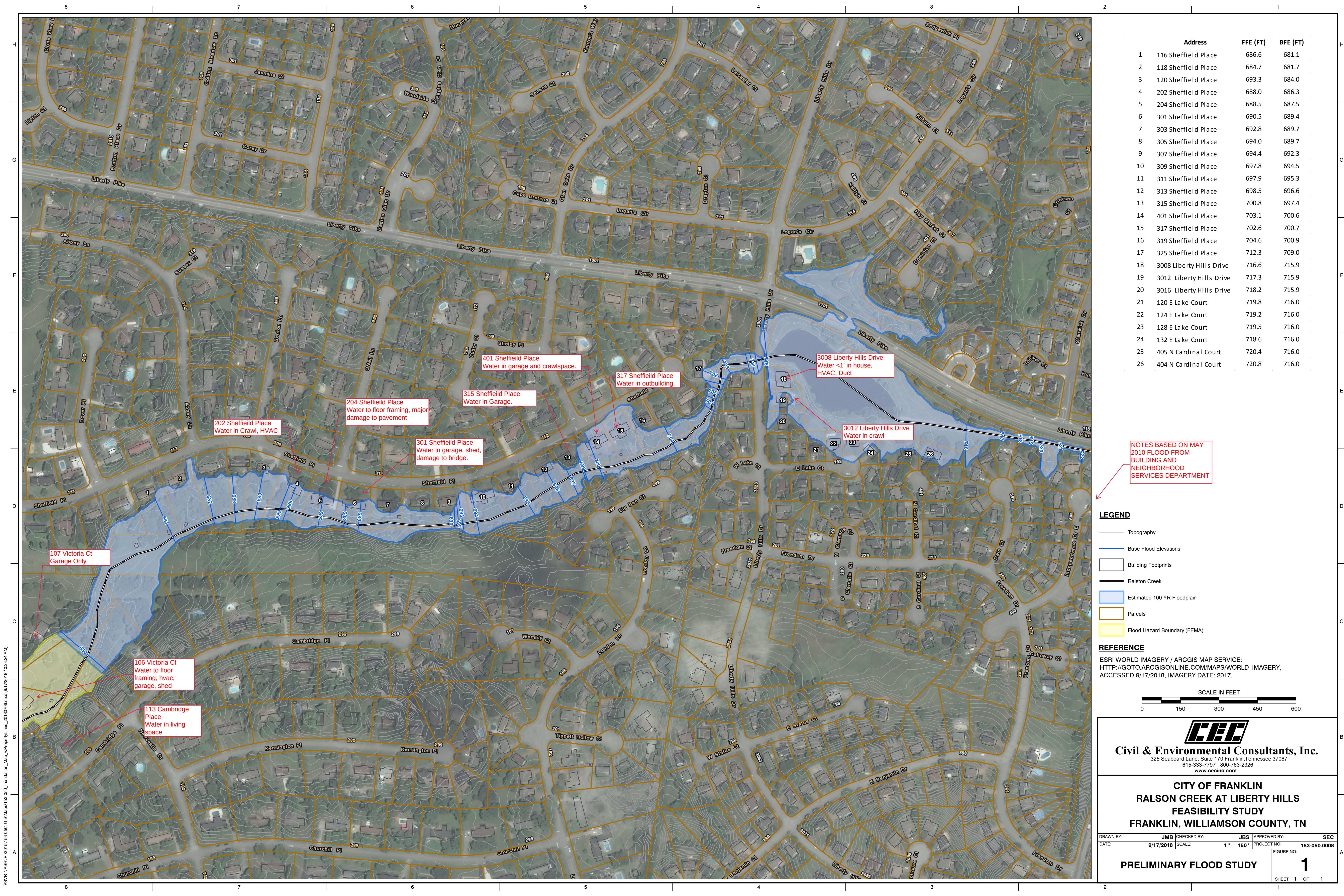
BEST AVAILABLE COPY AT THIS TIME

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
47187C0212F

MAP REVISED
SEPTEMBER 29, 2006

Federal Emergency Management Agency



	Address	FFE (FT)	BFE (FT)
1	116 Sheffield Place	686.6	681.1
2	118 Sheffield Place	684.7	681.7
3	120 Sheffield Place	693.3	684.0
4	202 Sheffield Place	688.0	686.3
5	204 Sheffield Place	688.5	687.5
6	301 Sheffield Place	690.5	689.4
7	303 Sheffield Place	692.8	689.7
8	305 Sheffield Place	694.0	689.7
9	307 Sheffield Place	694.4	692.3
10	309 Sheffield Place	697.8	694.5
11	311 Sheffield Place	697.9	695.3
12	313 Sheffield Place	698.5	696.6
13	315 Sheffield Place	700.8	697.4
14	401 Sheffield Place	703.1	700.6
15	317 Sheffield Place	702.6	700.7
16	319 Sheffield Place	704.6	700.9
17	325 Sheffield Place	712.3	709.0
18	3008 Liberty Hills Drive	716.6	715.9
19	3012 Liberty Hills Drive	717.3	715.9
20	3016 Liberty Hills Drive	718.2	715.9
21	120 E Lake Court	719.8	716.0
22	124 E Lake Court	719.2	716.0
23	128 E Lake Court	719.5	716.0
24	132 E Lake Court	718.6	716.0
25	405 N Cardinal Court	720.4	716.0
26	404 N Cardinal Court	720.8	716.0

NOTES BASED ON MAY 2010 FLOOD FROM BUILDING AND NEIGHBORHOOD SERVICES DEPARTMENT

LEGEND

- Topography
- Base Flood Elevations
- Building Footprints
- Ralston Creek
- Estimated 100 YR Floodplain
- Parcels
- Flood Hazard Boundary (FEMA)

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 9/17/2018, IMAGERY DATE: 2017.



Civil & Environmental Consultants, Inc.
325 Seaboard Lane, Suite 170 Franklin, Tennessee 37067
615-333-7797 800-763-2326
www.ccecinc.com

CITY OF FRANKLIN
RALSON CREEK AT LIBERTY HILLS
FEASIBILITY STUDY
FRANKLIN, WILLIAMSON COUNTY, TN

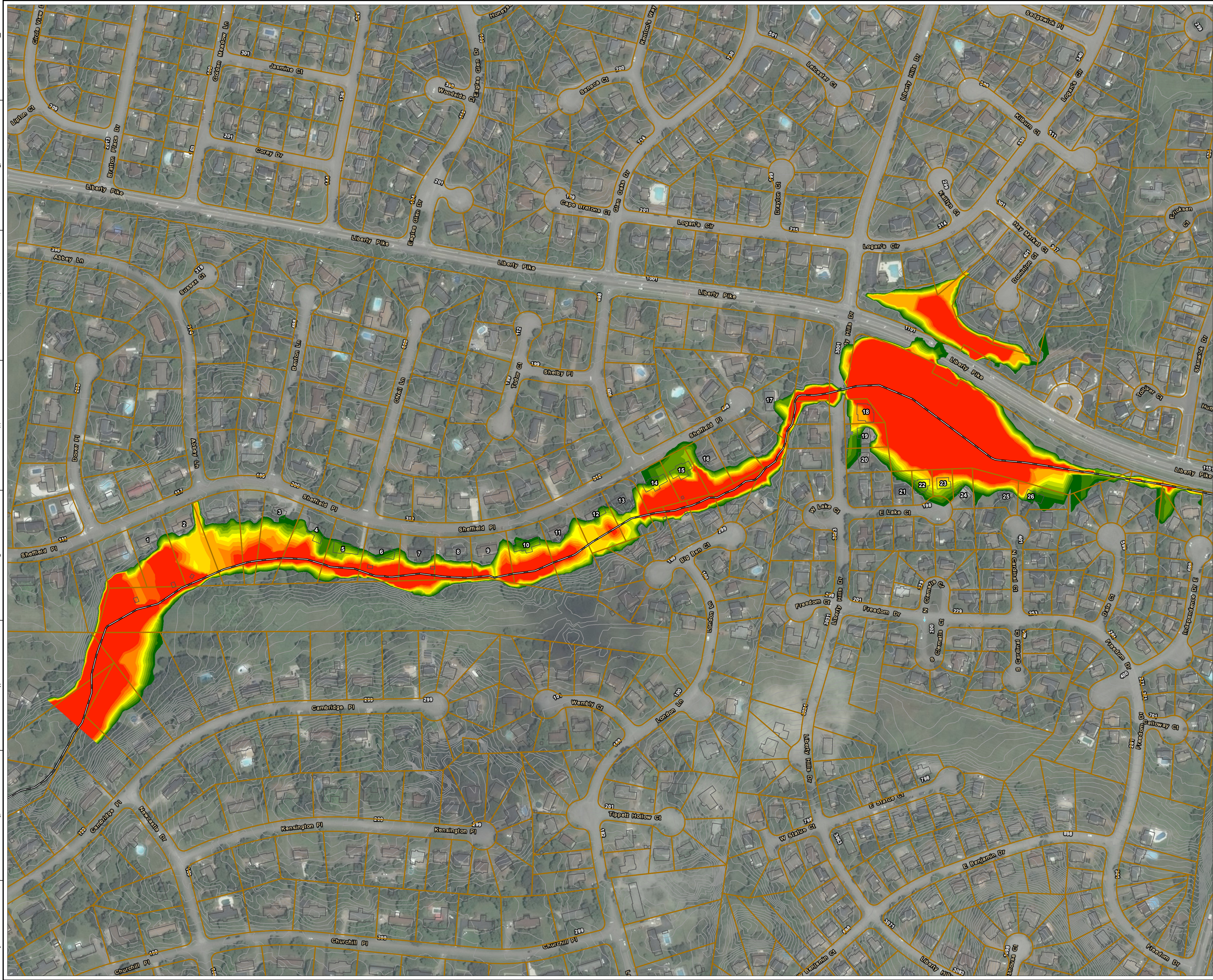
DRAWN BY:	JMB	CHECKED BY:	JBS	APPROVED BY:	SEC
DATE:	9/17/2018	SCALE:	1" = 150'	PROJECT NO:	153-050.0008

PRELIMINARY FLOOD STUDY

FIGURE NO: **1**
SHEET 1 OF 1

\\SVRNASHP\p\2018\153-050-GIS\Map153-050_Inundation_Map_vfPropertyLines_20180706.mxd (9/17/2018 10:29:24 AM)

\\SVRNASHP1\2018\153-050-GIS\Map153-050_Inundation_Map_10DepthGrid.mxd (9/17/2018 10:19:35 AM)



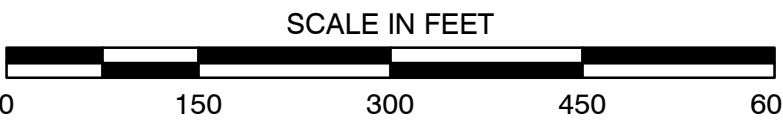
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7	303 Sheffield Place	692.8	689.7
8	305 Sheffield Place	694.0	689.7
9	307 Sheffield Place	694.4	692.3
10	309 Sheffield Place	697.8	694.5
11	311 Sheffield Place	697.9	695.3
12	313 Sheffield Place	698.5	696.6
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24	132 E Lake Court	718.6	716.0
25	405 N Cardinal Court	720.4	716.0
26	404 N Cardinal Court	720.8	716.0

LEGEND

- Topography
- Building Footprints
- Ralson Creek
- Parcels
- Depth (ft)
 - <0.25
 - 0.25 - 0.5
 - 0.5 - 0.75
 - 0.75 - 1
 - 1 - 1.25
 - 1.25 - 1.5
 - 1.5 - 1.75
 - 1.75 - 2
 - 2 - 2.25
 - 2.25 - 2.5
 - >2.5

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 9/17/2018, IMAGERY DATE: 2017.



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CITY OF FRANKLIN
RALSON CREEK AT LIBERTY HILLS
FEASIBILITY STUDY
FRANKLIN, WILLIAMSON COUNTY, TN

DRAWN BY: JMB CHECKED BY: JBS APPROVED BY: SEC
DATE: 9/17/2018 SCALE: 1" = 150' PROJECT NO: 153-050.0008

PRELIMINARY FLOOD STUDY

FIGURE NO: 1
SHEET 1 OF 1



Civil & Environmental Consultants, Inc.

325 Seaboard Lane | Suite 170 | Franklin, Tennessee 37067

Phone: (615) 333-7797 | Fax: (615) 333-7751

MEMORANDUM

Date: May 1, 2019

To: Mr. Paul Holzen, P.E., LEED AP, City of Franklin

From: Eric J. Gardner, P.E., CPESC, Jeffrey B. Shaver, P.E., CFM, CPESC

Subject: Ralston Creek at Liberty Hills – Feasibility Study Summary

CEC Project No. 153-050

1.0 INTRODUCTION

CEC has completed a hydrologic and hydraulic analysis of Ralston Creek to determine potential solutions to address flooding and streambank erosion in the Royal Oaks Subdivision. The study area also included the Liberty Hills Subdivision retention pond, located east of the subdivision entrance from Liberty Pike. This analysis has been performed according to the Professional Services Agreement (COF Contract No. 2015-0356) approved on November 19, 2015 and amended on September 12, 2017.

The second phase of the hydrologic and hydraulic analysis was to delineate the 100-yr floodplain for Ralston Creek in the Royal Oaks Subdivision and around the Liberty Hills Pond. In addition, once the 100-yr floodplain was delineated potential solutions would be evaluated to reduce flooding during the 100-yr event upstream of Liberty Hills Drive. The goal for the potential solutions was to decrease the flooding upstream of Liberty Hills Drive while not increasing the outflow from the Liberty Hills Pond when compared to the existing conditions. The results of the extended flood study were displayed at the Project Public Meeting, held on November 8, 2018 and are depicted on the attached Figure 1 “Preliminary Flood Study”.

Since this analysis had multiple phases with varying objectives, the approach and results for each analysis phase are presented separately.

2.0 EXECUTIVE SUMMARY

CEC analyzed fifteen potential solutions to reduce flooding along Ralston Creek and around the Liberty Hills Pond. The first phase analyzed eleven potential solutions that showed flooding along Ralston Creek due to the lower more frequent rainfall events could be reduced through modifications to the Liberty Hills Pond. However, in most instances a reduction in outflow from the pond resulted in an increase in the pond water elevation. Five of the potential solutions showed a reduction in both the pond outflow and pond water elevation, however they were either trending toward potential increases during larger rainfall events, provided minimal reductions in the pond outflow such that it would not provide a noticeable reduction in flooding along Ralston Creek, or were “extreme”

solutions that may not be acceptable. The “extreme” solutions would require the Liberty Hills Pond to be changed from a neighborhood amenity to an unsightly flood control facility (e.g. drain pond and construct walls around pond to increase storage volume). It was also determined that the cost-benefit ratio of the “extreme” solutions would provide little relief for a relatively large cost.

In simple terms, the analysis shows releasing stormwater from the pond at a slower rate requires additional storage volume for the pond, which has the potential of increased flooding for the properties adjacent to the Liberty Hills Pond. Subsequently, modifying the outlet structure to release stormwater quicker resulted in the potential for increased flooding downstream of the pond along Ralston Creek.

The second phase analyzed four additional potential solutions which showed there is not a solution that will lower the pond water elevation a measurable amount for the 100-yr event while not increasing the outflow from the pond. The extended flood study also indicated that the majority of the houses adjacent to the right descending bank of Ralston Creek downstream of Liberty Hills Drive are located in the base flood (100-year) floodplain in the existing condition.

CEC recommends that the City not make modifications to the Liberty Hills Pond outlet structure and storage capacity. The following information provide a detailed description of the existing conditions and each of the potential solutions that were evaluated. The following details describes the modifications that would be required with each option, a table with the results from the analysis, and CEC’s reason for not recommending the option.

3.0 FLOODING AND STREAMBANK EROSION ANALYSIS

The initial phase of the analysis was to evaluate potential solutions for flooding due to the lower more frequent rainfall events downstream of the Liberty Hills Pond. The goal for the potential solutions is to decrease the outflow from the Liberty Hills Pond while not increasing the water elevation in the pond when compared to the existing conditions.

The analysis included measuring the Liberty Hills Pond’s response to rainfall events by collecting rainfall depth, water level in the pond, and flow leaving the pond over a 21 month time period. The field data that was collected was used to calibrate a hydrologic computer model to simulate existing field conditions so potential solutions to address flooding and streambank erosion along Ralston Creek could be evaluated. The calibration of the hydrologic computer model also included use of a hydraulic computer model to evaluate flow depth measurements and photographs provided by a resident along Ralston Creek downstream of the Liberty Hills Pond. The resulting flows from this model were lower than the regression equations produced but are extrapolated from field measurements.

Since there was not a rainfall event during the field data collection period that equaled or exceeded the 1-yr, 24-hr rainfall depth, as defined by NOAA Atlas 14, this phase of the analysis was limited to the 1-yr through 10-yr rainfall events when evaluating potential solutions. Table 1 shows the rainfall depths used in the analysis; other than the observed maximum, the other design storm depths are from NOAA Atlas 14. The potential solutions which were evaluated included modifications to

the existing Liberty Hills Pond's outlet structure, modification to the Liberty Hills Pond's storage volume, and combinations of the outlet structure and storage volume modifications.

Table 1 - Rainfall Depths

Event	Rainfall Depth (in)
Observed (Max)	2.16
1-YR, 24-HR	3.09
2-YR, 24-HR	3.69
5-YR, 24-HR	4.49
10-YR, 24-HR	5.14

During the Project Public Meeting, held on November 8, 2018, attendees asked if the pond could be excavated deeper to create additional volume. It was explained that volume created below the outlet control structure would not create additional detention, as the pond would fill to the elevation of the outlet structure and remain at that level. This alternative was not analyzed in the hydrologic computer model since only additional storage excavated above the existing pond water elevation would be effective in reducing the pond water elevation during rainfall events.

3.1 Existing Outlet Structure

The existing outlet structure for the Liberty Hills Pond consists of two concrete elliptical culverts under Liberty Hills Drive with a weir box located on their upstream end. The weir box is a rectangular box with four smaller triangular weirs as shown on Figure EX-1, "Existing Outlet Structure". The invert of the triangular weirs are approximately 5 inches above the invert of the elliptical culverts. The normal pond depth for the existing condition is approximately 3'-2". Table 2 shows how flow is attenuated for the existing condition.

Table 2 - Existing Outlet Structure Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)
Observed (Max)	709.40	64.88	45.53	29.8
1-YR, 24-HR	709.52	74.29	49.09	33.9
2-YR, 24-HR	710.44	121.71	69.86	42.6
5-YR, 24-HR	712.48	235.25	101.41	56.9
10-YR, 24-HR	713.83	327.12	117.67	64.0

3.2 Modified Outlet Structure 1 (MOS-1)

Modified Outlet Structure 1 consists of replacing one of the existing triangular weirs with a 4-inch rectangular weir as shown on Figure MOS-1, "Modified Outlet Structure 1". The invert of the proposed 4-inch rectangular weir would be constructed at the same elevations as the invert of existing elliptical culverts. The remaining portions of the existing outlet structure would remain unchanged. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 3 shows how the flow is attenuated for this alternative.

Table 3 - Modified Outlet Structure 1 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.05	64.88	46.62	28.1	2.4	-0.35
1-YR, 24-HR	709.23	74.29	51.39	30.8	4.7	-0.29
2-YR, 24-HR	710.16	121.71	71.09	41.6	1.8	-0.28
5-YR, 24-HR	712.26	235.25	102.43	56.5	1.0	-0.22
10-YR, 24-HR	713.66	327.12	118.78	63.7	0.9	-0.17

Increase
 Decrease

This alternative when compared to the existing outlet structure would increase the outflow from the Liberty Hills Pond between 0.9% - 4.7% while lowering the pond water elevation. This alternative was not selected to move forward with additional analysis since it would increase flows with the potential to increase flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.3 Modified Outlet Structure 2 (MOS-2)

Modified Outlet Structure 2 consists of replacing one of the existing triangular weirs with a 6-inch rectangular weir as shown on Figure MOS-2, “Modified Outlet Structure 2”. The invert of the proposed 6-inch rectangular weir would be constructed at the same elevations as the invert of existing elliptical culverts. The remaining portions of the existing outlet structure would remain unchanged. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 4 shows how the flow is attenuated for this alternative.

Table 4 - Modified Outlet Structure 2 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.03	64.88	47.09	27.4	3.4	-0.37
1-YR, 24-HR	709.20	74.29	51.83	30.2	5.6	-0.32
2-YR, 24-HR	710.12	121.71	71.96	40.9	3.0	-0.32
5-YR, 24-HR	712.21	235.25	104	55.8	2.6	-0.27
10-YR, 24-HR	713.61	327.12	120.73	63.1	2.6	-0.22

Increase
 Decrease

This alternative when compared to the existing outlet structure would increase the outflow from the Liberty Hills Pond between 2.6% - 5.6% while lowering the pond water elevation. This alternative was not selected to move forward with additional analysis since it would increase flows with the potential to increase flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.4 Modified Outlet Structure 3 (MOS-3)

Modified Outlet Structure 3 consists of replacing one of the existing triangular weirs with a 6-inch rectangular weir as shown on Figure MOS-3, “Modified Outlet Structure 3”. The invert of the proposed 6-inch rectangular weir would be constructed at the same elevations as the invert of existing elliptical culverts. The remaining three existing triangular weirs would be filled (removed) from the weir box. The remaining portions of the existing outlet structure would remain unchanged. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 5 shows how the flow is attenuated for this alternative.

Table 5 - Modified Outlet Structure 3 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.18	64.88	43.48	33.0	-4.5	-0.22
1-YR, 24-HR	709.39	74.29	48.06	35.3	-2.1	-0.13
2-YR, 24-HR	710.37	121.71	65.55	46.1	-6.2	-0.07
5-YR, 24-HR	712.51	235.25	92.85	60.5	-8.4	0.03
10-YR, 24-HR	713.9	327.12	106.93	67.3	-9.1	0.07

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 2.1% - 9.1%. The pond water elevations would decrease for the 1-yr and 2-yr rainfall events and would increase for the 5-yr and 10-yr rainfall events. This alternative was not selected to move forward with additional analysis since has the potential to increase the pond water surface elevation for the higher rainfall events.

3.5 Modified Outlet Structure 4 (MOS-4)

Modified Outlet Structure 4 consists of removing the existing weir box that is located in front of the elliptical culverts under Liberty Hills Drive and removing one of the elliptical culverts under Liberty Hills Drive as shown on Figure MOS-4, “Modified Outlet Structure 4”. The invert of the remaining elliptical culvert would remain at its current elevation. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 6 shows how the flow is attenuated for this alternative.

Table 6 - Modified Outlet Structure 4 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	708.84	64.88	47.13	27.4	3.5	-0.56
1-YR, 24-HR	708.91	74.29	50.2	32.4	2.3	-0.61
2-YR, 24-HR	709.66	121.71	83.13	31.7	19.0	-0.78
5-YR, 24-HR	711.21	235.25	151.67	35.5	49.6	-1.27
10-YR, 24-HR	712.43	327.12	188.02	42.5	59.8	-1.40

Increase

Decrease

This alternative when compared to the existing outlet structure would increase the outflow from the Liberty Hills Pond between 2.3% - 59.8% while lowering the pond water elevation. This alternative was not selected to move forward with additional analysis since it would increase flows with the potential to increase flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.6 Modified Outlet Structure 5 (MOS-5)

Modified Outlet Structure 5 consists of removing the existing outlet structure completely and replacing it with one 48" reinforce concrete pipe as shown on Figure MOS-5, "Modified Outlet Structure 5". The invert of the proposed 48" RCP would set at the same invert elevation as the existing elliptical culverts. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 7 shows how the flow is attenuated for this alternative.

Table 7 - Modified Outlet Structure 5 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.12	64.88	40.73	37.2	-10.5	-0.28
1-YR, 24-HR	709.23	74.29	43.51	41.4	-11.4	-0.29
2-YR, 24-HR	710.13	121.71	69.30	43.1	-0.8	-0.31
5-YR, 24-HR	712.07	235.25	110.54	53.0	9.0	-0.41
10-YR, 24-HR	713.43	327.12	131.23	59.9	11.5	-0.40

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 0.8% - 11.4% for the 1-yr and 2-yr rainfall events and would increase the outflow from the Liberty Hills Pond between 9% - 11.5% for the 5-yr and 10-yr rainfall events. The pond water elevation would decrease with this alternative. This alternative was not selected to move forward with additional analysis since it would increase flows with the potential to increase flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.7 Modified Outlet Structure 6 (MOS-6)

Modified Outlet Structure 6 consists of removing the existing outlet structure completely and replacing it with a new weir box with a combination triangular and rectangular weir. The invert elevation is set at the existing pond bottom elevation. One of the existing elliptical culverts would be reinstalled under Liberty Hills Drive with an invert elevation set at the existing pond bottom elevation. Figure MOS-6, “Modified Outlet Structure 6” shows the proposed outlet structure configuration. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 8 shows how the flow is attenuated for this alternative.

Table 8 - Modified Outlet Structure 6 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	708.44	64.88	28.58	55.9	-37.2	-0.96
1-YR, 24-HR	708.73	74.29	32.86	55.8	-33.1	-0.79
2-YR, 24-HR	709.93	121.71	51.37	57.8	-26.5	-0.51
5-YR, 24-HR	712.24	235.25	83.22	64.6	-17.9	-0.24
10-YR, 24-HR	713.72	327.12	99.25	69.7	-15.7	-0.11

Increase
 Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 15.7% - 37.2% while also decreasing the pond water elevation. However, the decrease in outflow and water elevation is getting smaller as the rainfall depth increases for the larger events. This trend supports the assumption that by removing one of the elliptical culverts under Liberty Hills Drive the pond water elevation would increase for the larger rainfall events which were not included in this analysis. This alternative was not selected to move forward with additional analysis since it had the potential to increase the pond water surface elevation for the higher rainfall events.

3.8 Modified Pond Storage 1 (MPND-1)

Modified Pond Storage 1 consists of increasing the storage volume by excavating the area shown on Figure MPND-1, “Modified Pond Storage 1”. The existing outlet structure would not be modified for this alternative. The normal pond depth for this alternative would remain the same as the existing conditions. Table 9 shows how the flow is attenuated for this alternative.

Table 9 - Modified Pond Storage 1 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.32	64.88	43.32	33.2	-4.9	-0.08
1-YR, 24-HR	709.44	74.29	46.81	37.0	-4.6	-0.08
2-YR, 24-HR	710.32	121.71	67.58	44.5	-3.3	-0.12
5-YR, 24-HR	712.35	235.25	99.78	57.6	-1.6	-0.13
10-YR, 24-HR	713.74	327.12	116.64	64.3	-0.9	-0.09

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 0.9% - 4.9% while also decreasing the pond water elevation. This alternative was not selected to move forward with additional analysis since the decrease in the outflow from the pond is not large enough to notice a reduction in flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.9 Modified Pond Storage 2 (MPND-2)

Modified Pond Storage 2 consists of increasing the storage volume by constructing a retaining wall around the pond and excavating the area shown on Figure MPND-2, “Modified Pond Storage 2”. The existing outlet structure would not be modified for this alternative. The normal pond depth for this alternative would remain the same as the existing conditions. Table 10 shows how the flow is attenuated for this alternative.

Table 10 - Modified Pond Storage 2 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.12	64.88	36.16	44.3	-20.6	-0.28
1-YR, 24-HR	709.19	74.29	38.93	47.6	-20.7	-0.33
2-YR, 24-HR	709.79	121.71	56.16	53.9	-19.6	-0.65
5-YR, 24-HR	711.33	235.25	85.24	63.8	-15.9	-1.15
10-YR, 24-HR	712.63	327.12	103.35	68.4	-12.2	-1.20

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 12.2% - 20.7% while also decreasing the pond water elevation. This alternative was analyzed as an “extreme” alternative to see the impacts of maximizing storage in the Liberty Hills Pond. This alternative was not selected to move forward with additional analysis due to the aesthetics of having a retaining wall surrounding the pond. The retaining wall would have the potential to limit access to the pond and affect adjacent property owners by having a drop off located

at their property line in lieu of a slope down to the pond. This alternative also had diminishing attenuation as the storm depths increased.

3.10 Combination Modifications 1 (COMB-1)

Combination Modifications 1 included modifying the existing outlet structure of Liberty Hills Pond as described above for Modified Outlet Structure 5 and modifying the pond storage as described above in Modified Pond Storage 1. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 11 shows how the flow is attenuated for this alternative.

Table 11 - Combination Modifications 1 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.03	64.88	38.35	40.9	-15.8	-0.37
1-YR, 24-HR	709.13	74.29	40.97	44.9	-16.5	-0.39
2-YR, 24-HR	710.01	121.71	65.77	46.0	-5.9	-0.43
5-YR, 24-HR	711.92	235.25	108.06	54.1	6.6	-0.56
10-YR, 24-HR	713.31	327.12	129.53	60.4	10.1	-0.52

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 5.9% - 16.5% for the 1-yr and 2-yr rainfall events and would increase the outflow from the Liberty Hills Pond between 6.6% - 10.1% for the 5-yr and 10-yr rainfall events. The pond water elevation would decrease with this alternative. This alternative was analyzed to evaluate if adding additional storage to the pond would work with Modified Outlet Structure 5 to decrease the outflow from the pond for the rainfall events used for this analysis while not increasing the water elevation in the pond. This alternative was not selected to move forward with additional analysis since it would increase flows with the potential to increase flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.11 Combination Modifications 2 (COMB-2)

Combination Modifications 2 included modify the existing outlet structure of Liberty Hills Pond as described above for Modified Outlet Structure 3 and modifying the pond storage as described above in Modified Pond Storage 1. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. Table 12 shows how the flow is attenuated for this alternative.

Table 12 - Combination Modifications 2 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	709.10	64.88	41.57	35.9	-8.7	-0.30
1-YR, 24-HR	709.32	74.29	46.5	37.4	-5.3	-0.20
2-YR, 24-HR	710.25	121.71	63.76	47.6	-8.7	-0.19
5-YR, 24-HR	712.38	235.25	91.42	61.1	-9.9	-0.10
10-YR, 24-HR	713.8	327.12	105.97	67.6	-9.9	-0.03

Increase

Decrease

This alternative when compared to the existing outlet structure would decrease the outflow from the Liberty Hills Pond between 5.3% - 9.9%. The pond water elevation would decrease with this alternative. This alternative was analyzed to evaluate if adding additional storage to the pond would work with Modified Outlet Structure 3 to decrease the outflow from the pond for the rainfall events used for this analysis while not increasing the water elevation in the pond. This alternative was not selected to move forward with additional analysis since the decrease in the outflow from the pond is not considered large enough to notice a reduction in flooding and streambank erosion in Ralston Creek downstream of Liberty Hills Drive.

3.12 Combination Modifications 3 (COMB-3)

Combination Modifications 3 included modifying the existing outlet structure of Liberty Hills Pond as described above for Modified Outlet Structure 6 and modifying the pond storage as described above in Modified Pond Storage 2. This alternative would lower the permanent water surface of the Liberty Hills Pond approximately 5 inches. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 13 shows how the flow is attenuated for this alternative.

Table 13 - Combination Modifications 3 Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
Observed (Max)	708.37	64.88	27.62	57.4	-39.3	-1.03
1-YR, 24-HR	708.58	74.29	30.63	58.8	-37.6	-0.94
2-YR, 24-HR	709.33	121.71	42.15	65.4	-39.7	-1.11
5-YR, 24-HR	711.01	235.25	67.79	71.2	-33.2	-1.47
10-YR, 24-HR	712.37	327.12	84.75	74.1	-28.0	-1.46

Increase

Decrease

This alternative when compared to the existing conditions would decrease the outflow from the Liberty Hills Pond between 28% - 39.7% while also decreasing the pond water elevation. This alternative was analyzed as an “extreme” alternative to see the impacts of maximizing storage in the Liberty Hills Pond by draining the pond and constructing a retaining wall to allow additional excavation. This alternative was not selected to move forward with additional analysis due to the aesthetics of having a retaining wall surrounding the pond area and the existing pond being drained. The retaining wall would have the potential to limit access to the pond area and affect adjacent property owners by having a drop off located at their property line in lieu of a slope down to the pond area. This alternative also had diminishing attenuation as the storm depths increased.

4.0 EXTENDED FLOOD STUDY ANALYSIS

Since this analysis was to extend the existing hydraulic model which supports the Effective FEMA Flood Insurance Study (FIS) for Ralston Creek, the hydrologic method for calculating peak flow was not changed from that used in the FIS. The flows were calculated using the same regression equations used for the Effective FIS model. In addition, to evaluate the outflow from the Liberty Hills Pond for the potential solutions, a separate hydrologic computer model was developed and calibrated to the regression equation peak flows. Table 14 shows the peak flows used for the extended flood study.

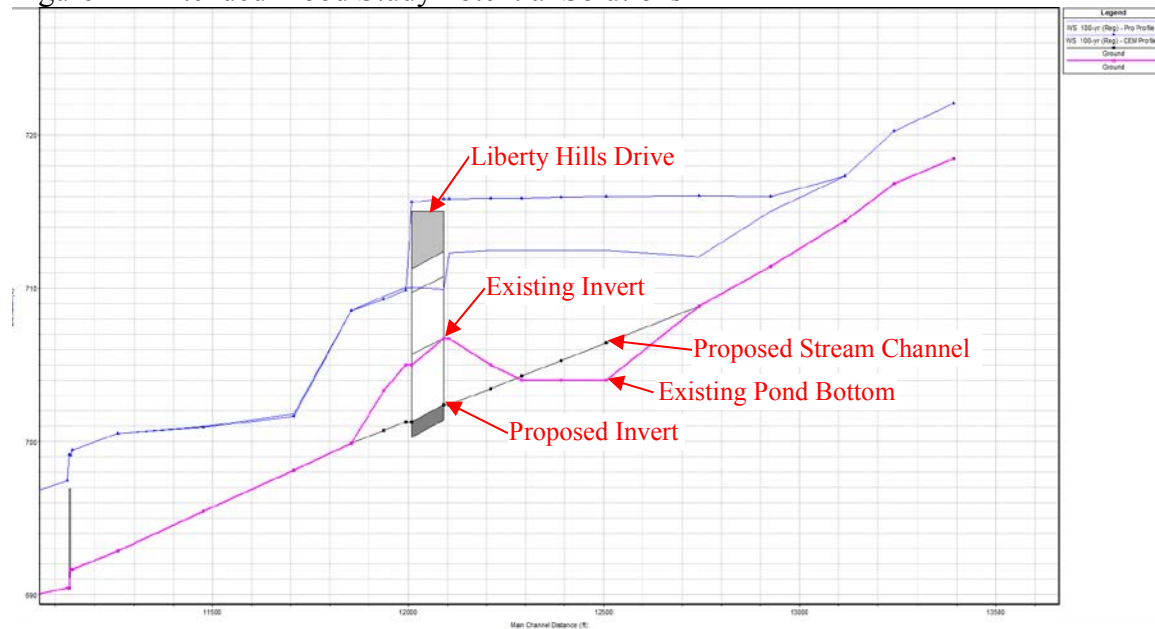
Table 14 - Extended Flood Study Regression Equation Peak Flows at Liberty Hills Drive

Event	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR	500-YR
Peak Flow (cfs)	262	418	533	689	810	936	1239

The regression equations calculated larger hydrologic flows for the 2-yr, 5-yr, and 10-yr events than were calculated with the hydrologic computer model that was calibrated with the field data that was collected for the initial phase of the analysis. The difference in the flows is because the hydrologic computer model used in the initial analysis is specific to the study area, and the regression equations were developed to apply to a much larger region of Tennessee. However, when extending the existing flood study for Ralston Creek the flows calculated with the regression equations should be used.

The potential solutions evaluated for this phase of the analysis do not correspond to the initial phase of the hydrologic and hydraulic analysis since the purpose of the analyses are different, the hydrologic methods are different, and it was decided not to pursue any of the potential solutions evaluated in the initial analysis. The potential solutions evaluated for this phase included draining the Liberty Hills Pond by replacing the existing outlet structure and elliptical culverts under Liberty Hills Drive with a box culvert and a box culvert weir box combination with lower inverts. Figure 2 shows how the inverts of the culvert under Liberty Hills Drive were lowered for the potential solutions.

Figure 2 - Extended Flood Study Potential Solutions



4.1 Existing Conditions

The existing conditions hydraulic computer model for the extended flood study was developed based on field surveyed cross-sections of Ralston Creek between Victoria Court and Royal Oaks Blvd. The bridges between Victoria Court and Liberty Hills Drive were also included in the model. The existing elliptical culverts under Liberty Hills Drive were included in the model, but the weir box as part of the Liberty Hills Pond outlet structure was not included in the model. Based on the geometry of the existing outlet structure and observing flow over the weir box during the smaller storm events, it was determined the flow through the existing outlet pipes would not be impeded during the 100-yr event used for the flood study. Table 15 shows the results for the water elevation in the pond for the existing conditions.

Table 14 - Flood Study Existing Conditions Hydrologic Model Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)
2-YR	711.93	425.99	348.55	-18.2
5-YR	713.22	550.06	415.47	-24.5
10-YR	714.19	649.58	459.3	-29.3
25-YR	715.35	789.44	565.64	-28.3
50-YR	715.65	902.62	771.09	-14.6
100-YR	715.82	1,018.60	940.76	-7.6
500-YR	716.09	1,304.84	1,288.10	-1.3

The extended flood study indicated that the majority of the parcels adjacent to the right descending bank of Ralston Creek downstream of Liberty Hills Drive are located in the base flood (100-year)

flood plain in the existing condition. The results of the extended flood study were displayed at the Project Public Meeting, held on November 8, 2018 and are depicted on the attached Figure 1 “Preliminary Flood Study”.

4.2 6’x5’ Box Culvert

This potential solution included removing the existing outlet structure of the Liberty Hills Pond and replacing it with a 6’x5’ reinforced concrete box culvert under Liberty Hills Drive with invert elevations as shown in Figure 2. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 15 shows how the flow is attenuated for this alternative.

Table 15 - 6’x5’ Box Culvert Hydrologic Model Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
2-YR	710.22	425.99	330.66	-22.4	-5.1%	-1.71
5-YR	712.15	550.06	387.57	-29.5	-6.7%	-1.07
10-YR	713.5	649.58	422.54	-35	-8.0%	-0.69
25-YR	715.1	789.44	461.94	-41.5	-18.3%	-0.25
50-YR	715.61	902.62	691.61	-23.4	-10.3%	-0.04
100-YR	715.82	1,018.60	889.74	-12.7	-5.4%	0
500-YR	716.12	1,304.84	1272.24	-2.5	-1.2%	0.03

Increase

Decrease

This alternative when compared to the existing conditions would not increase the outflow from the Liberty Hills Pond while also decreasing the pond water elevation for the 2-yr through 50-yr events. This alternative was not selected to move forward with additional analysis since there was no reduction in the 100-yr pond water elevation.

4.3 6’x5’ Box Culvert with Weir

This potential solution included removing the existing outlet structure of the Liberty Hills Pond and replacing it with a 6’x5’ reinforced concrete box culvert under Liberty Hills Drive with invert elevations as shown in Figure 2. A weir box would also be placed in front of the culvert. The weir box would be 7.5’ tall with a 4.5’ rectangular weir. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 16 shows how the flow is attenuated for this alternative.

Table 16 - 6'x5' Box Culvert with Weir Box Hydrologic Model Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
2-YR	710.52	425.99	340.25	-20.1	-2.4%	-1.41
5-YR	712.34	550.06	392.59	-28.6	-5.5%	-0.88
10-YR	713.64	649.58	426.03	-34.4	-7.2%	-0.55
25-YR	715.19	789.44	477.31	-39.5	-15.6%	-0.16
50-YR	715.63	902.62	708.84	-21.5	-8.1%	-0.02
100-YR	715.83	1,018.60	900.9	-11.6	-4.2%	0.01
500-YR	716.12	1,304.84	1276.87	-2.1	-0.9%	0.03
		Increase	Decrease			

This alternative when compared to the existing conditions would not increase the outflow from the Liberty Hills Pond while also decreasing the pond water elevation for the 2-yr through 50-yr events. This alternative was not selected to move forward with additional analysis since there was only minor reduction in the 100-yr pond water elevation.

4.4 12'x10' Box Culvert

This potential solution included removing the existing outlet structure of the Liberty Hills Pond and replacing it with a 12'x10' reinforced concrete box culvert under Liberty Hills Drive with invert elevations as shown in Figure 2. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 17 shows how the flow is attenuated for this alternative.

Table 17 - 12'x10' Box Culvert Hydrologic Model Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
2-YR	707.22	425.99	410.39	-3.7	17.7%	-4.71
5-YR	708.14	550.06	523.57	-4.8	26.0%	-5.08
10-YR	708.88	649.58	613.77	-5.5	33.6%	-5.31
25-YR	709.87	789.44	740.36	-6.2	30.9%	-5.48
50-YR	710.62	902.62	841.85	-6.7	9.2%	-5.03
100-YR	711.36	1,018.60	944.16	-7.3	0.4%	-4.46
500-YR	712.98	1,304.84	1183.79	-9.3	-8.1%	-3.11
		Increase	Decrease			

This alternative when compared to the existing conditions would increase the outflow from the Liberty Hills Pond while decreasing the pond water elevation. This alternative was not selected to move forward with additional analysis since there was an increase in the outflow from the pond.

4.5 12'x10' Box Culvert with Weir

This potential solution included removing the existing outlet structure of the Liberty Hills Pond and replacing it with a 12'x10' reinforced concrete box culvert under Liberty Hills Drive with invert elevations as shown in Figure 2. A weir box would also be placed in front of the culvert. The weir box would be 12' tall with a 3.5' rectangular weir. This alternative would effectively remove the permanent pool from the Liberty Hills Pond. A natural stream channel would be constructed to convey the stormwater runoff from the pond inflow locations to the proposed outlet structure. Table 18 shows how the flow is attenuated for this alternative.

Table 18 - 12'x10' Box Culvert with Weir Box Hydrologic Model Results

Event	Pond Water Elevation (ft)	Pond Inflow (cfs)	Pond Outflow (cfs)	Flow Attenuation IN vs OUT (%)	Outflow Change vs Existing (%)	Water Elevation Change vs Existing (ft)
2-YR	711.52	425.99	316.74	-25.6	-9.1%	-0.41
5-YR	712.96	550.06	394.58	-28.3	-5.0%	-0.26
10-YR	713.95	649.58	450.99	-30.6	-1.8%	-0.24
25-YR	715.01	789.44	567.32	-28.1	0.3%	-0.34
50-YR	715.42	902.62	748.55	-17.1	-2.9%	-0.23
100-YR	715.62	1,018.60	926.99	-9	-1.5%	-0.2
500-YR	715.91	1,304.84	1282.9	-1.7	-0.4%	-0.18

Increase

Decrease

This alternative when compared to the existing conditions would increase the outflow from the Liberty Hills Pond for the 25-yr event while also decreasing the pond water elevation. This alternative was not selected to move forward with additional analysis since there was an increase in the pond outflow for the 25-yr event and only a minor reduction in the 100-yr pond water elevation.

Enclosures

Figure 1 – “Preliminary Flood Study”

Figure EX-1 – “Existing Outlet Structure”

Figure MOS-1 – “Modified Outlet Structure 1”

Figure MOS-2 – “Modified Outlet Structure 2”

Figure MOS-3 – “Modified Outlet Structure 3”

Figure MOS-4 – “Modified Outlet Structure 4”

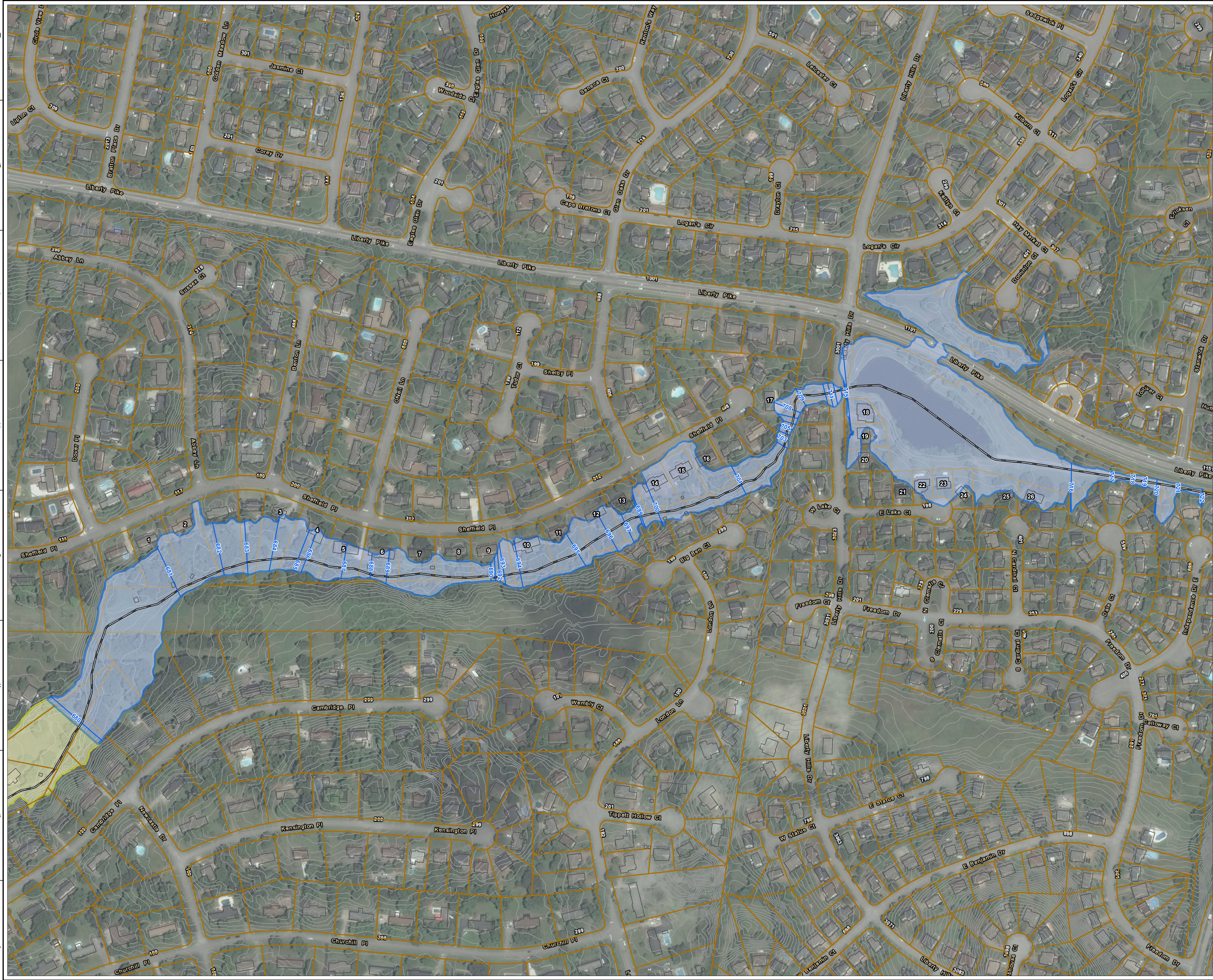
Figure MOS-5 – “Modified Outlet Structure 5”

Figure MOS-6 – “Modified Outlet Structure 6”

Figure MPND-1 – “Modified Pond Storage 1”

Figure MPND-2 – “Modified Pond Storage 2”

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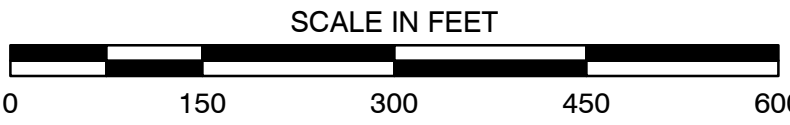
	Address	FFE (FT)	BFE (FT)
1	116 Sheffield Place	686.6	681.1
2	118 Sheffield Place	684.7	681.7
3	120 Sheffield Place	693.3	684.0
4	202 Sheffield Place	688.0	686.3
5	204 Sheffield Place	688.5	687.5
6	301 Sheffield Place	690.5	689.4
7	303 Sheffield Place	692.8	689.7
8	305 Sheffield Place	694.0	689.7
9	307 Sheffield Place	694.4	692.3
10	309 Sheffield Place	697.8	694.5
11	311 Sheffield Place	697.9	695.3
12	313 Sheffield Place	698.5	696.6
13	315 Sheffield Place	700.8	697.4
14	401 Sheffield Place	703.1	700.6
15	317 Sheffield Place	702.6	700.7
16	319 Sheffield Place	704.6	700.9
17	325 Sheffield Place	712.3	709.0
18	3008 Liberty Hills Drive	716.6	715.9
19	3012 Liberty Hills Drive	717.3	715.9
20	3016 Liberty Hills Drive	718.2	715.9
21	120 E Lake Court	719.8	716.0
22	124 E Lake Court	719.2	716.0
23	128 E Lake Court	719.5	716.0
24	132 E Lake Court	718.6	716.0
25	405 N Cardinal Court	720.4	716.0
26	404 N Cardinal Court	720.8	716.0

LEGEND

- Topography
- Base Flood Elevations
- Building Footprints
- Ralston Creek
- Estimated 100 YR Floodplain
- Parcels
- Flood Hazard Boundary (FEMA)

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 9/17/2018, IMAGERY DATE: 2017.



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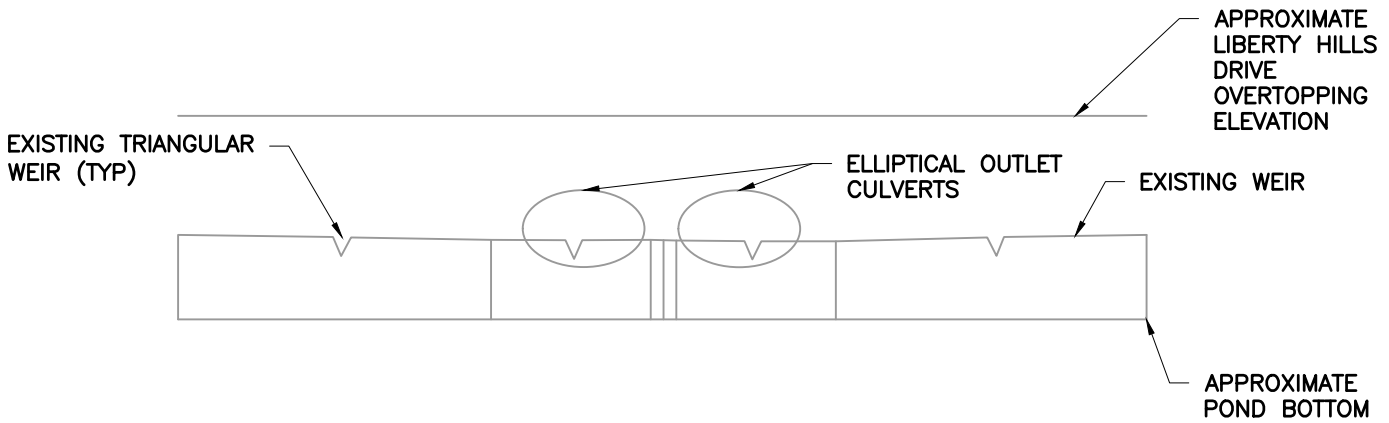
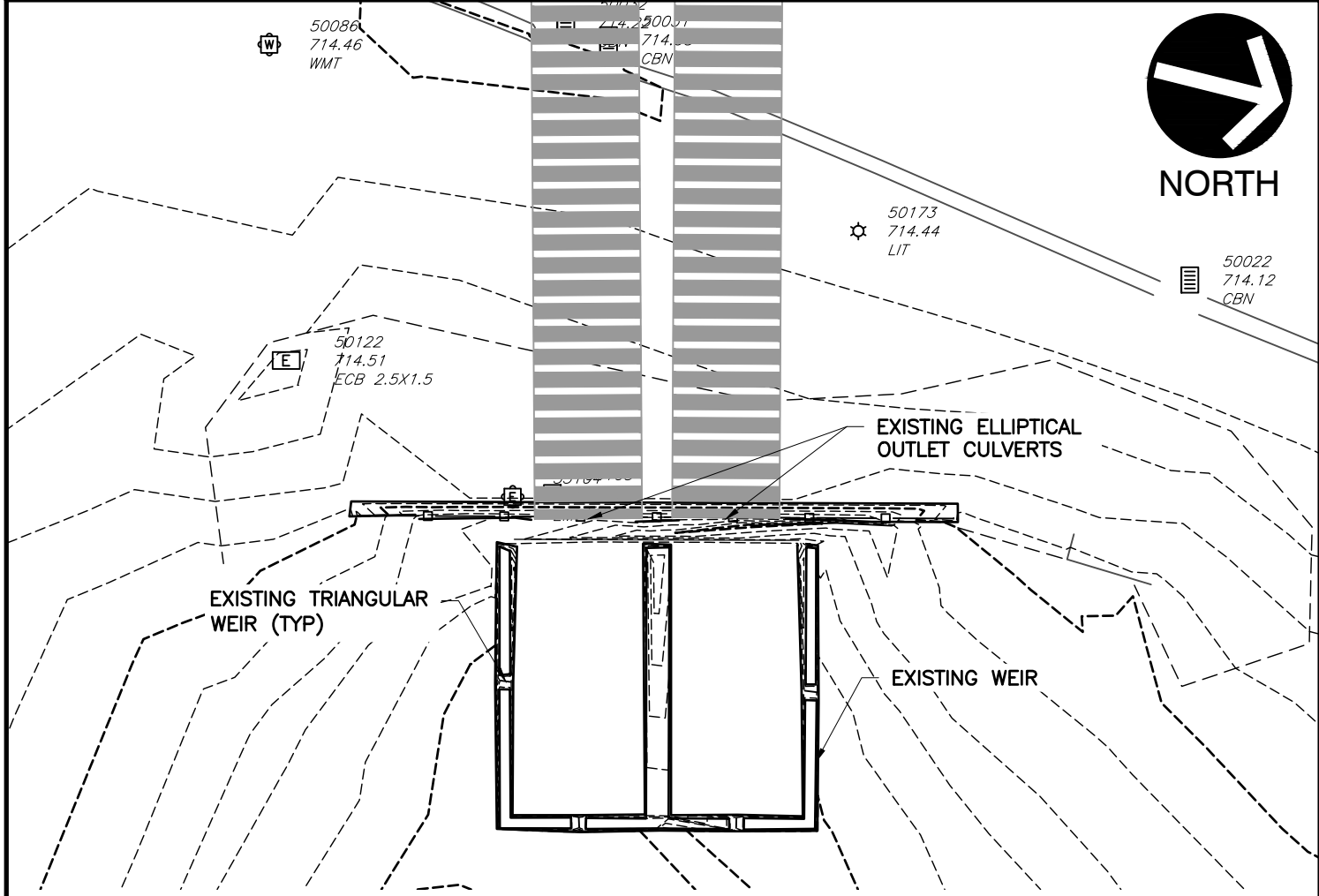
CITY OF FRANKLIN
RALSON CREEK AT LIBERTY HILLS
FEASIBILITY STUDY
FRANKLIN, WILLIAMSON COUNTY, TN

DRAWN BY: JMB CHECKED BY: JBS APPROVED BY: SEC
DATE: 9/17/2018 SCALE: 1" = 150' PROJECT NO: 153-050.0008

PRELIMINARY FLOOD STUDY

FIGURE NO: **1**
SHEET 1 OF 1

P:\2015\153-050\153-050\153050XR-CV01-Outlet_Detail.dwg{FIGURE NO. EX-1} LS:(4/23/2019 - jshaver) - LP: 4/30/2019 2:55 PM



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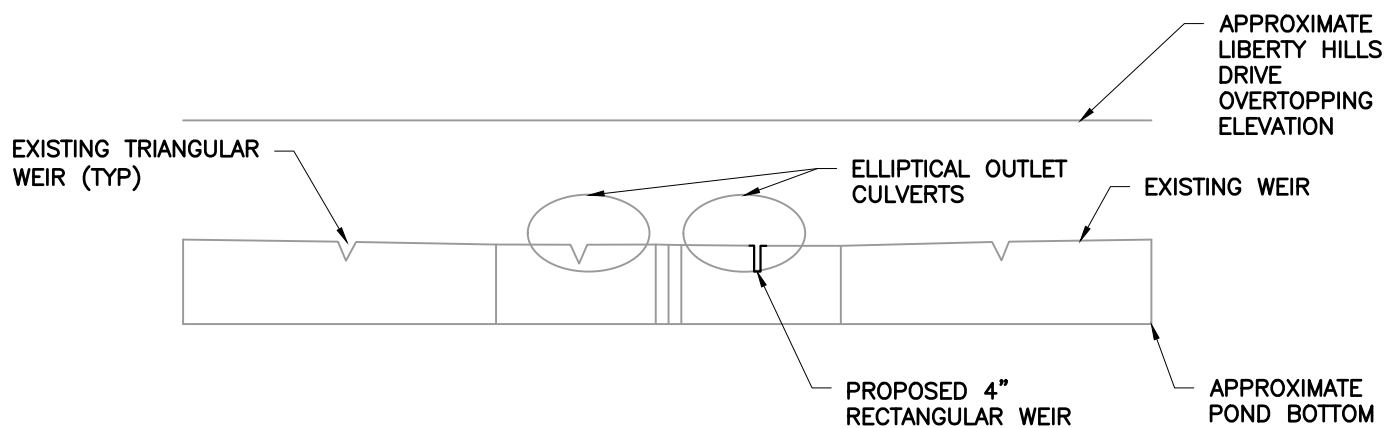
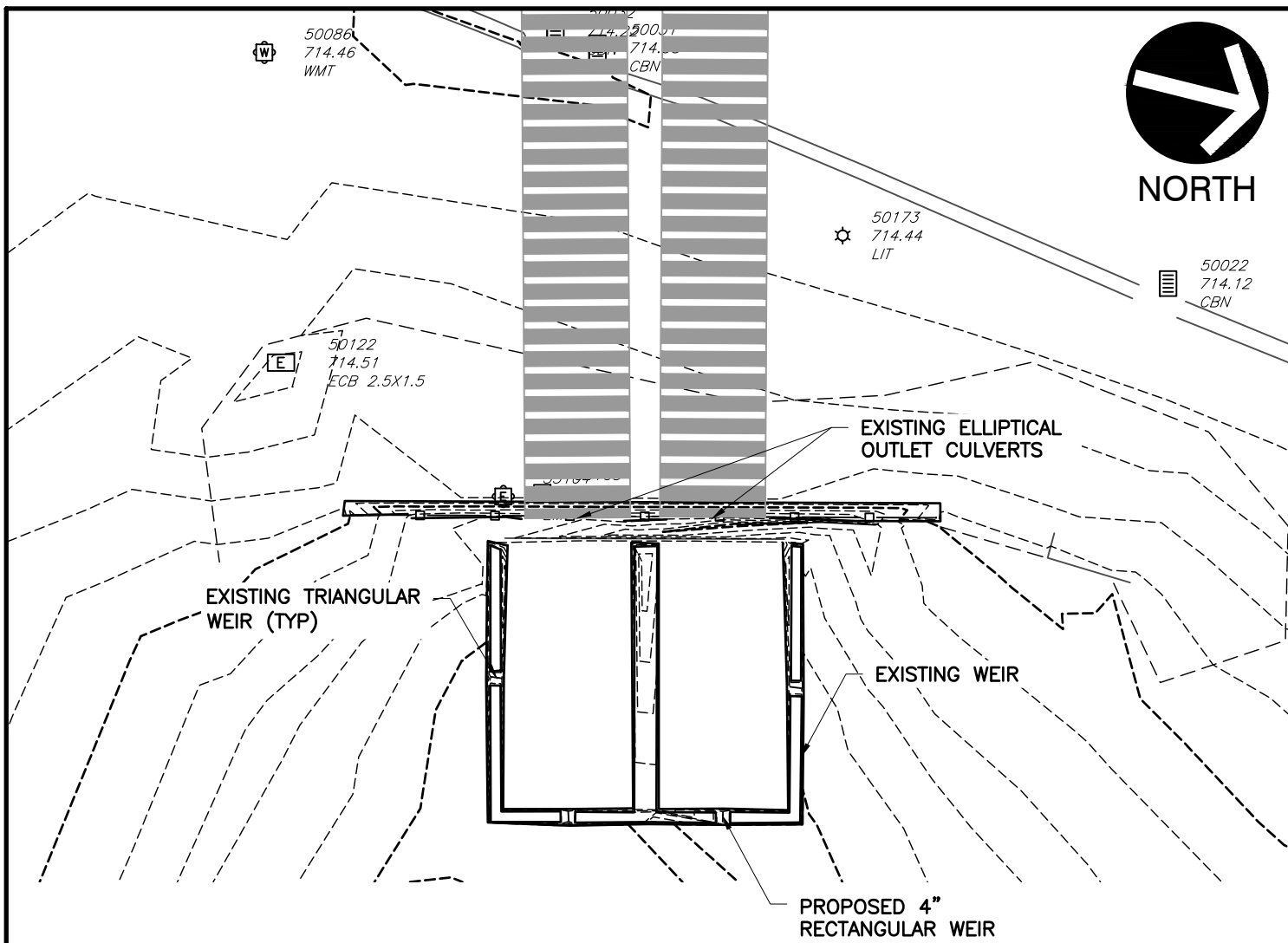
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EXISTING OUTLET STRUCTURE

DRAWN BY:	JBS	CHECKED BY:	JBS	APPROVED BY:	EJG	FIGURE NO.:
DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	EX-1

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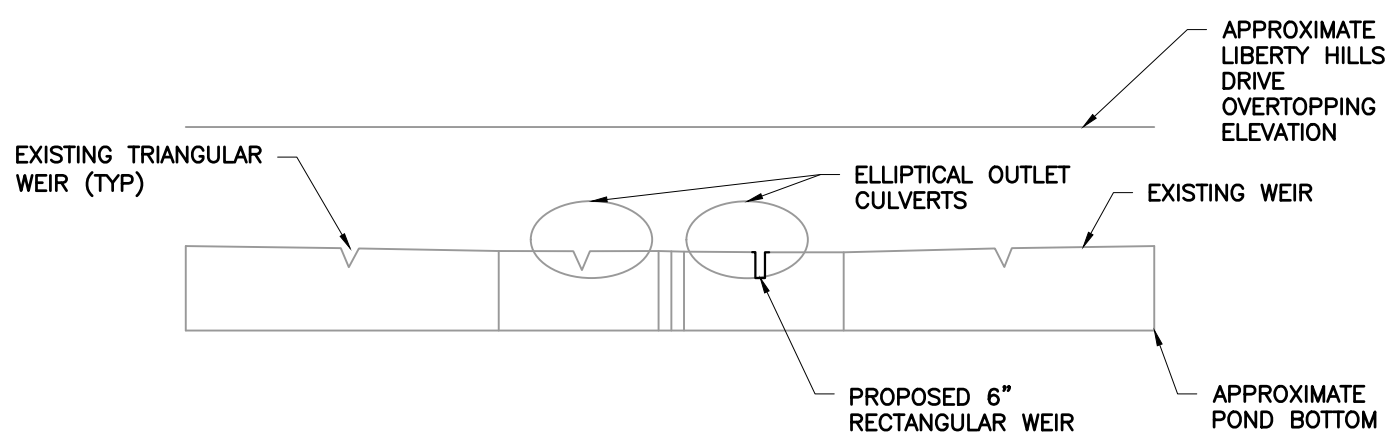
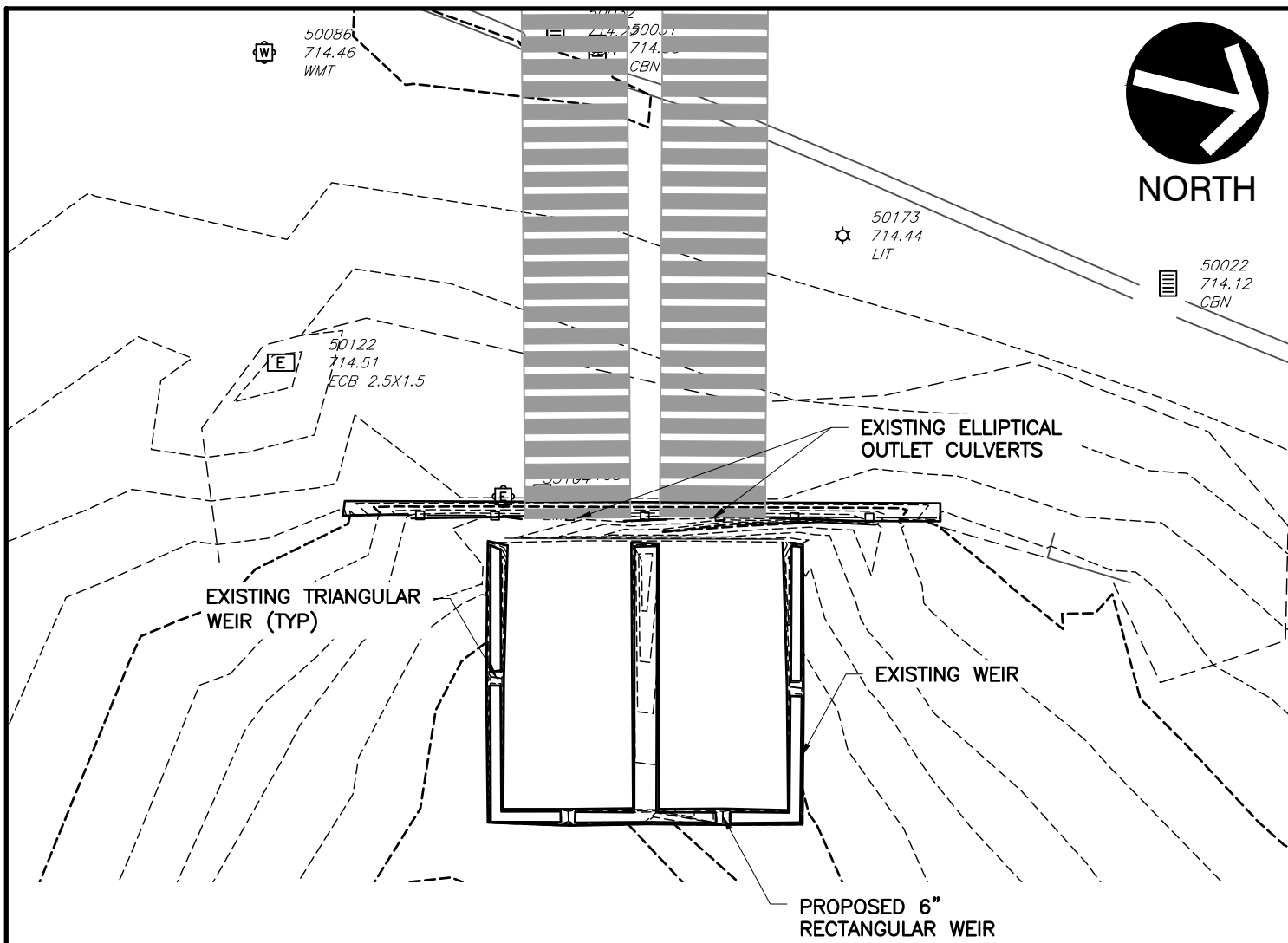
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FRANKLIN, WILLIAMSON COUNTY, TN

MODIFIED OUTLET STRUCTURE 1

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DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	MOS-1

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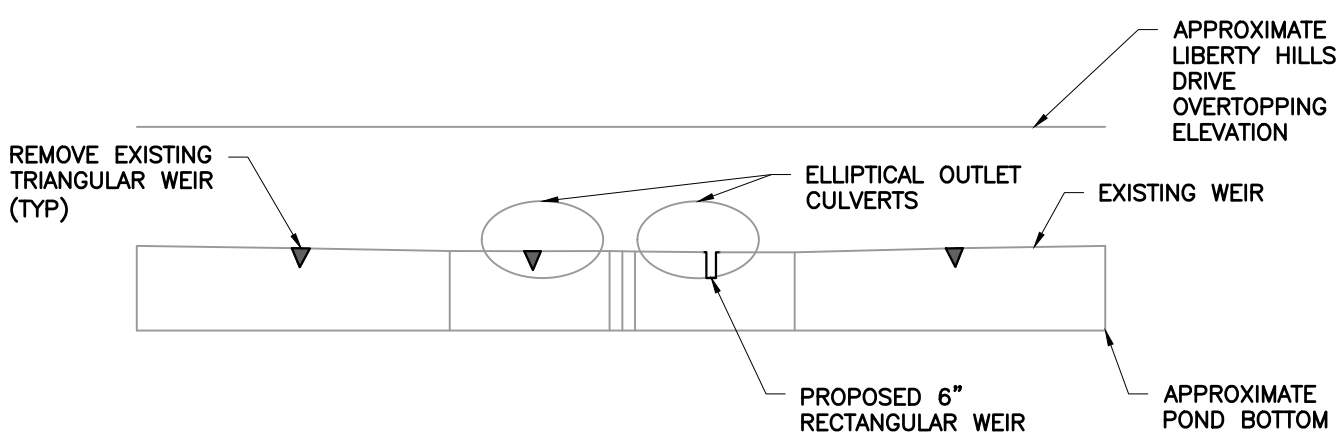
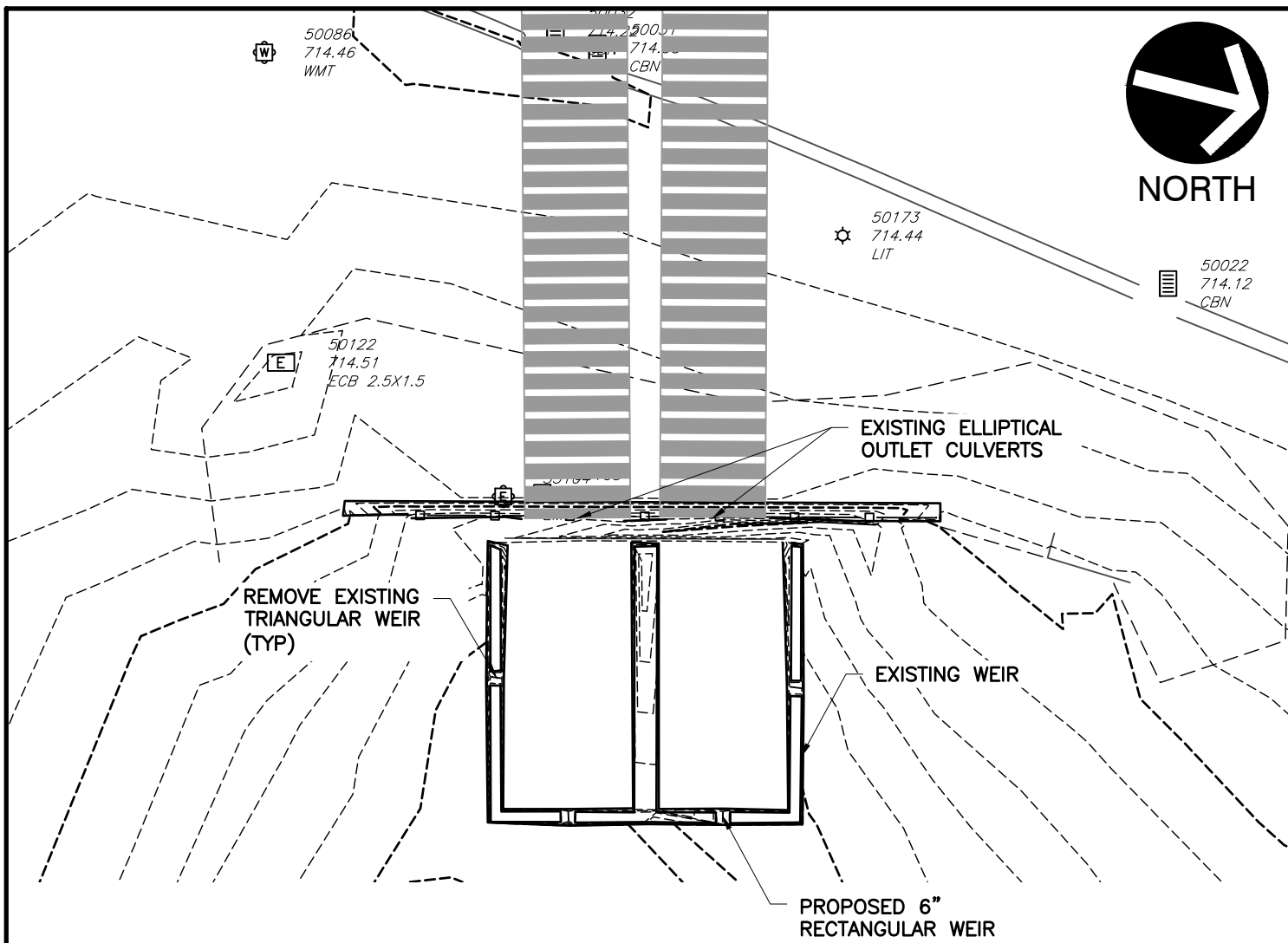
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MODIFIED OUTLET STRUCTURE 2

DRAWN BY:	JBS	CHECKED BY:	JBS	APPROVED BY:	EJG	FIGURE NO.:
DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	MOS-2

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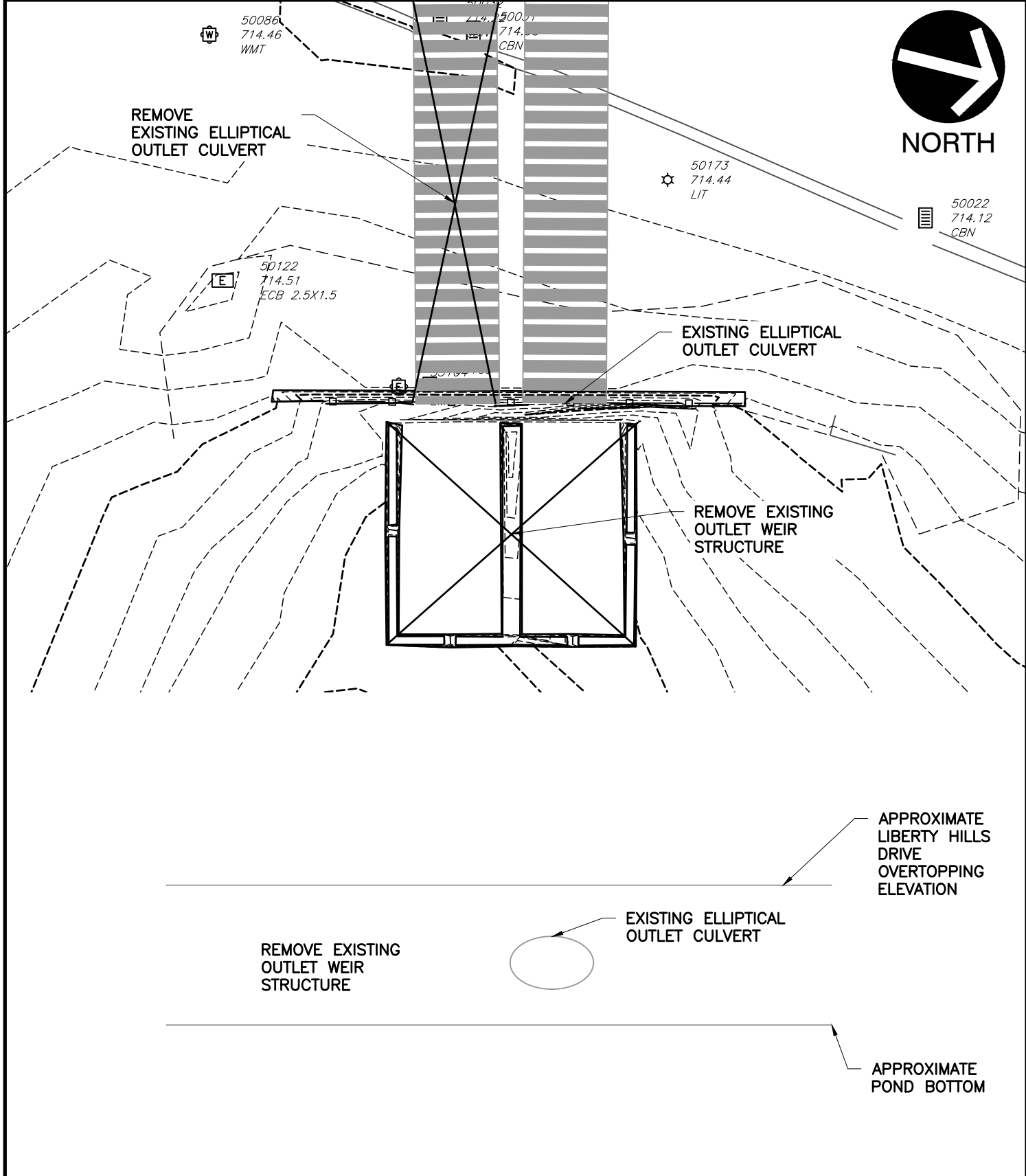
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MODIFIED OUTLET STRUCTURE 3

DRAWN BY:	JBS	CHECKED BY:	JBS	APPROVED BY:	EJG	FIGURE NO.:
DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	MOS-3

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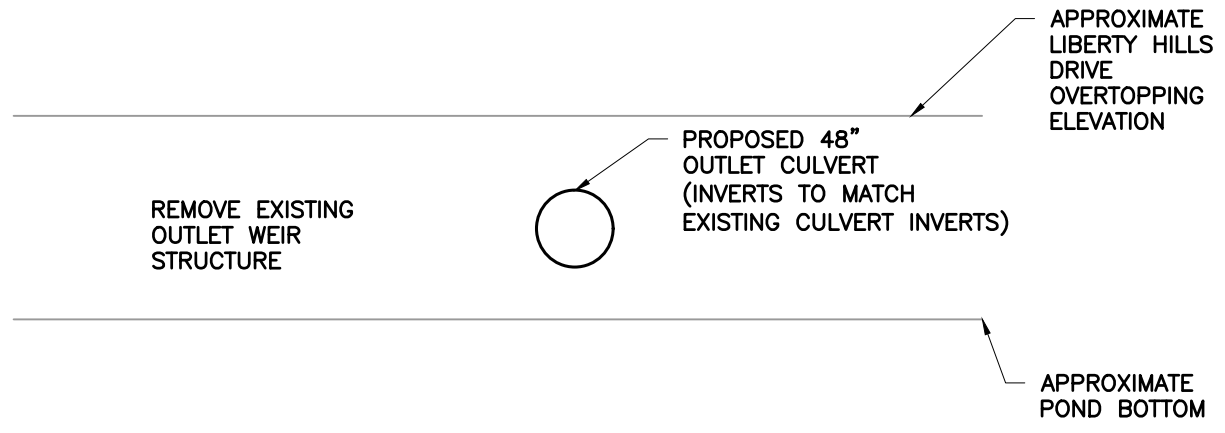
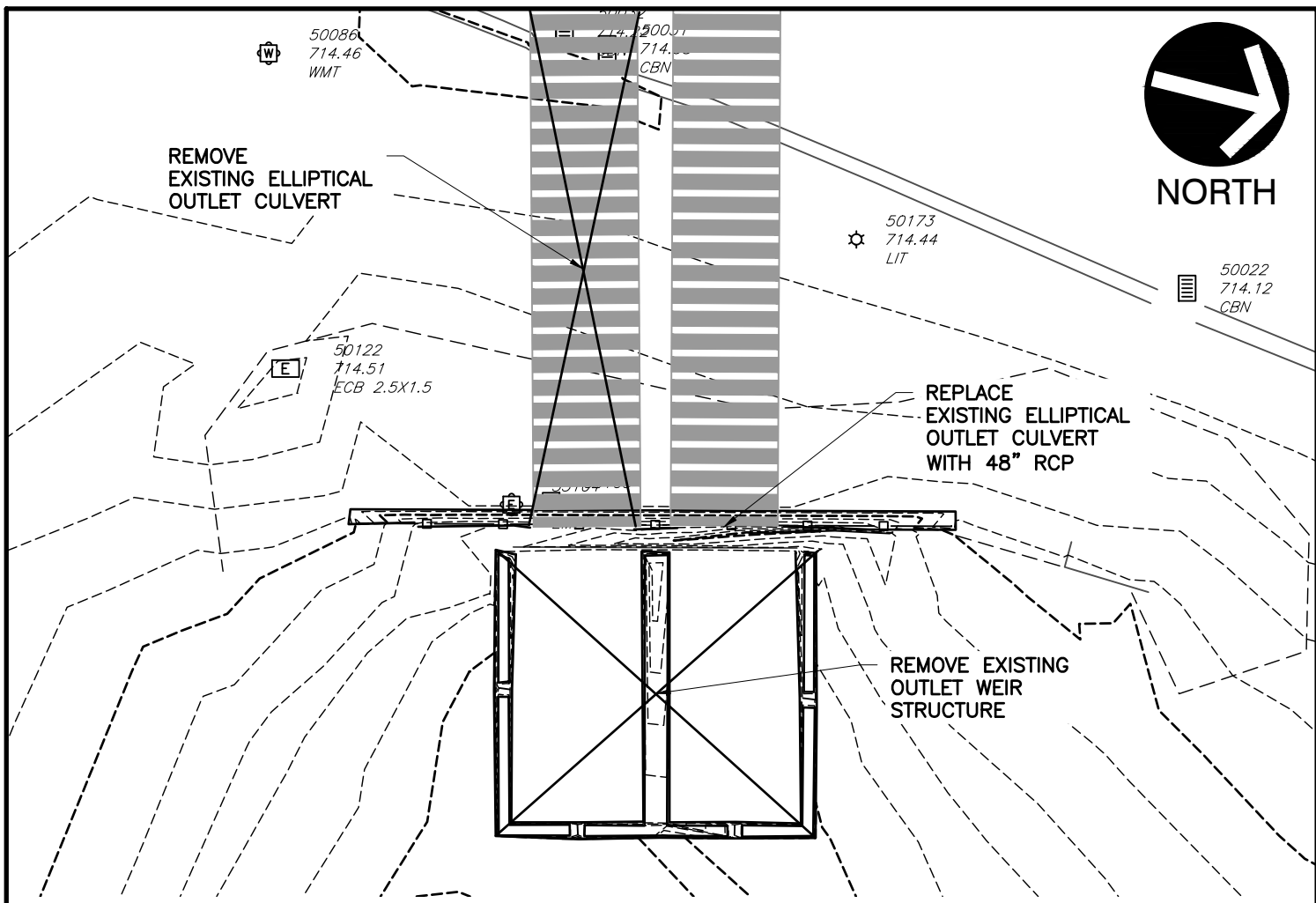
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MODIFIED OUTLET STRUCTURE 4

DRAWN BY:	JBS	CHECKED BY:	JBS	APPROVED BY:	EJG	FIGURE NO.:
DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	MOS-4

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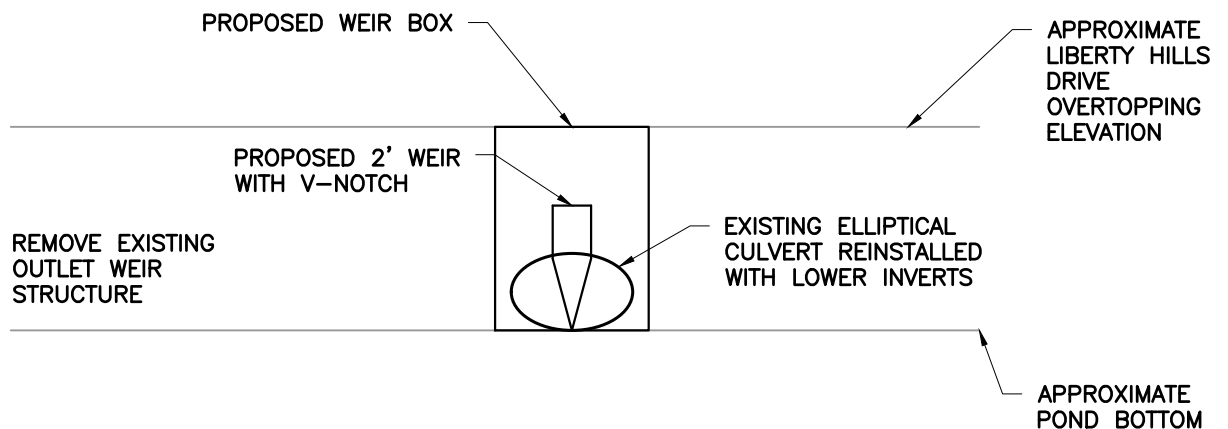
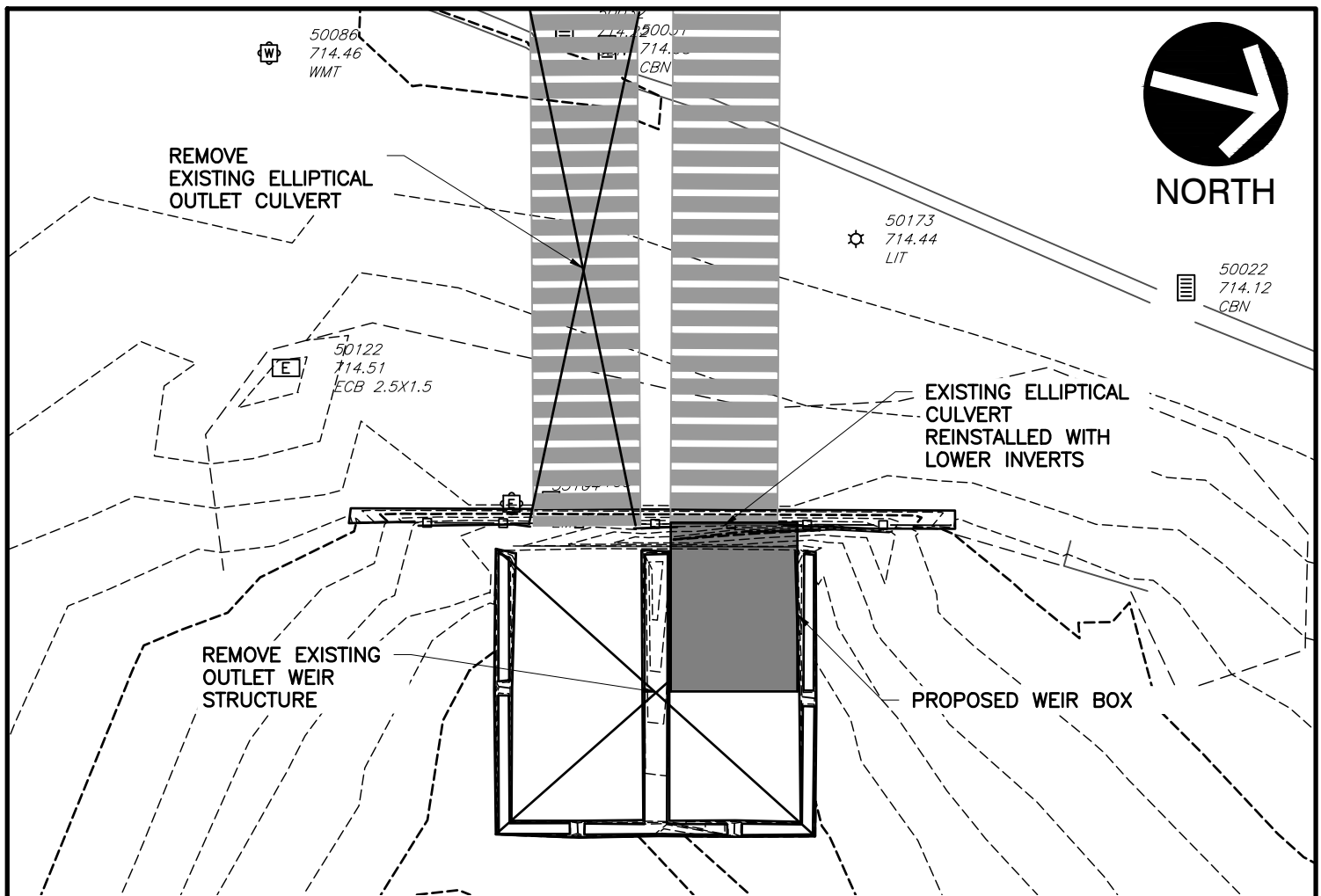
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MODIFIED OUTLET STRUCTURE 5

DRAWN BY:	JBS	CHECKED BY:	JBS	APPROVED BY:	EJG	FIGURE NO.:
DATE:	JUNE 2017	DWG SCALE:	NTS	PROJECT NO:	153-050	MOS-5



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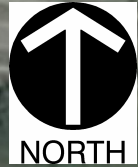
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MODIFIED OUTLET STRUCTURE 6

DRAWN BY: JBS	CHECKED BY: JBS	APPROVED BY: EJG	FIGURE NO.: M
DATE: JUNE 2017	DWG SCALE: NTS	PROJECT NO: 153-050	

NO.: **MOS-6**



REFERENCE
ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
[HTTP://GTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY](http://gto.arcgis.com/maps/world_imagery),
ACCESSED 4/30/2019, IMAGERY DATE: 2014.

LEGEND
 Property Boundary
 Area to be Excavated for Additional Storage



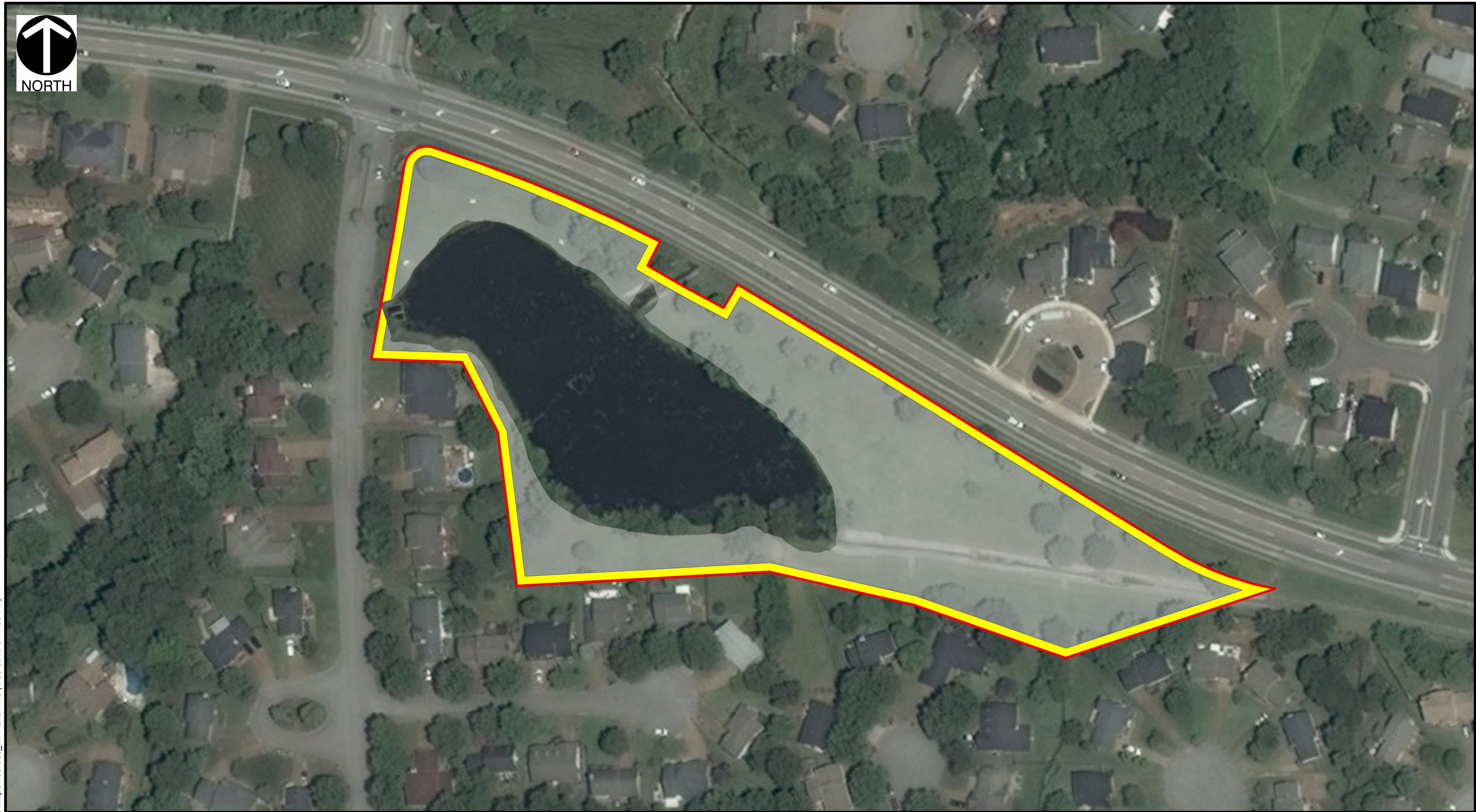
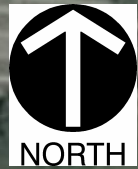
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DATE:	4/30/2019	SCALE:	1" = 100'

CITY OF FRANKLIN RALSON CREEK AT LIBERTY HILLS FEASIBILITY STUDY FRANKLIN, WILLIAMSON COUNTY, TN	
MODIFIED POND STORAGE 1	
APPROVED BY:	EJG
PROJECT NO:	153-050
FIGURE NO:	MPND-1



LEGEND

- Property Boundary
- Retaining Wall
- Area to be Excavated for Additional Storage

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
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DATE:	4/30/2019	SCALE:	1" = 100'	PROJECT NO:	153-050		

CITY OF FRANKLIN
RALSON CREEK AT LIBERTY HILLS
FEASIBILITY STUDY
FRANKLIN, WILLIAMSON COUNTY, TN

MODIFIED POND STORAGE 2



December 26, 2018

Mr. Paul Holzen, P.E., LEED AP
Director of Engineering
City of Franklin
109 3rd Avenue South
Franklin, TN 37064

Delivered via electronic mail to: paul.holzen@franklinton.gov

Dear Mr. Holzen:

Subject: Preliminary Hydraulic Analysis Results
Based On Effective FEMA Flood Insurance Study (FIS)
East Main Street (Franklin Road, SR-6, US-31) Bridge over Harpeth River
City of Franklin, Williamson County, Tennessee
CEC Project 182-736

Civil & Environmental Consultants, Inc. (CEC) is pleased to submit the results from the Preliminary Hydraulic Analysis of East Main Street (Franklin Road, US-31/SR-6) Bridge over the Harpeth River based on the hydraulic model which supports the effective FEMA FIS for Williamson County, Tennessee And Incorporated Areas (FIS Number 47187CV001C and 47187CV002C) dated December 22, 2016. CEC analyzed the Harpeth River from approximately 1690 feet downstream of East Main Street to downstream of I-65.

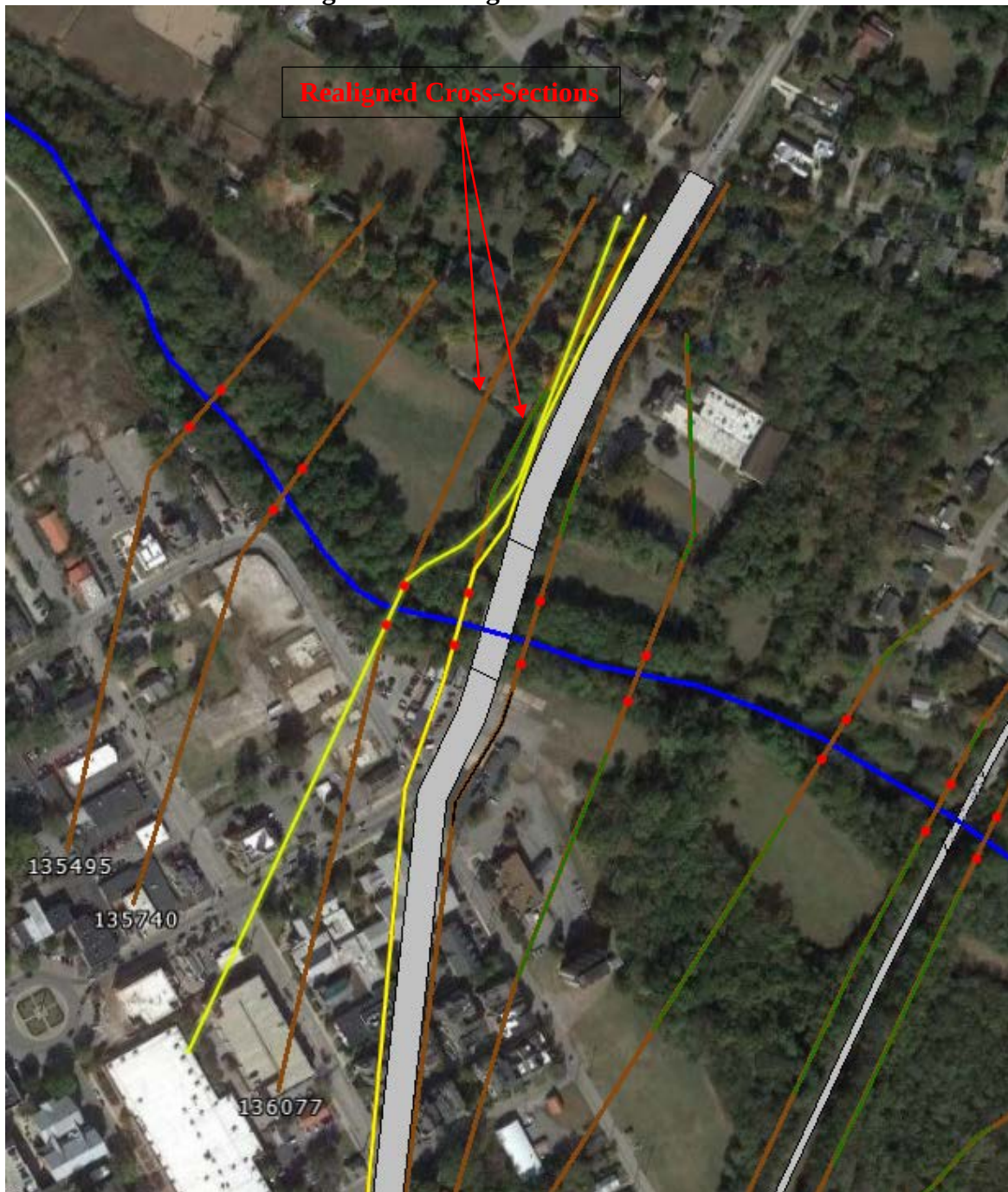
The purpose of the preliminary hydraulic analysis was to develop a preliminary bridge layout for the replacement of the East Main Street Bridge, which will allow the City to proceed with its plans for reducing flooding along the Harpeth River upstream of East Main Street and the City's adjacent Franklin Road Corridor Improvements Project.

The City has been working with the USACE for the design of floodplain overflow culverts to be constructed adjacent to the East Main Street Bridge in the Harpeth River's northern floodplain. TDOT has recently notified the City that the East Main Street Bridge is included in their three-year plan for replacement. In addition, a private development located on the parcel adjacent to the southeast corner of the Harpeth River Bridge has also recently been approved by the City and could be impacted by TDOT's bridge replacement project.

The hydraulic analysis was based on the Harpeth River hydraulic model which supports the effective FEMA FIS and performed in accordance to TDOT's "Design Procedures for Hydraulic Structures 2012." The hydraulic analysis included updating the topographic information within the vicinity of the East Main Street Bridge, realigning two cross-sections in the hydraulic model, and evaluating lengthening the East Main Street Bridge by adding an additional span when it is replaced in lieu of utilizing floodplain relief culverts. Figure 1 shows how the first two Harpeth

River cross-sections downstream of the East Main Street Bridge were realigned to better represent the current conditions of the right descending floodplain and to better follow standards for layout of cross-sections for a hydraulic model.

Figure 1 – Realigned Cross-Sections



The length of the proposed replacement bridge was based on providing approximately the same amount of flood reduction upstream of the East Main Street Bridge as the USACE Culvert Alternative. A layout of the preliminary proposed bridge is included in the attached preliminary roadway plans.

Only one proposed scenario consisting of a proposed 280' 4-span bridge (60' - 80' - 80' - 60') with no floodplain relief culverts was evaluated in the hydraulic model which supports the effective FEMA FIS. The analysis uses Type III Prestressed I-beams for the bridge and the bridge cross-section shown in the preliminary plans. Other scenarios were evaluated utilizing the USACE hydraulic model of the Harpeth River, these results are included in the letter from CEC dated August 24, 2018.

Table 1 below shows the depth of flood reduction at various points upstream of the East Main Street Bridge. Table 2 show an approximate number of buildings which may be removed from the Harpeth River floodplain, between East Main Street/Franklin Road and Interstate 65, after the bridge is constructed and the FEMA Flood Insurance Study is revised. For the CEC Bridge Alternative, the buildings removed are based on the City's GIS building layer; the buildings may represent houses, sheds, other accessory structures, or commercial buildings.

Table 1 – Reduction in Flood Elevations Compared to FEMA's Effective Flood Insurance Study Hydraulic Model.

Location	10%-annual-chance (10-yr) (feet)	4%-annual-chance (25-yr) (feet)	1%-annual-chance (100-yr) (feet)
Upstream of East Main Street Bridge	-0.43	-0.66	-1.05
Upstream of Railroad Bridge	-0.45	-0.68	-1.10
USGS Gage: Harpeth River at Franklin, TN	-0.33	-0.51	-0.92
Near Carnton Lane	-0.29	-0.45	-0.80
Mack Hatcher Memorial Parkway	-0.18	-0.27	-0.52

Table 2 – Buildings Located in Harpeth River 1%-annual-chance (100-year) Floodplain Upstream of East Main Street.

	Buildings in Effective 1%-annual-chance Floodplain ¹	Buildings in Revised 1%-annual-chance Floodplain ^{1,3}	Net Reduction ¹
CEC ²	324	271	53

1. Does not include buildings that are located along tributaries to the Harpeth River but could see flood damages from backwater flooding from the Harpeth River.

2. Buildings may represent houses, sheds, other accessory structures, or commercial buildings.

3. Three building which are not mapped in the Effective 1%-annual-chance Floodplain are included in the Revised 1%-annual-chance Floodplain due to better topographic elevation data being used to map the floodplain limits.

The hydraulic analysis also indicated an increase in the proposed condition 1%-annual-chance water surface elevation at the first cross-section downstream of the East Main Street Bridge. The proposed 1%-annual-chance water surface elevation at this cross-section is 638.12 feet. The one structure (Puckett's Boathouse) which may be impacted by the increase at this cross-section has a finished floor elevation of 638.7 feet. There is a slight increase in the existing conditions model just downstream of the bridge due to realignment of two cross-sections and newer topographical data. The addition of the proposed bridge increases the water surface elevation slightly more due to right descending floodplain excavation to accommodate the longer span bridge. It should be noted that the proposed bridge resulted in no structures downstream of the bridge, including Puckett's Boathouse, being located in the 1%-annual-chance floodplain.

In summary, CEC recommends the City of Franklin request that TDOT use the preliminary bridge layout as developed by CEC as the basis of design for the replacement of the Franklin Road Bridge over the Harpeth River. The bridge is to be designed as a 280-foot, 4-span bridge (60' – 80' – 80' – 60') with Type III Prestressed I-beams. The typical section for the bridge consists of three 12-foot travel lanes, 2-foot shoulders, and an 8-foot sidewalk on both sides. The sidewalks are to be separated from the travel lanes by a concrete barrier rail. In using this bridge design, the City will be able to achieve its goal of removing approximately 53 structures from the 1%-annual-chance floodplain upstream of the bridge, while not placing additional structures downstream of the bridge in the floodplain. CEC also recommends that the City prepare and submit to FEMA a Conditional Letter of Map Revision (CLOMR) submittal package during the design development process after the final bridge layout is finalized by TDOT. A Letter of Map Revision (LOMR) submittal package will need to be prepared and submitted to FEMA after the bridge is replaced by TDOT to revise the effective Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRM) to remove the affected structures from the floodplain.

You may reach me at 615-333-7797 to discuss questions about this analysis summary. CEC appreciates the opportunity to provide the City with this information to assist in moving the Franklin Road corridor improvements project along.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.



Jeffrey B. Shaver, PE, CFM, CPESC
Project Manager



Steven E. Casey, P.E., CPESC
Principal

Enclosures: Preliminary Roadway Plans
Floodplain Comparison Exhibit

cc: Mr. William Banks

EAST MAIN STREET (FRANKLIN ROAD)
BRIDGE OVER THE HARPETH RIVER

CITY OF FRANKLIN, WILLIAMSON COUNTY, TENNESSEE

DECEMBER 2018
FRANKLIN, TN 37064

CONTACT LIST

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FRANKLIN, TN 37064
PHONE: 615-794-4554
CONTACT: BEN McNEIL
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MTEMC
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PHONE: 615-4595-4685
CONTACT: ROGER JENKINS
E-MAIL: rjenkins@mtmc.com

GAS SERVICE

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CONTACT: DAVID TUTTEROW
E-MAIL: dt8243@att.com

STORM WATER FACILITIES

FRANKLIN ENGINEERING DEPARTMENT
109 THIRD AVENUE SOUTH
FRANKLIN, TN 37064
PHONE: 615-550-6651
CONTACT: JEFF WILLOUGHBY
E-MAIL: jeff.willoughby@franklin.tn.gov

BASIS OR BEARINGS

BEARINGS ARE BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83).

UTILITY NOTE

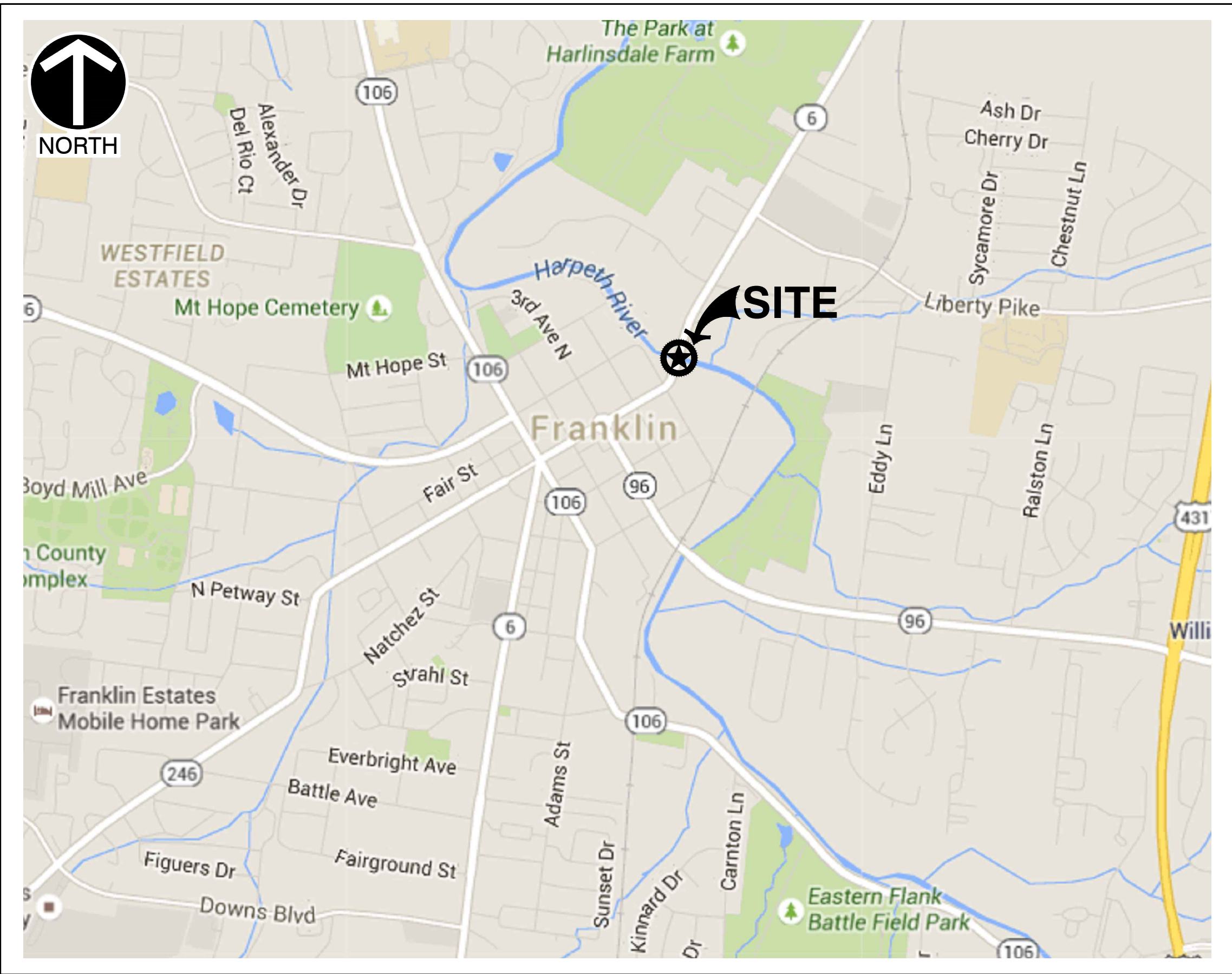
AVAILABLE PLANS AND OBSERVED EVIDENCE WAS USED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. UTILITIES MAY EXIST THAT ARE NOT SHOWN.

SPECIFICATION NOTE

PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF FRANKLIN STANDARD SPECIFICATIONS.

NOTE TO CONTRACTOR:

- THE CONTRACTOR SHALL REFER TO ALL PLANS WITHIN THIS PLAN SET. IT IS NOT THE ENGINEER'S/LANDSCAPE ARCHITECT'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THIS PROJECT.
- SURVEY INFORMATION IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPSZONE 4100, NAD83 DATUM.



SITE LOCATION MAP



Sheet List Table

Sheet Number	Sheet Title
C0.00	COVER SHEET
C1.00	PRESENT LAYOUT
C1.01	PROPOSED LAYOUT
C1.02	PROFILE
C2.00	CROSS SECTIONS



PRELIMINARY
NOT FOR CONSTRUCTION

REVISION RECORD

NO	DATE	DESCRIPTION

Civil & Environmental Consultants, Inc.
325 Seaboard Lane - Suite 170 - Franklin, TN 37067
615-333-7797 - 800-763-2326
www.cecinc.com

EAST MAIN STREET (FRANKLIN ROAD)
BRIDGE OVER THE HARPETH RIVER
CITY OF FRANKLIN
WILLIAMSON COUNTY, TN

DATE: SEPTEMBER 2019	DRAWN BY: GND
PROJECT NO: 182-736	CHECKED BY: EUG
APPROVED BY: AS SHOWN	AS SHOWN

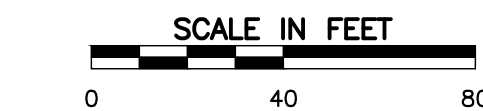
DRAWING NO.:
C0.00



SCALE IN FEET

0 40 80

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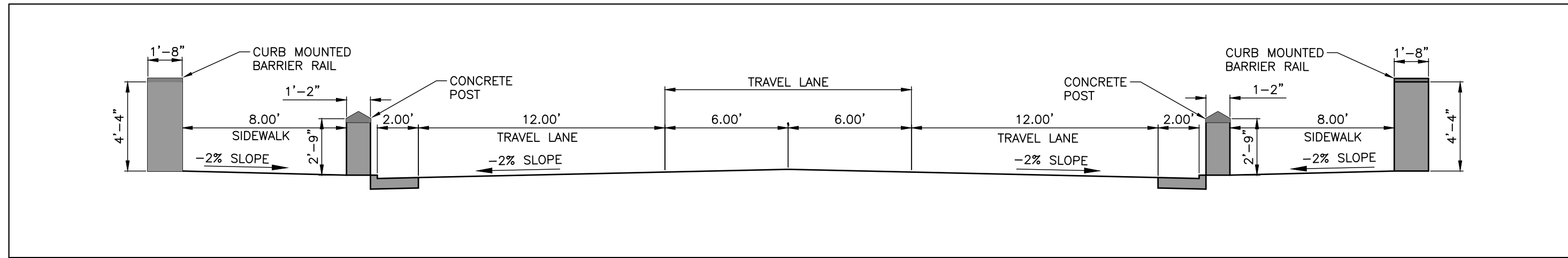


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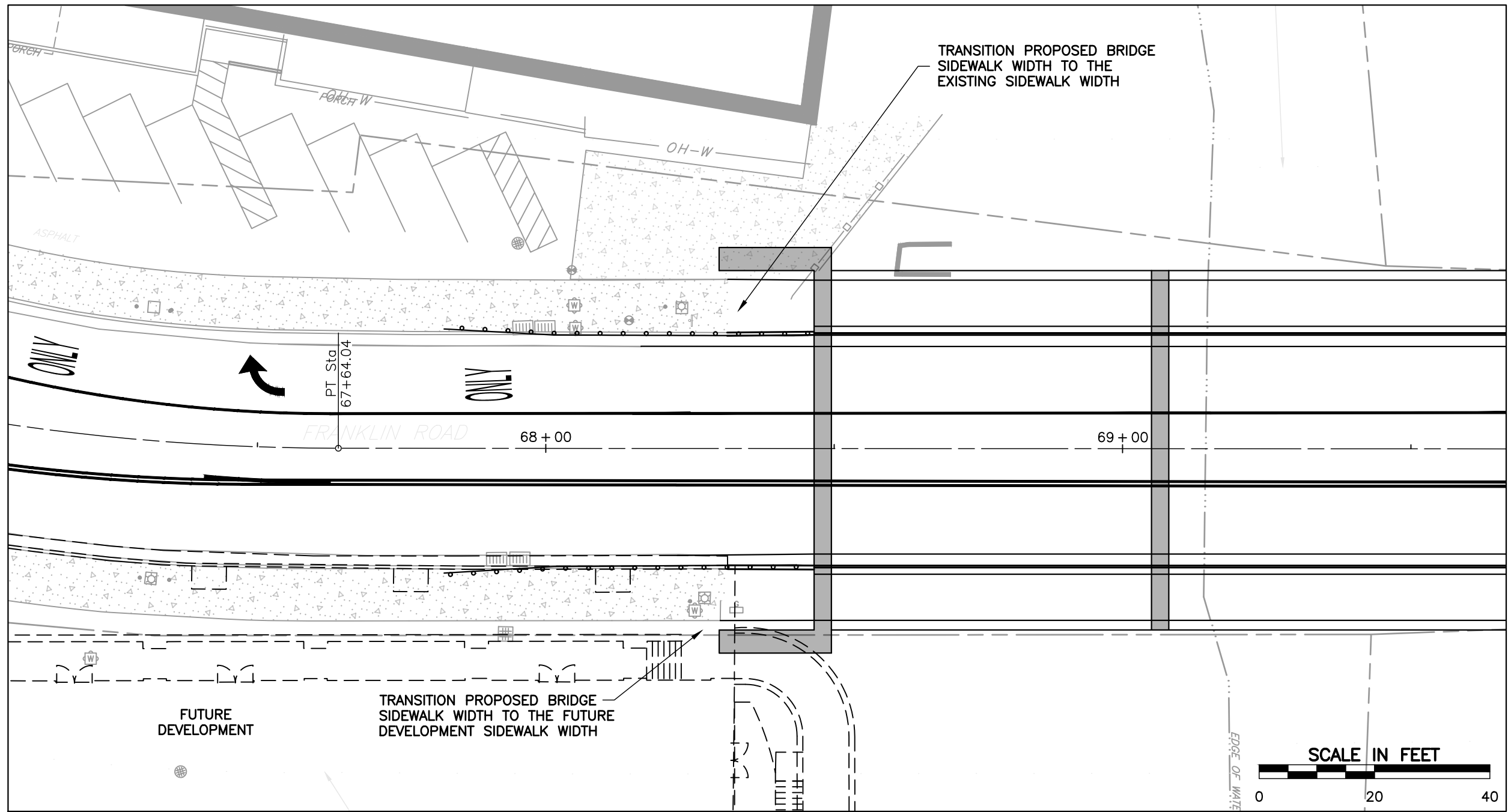
DATE:	SEPTEMBER 2018	DRAWN BY:	GND
DWG SCALE:	AS SHOWN	CHECKED BY:	EJG
PROJECT NO:	182-736		
APPROVED BY:	AS SHOWN		

DRAWING NO.:

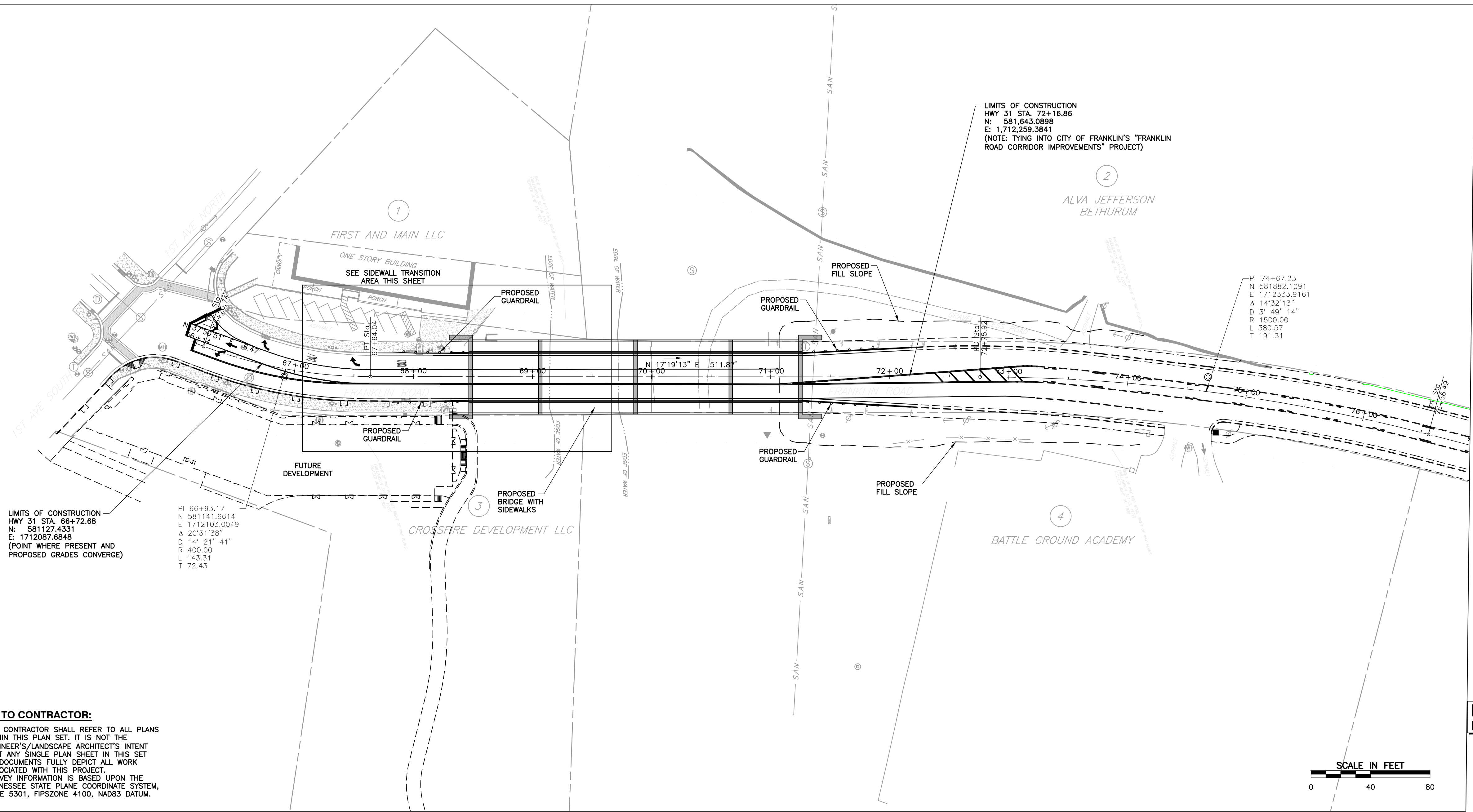
C1.00



TYPICAL BRIDGE SECTION



SIDEWALK TRANSITION AREA



LIMITS OF CONSTRUCTION
HWY 31 STA. 66+72.68
N: 581127.4351
E: 1712087.6848
(POINT WHERE PRESENT AND
PROPOSED GRADES CONVERGE)

PI 66+93.17
N 581141.6614
E 1712103.0049
A 20°31'38"
D 14° 21' 41"
R 400.00
L 143.31
T 72.43

LIMITS OF CONSTRUCTION
HWY 31 STA. 72+16.86
N: 581643.0898
E: 1712259.3841
(NOTE: TYING INTO CITY OF FRANKLIN'S "FRANKLIN
ROAD CORRIDOR IMPROVEMENTS" PROJECT)

PI 74+67.23
N 581882.1091
E 1712333.9161
A 14°32'13"
D 3° 49' 14"
R 1500.00
L 380.57
T 191.31

**PRELIMINARY
NOT FOR CONSTRUCTION**



NOTE TO CONTRACTOR:

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2. SURVEY INFORMATION IS BASED UPON THE TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPSZONE 4100, NAD83 DATUM.

REVISION RECORD

NO	DATE	DESCRIPTION



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COF #: 0000

**EAST MAIN STREET (FRANKLIN ROAD)
BRIDGE OVER THE HARPETH RIVER
CITY OF FRANKLIN
WILLIAMSON COUNTY, TN**

PROPOSED LAYOUT

DATE:	SEPTEMBER 2018	DRAWN BY:	GND
DWG SCALE: <td>AS SHOWN</td> <td>CHECKED BY:<td>EJG</td></td>	AS SHOWN	CHECKED BY: <td>EJG</td>	EJG
PROJECT NO: <td>182736<td>APPROVED BY:<td>AS SHOWN</td></td></td>	182736 <td>APPROVED BY:<td>AS SHOWN</td></td>	APPROVED BY: <td>AS SHOWN</td>	AS SHOWN

DRAWING NO.:

C1.01

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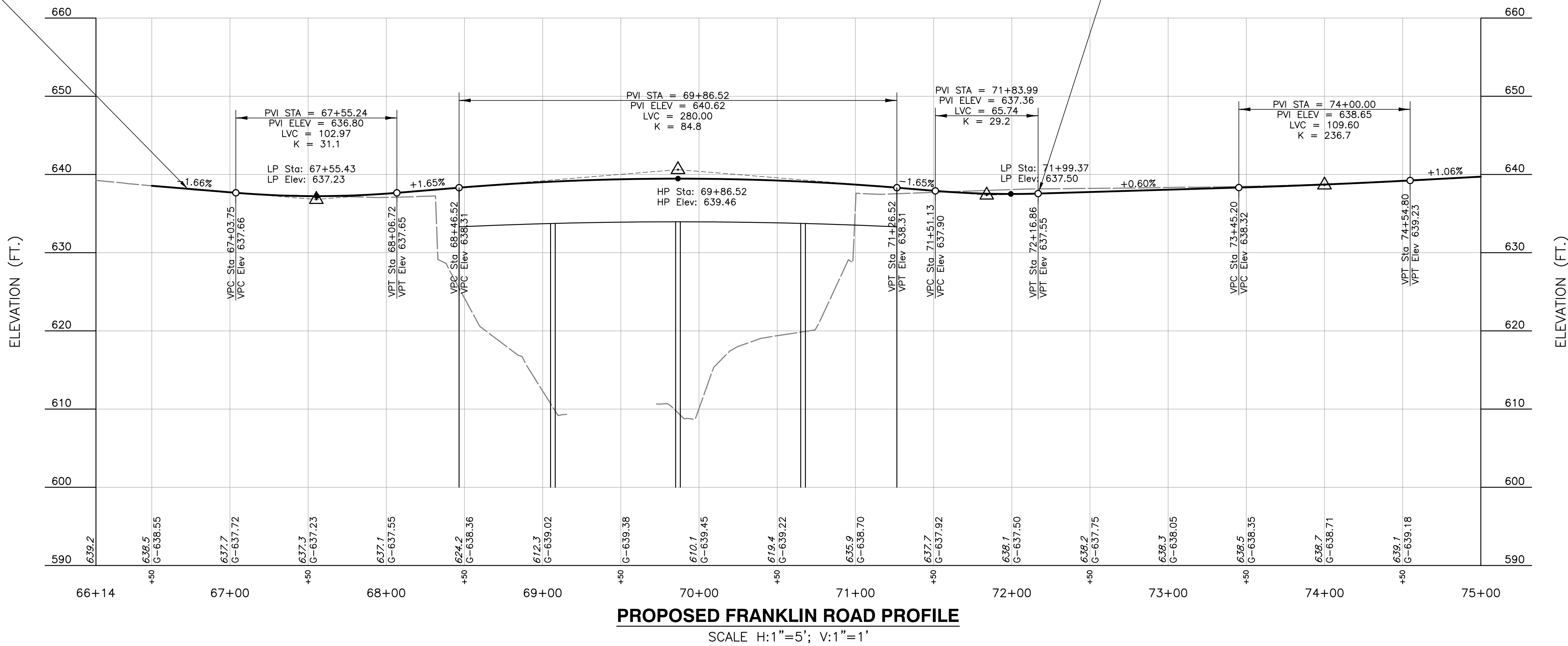


Know what's below.
Call before you dig.

NOTE TO CONTRACTOR:

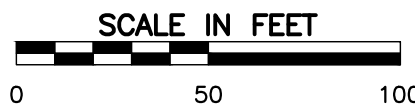
1. THE CONTRACTOR SHALL REFER TO ALL PLANS WITHIN THIS PLAN SET. IT IS NOT THE ENGINEER'S/LANDSCAPE ARCHITECT'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THIS PROJECT.
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LIMITS OF CONSTRUCTION
HWY 31 STA. 66+72.68
(POINT WHERE PRESENT AND
PROPOSED GRADES CONVERGE)



LIMITS OF CONSTRUCTION
HWY 31 STA. 72+16.86
(NOTE: TYING INTO CITY OF FRANKLIN'S "FRANKLIN
ROAD CORRIDOR IMPROVEMENTS" PROJECT)

PRELIMINARY
NOT FOR CONSTRUCTION



COF #: 0000

REVISION RECORD	
NO	DATE

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**EAST MAIN STREET (FRANKLIN ROAD)
BRIDGE OVER THE HARPETH RIVER
CITY OF FRANKLIN
WILLIAMSON COUNTY, TN**

PROFILE	
DATE: SEPTEMBER 2018	DRAWN BY: GND
DWG SCALE: AS SHOWN	CHECKED BY: EUG
PROJECT NO: 182-736	AS SHOWN
APPROVED BY:	

DRAWING NO.: **C1.02**

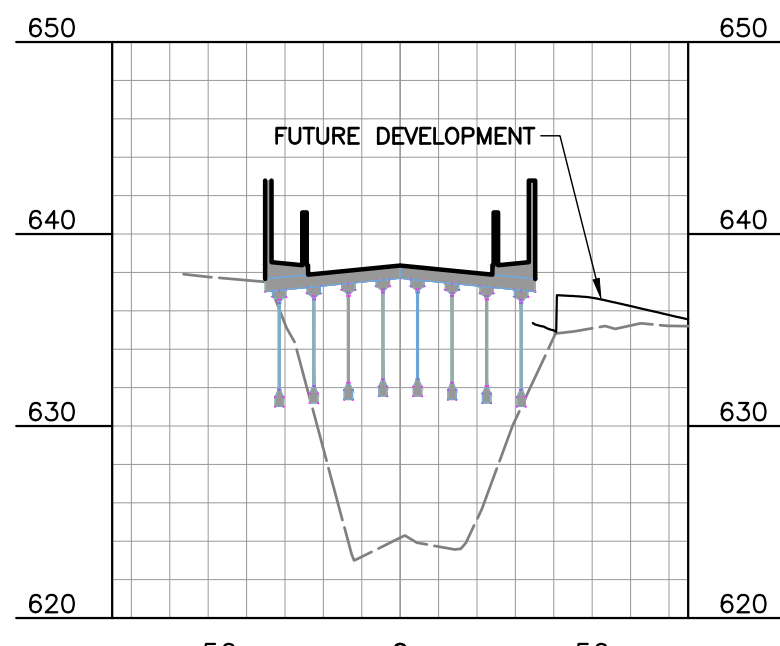
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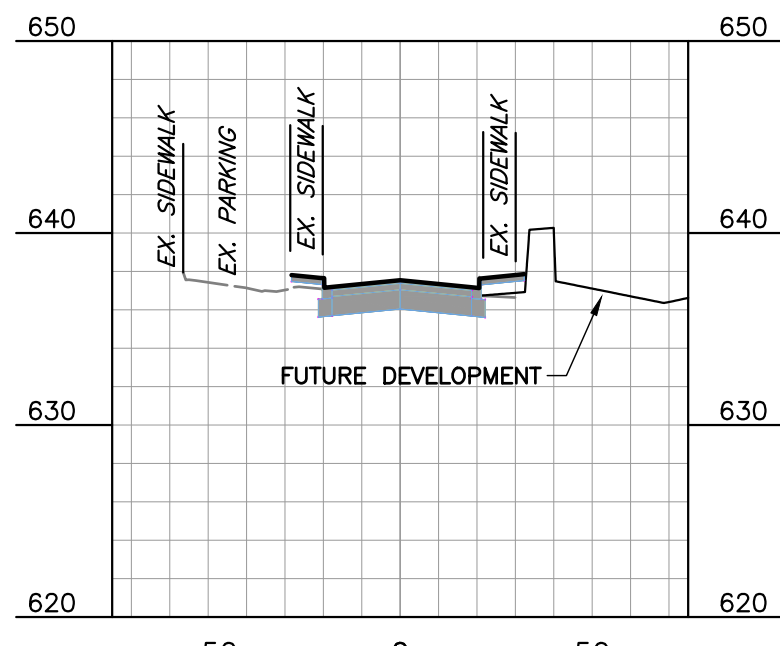
Know what's below.
Call before you dig.

NOTE TO CONTRACTOR:

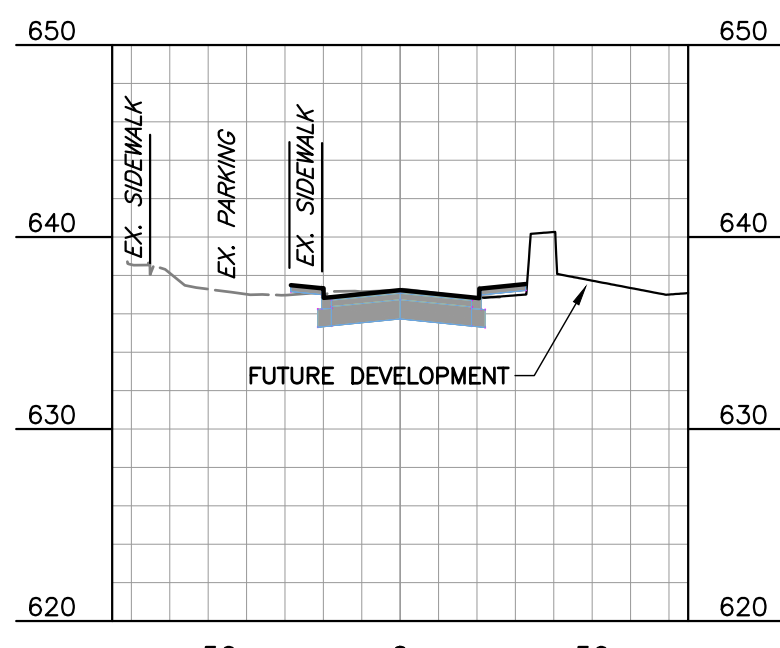
1. THE CONTRACTOR SHALL REFER TO ALL PLANS WITHIN THIS PLAN SET. IT IS NOT THE ENGINEER'S/LANDSCAPE ARCHITECT'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THIS PROJECT.
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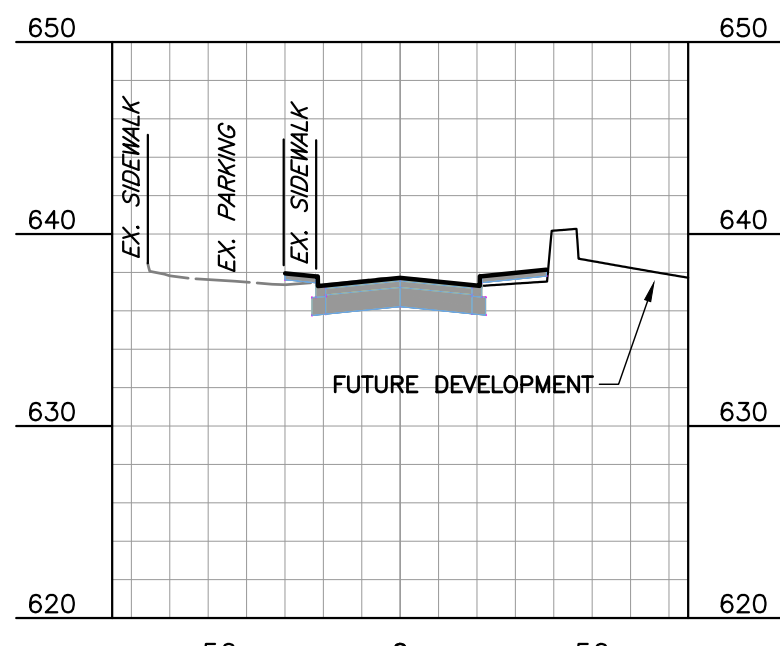
STA 68+50



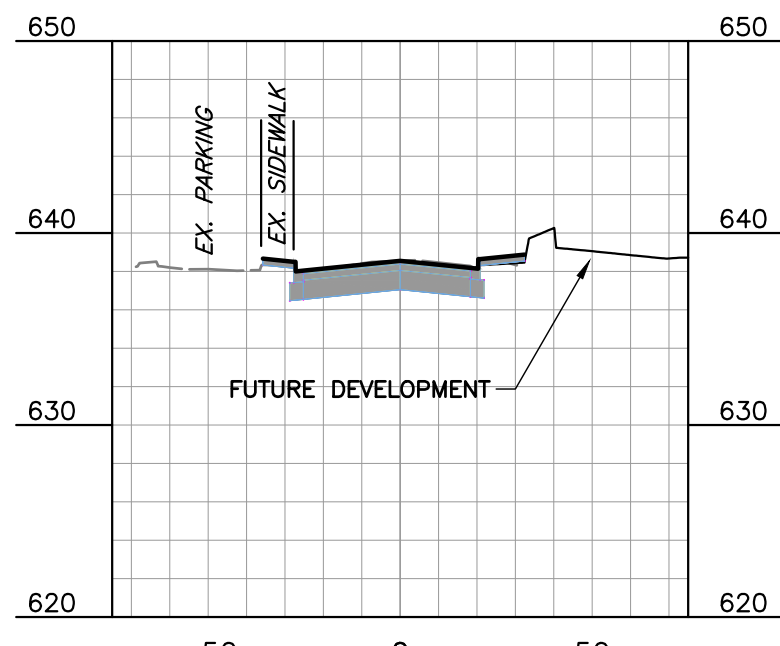
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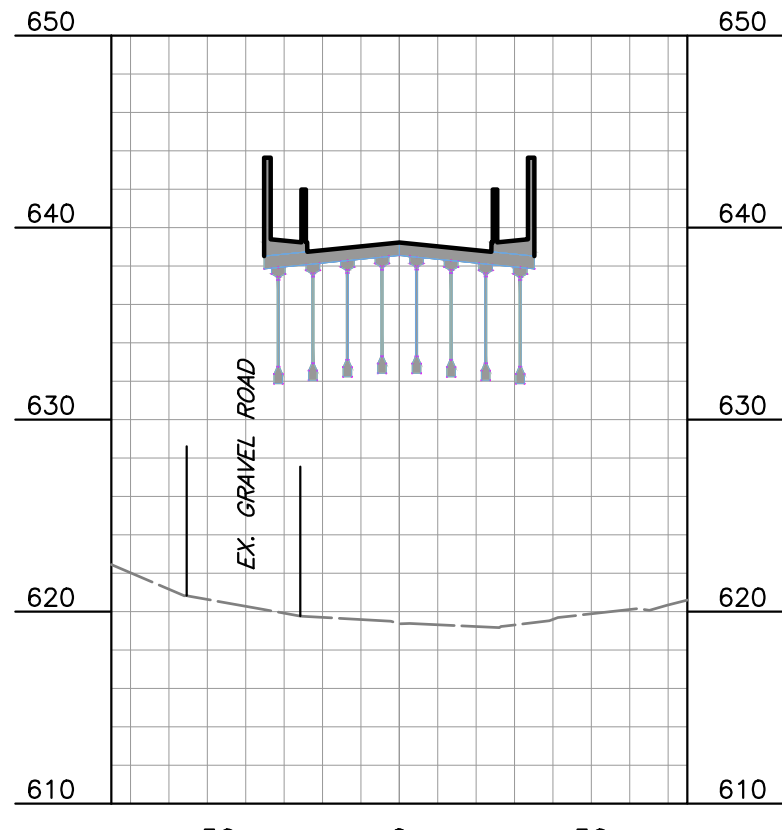
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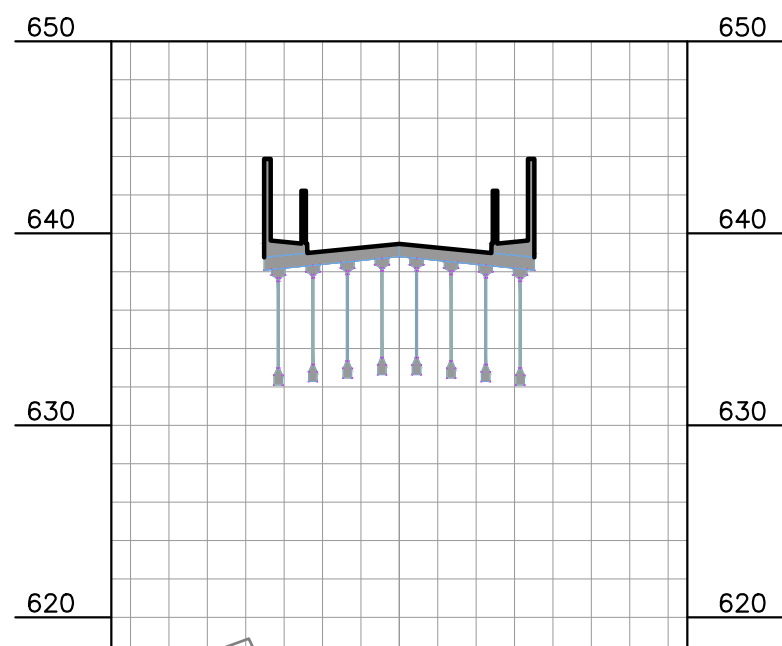
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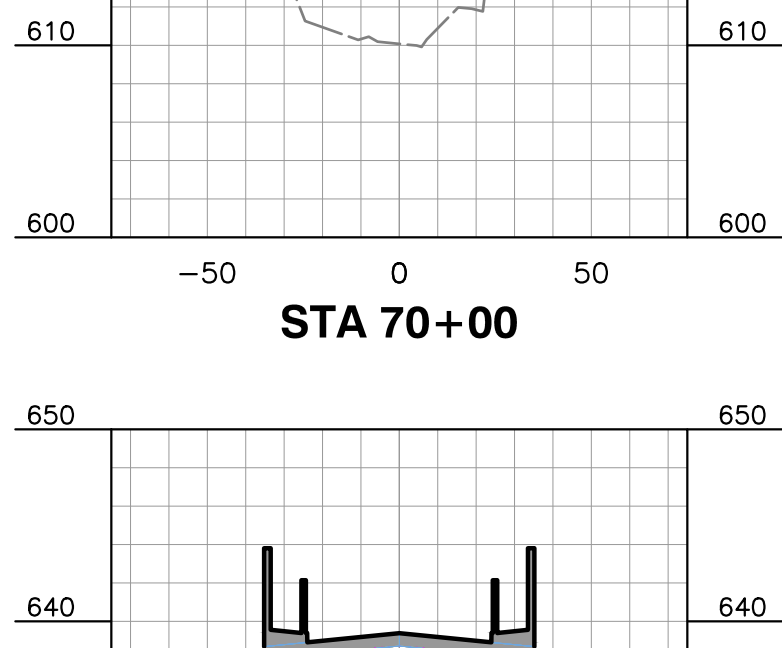
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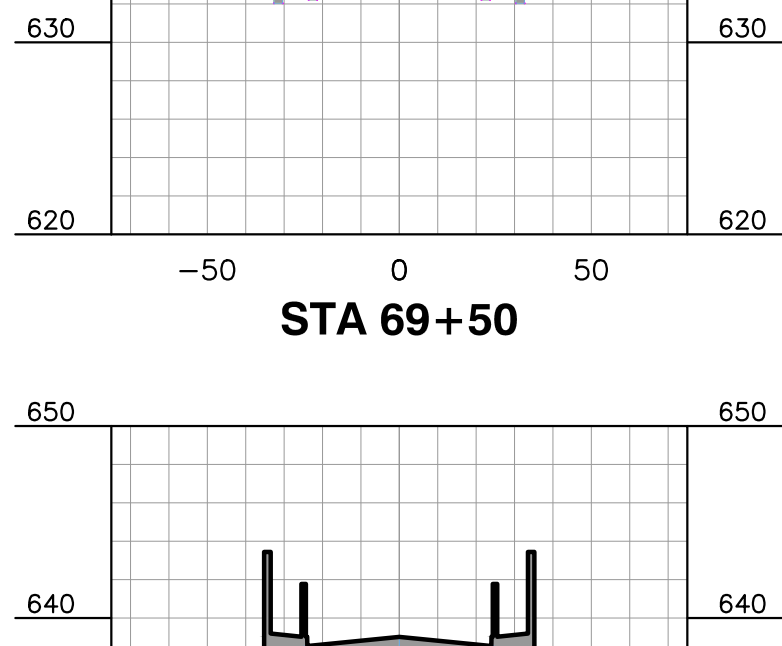
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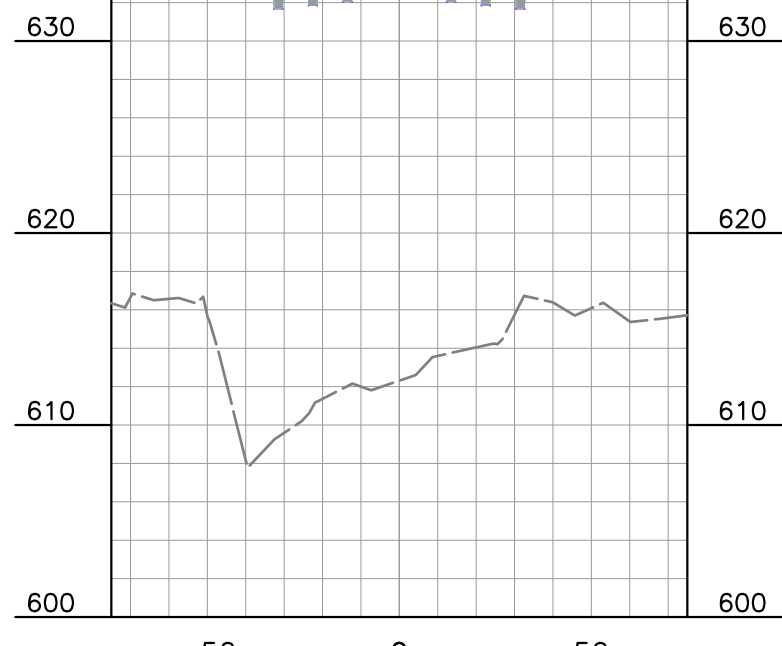
STA 70+00



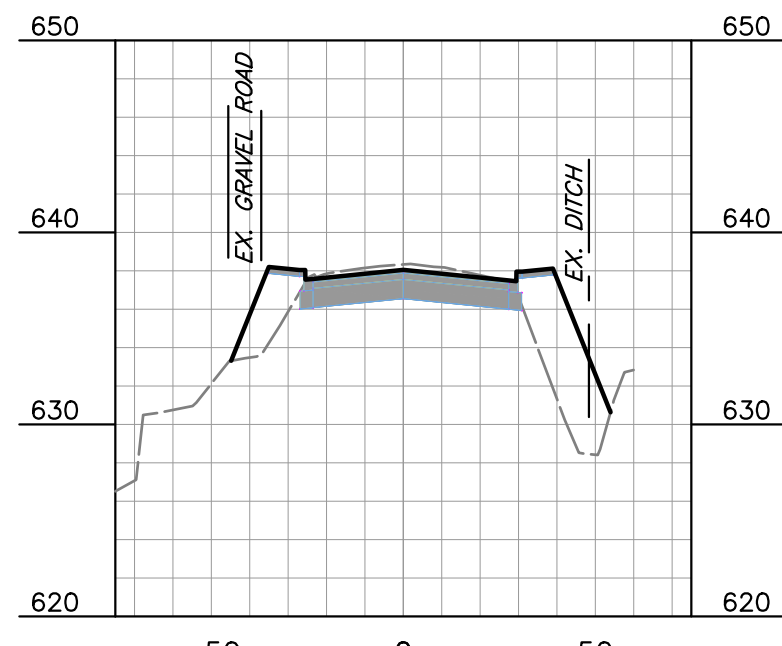
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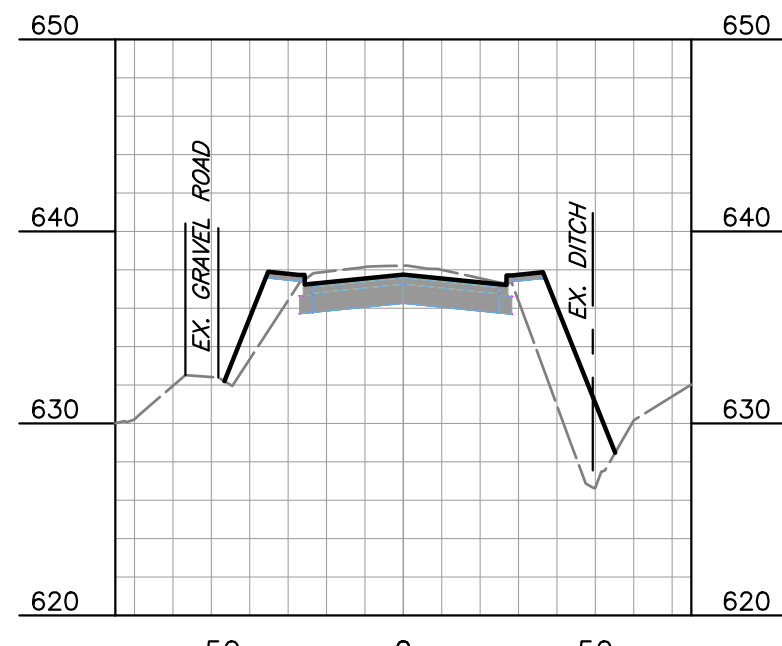
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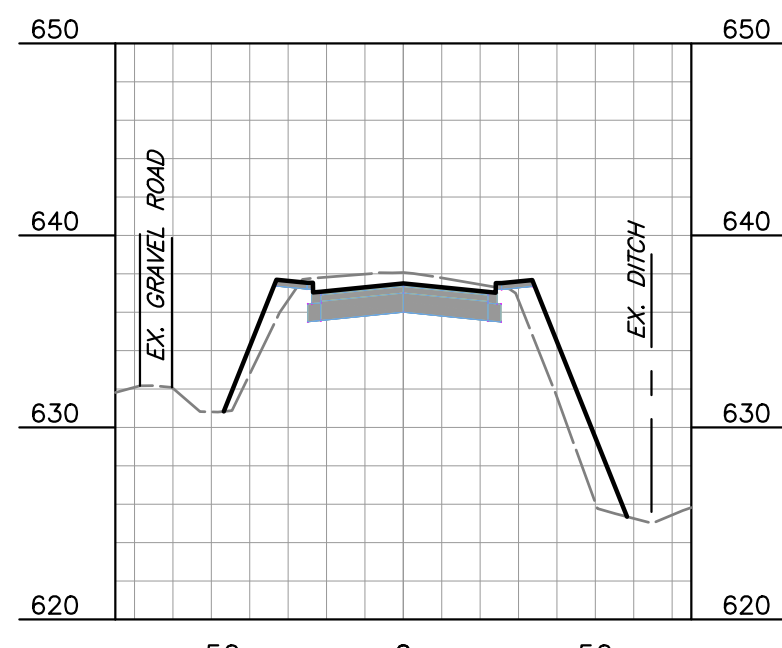
STA 69+00



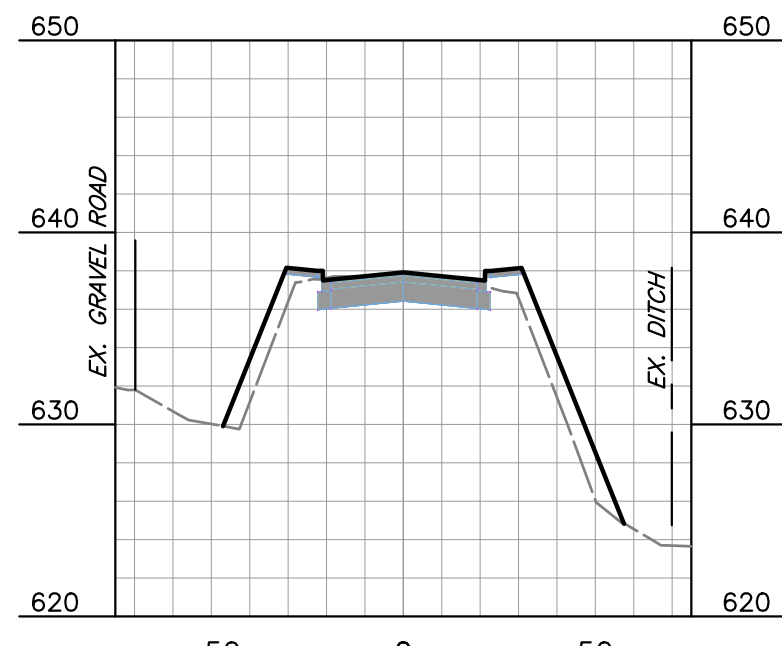
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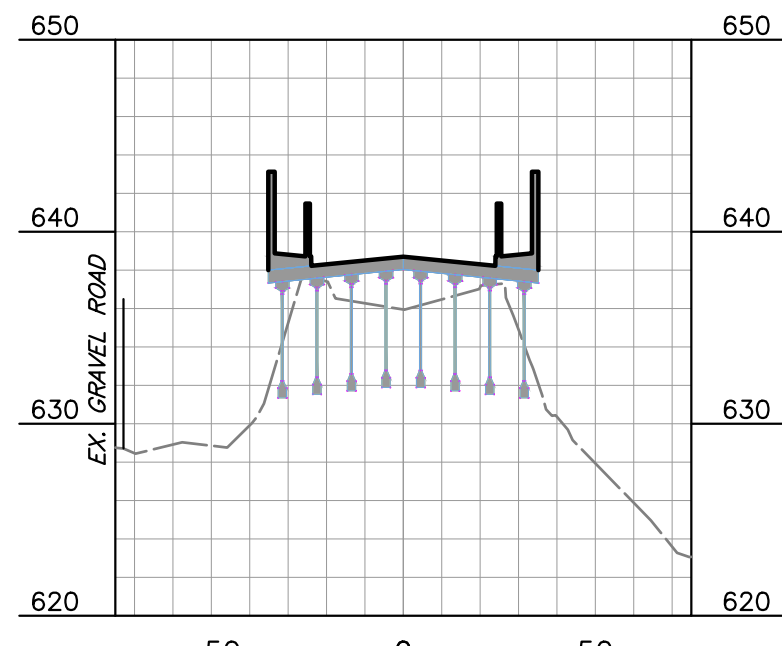
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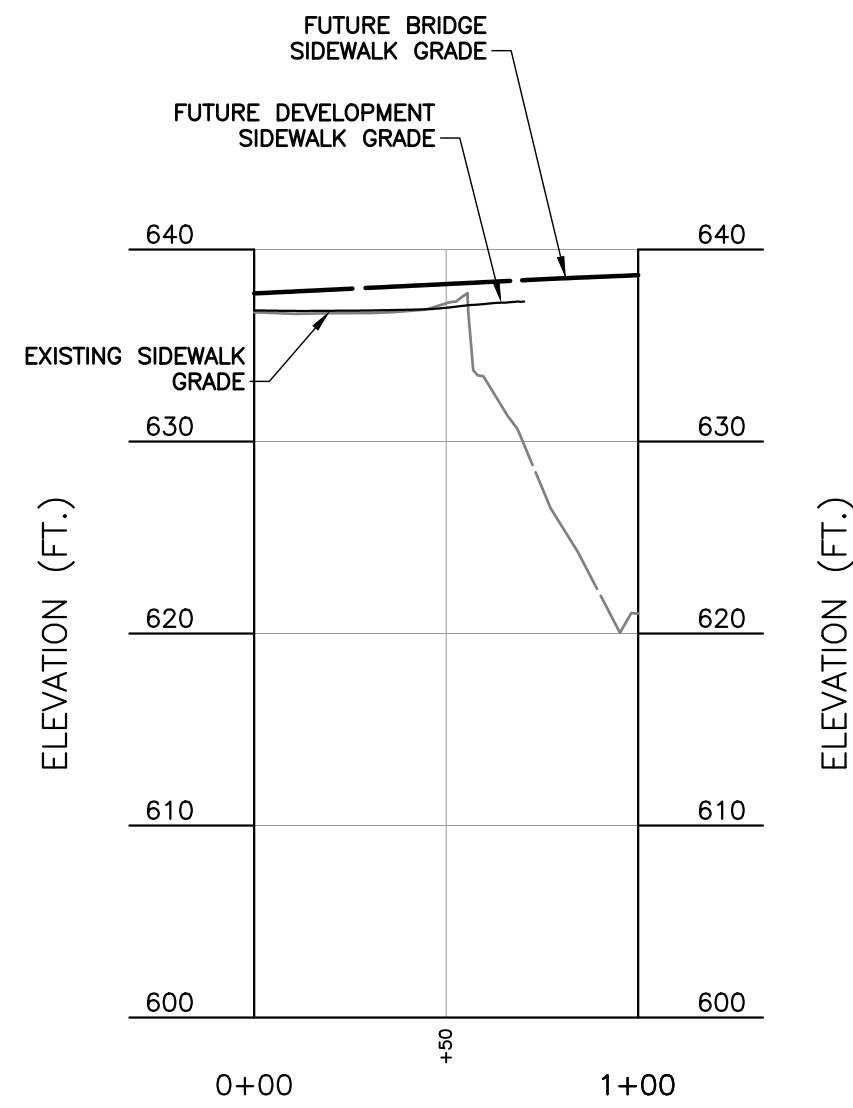
STA 72+00



STA 71+50

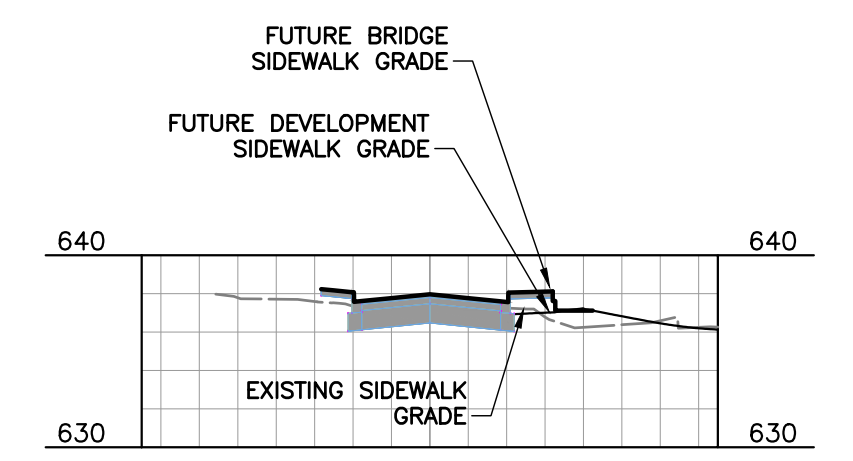


STA 71+00

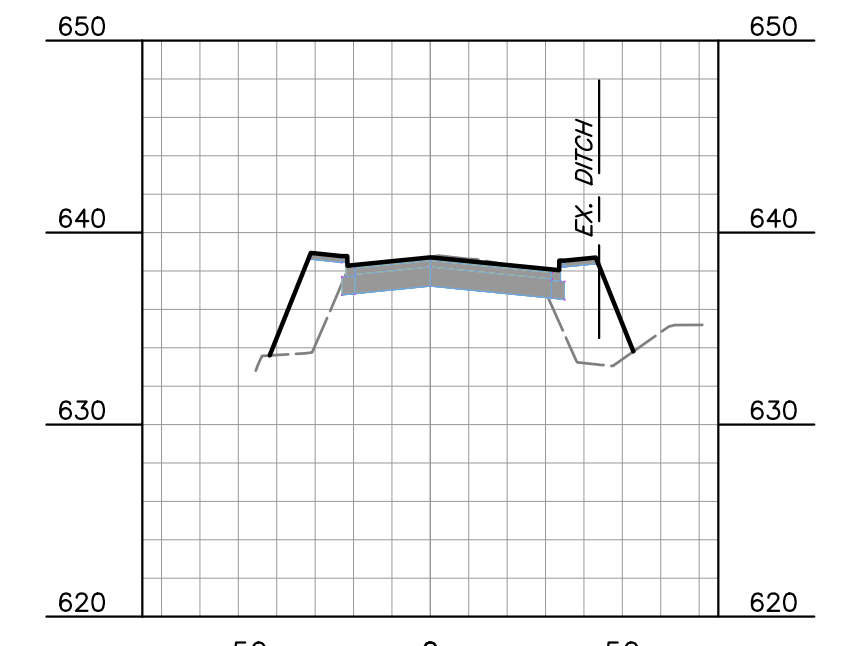


SE SIDEWALK AT END OF
BRIDGE PROFILE

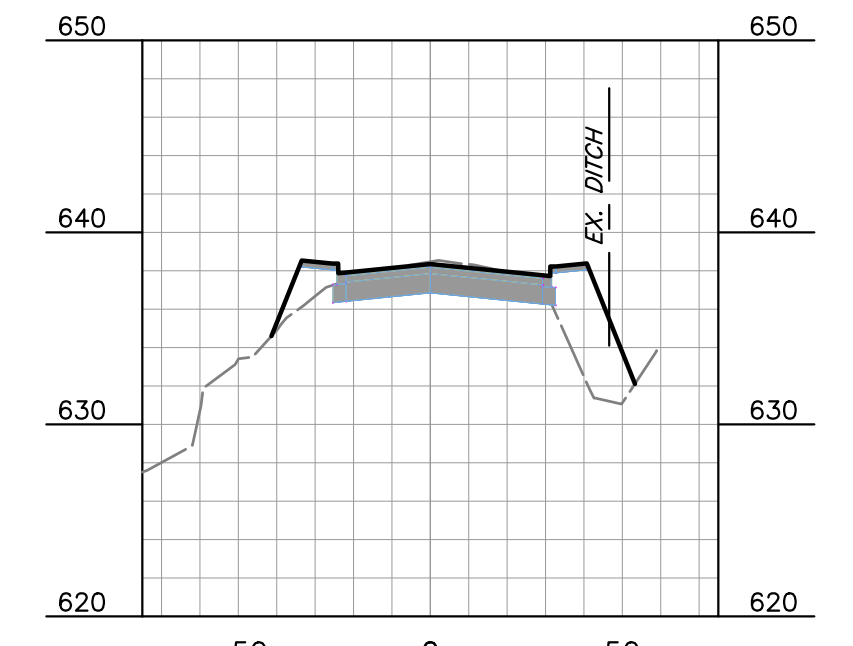
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STA 68+26

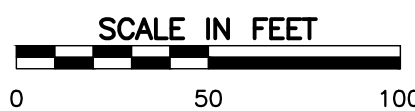


STA 74+00



STA 73+50

PRELIMINARY
NOT FOR CONSTRUCTION



COF #: 0000

CROSS SECTIONS

EAST MAIN STREET (FRANKLIN ROAD)
BRIDGE OVER THE HARPETH RIVER
CITY OF FRANKLIN
WILLIAMSON COUNTY, TN

REVISION RECORD

DESCRIPTION

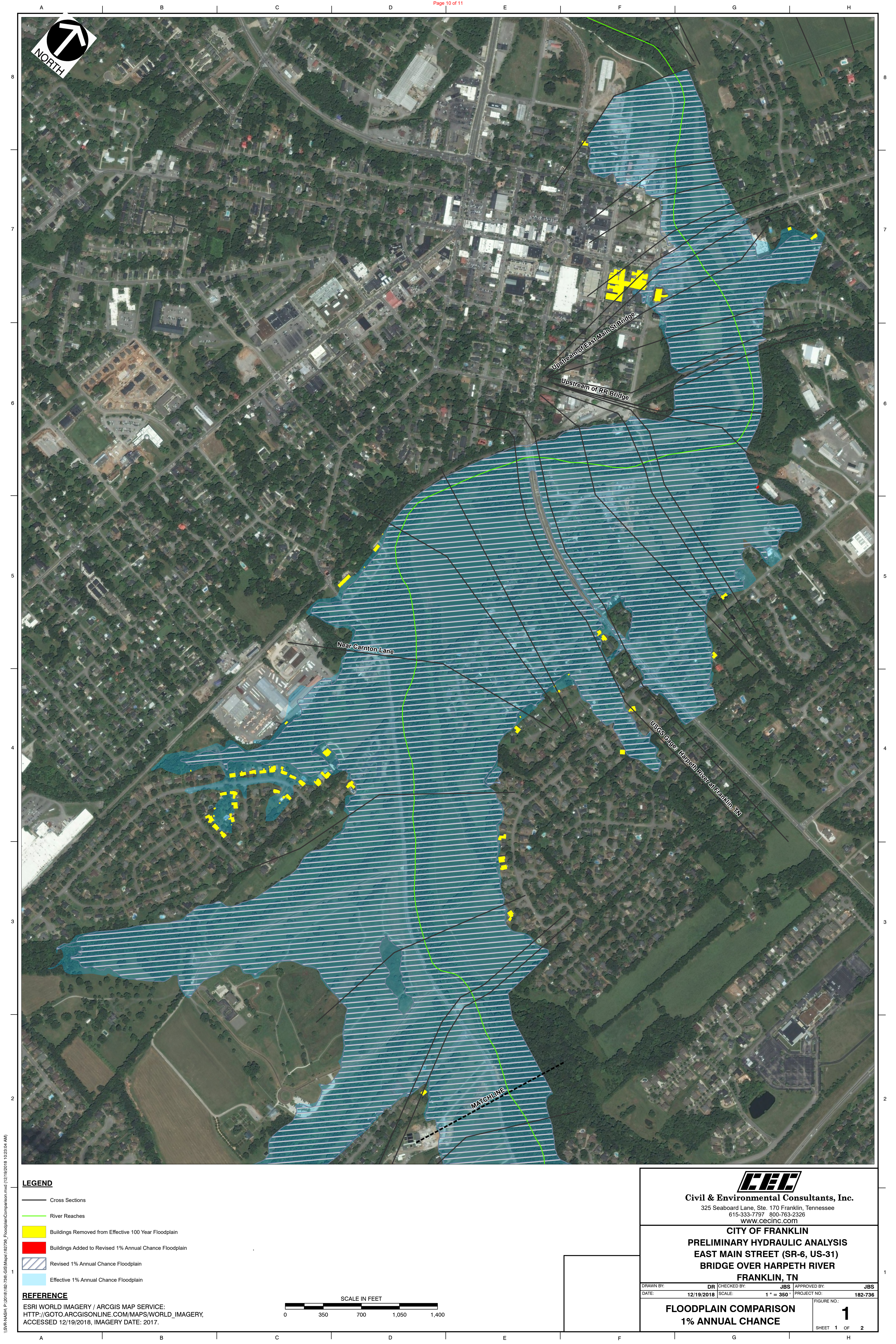
NO DATE

DATE:	SEPTEMBER 2018	DRAWN BY:	GND
DWG SCALE:	AS SHOWN	CHECKED BY:	EJG
PROJECT NO:	182-736	APPROVED BY:	AS SHOWN

DRAWING NO.:

C2.00

C&E
Civil & Environmental Consultants, Inc.
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615-333-7797 · 800-763-2326
www.cceinc.com



LEGEND

- Cross Sections
- River Reaches
- Buildings Removed from Effective 100 Year Floodplain
- Buildings Added to Revised 1% Annual Chance Floodplain
- Revised 1% Annual Chance Floodplain
- Effective 1% Annual Chance Floodplain

REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 12/19/2018, IMAGERY DATE: 2017.



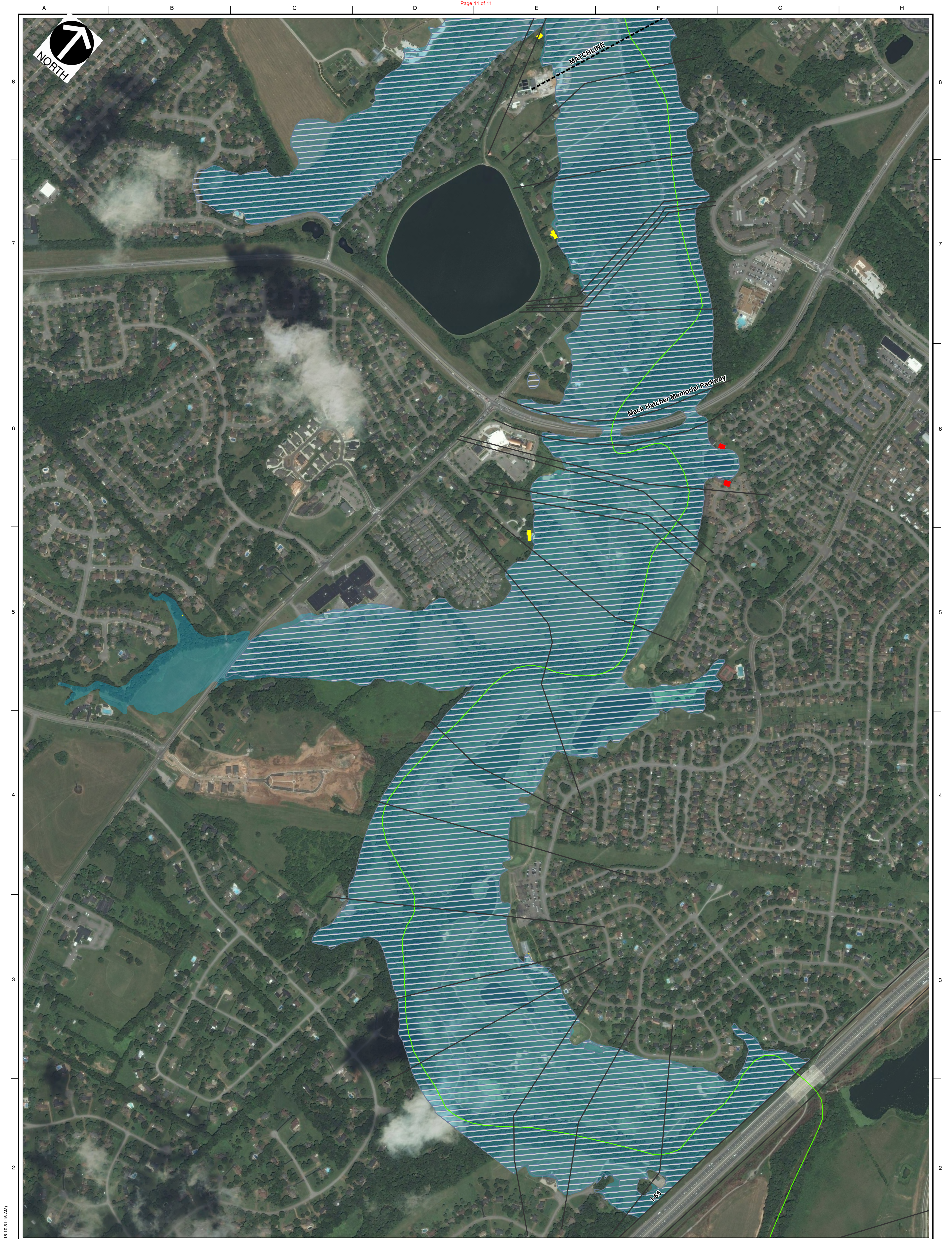
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615-333-7797 800-763-2326
www.cecinc.com

CITY OF FRANKLIN
PRELIMINARY HYDRAULIC ANALYSIS
EAST MAIN STREET (SR-6, US-31)
BRIDGE OVER HARPETH RIVER
FRANKLIN, TN

DRAWN BY: DR CHECKED BY: JBS APPROVED BY: JBS
DATE: 12/19/2018 SCALE: 1" = 350' PROJECT NO: 182-736

FLOODPLAIN COMPARISON
1% ANNUAL CHANCE

FIGURE NO: **1**
SHEET 1 OF 2



\\SVR\NASH_P\2019\182-736_GIS\Mapa\182736_FloodplainComparison.mxd (12/19/2018 10:51:15 AM)

LEGEND

- Cross Sections
- River Reaches
- Buildings Removed from Effective 100 Year Floodplain
- Buildings Added to Revised 1% Annual Chance Floodplain
- Revised 1% Annual Chance Floodplain
- Effective 1% Annual Chance Floodplain

REFERENCE

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ACCESSED 12/19/2018, IMAGERY DATE: 2017.



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CITY OF FRANKLIN
PRELIMINARY HYDRAULIC ANALYSIS
EAST MAIN STREET (SR-6, US-31)
BRIDGE OVER HARPETH RIVER
FRANKLIN, TN

DRAWN BY:	DR	CHECKED BY:	JBS	APPROVED BY:	JBS
DATE:	12/19/2018	SCALE:	1" = 350'	PROJECT NO.:	182-736

FLOODPLAIN COMPARISON
1% ANNUAL CHANCE

FIGURE NO.:
1

SHEET 2 OF 2

Request for Construction Change

Change Order No. 2

City of Franklin
Engineering Office
109 Third Avenue South
Franklin, TN 37064

Contract No. 2017-0006
Project SR 96 East Sidewalk Project

Whereas, we Civil Constructors, LLC entered into an contract with the CITY OF FRANKLIN, on 06/26/2018, for the construction by said Contractor of the above designated contract; and Whereas, certain items of construction encountered are not covered by the original contract, we desire to submit the following additional items of construction to be performed by the Contractor and paid by the City at the prices scheduled therefore below:

Reason for Change Order:

To reconcile final quantities for all items in the contract.

Attachments (List documents supporting change):

Attachment A - Final Quantity Spreadsheet

Item No.	Description of Work	Unit	Estimate Quantity	Unit Price	Amount
TOTAL					

CHANGE IN CONTRACT PRICE:	
Original Contract Price	
	\$1,511,299.81
Net Increase (Decrease) from previous Change Orders	
No. 0 to <u>1</u> :	\$78,863.50
Contract Price prior to this Change Order:	
	\$1,585,163.31
Net increase (decrease) of this Change Order:	
	\$208,684.31
Contract Price with all approved Change Orders:	
	\$1,793,847.61

CHANGE IN CONTRACT TIMES:	
Original Contract Times:	
Substantial Completion:	December 12, 2017
Ready for final payment:	N/A
Net change from previous Change Orders No. 0 to <u>1</u> to:	
Substantial Completion:	143 days
Ready for final payment:	N/A
Contract Times prior to this Change Order:	
Substantial Completion:	May 9, 2018
Ready for final payment:	N/A
Net increase (decrease) this Change Order:	
Substantial Completion:	68 days
Ready for final payment:	N/A
Contract Times with all approved Change Orders:	
Substantial Completion:	July 17, 2018
Ready for final payment:	N/A

Now, Therefore, We, Civil Constructors, LLC Contractors, hereby agree to this Supplemental Agreement consisting of the above mentioned items and prices, and agree that this Supplemental Agreement is hereby made a part of the original contract and will be performed by this Contractor in accordance with specifications thereof, and that the original contract remain in full force and effect, except in so far as specifically modified by this supplemental Agreement.

RECOMMENDED FOR APPROVAL BY:

By: ENGINEER By: CITY PROJECT MANAGER By: CITY ENGINEER OR DESIGNEE

Date: 12-11-18 Date: 12-11-18 Date: 12-11-18

ACCEPTED:

By:
CONTRACTOR (Authorized Signature)

Date: 12/10/18

APPROVED:

By: _____
OWNER (Authorized Signature)

Date: _____

LOCATION:	Franklin, TN (Williamson Co.)
PROJECT:	SR-96 East Sidewalk Project
COF CONTRACT #:	2017-0006
BID DATE:	May 25, 2017

TABULATED BID									
Civil Constructors, LLC									
ITEM NO.	ITEM DESCRIPTION	UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
105-01	CONSTRUCTION STAKES LINES AND GRADES	L.S.	1	\$ 29,500.00	\$ 29,500.00	1.00	0.00	\$ 32,013.18	\$ 2,513.18
201-01	CLEARING AND GRUBBING	L.S.	1	\$ 28,165.00	\$ 28,165.00	1.00	0.00	\$ 28,165.00	\$ -
202-01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (INCLUDES BUT NOT LIMITED TO ITEMS SUCH AS EARTHWORK (INCLUDES ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED, BORROW	L.S.	1	\$ 11,840.00	\$ 11,840.00	1.00	0.00	\$ 13,550.84	\$ 1,710.84
207-99.91	REMOVAL OF RIGID PAVMT, SIDEWALK, ETC	LS	1	\$ 280,230.00	\$ 280,230.00	1.00	0.00	\$ 296,350.86	\$ 16,120.86
202-03	REMOVAL OF ASPHALT PAVEMENT	SY	387	\$ 7.85	\$ 3,037.95	250.00	-137.00	\$ 1,962.50	\$ (1,075.45)
202-03.03	UNDERCUTTING (AS DIRECTED BY THE ENGINEER) (UNIT PRICE BIDS INCLUDES MINERAL AGGREGATE	SY	1541	\$ 3.20	\$ 4,931.20	1611.00	70.00	\$ 5,155.20	\$ 224.00
203-05	REMOVAL OF CURB (EXTRUDED)	C.Y.	500	\$ 52.60	\$ 26,300.00	354.50	-145.50	\$ 18,646.70	\$ (7,653.30)
202-08.10	REMOVAL OF CURB AND GUTTER	LF	16	\$ 9.40	\$ 150.40	0.00	-16.00	\$ -	\$ (150.40)
202-08.15	CONSTRUCTION ACCESS ROAD	LF	19	\$ 13.60	\$ 258.40	19.00	0.00	\$ 258.40	\$ -
209-01.11	TEMPORARY SILT FENCE (WITHOUT BACKING), (AFTER THE INITIAL INSTALLATION ALL COST	EACH	0	\$ 3,550.00	\$ -	2.00	2.00	\$ 7,100.00	\$ 7,100.00
209-08.03	ROCK CHECK DAM ("TRAPEXOIDAL DITCH", 1.5' +/-	L.F.	2323	\$ 1.75	\$ 4,065.25	3245.00	922.00	\$ 5,678.75	\$ 1,613.50
209-08.07	DEPTH, OR AS DIRECTED BY THE ENGINEER, AFTER CATCH BASIN PROTECTION (TYPE D), (AFTER THE INITIAL INSTALLATION ALL COST ASSOCIATED WITH	EACH	3	\$ 286.00	\$ 858.00	0.00	-3.00	\$ -	\$ (858.00)
209-40.33	MINERAL AGGREGATE TYPE A BASE GRADING "D"	EACH	9	\$ 200.00	\$ 1,800.00	13.00	4.00	\$ 2,600.00	\$ 800.00
303-01	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2	TON	304	\$ 48.00	\$ 14,592.00	296.07	-7.93	\$ 14,211.36	\$ (380.64)
307-01.08	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	25	\$ 290.00	\$ 7,250.00	127.23	102.23	\$ 36,896.70	\$ 29,646.70
402-01	AGGREGATE FOR COVER MATERIAL (PC)	TON	1.25	\$ 1,123.00	\$ 1,403.75	1.25	0.00	\$ 1,403.75	\$ -
402-02		TON	4.5	\$ 60.00	\$ 270.00	0.00	-4.50	\$ -	\$ (270.00)

TABULATED BID									
ITEM NO.	ITEM DESCRIPTION	Civil Constructors, LLC							
		UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	0.25	\$ 840.75	\$ 210.19	0.25	0.00	\$ 210.19	\$ -
411-01.10	ACS MIX (PG64-22) GRADING D	TON	74	\$ 179.25	\$ 13,264.50	121.29	47.29	\$ 21,741.23	\$ 8,476.73
411-02.10	ACS MIX (PG64-22) GRADING E SHOULDER	TON	59	\$ 194.65	\$ 11,484.35	78.97	19.97	\$ 15,371.51	\$ 3,887.16
415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	778.3	\$ 9.90	\$ 7,705.17	778.30	0.00	\$ 7,705.17	\$ -
604-09.10	CLASS A CONCRETE (DRIVEWAYS) (6" THICKNESS W/ FIBER MESH AND 4" AGGREGATE CLASS "A")	SY	953	\$ 68.50	\$ 65,280.50	956.63	3.63	\$ 65,529.16	\$ 248.65
607-02.02	15" CONCRETE PIPE CULVERT (CLASS III)	LF	250	\$ 83.40	\$ 20,850.00	518.00	268.00	\$ 43,201.20	\$ 22,351.20
607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	LF	447	\$ 85.65	\$ 38,285.55	758.00	311.00	\$ 64,922.70	\$ 26,637.15
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	LF	471	\$ 98.65	\$ 46,464.15	475.00	4.00	\$ 46,858.75	\$ 394.60
607-06.02	30" CONCRETE PIPE CULVERT (CLASS III)	LF	31	\$ 146.35	\$ 4,536.85	31.00	0.00	\$ 4,536.85	\$ -
611-07.30	15" ENDWALL (SIDE DRAIN) 6:1 (INCLUDES STEEL PIPE GRATE TDOT D-SEW-1A)	EACH	14	\$ 3,950.00	\$ 55,300.00	13.00	-1.00	\$ 51,350.00	\$ (3,950.00)
611-07.31	18" ENDWALL (SIDE DRAIN) 6:1 (INCLUDES STEEL PIPE GRATE TDOT D-SEW-1A)	EACH	7	\$ 4,000.00	\$ 28,000.00	8.00	1.00	\$ 32,000.00	\$ 4,000.00
611-07.01	15" TDOT STRAIGHT CONCRETE ENDWALL (LS PER DETAIL D-PE-4)	EACH	1	\$ 1,080.00	\$ 1,080.00	1.00	0.00	\$ 1,080.00	\$ -
611-07.02	18" TDOT STRAIGHT CONCRETE ENDWALL (LS PER DETAIL D-PE-4)	EACH	1	\$ 1,130.00	\$ 1,130.00	2.00	1.00	\$ 2,260.00	\$ 1,130.00
611-07.03	24" TDOT STRAIGHT CONCRETE ENDWALL (LS PER DETAIL D-PE-4)	EACH	1	\$ 1,650.00	\$ 1,650.00	1.00	0.00	\$ 1,650.00	\$ -
611-07.04	30" TDOT STRAIGHT CONCRETE ENDWALL (LS PER DETAIL D-PE-4)	EACH	1	\$ 2,660.00	\$ 2,660.00	1.00	0.00	\$ 2,660.00	\$ -
611-42.01	CATCH BASINS, TYPE 42, 0' - 4' (COMPLETE IN-PLACE, INCLUSIVE OF ALL EXCAVATION, BACKFILL,	EACH	4	\$ 3,560.00	\$ 14,240.00	8.00	4.00	\$ 28,480.00	\$ 14,240.00
611-42.02	CATCH BASINS, TYPE 42, 4' - 8' (COMPLETE IN-PLACE, INCLUSIVE OF ALL EXCAVATION, BACKFILL,	EACH	5	\$ 4,175.00	\$ 20,875.00	5.00	0.00	\$ 20,875.00	\$ -
611-01.02	MANHOLES, >4-8' DEPTH (COMPLETE IN-PLACE, INCLUSIVE OF ALL EXCAVATION, BACKFILL AND	EACH	1	\$ 3,160.00	\$ 3,160.00	1.00	0.00	\$ 3,160.00	\$ -
701-01.01	CONCRETE SIDEWALK (4" THICKNESS W/ FIBER MESH AND 4" AGGREGATE CLASS "A" GRADING "D" BASE)	S.Y.	2423	\$ 45.85	\$ 111,094.55	2489.08	66.08	\$ 114,124.32	\$ 3,029.77
701-02.03	CONCRETE CURB RAMP (INCLUDES 8" CLASS A CONCRETE, 4" BASE STONE AND TRUNCATED DOME	S.F.	546	\$ 23.60	\$ 12,885.60	469.00	-77.00	\$ 11,068.40	\$ (1,817.20)
701-01.20	BRICK SIDEWALK (TRACT 9 - REMOVAL, STORAGE AND REINSTALLATION) (INCLUDES 1.5" SAND	SF	153	\$ 45.80	\$ 7,007.40	77.00	-76.00	\$ 3,526.60	\$ (3,480.80)

TABULATED BID									
ITEM NO.	ITEM DESCRIPTION	Civil Constructors, LLC							
		UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
702-01	6" TYPE "A" DETACHED CONCRETE CURB (TDOT STD. RP-NMC-10)	LF	378	\$ 15.45	\$ 5,840.10	378.00	0.00	\$ 5,840.10	\$ -
702-03	CONCRETE COMBINED CURB & GUTTER	LF	290	\$ 22.30	\$ 6,467.00	273.00	-17.00	\$ 6,087.90	\$ (379.10)
708-01.01	MONUMENTS (TRACT 17 - REMOVE, STORE AND RELOCATE STONE ENTRANCE FEATURE)	L.S.	1	\$ 27,000.00	\$ 27,000.00	1.00	0.00	\$ 27,000.00	\$ -
712-01	TRAFFIC CONTROL	L.S.	1	\$ 28,075.00	\$ 28,075.00	1.00	0.00	\$ 28,075.00	\$ -
712-04.01	FLEXIBLE DRUMS (CHANNELIZING), (ESTIMATED QUANTITY IS BASED ON PHASE WHICH REQUIRES	EACH	104	\$ 26.60	\$ 2,766.40	94.00	-10.00	\$ 2,500.40	\$ (266.00)
712-06	SIGNS (CONSTRUCTION)	S.F.	203	\$ 8.00	\$ 1,624.00	207.00	4.00	\$ 1,656.00	\$ 32.00
713-16.20	SIGN (STOP SIGN R1-1) (INCLUDES PERFORATED / KNOCKOUT SQUARE TUBE POST)	EACH	1	\$ 246.00	\$ 246.00	1.00	0.00	\$ 246.00	\$ -
713-16.21	SIGN (YIELD HERE TO PEDESTRIANS R1-5A) (INCLUDES PERFORATED / KNOCKOUT SQUARE TUBE PLASTIC PAVEMENT MARKING (STOP LINE)	EACH	1	\$ 314.60	\$ 314.60	1.00	0.00	\$ 314.60	\$ -
716-02.05	PLASTIC PAVEMENT MARKING (STOP LINE)	L.F.	37	\$ 34.35	\$ 1,270.95	94.00	57.00	\$ 3,228.90	\$ 1,957.95
716-02.09	PLASTIC PVMNT MARKING (LONGITUDINAL CROSS-WALK), (QUANTITY IS CALCULATED FROM EOP TO	L.F.	264	\$ 45.75	\$ 12,078.00	275.00	11.00	\$ 12,581.25	\$ 503.25
716-09.79	THERMOPLST PVMT MARK PROFILE LINE (4")	L.F.	56	\$ 2.30	\$ 128.80	311.00	255.00	\$ 715.30	\$ 586.50
717-01	MOBILIZATION	L.S.	1	\$ 39,350.00	\$ 39,350.00	1.00	0.00	\$ 39,350.00	\$ -
730-03.21	INSTALL PULL BOX (TYPE B)	EACH	1	\$ 572.00	\$ 572.00	1.00	0.00	\$ 572.00	\$ -
730-08.01	SIGNAL CABLE - 3 CONDUCTOR	L.F.	442	\$ 1.70	\$ 751.40	655.00	213.00	\$ 1,113.50	\$ 362.10
730-08.02	SIGNAL CABLE - 5 CONDUCTOR	L.F.	629	\$ 2.00	\$ 1,258.00	825.00	196.00	\$ 1,650.00	\$ 392.00
730-08.03	SIGNAL CABLE - 7 CONDUCTOR	L.F.	346	\$ 2.30	\$ 795.80	240.00	-106.00	\$ 552.00	\$ (243.80)
730-11.10	RISER ASSEMBLY (FOR SIGNAL CABLE W/ WEATHERHEAD)	EACH	4	\$ 514.80	\$ 2,059.20	4.00	0.00	\$ 2,059.20	\$ -
730-12.02	CONDUIT 2" DIAMETER (PVC)	L.F.	82	\$ 13.75	\$ 1,127.50	136.00	54.00	\$ 1,870.00	\$ 742.50
730-12.03	CONDUIT 3" DIAMETER (PVC)	L.F.	15	\$ 16.00	\$ 240.00	0.00	-15.00	\$ -	\$ (240.00)
730-23.30	PEDESTAL POLE (PEDESTAL MOUNTING 8'-10" HEIGHT)	EACH	5	\$ 2,288.00	\$ 11,440.00	5.00	0.00	\$ 11,440.00	\$ -
730-26.02	PEDESTRIAN PUSHBUTTON WITH 15" SIGN	EACH	6	\$ 258.50	\$ 1,551.00	6.00	0.00	\$ 1,551.00	\$ -

TABULATED BID									
ITEM NO.	ITEM DESCRIPTION	Civil Constructors, LLC							
		UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
730-26.05	COUNTDOWN PEDESTRIAN SIGNAL	EACH	6	\$ 626.90	\$ 3,761.40	6.00	0.00	\$ 3,761.40	\$ -
740-11.02	TEMPORARY SEDIMENT TUBE (12 INCH) (AFTER THE INITIAL INSTALLATION ALL COST ASSOCIATED WITH	L.F.	410	\$ 3.15	\$ 1,291.50	500.00	90.00	\$ 1,575.00	\$ 283.50
801-01	SEEDING (WITH MULCH)	UNIT	87	\$ 40.00	\$ 3,480.00	0.00	-87.00	\$ -	\$ (3,480.00)
801-02	SEEDING (WITHOUT MULCH)	UNIT	113	\$ 34.30	\$ 3,875.90	0.00	-113.00	\$ -	\$ (3,875.90)
801-03	WATER (SEEDING & SODDING)	M.G.	18	\$ 28.60	\$ 514.80	0.00	-18.00	\$ -	\$ (514.80)
802-01.10	TREE (TRACT 6 - 1.5" CALIPER RED MAPLE TREE TO INCLUDE 4" SHREDDED HARDWOOD MULCH IN ALL	EACH	2	\$ 451.90	\$ 903.80	2.00	0.00	\$ 903.80	\$ -
802-07.01	FLOWER (TRACT 10 - RELOCATED OR NEW IRISES TO INCLUDE 4" SHREDDED HARDWOOD MULCH IN ALL	L.S.	1	\$ 3,535.00	\$ 3,535.00	1.00	0.00	\$ 3,535.00	\$ -
805-12.01	EROSION CONTROL BLANKET (TYPE I)	SY	11083	\$ 1.30	\$ 14,407.90	19500.00	8417.00	\$ 25,350.00	\$ 10,942.10
805-01.01	TURF REINFORCEMENT MAT (CLASS II)	SY	1017	\$ 4.60	\$ 4,678.20	0.00	-1017.00	\$ -	\$ (4,678.20)
806-02.03	PROJECT MOWING (AS DIRECTED BY THE CITY OF FRANKLIN)	CYCL	4	\$ 1,716.00	\$ 6,864.00	2.00	-2.00	\$ 3,432.00	\$ (3,432.00)
W1	RELOCATE WATER SERVICE ASSEMBLIES AND SERVICE (AS NECESSARY)	EACH	13	\$ 2,118.00	\$ 27,534.00	12.00	-1.00	\$ 25,416.00	\$ (2,118.00)
W2	BORE AND JACK WATER SERVICE AND CONNECT TO EXISTING WATER MAIN	EACH	2	\$ 10,866.00	\$ 21,732.00	3.00	1.00	\$ 32,598.00	\$ 10,866.00
W3	CUT & CAP / PLUG EXISTING WATER SERVICE	EACH	2	\$ 269.50	\$ 539.00	0.00	-2.00	\$ -	\$ (539.00)
S1	48" DIA MANHOLE PER COF SPECIFICATIONS (4'-8" DEPTH) (INCLUDES WATER TIGHT CASTING)	EACH	5	\$ 4,820.00	\$ 24,100.00	6.00	1.00	\$ 28,920.00	\$ 4,820.00
S2	8" PVC SEWER (INSIDE AND OUTSIDE ROADWAY)	LF	656	\$ 92.25	\$ 60,516.00	1058.00	402.00	\$ 97,600.50	\$ 37,084.50
S3	LATERAL SERVICE CONNECTION (INCLUDES ALL COST ASSOCIATED WITH DISCONNECTING AND	EACH	7	\$ 1,718.00	\$ 12,026.00	11.00	4.00	\$ 18,898.00	\$ 6,872.00
S4	ABANDONMENT OF EXISTING 8" SANITARY SEWER AND MH (AS SHOWN ON PLANS)	LF	659	\$ 21.70	\$ 14,300.30	659.00	0.00	\$ 14,300.30	\$ -
S5	SEWER CLEANOUT	EACH	0	\$ 770.00	\$ -	10.00	10.00	\$ 7,700.00	\$ 7,700.00
S7	REMOVAL AND DISPOSAL OF EXISTING 8" CLAY LINE	LF	0	\$ 7.95	\$ -	402.00	402.00	\$ 3,195.90	\$ 3,195.90
YD-1	YARD DRAIN INSTALLATION 423 MURFREESBORO RD	EACH		\$ 2,700.00	\$ -	1.00	1.00	\$ 2,700.00	\$ 2,700.00
YD-2	YARD DRAIN CONNECTION 421 MURFREESBORO RD	EACH		\$ 1,250.00	\$ -	1.00	1.00	\$ 1,250.00	\$ 1,250.00

TABULATED BID									
ITEM NO.	ITEM DESCRIPTION	Civil Constructors, LLC							
		UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
E-1	MTEMC RELOCATION OF UNDERGROUND ELECTRICAL SERVICE LINE 427 MURFREESBORO RD	EACH		\$ 591.00	\$ -	1.00	1.00	\$ 591.00	\$ 591.00
E-2	MTEMC RELOCATION OF UNDERGROUND ELECTRICAL SERVICE LINE 821/827 MURFREESORO RD	EACH		\$ 1,413.75	\$ -	1.00	1.00	\$ 1,413.75	\$ 1,413.75
	CIVIL BASE BID SUBTOTAL				\$ 1,230,831.31			\$ 1,427,848.11	\$ 197,016.81

ATMOS GAS BASE BID									
G1	2" HDPE GAS MAIN	LF	1422	\$ 24.75	\$ 35,194.50	1432.00	10.00	\$ 35,442.00	\$ 247.50
G2	HDD 2" HDPE GAS MAIN	LF	116	\$ 170.00	\$ 19,720.00	295.00	179.00	\$ 50,150.00	\$ 30,430.00
G3	2" STEEL GAS MAIN	LF	55	\$ 173.00	\$ 9,515.00	173.00	118.00	\$ 29,929.00	\$ 20,414.00
G4	HDD 2" STEEL GAS MAIN	LF	55	\$ 269.00	\$ 14,795.00	55.00	0.00	\$ 14,795.00	\$ -
G5	6" STEEL GAS MAIN	LF	193	\$ 152.50	\$ 29,432.50	34.00	-159.00	\$ 5,185.00	\$ (24,247.50)
G6	HDD 6" STEEL GAS MAIN	LF	218	\$ 508.50	\$ 110,853.00	324.00	106.00	\$ 164,754.00	\$ 53,901.00
G7	CONNECT 2" HDPE TO EX. 2" MDPE	EA	1	\$ 2,100.00	\$ 2,100.00	3.00	2.00	\$ 6,300.00	\$ 4,200.00
G8	CONNECT 2" STEEL GAS TO EX 1-1/4" STEEL MAIN (CONTRACTOR TO VERIFY EX PIPE SIZE PRIOR TO	EA	1	\$ 3,226.00	\$ 3,226.00	1.00	0.00	\$ 3,226.00	\$ -
G9	CONNECT 2" STEEL GAS TO EX 6" STEEL	EA	1	\$ 3,425.00	\$ 3,425.00	1.00	0.00	\$ 3,425.00	\$ -
G10	CONNECT 6" STEEL GAS TO EX 6" STEEL MAIN W/ STOPPLE	EA	2	\$ 6,812.00	\$ 13,624.00	3.00	1.00	\$ 20,436.00	\$ 6,812.00
G11	3/4IN PE SERVICE PIPE AND ASSEMBLY	EA	10	\$ 1,348.00	\$ 13,480.00	18.00	8.00	\$ 24,264.00	\$ 10,784.00
G12	HDD 3/4" PE SERVICE PIPE (ADDITIONAL PAYMENT FOR ITEM G11)	LF	90	\$ 189.00	\$ 17,010.00	0.00	-90.00	\$ -	\$ (17,010.00)
G13	RETIRE IN PLACE 6" STEEL GAS CUT & PLUG	EA	2	\$ 2,104.50	\$ 4,209.00	2.00	0.00	\$ 4,209.00	\$ -
G14	RETIRE IN PLACE 2" STEEL GAS CUT & PLUG	EA	1	\$ 1,684.00	\$ 1,684.00	1.00	0.00	\$ 1,684.00	\$ -
G15	RETIRE IN PLACE 1-1/4" STEEL GAS CUT & PLUG (CONTRACTOR TO VERIFY EX PIPE SIZE)	EA	1	\$ 1,263.00	\$ 1,263.00	1.00	0.00	\$ 1,263.00	\$ -

TABULATED BID									
Civil Constructors, LLC									
ITEM NO.	ITEM DESCRIPTION	UNIT	BID QTY.	UNIT PRICE	COST	FINAL QUANTITY	QUANTITY OVER/UNDER	FINAL COST	COST OVER/UNDER
G16	RESTORE GRAVEL	SY	25	\$ 37.50	\$ 937.50	25.00	0.00	\$ 937.50	\$ -
ATMOS GAS BASE BID SUBTOTAL									
	CONTRACT BID TOTAL				\$ 280,468.50			\$ 365,999.50	\$ 85,531.00
	CHANGE ORDER NO. 1				\$ 1,511,299.81				
	NEW CONTRACT TOTAL				\$ 73,863.50				
	FINAL CHANGE ORDER				\$ 1,585,163.31			\$ 1,793,847.61	
									\$ 208,684.31

January 24, 2019

Status Report for Transportation, Stormwater, and Parks Capital Projects

Transportation

Mack Hatcher Parkway Northwest Extension (SR-96 West to Hillsboro Road)	
Key Dates:	Design Start – August 14, 2007 (BOMA Approval); Re-Design Completion – October 2017; ROW Start – December 2009; ROW Completion – December 2017; Construction Bid Date – December 7, 2018 <i>*Denotes Estimated Date</i>
Cost:	Design – \$3,502,501; ROW – \$13,397,520 (Provided by TDOT); Construction – \$45,122,600 (Provided by TDOT) <i>Note: City of Franklin Funding Commitment of \$5,000,000</i>
Status Update:	Bids for construction were opened on December 7, 2018. TDOT has awarded the contract to Eutaw Construction Company, Inc. The pre-construction meeting is scheduled for late January 2019, with construction expected to begin thereafter.

Hunters Bend Elementary Safe Routes to School	
Key Dates:	Design Start- January 2014; Design Complete – December 2015; ROW Acquisition - N/A; Construction Start – April 24, 2017; Construction Complete – Substantial Completion on May 9, 2018 (Contract Deadline January 31, 2018) <i>*Denotes Estimated Date</i>
Cost:	Design/Inspection - \$157,955; Construction - \$673,076
Status Update:	Project is substantially complete and fully open to pedestrian traffic. Staff is working to activate the emergency call box.

Murfreesboro Road (SR-96) Sidewalk (Pinkerton Park to Mack Hatcher Parkway)	
Key Dates:	Design Start- June 2014; Design Complete – June 2017; ROW Acquisition Complete – August 2017; Construction Start – August 14, 2017; Construction complete – July 2018
Cost:	Total – \$1,585,163.31
Status Update:	The substantial completion was July 17, 2018. Project closeout is underway. Contractor is addressing final punch list items.

Transportation (continued)

Franklin Road Corridor (Streetscape) Improvements (Harpeth River Bridge to Harpeth Industrial Court)	
Key Dates:	Design Start- January 2015; ROW Design Complete – December 2018; ROW Acquisition Start - April 2018; Construction Start – August 2019* <i>*Denotes Estimated Date</i>
Cost:	Total - \$14,300,000.00 (Estimated)
Status Update:	Final design updates are still ongoing. Right-of-way acquisition process began in Spring 2018 and will be complete in Spring 2019. Because of a petition from some of the Franklin Rd homeowners, a public meeting was scheduled for November 7 th , to discuss the possible reduction of property impacts. Resident concerns were discussed at the Nov. 13, 2018, BOMA meeting. A resolution was passed at that meeting giving direction to Staff on how to move forward with final design.

East McEwen Drive Phase 4 Improvements (Cool Springs Boulevard to Wilson Pike)	
Key Dates:	Design Start – April 2015; NEPA Completion – July 2018*; Design Completion – December 2018*; ROW Acquisition Start – October 2018*; ROW Acquisition End – December 2019*; Construction Start – January 2020*; Construction End – May 2022 <i>*Denotes Estimated Date</i>
Cost:	Design - \$1,210,000 (Preliminary - \$497,000; Final - \$713,000); NEPA - \$125,018 ROW Acquisition – TBD; Construction – TBD
Status Update:	Final NEPA document was approved in November 2018. Designer is working on finals plans, which include proposed utility relocations. Right-of-way process is anticipated to begin in Spring 2019.

Columbia Avenue Widening & Improvements (Mack Hatcher Parkway to Downs Boulevard)	
Key Dates:	Preliminary Design/Environmental Start - February 9, 2016 (BOMA Approved); Preliminary Design/Env. Completion – February 2018; Design Start – January 2019; Design Completion – October 2019*; ROW Start– March 2020*; ROW End – November 2021*; Construction Start – March 2022*; Construction End – June 2024* <i>*Denotes Estimated Date</i>
Cost:	Prelim. Design – \$1,070,450.00; Design TBD; ROW – TBD; Construction – TBD;
Status Update:	A PSA for final design was approved by BOMA in January 2019. Designer has begun work on plans, which are anticipated to be complete in Fall 2019.

Transportation (continued)

East McEwen Drive Roundabout Modifications	
Key Dates:	Design Start – March 2017; Design Complete– July 2018*; ROW Start – July 2018*; ROW Complete – September 2018*; Construction – TBD <i>*Denotes Estimated Date</i>
Cost:	Preliminary Design/Environmental – \$86,155; ROW - \$350,000 Construction - \$1,250,000
Status Update:	Plans are nearing final completion. Amendment No. 3 for the design of additional modifications to the southern leg of the roundabout will be on February BOMA meeting for approval.

Intersection Improvements at Mallory Lane and Liberty Pike	
Key Dates:	Design Start – February 14, 2017 (BOMA Approved); Design Completion – TBD; ROW – TBD; Construction – TBD
Cost:	Design - \$229,965.00; ROW – TBD; Construction – TBD;
Status Update:	Based upon feedback from the public meeting, staff has directed the designer to develop several options, including a roundabout concept, to reduce the impacts of the proposed design on the surround properties.

Stormwater

100-Block Battle Avenue Drainage Improvements	
Key Dates:	Design Start – July 24, 2012 (BOMA Approved); Design Completion – April 2018*; Easement Acquisition Completion – TBD Construction Start – TBD <i>*Denotes Estimated Dates</i>
Cost:	Initial Study – \$46,500.00; Final Design – \$131,700.00 (Including Amendment 1 of \$68,200.00); Construction Estimate- \$2,400,000.00* (Includes \$1MM for Easements)
Status Update:	Staff seeks direction from the Board, as a part of the ongoing CIP prioritization process, on whether to proceed with the project.

Figuers Drive Drainage Improvements	
Key Dates:	Design Start – July 24, 2012 (BOMA Approved); Preliminary Design Completion – October 2018; Easement Acquisition Completion – TBD; Construction Start – TBD <i>*Denotes Estimated Dates</i>
Cost:	Initial Study – \$46,500.00; Design – \$236,700; Final Design – \$150,000; ROW – \$400,000; Construction Estimate – \$1,300,000
Status Update:	Staff seeks direction from the Board on whether to proceed with the project.

Stormwater (continued)

United States Army Corp of Engineers (USACE) Harpeth River Feasibility Study (Home Raisings)	
Key Dates:	Study Start – June 13, 2013; Study Completion – Spring 2019*; Easement Acquisition Completion – N/A; Construction Start – Summer/Fall 2019* <i>*Denotes Estimated Dates</i>
Cost:	Design– \$287,500 (City Portion); ROW – N/A; Construction Estimate – \$3,900,000 (65% USACE / 35% Non-Federal Sponsor and/or Property Owner)
Status Update:	The Board approved Resolution 2018-53 in July 2018 to participate as the non-federal sponsor, allowing the USACE to complete the study. The Staff seeks direction from the Board, as a part of the ongoing CIP prioritization process, on the City's participation/funding of the 35% non-federal construction portion.

Jordan Branch of Spencer Creek (Cool Springs East) Stream Restoration	
Key Dates:	Design Start – May 26, 2015 (BOMA Approved); Design Completion – June/July 2018*; ROW/Easement Acquisition – May 2018*; Construction - TBD <i>*Denotes Estimated Dates</i>
Cost:	Design - \$113,445.00; Construction Estimate - \$750,000
Status Update:	This project has been advertised for bids twice, with no responses. Staff is working with designer to determine the best way to move this project forward.

Ralston Creek (Liberty Hills) Stream Restoration	
Key Dates:	Feasibility Study Start – November 19, 2015 (BOMA Approved); Feasibility Study Completion – April 2017; Design Start – September 2017; Design End – TBD; ROW/Easement Acquisition – TBD; Construction - TBD
Cost:	Design - \$68,700.00
Status Update:	A public meeting was held on November 8, 2018 to discuss the results of the flood modeling and to present the stabilization plans. Staff has contacted property owners that would be affected by the proposed bank stabilization to gauge their specific interest in moving the stabilization project forward. Staff also seeks direction from the Board, as a part of the ongoing CIP prioritization process, on whether to proceed with the project.

Stormwater (continued)

Harpeth River Bank Stabilization at the Water Reclamation Facility	
Key Dates:	Design Start – August 11, 2015 (BOMA Approved); Design Completion – Fall 2017; ROW/Easement – N/A; Construction Start – September 2018; Construction End – December 2017
Cost:	Design - \$74,000.00; ROW/Easement – N/A; Construction – 311,782.21
Status Update:	Work is complete. Staff and the designer continue to monitor the site. Following the 1-year warranty period, a final change order will be presented to the BOMA in late 2018 for consideration.

Carnton Lane Culvert Replacement	
Key Dates:	Design Start- September 9, 2016 (BOMA Approved); Design Completion- July 2017; ROW/Easement(s) – November 2017; Construction Start– October 8, 2018; Construction End – January 7, 2019 (Original Contract) <i>*Denotes Estimated Dates</i>
Cost:	Design - \$18,580.00; ROW/Easement – N/A; Construction – TBD
Status Update:	Work began in October 2018. During construction utilities conflicts were discovered that were unknown at the time construction began. Some delay was experienced due to this utility conflict. A future change order is anticipated to request additional time.

Watson Branch Culvert Rehabilitation	
Key Dates:	Design Start – November 22, 2016 (BOMA Approval); Design Completion – October 2017; ROW/Easement Start – November 2017; ROW/Easement End – March 2018; Construction Start – *****; Construction End – ****; <i>*Denotes Estimated Dates</i>
Cost:	Design - \$30,640.00; ROW/Easement – TBD; Construction – TBD
Status Update:	Preliminary plans are complete. ARAP and CGP permits were approved by TDEC and received June 5, 2017. A permit to access TDOT right of way on Mack Hatcher was received June 13, 2017. Temporary construction easements and PU&DE easement documents have been filed with court. Project is waiting on prioritization and funding.

Parks

Southeast Municipal Complex (Park)	
Key Dates:	Planning Start – June 2017; Planning Completion – August 2018*
Cost:	Planning - \$396,046.00; Design – TBD; Construction - TBD
Status Update:	PSAs for the design of the park will be presented to the Board at an upcoming meeting.

Parks (continued)

Southeast Municipal Complex (Lockwood Parcel)	
Key Dates:	Design Start – July 2017; Design Completion – TBD;
Cost:	Design - \$310,158.00; Purchase of property – \$500,000; Construction – TBD;
Status Update:	The purchase of the property was completed by the City. A PSA for the design of necessary improvements to the Robinson Lake dam will be presented to the Board at an upcoming meeting.

Reconstruction of Tennis Courts at Jim Warren Park	
Key Dates:	Design Start – June 2018; Design Completion – TBD;
Cost:	Design - \$; 74,575.00; Construction – Spring 2019 to Fall 2019;
Status Update:	Project will be advertised for construction bids in February 2019.



HISTORIC
FRANKLIN
TENNESSEE

DATE: January 14, 2019

TO: Board of Mayor and Aldermen

FROM: Eric Stuckey, City Administrator
Mark Hilty, Assistant City Administrator for Public Works
Michelle Hatcher, Director of Water Management
Patricia McNeese, Utilities Engineer II

SUBJECT:
Water and Sewer Projects Status Report

Purpose

The purpose of this memo is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the status of some of the City's water and sewer projects.

Project Status

- A. Spencer Creek Basin - South Prong Interceptor Upgrade
Key Dates: Design Start - April 23, 2013; Design Completion - February 2017*;
Easement Acquisition - TBD; Construction - Not Funded
*Denotes Estimated Date
Cost: Design - \$337,000.00; Easement - Not Funded; Construction - Not Funded
Funding Source: Design - Sewer Fund; Easements - TBD; Construction - TBD
Status Update: Plans are complete but will not be submitted to TDEC for approval until the project is closer to bid. Easement documents have been prepared and submitted to City Staff for review. The project will not be constructed until funding is available from the Water Management Department budget.

- B. Spencer Creek at Franklin Road Sewer
Key Dates: Design Start - March 11, 2014; Design Completion - June 2015; Easement Acquisition Start - September 2015; Easement Acquisition Completion – February 2019*; Bid Date: April 2019*; Construction Start - July 2019*; Construction Completion – February 2020*
*Denotes Estimated Date
Cost: Design - \$40,000.00; Construction - TBD
Funding Source: Design - Sewer Fund



Status Update: The plans are 100% complete. Three of the four easements required have been obtained; the last easement is still in negotiation. The project will be bid once the easement has been obtained.

C. Bobby Drive Water Line Improvement Project

Key Dates: Design Start - May 12, 2015; Design Completion - April 2016; Easement Acquisition Start - June 2016; Easement Acquisition Completion – February 2019*; Construction - To be completed in-house by Water Management Department staff

*Denotes Estimated Date

Cost: Design - \$80,313.00; Easements - TBD; Construction - TBD (Materials Only)

Funding Source: Design and Easements - Water Operating Fund

Status Update: Phase 1 has been completed. Phase 2 will be broken into two phases; phase one of Phase 2 will begin in approximately a month. Only 1 easement remains to be obtained.

D. Old Carters Creek Water Line Improvements

Key Dates: Design Start - May 12, 2015; Design Completion - July 2017; Easement Acquisition Start - August 2017; Easement Acquisition Completion - June 2019*; Construction - to be completed in-house by Water Management Department staff

*Denotes Estimated Date

Cost: Design - \$101,278.00; Easements - TBD; Construction - TBD (Materials Only)

Funding Source: Design and Easements - Water Operating Fund

Status Update: This project will be constructed in two phases with the entire job being designed now.

E. Goose Creek Inn Sewer Project

Key Dates: Design Start - April 11, 2017 (BOMA Approved); Design Completion - July 2017; ROW/Easement/Contracts Signed by landowners - July 2017; Construction Start- February 5, 2018; Construction Completion - August 2018

Cost: Design - \$50,020.00; ROW/Easement/Contracts - TBD; Construction - est. \$570,000.00

Status Update: Construction is 100% complete on this project. The property owners will be assessed the final cost for their proportionate share, which includes engineering design, construction inspection and the actual construction of the project.

F. Henpeck Lane Sanitary Sewer Project

Key Dates: Design Start - July 2017; Design Completion - August 2018*; ROW/Easement Start - February 2018*; ROW/Easement End - December 2018*; Construction Start - February 2019*; Construction End - November 2019*;

*Denotes Estimated Dates

Cost: Design - \$176,000; ROW/Easement/Contracts - \$200,000; Construction - est. \$2,000,000



Status Update: The school has requested to extend the sewer to their vacant lot for a future school site.

G. Water Reclamation Facility Modifications Project

Key Dates: Design Start - February 12, 2013; Design Completion - May 2018; Construction Start - November 2018; Construction End - October 2021;

*Denotes Estimated Dates

Cost: Design - \$ 7,806,980.00; Construction - \$132,890,000.00

Status Update: Construction of the temporary entrance from Mack Hatcher has begun.

Construction trailers with utilities are being placed and set up. Submittals for shop drawings and requests for information continue.

H. Holiday Court Pump Station Project

Key Dates: Design Start - January 10, 2017; Design Completion - December 2017; Easement Acquisition Start - April 2018; Easement Acquisition Complete – January 2019*; Bid Date – March 2019; Construction Start - May 2019*; Construction End – December 2019*

*Denotes Estimated Dates

Cost: Design - \$89,569.00; Easements - \$18,000.00; Construction - est. \$564,000.00

Status Update: Continuing to work with the remaining property owner on last easement. The project will be bid once this easement is obtained.