



City Council
COMMITTEE OF THE WHOLE
City of Belvidere, Illinois

Alderman Clayton Stevens,	1 st Ward	Public Works Vice Chairman
Alderman Tom Porter,	1 st Ward	F&P Vice Chairman, C-CCC
Alderman Daniel Snow,	2 nd Ward	BPZ Chairman, C-CCC CO-Chairman
Alderman Michael Borowicz,	2 nd Ward	Public Safety Vice Chairman, C-CCC
Alderman Wendy Frank,	3 rd Ward	C-CCC Vice Co Chairman
Alderman Thomas Ratcliffe,	3 rd Ward	F&P Chairman
Alderman Ronald Brooks,	4 th Ward	Public Works Chairman
Alderman George Crawford,	4 th Ward	Public Safety Chairman
Alderman Mark Sanderson	5 th Ward	BPZ Vice Chairman
Alderman Marsha Freeman,	5 th Ward	C-CCC

AGENDA

August 14, 2017

6:00 p.m.

City Council Chambers

401 Whitney Boulevard

Belvidere, Illinois

Call to Order: Mayor Chamberlain

Roll Call: Present: Absent:

Public Comment:

Public Forum:

Reports of Officers, Boards, and Special Committees:

1. Building, Planning & Zoning, Unfinished Business: None.
2. Building, Planning & Zoning, New Business: None.

3. Public Works, Unfinished Business: None.

4. Public Works, New Business:

- (A) 1490 Willowbrook Drive – Backup.
- (B) Logan Avenue Design Recommendations.
- (C) Newburg Bridge Bid Tabulation.
- (D) Construction Engineering Services – Newburg Bridge Project.
- (E) Construction Engineering Services – Sludge Thickening Project.
- (F) Inflow and Infiltration (I&I) Study Proposal.
- (G) Sump Pump Inspection Proposal.
- (H) Storm Basin A&B Study Update Proposal.
- (I) Bellwood Drive Detention Area Update.
- (J) Wycliffe Sanitary Sewer Modeling Proposal.
- (K) Traffic Signal Battery Backup Proposals.

5. Adjournment:

Michael J. Phillips

Attorney At Law

10 North Galena Avenue, Suite 210
Freeport, Illinois 61032-4360
(815) 378-1479 Voice
(815) 232-5500 Facsimile
E-mail: Flanner77@Frontier.com

August 8, 2017

Hand-Delivered and Emailed

Mr. Brent Anderson
Director of Public Works of the City of Belvidere
401 Whitney Blvd
Belvidere, IL 61008

RE: Damage to 1490 Willowbrook Drive from Sanitary Sewer Backup

Dear Mr. Anderson:

My wife Donna Donato asked me to contact you to accept your offer for us to appear on August 14, 2017 to discuss our claim for damages resulting from the backup of the sanitary sewer at 1490 Willowbrook Drive in Belvidere last month. Please contact me to clarify the entity before whom we will appear and the address of said meeting as well as any documents or information which we should bring to said meeting. Thank you for your assistance. I have also sent you an email on the same subject.

Thank you for your assistance in this matter. If you have any questions on this or on any other matter, please do not hesitate to contact my office.

Sincerely,



Michael J. Phillips
Secretary of the Board

cc: File on July 2017 Sanitary Sewer Backup at 1490 Willowbrook Drive in Belvidere

MJP/me



CCMSI

www.ccmssi.com

July 17, 2017

Michael Phelps
1490 Willowbrook Drive
Belvidere, IL 61008

Member: City of Belvidere
Claimant: Michael Phelps
DOL: 6/29/2017
Claim No.: 17050F204547

Dear Mr. Phelps,

As you are aware, CCMSI is the designated third party administrator for the Illinois Municipal League Risk Management Association, of which the City of Belvidere is a member. It is our obligation to pay those claims for which the City is responsible due from negligence. After completing our investigation of your claim, I am sorry but I do not find sufficient evidence to show that the City caused your backup.

As the City is a local governmental entity mere ownership of the sewer main is insufficient to show liability under Illinois law. There must be sufficient evidence of negligence on the part of the City that directly caused the damages you suffered. Unfortunately, I did not find supporting evidence of negligent conduct by the City. The City was unaware of any recent problems with the sewer main connected to your residence prior to your backup on June 29, 2017. No one, including your neighbors, reported any sewer problems at all that would give notice to the City of a potential problem. When Public Works inspected the main it was functioning. It was simply overwhelmed.

Additionally, the City received approximately five inches of rain in less than four hours. That is a massive amount of rain at one time. The City usually gets that amount of rain in months rather than in a few hours. The water system can only allow so much water in at one time and when it becomes overwhelmed, the water drains into any available area, including the sewer main. Water can enter the main through manholes, faulty lateral lines, illegal downspout hook-ups, illegal sump pump hook-ups, as well as through the ground itself. It is impossible to keep 100% of water out of every aspect of the sewer system. Even brand new sewer lines can and will have water enter the main or the lateral line, especially during a massive rainfall. As such, there appears to be immunity for your damages under the Illinois Tort Immunity Act as the City could not have stopped the issues the rain caused.

Though we truly regret the damage to your property, there is no indication of liability on the City of Belvidere for causing your backup and we must respectfully deny payment of this claim. I am sorry I was not able to provide you with a more favorable outcome. Thank you for your patience.

Cannon Cochran Management Services, Inc.

114 South Racine, Ste. 200 • Chicago, IL 60607-1609

866-276-9119 • 312-455-1612 • Fax: 312-455-1659 • www.ccmssi.com

FRAUD WARNING: Any person who, knowingly and with intent to injure, defraud, or deceive any employer, insurance company, third party administrator, self-insured program, or any other third party, files an insurance claim containing any false or misleading information, which violates an applicable state statute, is guilty of a crime and subject to prosecution.

City of Belvidere



Logan Avenue Rehabilitation State Street to Belvidere Road Summary Design Recommendations

Prepared By:

**Arc Design Resources, Inc.
5291 Zenith Parkway
Loves Park, IL 61111
(815) 484-4300
Jeffrey S. Linkenheld, P.E.**

August 1, 2017

INTRODUCTION

Logan Avenue has long been one of the main arterial streets in the City of Belvidere, stretching from the geographic center of town to the east and southeast. Prior to construction of the bypass, Logan Avenue was designated as Business Route 20. While the bypass has diverted a large percentage of traffic passing through the City, Logan Avenue remains an important link connecting downtown Belvidere with the tollway retail area and I-90 access. Jurisdiction of Logan Avenue was transferred to the City of Belvidere in the 1980's with the construction of the bypass. A series of overlays and temporary repairs have exceeded their design life and a more aggressive rehabilitation is needed along the corridor. The purpose of this study is to identify improvement alternatives that address vehicular traffic, pedestrian needs, and business impacts along the corridor. Within this report we will identify several potential construction scenarios and develop a recommended solution for proceeding with a construction project. The results of this report, when reviewed and endorsed by the City, will serve as the template for construction as funding is obtained to proceed with the project.

EXECUTIVE SUMMARY

Based on our analysis and findings of this report, we are presenting two recommendations for consideration by the City. While we do make a preferred recommendation below, the final decision on how to proceed will involve all stakeholders for the project, including the City Council, staff, local businesses, and residents. These two options are based largely on cost considerations and understanding the budget pressures on local governments in Illinois.

Preferred Recommendation – Enhanced Four Lane Overlay

To greatly improve the look of the existing condition and give the appearance of a more significant upgrade, our first recommendation would be to pursue the overlay solution while including new curb and gutter and new sidewalks. While the ride quality along Logan Avenue is not terrible, the needed improvements lie along the edge of the roadway (curb, sidewalks, inlets). To pursue an overlay without addressing the periphery infrastructure will not provide the fresh look that is needed along the corridor. A replacement of the curbs and inlets, along with new sidewalk, will provide a significant upgrade to the existing corridor that will be adequate for the next decade. The cost of the enhanced overlay is significantly less than any full reconstruction option and will provide for a good project for the next 10-15 years.

Logan Avenue Rehabilitation
Summary Design Recommendations

Secondary Recommendation – Reconstruction to a Four Lane Section

While our research shows that converting Logan Avenue to a three lane section would have some merits, we understand that Logan Avenue is the main route connecting downtown to the I-90 interchange area at Genoa Road. The cost savings of a three lane reconstruction are not significant and would likely not outweigh the community feedback to keep the current status quo. At some point in the future, a full reconstruction of the pavement will be required. It might be possible to save some of the curbs and/or sidewalks that are recommended in the “enhanced overlay” option, but those cost savings are not considered in our overall future cost opinion. If funding was available, we would recommend this reconstruction option with new water and sewer mains and services along the corridor to provide a service life of 30 to 40 years, with regular maintenance. Since the costs of a full reconstruction are so high, we would recommend the overlay option ahead of this as a more “doable” project in the near term.

Please read further within the details of the report for additional information leading to the conclusions presented in this executive summary.

EXISTING CONDITIONS

Logan Avenue was constructed in its current form back in the 1950’s as a four lane pavement. Additional observations about the street are as follows.

Traffic Volumes

2013 Average Daily Traffic (ADT) Counts from the State of Illinois vary from 6,300 vehicles per day (vpd) at the west end near State Street to 6,700 vpd near East Avenue, to 6,400 vpd at the west end near the bypass (Belvidere Road). An analysis of historical traffic volumes shows a downward trend in traffic along the corridor:

Average Daily Traffic Volumes Logan Avenue
Source: IDOT traffic maps online site

<u>YEAR</u>	<u>@ State Street</u>	<u>@ East Avenue</u>	<u>@ Belvidere Rd.</u>
2003	6,800	8,000	8,300
2008	6,300	7,100	7,400
2013	6,300	6,700	6,400

We believe that much of this downward trend can be attributed to two events. First, the onset of the Great Recession occurred in late 2007 and the area has never recovered to a pre-2008 development pace, especially with housing. The dip in traffic volumes is evident in the entire Rockford region, not just Belvidere. Second, was the opening of Belvidere North High School in fall of 2007. When it first

Logan Avenue Rehabilitation
Summary Design Recommendations

opened, Belvidere North had a small senior class as most elected to stay at the old High School. Since that time, no such option is available, and the student attendance zones have normalized between the two schools. Using the center of the corridor as our baseline location, the traffic volumes along Logan Avenue have declined from 8,000 to 6,700 over a 10-year period. This is a drop of 16%.

Geometric Design (Existing)

In general terms, Logan Avenue consists of a four lane pavement, two each direction. The street is a full urban section with curb and gutter on both sides, storm sewers, water main, sanitary sewer, and sidewalks on both sides (some gaps). Per the IDOT Bureau of Design and Environment (BDE) Manual, the following are general guidelines for street capacity in relation to ADT:

<u>Facility (# of lanes)</u>	<u>Normal Capacity</u>
2 lane facilities	up to 10,000 ADT
3 lane (2 plus TWLTL)	5,000 to 14,000 ADT
4 lane facilities	10,000 to 20,000 ADT
5 lane (4 plus TWLTL)	10,000 to 40,000 ADT

**TWLTL = Two Way Left Turn Lane*

The structure of Logan Avenue as a four lane street is adequate for the current traffic. In fact, the street could be considered to have excess capacity when comparing to the above capacity chart. Functionally, the four lane roadway works well with the numerous side streets and driveways along the route, as the additional lane of travel and relatively low volume allows cars to "bypass" turning vehicles as needed. However, recent studies also point out that a four lane section is also prone to more accidents than a comparable three lane section, due to the increased number of conflict points with the additional lanes of travel.

Another option to be researched in this report is a downsizing of the street from four lanes to 3 lanes, based on existing Average Daily Traffic. The common industry term for this downsizing is "Road Diet". The potential of a Road Diet will be discussed further in later sections.

The existing curb and gutter along the route has been overlaid into the gutter, decreasing the water runoff capacity of the facility. In addition, the curb that is visible is in poor condition and should be replaced, although there are some sections that could be salvaged with a more in-depth preparation of construction documents. For purposes of the study and recommendations, the assumption is that all of the curb would be replaced due to condition or grade changes.

Pedestrian concerns are becoming a larger focus nationally as communities adopt a "complete streets" mentality of utilizing the right of way for pedestrians (and bikes)

Logan Avenue Rehabilitation Summary Design Recommendations

as well as cars and trucks. The sidewalks along Logan Avenue are generally in very poor condition and require replacement to conform to current ADA requirements. IDOT recommends the following for sidewalk designs from BDE Chapter 48:

- 5.0' wide typical recommended (note that City standard is 4' minimum)
- 2'-3' buffer strip (grass or other) between curb and sidewalk
- 7' recommended when at back of curb (6' minimum)

It will be a challenge to meet all of these design guidelines given the restricted right of way that exists as one heads east down the corridor and the existing utility poles crowd the sidewalk.

Existing Pavement Cross Section

The existing pavement is a composite pavement with an underlying concrete base course of unknown thickness and varying thickness of asphalt overlay. The intention of the City is to mill the top three inches and replace for any resurfacing project. A full replacement is also under consideration.

Utilities

Storm Sewer: The age of the storm sewer also dates back to the 1950's or earlier. A visual inspection of the inlets shows significant deterioration. The mainline manholes and storm lines were not inspected. Without any physical evidence of a major problem area, the assumption is that the mainline sewer is intact and could be salvaged with an overlay project. Inlet reconstruction would be recommended regardless of the scope of the pavement project.

Sanitary Sewer: the sanitary sewer is aged but replacement would only be recommended with a full reconstruction project.

Water Main: the City has identified a segment they would desire to replace with any Logan Avenue project. The water main between Main Street and Prospect Street is only 4" in size and needs to be upgraded to 8" to improve the capacity of the water system.

Electric: One of the biggest challenges is the presence of numerous electrical poles within the sidewalk, especially on the east half of the project limits. These poles also support the City street light system. These lines are a main feeder and will be difficult, if not impossible to have removed at no cost to the City. Utility relocations or underground conversions for convenience or beautification are borne by the local municipality or customers. Relocations are at no cost under the conditions where the public improvements impact the existing utility facility.

CORRIDOR OPTIONS AND RECOMMENDATIONS

After over 50 years of service and changes to the demographics of the City of Belvidere, Logan Avenue is due for some rehabilitation and upgrades.

Due to the uncertainty of the funding source for any roadway work, the assumption is that this project will follow IDOT's normal design policies where possible since it is the accepted practice for the State of Illinois. The following investigations have been performed using IDOT methodology to develop our summary design recommendations.

Traffic Growth Considerations

We showed above that traffic volumes along the corridor dropped between 2003 and 2013, by an average of 16% (more east and less near downtown).

A review of the Belvidere/Boone County Land Use Plan and understanding of future growth needs to demand good transportation and utility access indicates that the area east of Belvidere Road, between the Kishwaukee River and Jane Addams Tollway, centered on Logan Avenue, would be the prime location for future growth pressures in the City. This area has easy tollway access and ready access to water and sewer infrastructure that is difficult west and south of the City.

Since 2008, the regions overall annual traffic growth rate has been between zero and one percent annually. Because of the potential for development east of Belvidere Road, we will target a 1% annual growth rate for the corridor. Using the traffic at East Avenue as a baseline, the following traffic projections are used for the remainder of the report:

<u>Year</u>	<u>Average Daily Traffic (ADT)</u>
2013	6,700
2017	6,970
2027	7,700 (target for pavement design)
2037	8,500
2047	9,300

Because of the recent decline in traffic (down by over 20% at the east end), it will take up to 20 years to get back to pre-2003 traffic volumes. So there is little pressure on the corridor for systematic capacity upgrades.

Pavement Designs

Based on the current traffic and future projections, pavement designs were generated using the methods put forth in the IDOT Bureau of Design and Environment (BDE) Manual. These were compared using IDOT methods for overall Life Cycle Costs. The overlay option of removing and replacing 3" of surface has been predetermined by the City based on successful projects in their recent past history.

OVERLAY OPTION:

With any overlay or rehabilitation project, the existing pavement substructure would be saved with a milling of the top three inches of asphalt and then a replacement of the same in two lifts. This will remove most of the surface deformities (cracking, minor potholes, etc.) and provide a significant improvement to the ride quality of the road for several years. The typical overlay can be expected to have a service life of approximately 10 years, with regular crack control maintenance, before more significant improvements are once again needed.

REPLACEMENT OPTIONS:

These pavement design options would be used for a replacement option only, or in locations where the water main replacement will require full removal of the existing pavement structure. Per IDOT guidelines two different pavement types were reviewed. The pavement structure is the same for a 3 lane or four lane option. These options consider a 20-year initial design life, with maintenance options to extend the life up to 40 or 50 years before the next full replacement.

Replacement Option A: Portland Cement Concrete (PCC) Pavement, 8.25" over NEW BASE

The IDOT design method results in a pavement thickness of 8.25". Current IDOT policy would normally require a full 12" of improved subgrade under the pavement. The most common method to achieve this is to provide 12" of new stone base. IDOT policy now also requires joint transfer by means of dowel baskets at every joint. Failure to transfer loading across joints leads to uneven settlement of concrete panels and causes panels to heave unevenly, resulting in unsatisfactory ride quality. In any concrete solution, proper joint transfer by dowels is required to avoid joint separation and settlement.

Replacement Option B: Hot Mix Asphalt (HMA) Pavement, 8.75" over NEW BASE

The IDOT design method results in a full depth HMA pavement thickness of 8.50" over a new 12" improved base. Historically, the base course is a structural component in any flexible pavement design, more so than in a concrete pavement. The new IDOT mechanistic design does not consider the base to be a structural factor, but it is a requirement for construction.

Logan Avenue Rehabilitation
Summary Design Recommendations

Initial Installation Costs – 4 lane pavement

Using recent bid costs for HMA and PCC pavements, the initial installation costs for the corridor for HMA vs. PCC pavement for a typical 100' segment of road was performed. The following table ranks the installation costs from low to high, based on our analysis. Note that these costs **DO NOT** represent the total installation costs, since additional removals, drainage work, utility work, and other items are assumed to be similar for all options and not relevant to this cost difference.

- 8.75" HMA over 12" base \$41,850 per 100' of pavement
- 8.25" PCC over 12" base \$57,050 (36% higher)

Our analysis shows the HMA solution to be significantly less than the concrete option, mainly based on the design methodology and material properties of concrete dictating that a minimum street thickness needs to be at least 8". Given current oil pricing, a similar thickness of asphalt is considerably more economical, and consideration should be given to a nominal 9" pavement section to increase the initial life span for a minimal cost.

Life Cycle Costs PCC vs. HMA

IDOT methodology includes a life cycle cost analysis for up to a 50-year horizon. The maintenance program is very detailed at 5 year intervals. For HMA pavements, the analysis considers crack sealing, patching and various overlays. For PCC pavements, the analysis considers pavement patches and overlays. In general, HMA pavements are more susceptible to freeze-thaw conditions if not properly maintained, so the maintenance program needs to happen earlier and more frequently than the concrete. The annual maintenance of the HMA comes out as about 50% more as annualized over the life of a project. Higher maintenance costs indicate that initial installation costs need to be less for HMA to be competitive in the long term. In order for total costs to be equal, HMA pavements would need to be 6% to 7% less expensive on initial installation. Since our HMA design is over 35% less at initial installation, the cost of maintenance would still show asphalt as the preferred design solution.

Geometric Design

Right of Way

Our office did some preliminary research at the courthouse for any existing right of way plats along Logan Avenue. IDOT was also contacted. No formal right of way plats appear to exist. The right of way will need to be confirmed by analysis of the existing platted subdivisions adjacent to Logan Avenue. Absent any formal right of

Logan Avenue Rehabilitation
Summary Design Recommendations

way documentation, the assumed right of way from WinGIS takeoff is typically 66' wide and a minimum of 62' wide at its narrowest.

Overlay Option

After walking the entire corridor, the overlay option should be accompanied by a replacement of the majority of the curb and gutter along both sides of the street.

A very minimalist approach would be to mill and overlay the street only with no sidewalk work. This solution is not recommended since the ride quality of Logan Avenue is not bad and the real issues are the poor condition of the existing curbs, inlets, and sidewalks along the corridor. We only present it as the "bare bones" cost option but recommend that any overlay also include new curbs and sidewalks.

Only the far west end, near Alpine Bank, has a significant length of "good" curb and gutter. In addition, the sidewalk is old, broken, and needs to be replaced to conform to current ADA standards. As of now, the current gutter has been overlaid so new curb would re-establish the normal 6" curb height for drainage purposes. Based on a cursory review of the existing grades, a new curb section and new sidewalk should be able to be accommodated without any significant drainage issues on private property.

Reconstruction Option – 4 Lane Replacement

The costliest long term solution would be to replace the existing condition with a brand new four lane pavement. With this work, the City would likely consider replacement of the entire water and sanitary sewer lines with the roadway removed. When completed, the residents of the community would enjoy a new four lane pavement replicating the existing conditions. At locations where the right of way and power pole locations seem to be constricted, minor adjustments in the lane widths can be made to accommodate an ADA compliant sidewalk width. For concept purposes, we are showing four 11.5' wide lanes and a 4' wide sidewalk to generate a minimal amount of green space along the corridor. At narrow locations or commercial locations, the narrow grass strip would be converted to additional sidewalk.

Reconstruction Option – 3 Lane Replacement

Based on the current and projected ADT of between 7,000 and 9,000, the corridor is on the lower end of needing four lanes. An option to reconstruct the roadway to a three lane section (2 lanes with a center turn lane) could be considered. The recent term for reducing capacity on existing streets due to changing traffic patterns is called a "Road Diet". The theory of the Road Diet is that bigger may no longer be better. This is a change from thinking of even 20 years ago, when the natural assumption was that traffic would *always* continue to increase at rates of

Logan Avenue Rehabilitation
Summary Design Recommendations

two, three, or even four percent annually. The late 2000's showed this is not the case. All pavement comes with maintenance costs. If the capacity is no longer needed, then the maintenance costs become an unnecessary expense. The Federal Highway Administration has an interesting guideline publication on this topic that can be found at http://safety.fhwa.dot.gov/road_diets/info_guide/.

There are plusses and minuses to putting Logan Avenue on a Road Diet. We have attempted to outline what we see as the major pros and cons below:

Logan Avenue 3-lane road diet **PRO** arguments

- Somewhat cheaper to construct. 8' of pavement width eliminated. Also provides for less maintenance in future due to narrower pavement
- Creation of green space in parkways. Less pavement means more room for grass, ability to store snow in the parkway instead of removing from center. And the traffic is moved away from the houses and businesses.
- Sidewalks could be full 5' width vs. minimum 4'. Better for pedestrians.
- Less driver conflicts. A three-lane section presents less conflicts and potential collision points for motorists. Studies referenced in the FHWA publication would confirm the reduction in accident rates.
- Easier for pedestrians to cross. A narrower street means less time to cross.
- Easier for cars to cross. Instead of looking for adequate gaps in four lanes of traffic, a driver wanting to cross the street only has to worry about one lane each direction.
- Separation of turning traffic. Left turn traffic is provided an independent lane to reduce backups seen on the interior lane of a 4-lane segment.
- City water and storm sewer mains could be located in grass areas for easier access.
- Snowplow operations could push snow to perimeter, eliminating need to come back and haul away.

Logan Avenue 3-lane road diet **CON** arguments

- Loss of capacity. Although not needed based on the ADT, the reality is that 2 lanes of traffic will now share the same single lane, increasing the perceived amount of traffic up and down the street.
- Not a significant amount cheaper than the 4 lane.
- No provisions to pass. In the case of a breakdown, garbage truck, or other lane blockage or slowdown, the lack of a second passing lane could result in increased congestion.
- Difficulty in finding gaps to enter Logan Avenue from side streets due to increased usage in the single available lane. This could be a consideration when thinking about the local businesses along the corridor.

Logan Avenue Rehabilitation Summary Design Recommendations

- Public perception. Logan Avenue is the eastern gateway to downtown Belvidere. A four-lane pavement naturally presents more of a “big city” feel than a three-lane pavement. Of the other avenues to downtown, only North State Street provides the same feel. Pearl Street and State Street are two-lane residential streets with much less business development. If the goal is to pull people to downtown via Logan Avenue, then the downsize might not give impression of “having arrived”.
- Change. In general, people don’t like change. So there will be a public awareness component and community support from local residents and businesses that would be required.

Business Considerations and Public Awareness

There are a significant number of businesses along Logan Avenue. Any proposed improvement should include engagement of these community members, as well as affected residents, to garner opinion. While a new roadway will benefit businesses in the long run, the reality is that there will be a significant impact on traffic for several months, longer as the reconstruction options are added. In addition, the local business leaders might be polled for input on their impressions of the potential to change to a three lane section.

Utilities

The following is a summary of the current utilities along Logan Avenue.

Sanitary Sewer

The City would consider replacement of the sanitary sewer main and services along the route with any complete reconstruction. This would be due to the age of the system. There is no apparent capacity problem, so the motivation is to reduce any future issues with the existing clay pipe by replacing with newer and stronger PVC.

Water Main

The City has identified a segment of 4” water main between Main and Prospect streets that needs to be replaced to a new 8” main for capacity reasons. As part of this work, the City would replace any residential services within this segment. With a full reconstruction option, the City would consider full replacement of the old water main while the street is completely torn up. As with the sewer, this would reduce the chance of future repair issues under the new street.

Storm Sewer

Storm sewer inlets were observed to be in poor condition. With the overlay option, all inlets would be reconstructed but the main line storm sewer would be left alone, since it is out under the existing pavement. With a reconstruction option, new

Logan Avenue Rehabilitation
Summary Design Recommendations

storm sewers can be installed along the corridor, likely outside of the pavement on the side of the street opposite the water main.

Electric and Lighting

The existing electric lines are on overhead poles along the south side of Logan Avenue. These poles also support the City street light system. To put the existing system underground would be a significant undertaking. Costs to lower power lines are normally borne by the local agency requesting the aesthetic improvement. Some local governments have been able to add this work to utility taxes as a surcharge or directly to the ComEd customer bill as a fee. It might be possible to reroute some of the overhead via adjacent alleys between Caswell Street and Andrews Drive. Second Street, east of East Avenue, also parallels Logan Avenue and could be a partial reroute option.

Any burying or relocation of the existing power poles would require the City to invest in a street light network along Logan Avenue, adding more cost. At this time, the burying or relocating of the overhead electric seems to be cost prohibitive.

Projected Costs

Costs are an important part of any public works discussion. We have summarized the projected costs of each of several items discussed in earlier sections, and ranked from lowest to highest. A complete summary of costs is included in the appendix.

\$1,070,000	Minimal Overlay
\$1,860,000	Enhanced Overlay with new sidewalks and curbs
\$2,660,000	Enhanced Overlay w/ new sidewalks/curbs AND water main upsize to 8"
\$5,240,000	Three Lane reconstruction with water main upsize to 8"
\$5,490,000	Four Lane reconstruction with water main upsize to 8"
\$6,540,000	Three Lane reconstruction with ALL NEW sewer and water mains
\$6,790,000	Four Lane reconstruction with ALL NEW sewer and water mains

Anticipated Construction timeline

Based on the size of the project and historical norms for local construction timelines, the following guidelines would apply for this project:

- Overlay project only – expect a 2-month construction timeline

Logan Avenue Rehabilitation
Summary Design Recommendations

- Overlay plus water main upgrade – the water main project will add at least 4 to 6 weeks to the project timeline, increasing the project to a 3-4 month impact.
- Reconstruction – The full reconstruction would consume an entire construction season from late March to November, with some restoration work likely carrying over to the following Spring.

SUMMARY RECOMMENDATIONS

Refer to the Executive Summary at the beginning of the document for the final design recommendations.

End of Report.

Logan Avenue Rehabilitation
Summary Design Recommendations

APPENDIX OF EXHIBITS

Corridor Strip Map Exhibit (Existing Conditions)

Representative photos

Typical Section (Existing)

Typical Section (Overlay)

Typical Section (3-lane reconstruct)

Typical Section (4-lane reconstruct)

IDOT Pavement Design Summaries

Cost Opinion Summaries

3-lane Corridor Strip Map Exhibit

4-lane Corridor Strip Map Exhibit



MATCH LINE STATION 114+50
SEE BELOW



MATCH LINE STATION 129+00
SEE SHEET 02

FILE NAME - C:\projects\114450\114450.dwg 114450.dwg	DESIGNED -	MAT	REVISED -	DATE	ARC DESIGN RESOURCES INC.	LOGAN AVENUE EXISTING CONDITIONS	SECTION XP-XXXX-XX-XX	COUNTY BOONE	TOTAL SHEETS 2	SHEET NO. 1
	DRAWN -	MAT	REVISED -	DATE						
PROJECT NAME -	WARREN AVE	DATE	05/25/2016	REVISED -						
PROJECT SCALE -	1" = 50'	CHECKED -	JEL	REVISED -						
POST DATE -	2/2/2017			REVISED -						



MATCH LINE STATION 129+00
SEE SHEET 01

MATCH LINE STATION 143+00
SEE BELOW



MATCH LINE STATION 143+00
SEE ABOVE

USER NAME = [blank] PLOT SCALE = 1 : 50 PLOT DATE = 12/29/17	DESIGNED BY = [blank] CHECKED BY = [blank]	REVISIONS 1 2 3 4	COUNTY = BOONE SECTION = 31-30000-00-01	TOTAL SHEET NO. = 2 SHEETS = 2 CONTRACT NO. = 00000
	DATE = 04/29/2016	RELEASED REVISIONS REVISIONS REVISIONS	LOGAN AVENUE EXISTING CONDITIONS	11/2005 (REV. 00 PROJECT)



Logan Avenue Rehabilitation
Summary Design Recommendations



Looking East near Belvidere Funeral Home. Note the lack of any water carrying capacity in the curb that has been overlaid to the top. Also note broken curb head.



Looking East @ Florence Court. Note the lack of ADA ramps and the power poles encroaching on the sidewalk

Logan Avenue Rehabilitation
Summary Design Recommendations



Pedestrian access is a concern. New rules require 3' clearance.



Looking west in the 900 block. The sidewalk looks OK, but the curb is need of replacement, and raising the curb for drainage will require adjustment to the sidewalk as well.

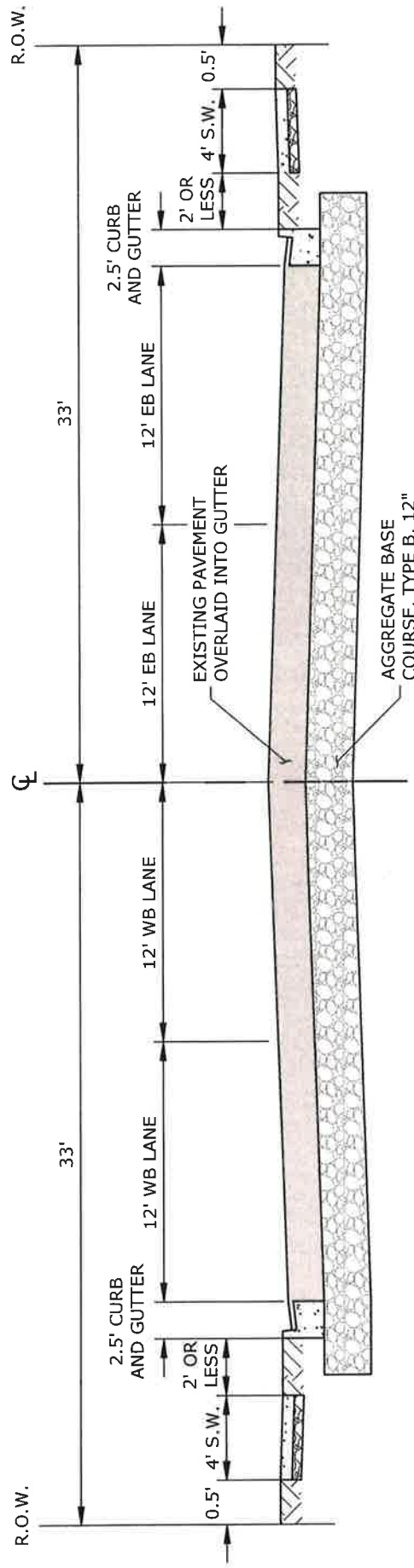
Logan Avenue Rehabilitation
Summary Design Recommendations



Looking west approaching Warren Avenue. At photo showing the need for full replacement of sidewalks and curbs.



A photo at F and F Tire Service showing more sidewalk and curb repair needs. Here the business owner needs to also coordinate some work on his building.

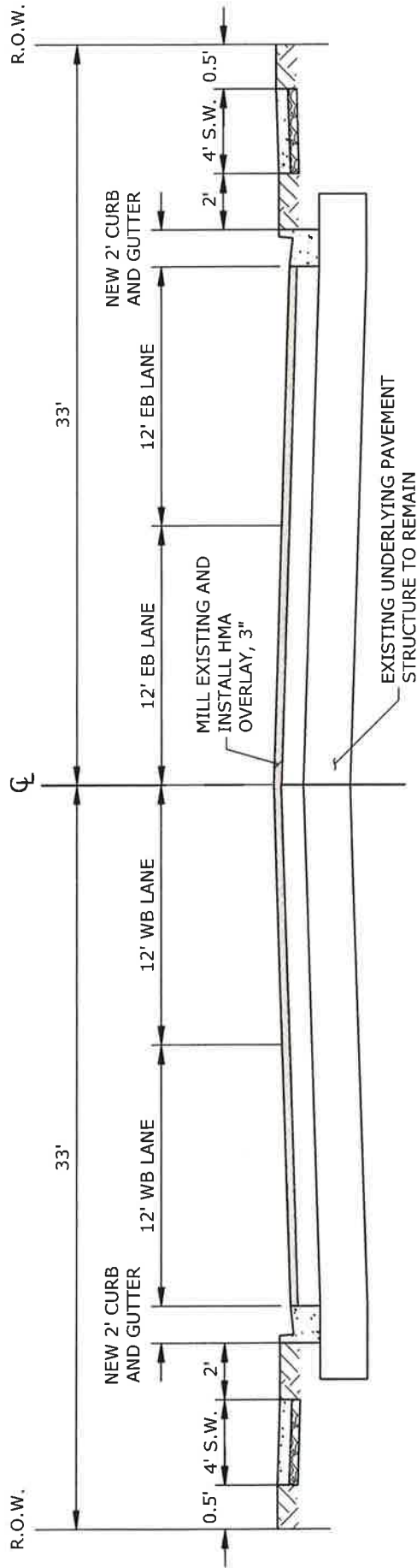


CROSS SECTION - LOGAN AVENUE EXISTING CONDITIONS (LOOKING EAST)



ARC DESIGN
RESOURCES INC.

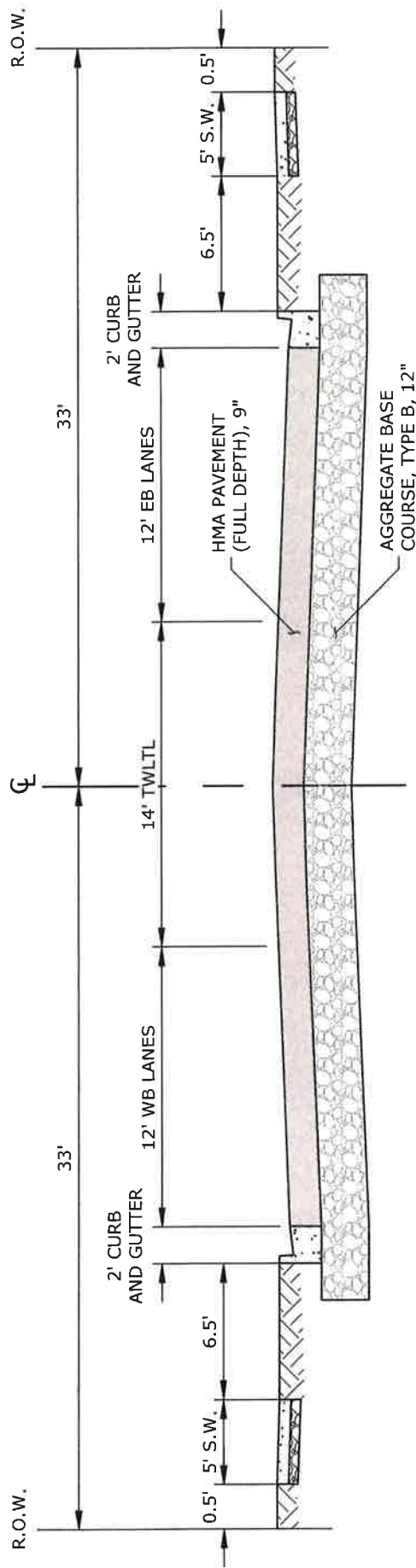
5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303



CROSS SECTION - LOGAN AVENUE OVERLAY OPTION (LOOKING EAST)

ARC DESIGN
RESOURCES INC.

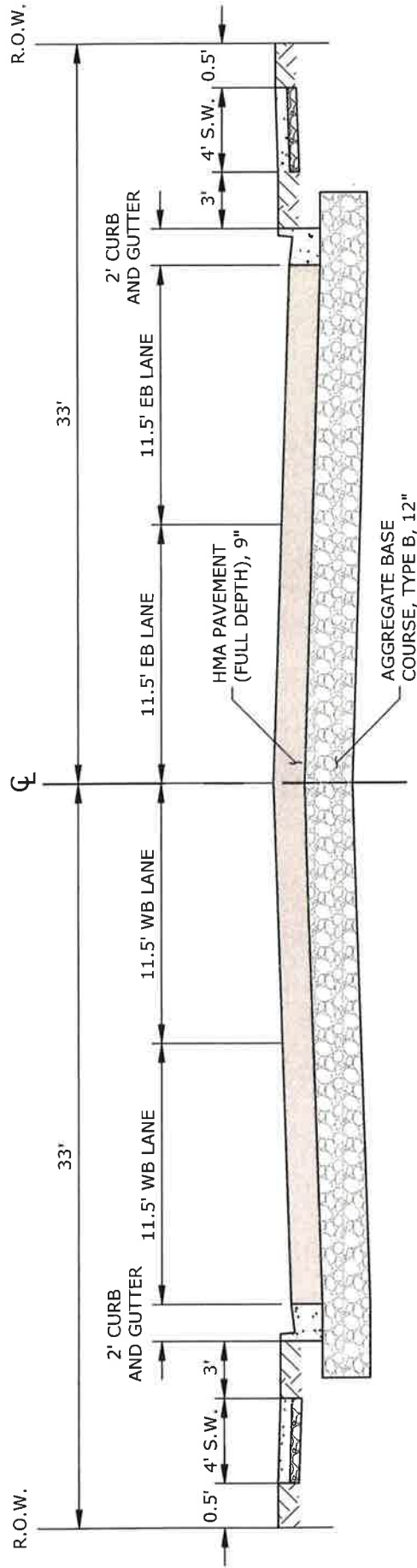
5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303



CROSS SECTION - LOGAN AVENUE 3 LANE OPTION (LOOKING EAST)

ARC DESIGN
RESOURCES INC.

5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303



CROSS SECTION - LOGAN AVENUE 4 LANE OPTION (LOOKING EAST)

ARC

DESIGN

RESOURCES INC.

5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303

PROJECT AND TRAFFIC INPUTS

(Enter Data in Gray Shaded Cells)

Route: **Logan Avenue** Comments: **Reconstruction Pavement Options**
 Section: _____
 County: **Boone** Design Date: **11/16/2016** JSL <- BY
 Location: **State Street to Belvidere Road** Modify Date: _____ <- BY

	ADT	Year
Current:	6,970	2017
Future:	8,500	2040

Facility Type **Unmarked State Route**

of Lanes = **4**

Road Class: **I**

Subgrade Support Rating (SSR): **Poor**
 Construction Year: **2018**
 Design Period (DP) = **20** years

	Structural Design Traffic			% of ADT in Design Lane
	Minimum ADT	Actual ADT	Actual % of Total ADT	
PV =	No Min	6,932	90.0%	P = 32%
SU =	No Min	539	7.0%	S = 45%
MU =	No Min	231	3.0%	M = 45%
Struct. Design ADT =	7,702		(2028)	

TRAFFIC FACTOR CALCULATION

FLEXIBLE PAVEMENT

Cpv = 0.15
 Csu = 132.5
 Cmu = 482.53
 TF flexible (Actual) = 1.65 (Actual ADT)
 TF flexible (Min) = No Min (Min ADT Fig. 54-2.C)

RIGID PAVEMENT

Cpv = 0.15
 Csu = 143.81
 Cmu = 696.42
 TF rigid (Actual) = 2.15 (Actual ADT)
 TF rigid (Min) = No Min (Min ADT Fig. 54-2.C)

NEW CONSTRUCTION / RECONSTRUCTION PAVEMENT DESIGN CALCULATIONS

Full-Depth HMA Pavement		JPC Pavement	
Use TF flexible =	1.65	Use TF rigid =	2.15
PG Grade Lower Binder Lifts =	PG 64-22 (Fig. 53-4.R)	Edge Support =	Tied Shoulder or C.&G.
HMA Mixture Temp. =	73.5 deg. F (Fig. 54-5.C)	Rigid Pavt Thick. =	8.25 in. (Fig. 54-4.E)
Design HMA Mixture Modulus (E _{HMA}) =	740 ksi (Fig. 54-5.D)		
Design HMA Strain (ε _{HMA}) =	104 (Fig. 54-5.E)		
Full Depth HMA Design Thickness =	8.75 in. (Fig. 54-5.F)		
Limiting Strain Criterion Thickness =	14.25 in. (Fig. 54-5.I)		
Use Full-Depth HMA Thickness =	8.75 Inches	CRCP Thickness =	7.00 in. (Fig. 54-4.M)

TF MUST BE > 60 FOR CRCP

RECONSTRUCTION ONLY (SUPPLEMENTAL) PAVEMENT DESIGN CALCULATIONS

HMA Overlay of Rubblized PCC		Unbonded Concrete Overlay	
Use TF flexible =	1.65	Review 54-4.03 for limitations and special considerations.	
HMA Overlay Design Thickness =	6.25 in. (Fig. 54-5.U)	JPCP Thickness =	NA inches
Limiting Strain Criterion Thickness =	10.75 in. (Fig. 54-5.V)		
Use HMA Overlay Thickness =	6.25 inches		

CONTACT BMPR FOR ASSISTANCE

DESIGN TABLES FROM BDE MANUAL CHAPTER 54 - PAVEMENT DESIGN

Class I Roads	Class II Roads	Class III Roads	Class IV Roads
4 lanes or more Part of a future 4 lanes or more One-way Streets with ADT > 3500	2 lanes with ADT > 2000 One way Street with ADT <= 3500	2 Lanes (ADT 750 -2000)	2 Lanes (ADT < 750)

Facility Type	Min. Str. Design Traffic (Fig 54-2.C)		
	PV	SU	MU
Interstate or Freeway	0	500	1500
Other Marked State Route	0	250	750
Unmarked State Route	No Min	No Min	No Min

Class I table for One-Way Streets	
ADT	Class
0 - 3500	II
>3501	I

Class	Traffic Factor ESAL Coefficients			
	Rigid (Fig. 54-4.C)		Flexible (Fig. 54-5.B)	
	Csu	Cmu	Csu	Cmu
I	143.81	696.42	132.50	482.53
II	135.78	567.21	112.06	385.44
III	129.58	562.47	109.14	384.35
IV	129.58	562.47	109.14	384.35

Class Table for 2 or 3 lanes (not future 4 lane & not one-way street)	
ADT	Class
0 - 749	IV
750 - 2000	III
>2000	II

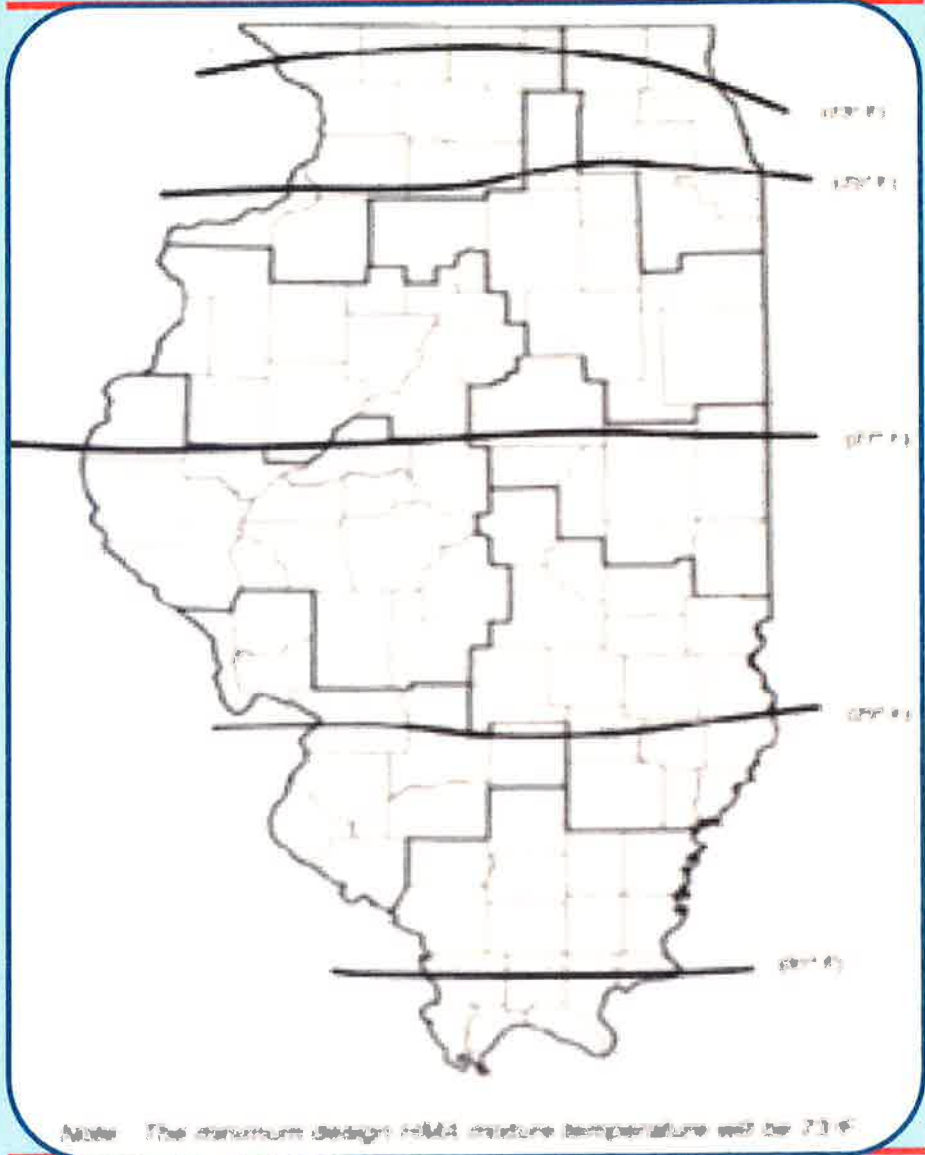
Number of Lanes	Design Lane Distribution Factors For Structural Design Traffic (Fig. 54-2.B)					
	Rural			Urban		
	P	S	M	P	S	M
1 Lane Ramp	100%	100%	100%	100%	100%	100%
2 or 3	50%	50%	50%	50%	50%	50%
4	32%	45%	45%	32%	45%	45%
6 or more	20%	40%	40%	8%	37%	37%

Click On Map to Set Your Project Location

Help

Then Press **Set HMA Mix Temp** to Set Temp

73.35° F



Click On Map to Set Your Project Location

Help

Then Press **Set LSCD Max Thickness** to Set Max T

14.20"

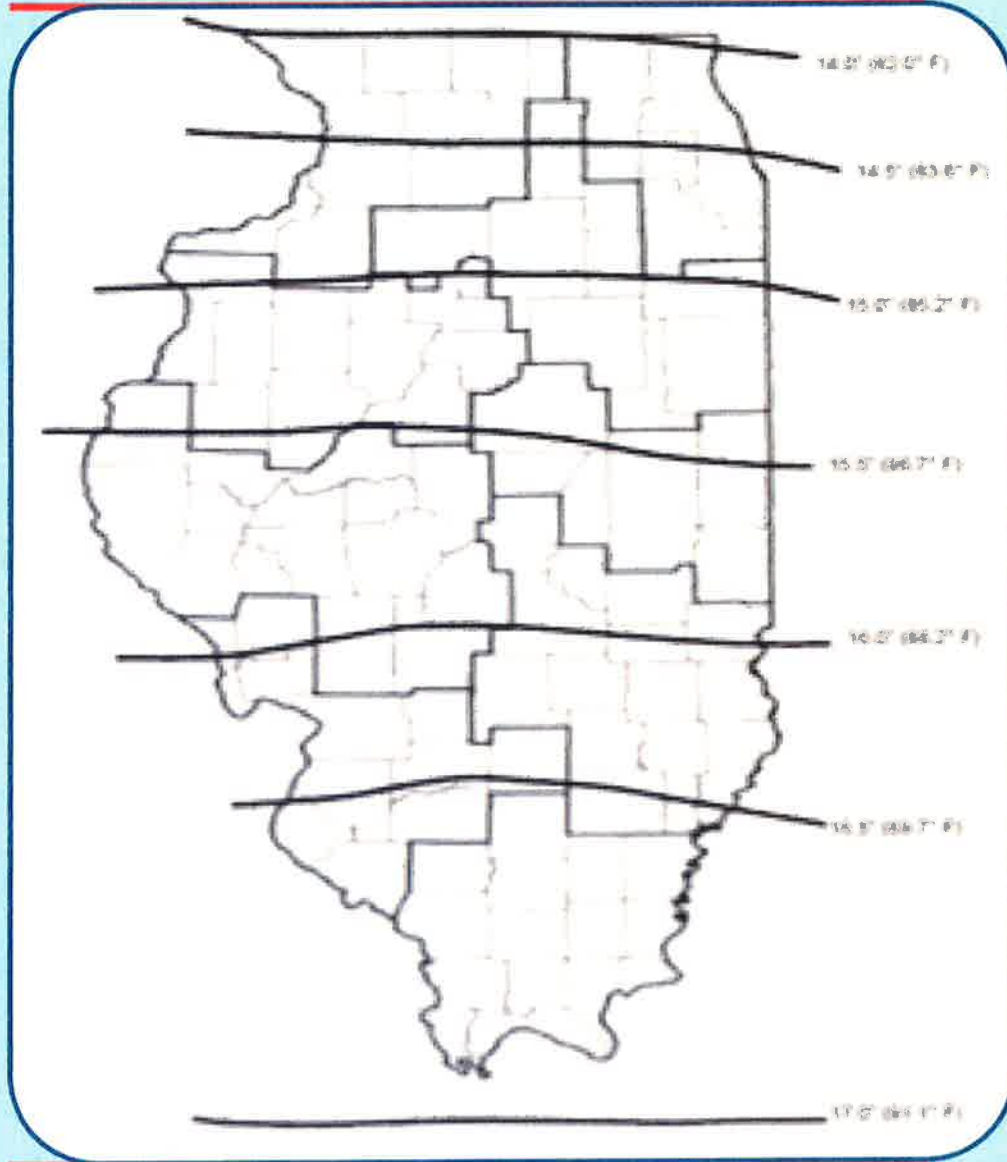


Figure 54-5. I

Click On Map to Set Your Project Location

Help

Then Press **Set LSCD Overlay Max Thickness** to Set Max T

10.58"

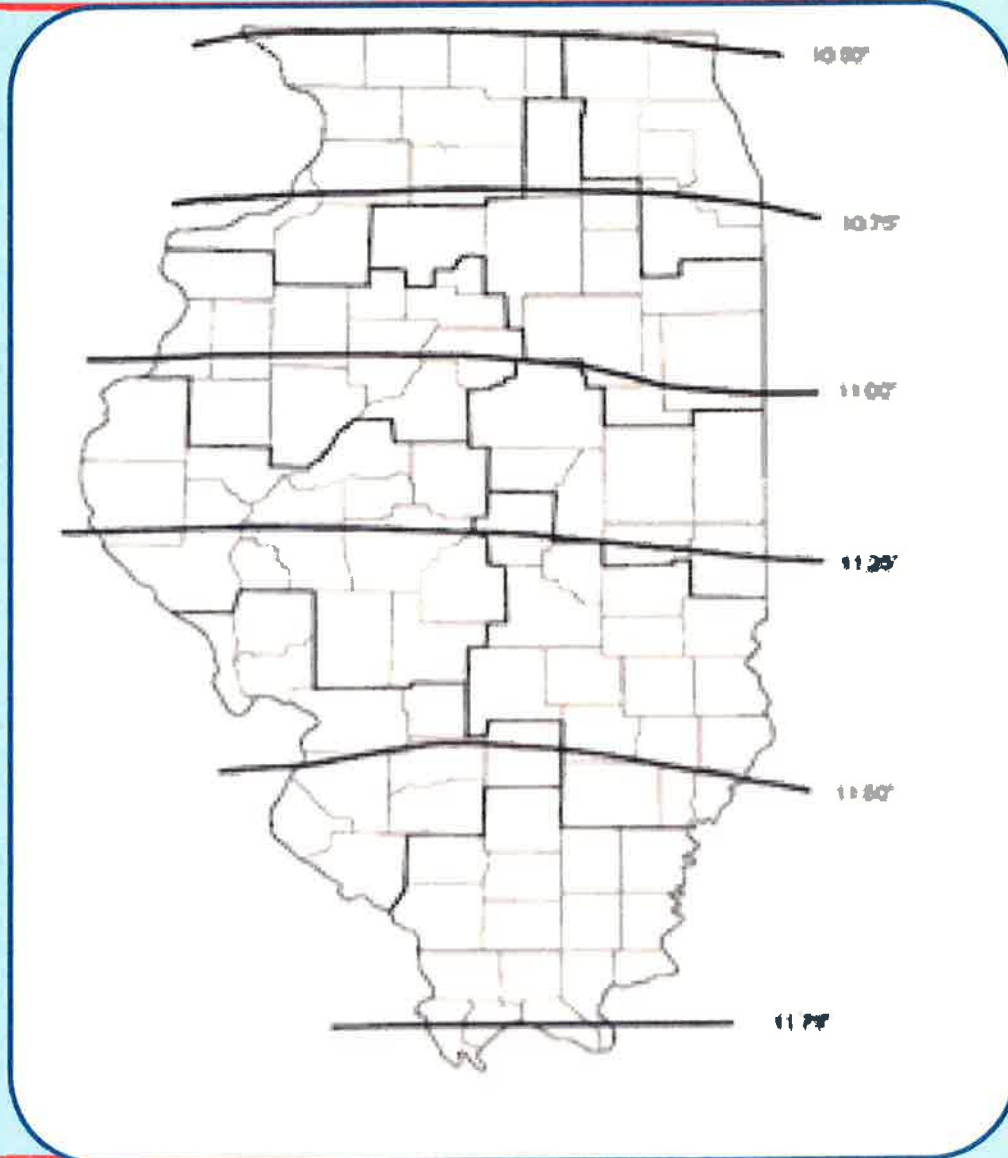


Figure 54-5. V

LIFE-CYCLE COST ANALYSIS: NEW CONSTRUCTION / RECONSTRUCTION

FULL-DEPTH HMA PAVEMENT

Standard Design

ROUTE: Logan Avenue, SECTION: 0, COUNTY: Boone, LOCATION: State 304 to S. Webster's Road, FACILITY TYPE: NON-INTERSTATE, PROJECT LENGTH: 186 FT, 0 OF CENTERLINES, 4 OF LANES, 4 EDGES, LANE WIDTH: AVERAGE 10.5 FT, SHOULDER WIDTH: 8 FT, PAVEMENT THICKNESS (FLEXIBLE): 8.25 IN, SHOULDER THICKNESS: 4.0 IN, POLICY OVERLAY THICKNESS: 2.25 IN.

FULL-DEPTH HMA PAVEMENT, HMA OVERLAY OF RUMBLEDECK PCC PAVEMENT, Figure 54-7.6, STANDARD DESIGN.

MATERIAL COSTS: HMA PAVEMENT (FULL-DEPTH) 18.75' 533 80 YD \$48.30 /YD \$1542.00, HMA SURFACE COURSE 2.25' 80 1000 \$100.00 /1000 \$8000.00, HMA TOP BINDER COURSE 2.25' 80 1000 \$100.00 /1000 \$8000.00, HMA LOWER BINDER COURSE 1.50' 140 1000 \$60.00 /1000 \$8400.00, HMA SHOULDER 1.00' 0 1000 \$26.00 /1000 \$0.00.

MAINTENANCE COSTS: YEAR 1, YEAR 2, YEAR 3, YEAR 4, YEAR 5, YEAR 6, YEAR 7, YEAR 8, YEAR 9, YEAR 10. Includes items like CURB & GUTTER, IMPROVED SUBGRADE, REVERSE FOR USER SUPPLIED ITEM, PAVEMENT REMOVAL, SHOULDER REMOVAL, and ROUTINE MAINTENANCE ACTIVITY.

MAINTENANCE COSTS: ROUTINE MAINTENANCE ACTIVITY, HMA OVERLAY PATCH SURF, HMA SURFACE MILE, HMA SHOULDER MILE, HMA OVERLAY MILE (CLASS B), HMA OVERLAY MILE (CLASS C), MILLING (2.50 IN), PARTIAL DEPTH POINT PATCH, PARTIAL DEPTH SHILD PATCH, PARTIAL DEPTH POINT PATCH (W/ F & B), PARTIAL DEPTH SHILD PATCH (W/ F & B), LONGITUDINAL SHOULDER JOINT ROUTE & SEAL, CENTERLINE JOINT ROUTE & SEAL, RANDOM / THERMAL CRACK ROUTE & SEAL.

ROUTINE MAINTENANCE ACTIVITY: YEAR 1 LIFE CYCLE, YEAR LIFE CYCLE, MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE, YEAR LIFE CYCLE, MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE.

PCC PAVEMENT

JPCP

ROUTE: Logan Avenue, SECTION: 0, COUNTY: Boone, LOCATION: State 304 to S. Webster's Road, FACILITY TYPE: NON-INTERSTATE, PROJECT LENGTH: 186 FT, 0 OF CENTERLINES, 4 OF LANES, 4 EDGES, LANE WIDTH: AVERAGE 10.5 FT, SHOULDER WIDTH: 8 FT, PAVEMENT THICKNESS (RIGID): JPCP, SHOULDER THICKNESS: 4.0 IN, POLICY OVERLAY THICKNESS: 2.0 IN.

RIGID PLAN CONCRETE PAVEMENT, UNIMPROVED JOINTED PLAN CONCRETE OVERLAY, Figure 54-7.7.A.

MATERIAL COSTS: JPC PAVEMENT 18.75' 533 80 YD \$68.00 /YD \$36240.00, PAVEMENT REINFORCEMENT 2.00' 80 1000 \$22.00 /1000 \$1760.00, STABILIZED SUBGRADE 2.00' 80 1000 \$115.00 /1000 \$9200.00, PCC SHOULDER 1.00' 0 1000 \$26.00 /1000 \$0.00, CURB & GUTTER 100 100 \$10.00 /100 \$1000.00, SUBGRADE GRAN MTLTY C IMPROVED SUBGRADE 4.00' 516 80 YD \$115.00 /100 YD \$59340.00, REVERSE FOR USER SUPPLIED ITEM 0 0 \$0.00 /1000 \$0.00, PAVEMENT REMOVAL 50 50 YD \$10.00 /100 YD \$500.00, SHOULDER REMOVAL 0 0 \$0.00 /100 YD \$0.00.

MAINTENANCE COSTS: YEAR 1, YEAR 2, YEAR 3, YEAR 4, YEAR 5, YEAR 6, YEAR 7, YEAR 8, YEAR 9, YEAR 10. Includes items like PAVEMENT PATCH CLASS B, PAVEMENT PATCH CLASS C, PAVEMENT PATCH CLASS A, PAVEMENT PATCH CLASS E, PAVEMENT PATCH CLASS F, HMA POLICY OVERLAY 2.5" (PMT), HMA POLICY OVERLAY 2.5" (SMA), LONGITUDINAL SHOULDER JOINT, CENTERLINE JOINT, REFLECTIVE TRANSVERSE CRACK, RANDOM CRACK, HO. POINT PATCH MAF JMW 2.5".

ROUTINE MAINTENANCE ACTIVITY: HMA POLICY OVERLAY, HMA SURFACE MILE, HMA SHOULDER MILE, HMA OVERLAY MILE (CLASS B), CLASS A PAVEMENT PATCHING, CLASS B PAVEMENT PATCHING, CLASS C SHOULDER PATCHING, PARTIAL DEPTH POINT PATCH (W/ F & B), PARTIAL DEPTH SHILD PATCH (W/ F & B), LONGITUDINAL SHOULDER JOINT ROUTE & SEAL, CENTERLINE JOINT ROUTE & SEAL, REFLECTIVE TRANSVERSE CRACK ROUTE & SEAL, RANDOM CRACK ROUTE & SEAL.

ROUTINE MAINTENANCE ACTIVITY: YEAR 1 LIFE CYCLE, YEAR LIFE CYCLE, MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE, YEAR LIFE CYCLE, MAINTENANCE AND REHABILITATION ACTIVITY SCHEDULE.

LIFE-CYCLE COST ANALYSIS: NEW DESIGN

CONSTRUCTION INITIAL COST: PRESENT WORTH \$17,095, ANNUAL COST PER MILE \$122,855. MAINTENANCE LIFE-CYCLE COST: PRESENT WORTH \$7,883, ANNUAL COST PER MILE \$117,217. TOTAL LIFE-CYCLE COST: PRESENT WORTH \$24,978, ANNUAL COST PER MILE \$240,072.

CONSTRUCTION INITIAL COST: PRESENT WORTH \$17,095, ANNUAL COST PER MILE \$122,855. MAINTENANCE LIFE-CYCLE COST: PRESENT WORTH \$7,883, ANNUAL COST PER MILE \$117,217. TOTAL LIFE-CYCLE COST: PRESENT WORTH \$24,978, ANNUAL COST PER MILE \$240,072.

LIFE-CYCLE COST ANALYSIS: FINAL SUMMARY

LIFE CYCLE OPTION: HMA \$18,234. OTHER OPTIONS (LOWEST TO HIGHEST): JPCP \$16,987, 19.3%.

© 2010 by Bentley Systems, Incorporated. All rights reserved. Bentley and MicroStation are registered trademarks of Bentley Systems, Incorporated.

Logan Avenue Rehabilitation Project

Minimal Overlay Option

Item	Quantity	Unit	Unit Cost	Total Cost
surface mill, 3"	29800	SQ YD	\$ 7.00	\$ 208,600.00
curb and gutter rem/repl	1600	FOOT	\$ 35.00	\$ 56,000.00
Sidewalk rem and repl (ramps)	5120	SQ FT	\$ 15.00	\$ 76,800.00
ADA plates	512	SQ FT	\$ 40.00	\$ 20,480.00
storm mh adjust	25	EACH	\$ 500.00	\$ 12,500.00
inlet reconstruct with c&g new	45	EACH	\$ 1,500.00	\$ 67,500.00
sanitary mh adjust	21	EACH	\$ 500.00	\$ 10,500.00
valve box/vault adjust	30	EACH	\$ 300.00	\$ 9,000.00
HMA surface, 3"	5010	TON	\$ 75.00	\$ 375,750.00
pavement marking	19200	FOOT	\$ 0.60	\$ 11,520.00
parkway restoration @ corners	570	SQ YD	\$ 10.00	\$ 5,700.00
traffic control	1	LUMP SUM	\$ 5,000.00	\$ 5,000.00
			subtotal	\$ 859,350.00
			10% contingency	\$ 85,935.00
			15% engineering	\$ 128,902.50
			GRAND TOTAL EST.	\$ 1,070,000.00

Logan Avenue Rehabilitation Project

Enhanced Overlay only

Item	Quantity	Unit	Unit Cost	Total Cost
surface mill, 3"	25400	SQ YD	\$ 7.00	\$ 177,800.00
curb and gutter rem/repl	9400	FOOT	\$ 28.00	\$ 263,200.00
Sidewalk rem and repl all	49560	SQ FT	\$ 9.00	\$ 446,040.00
driveway pavement rem/replace	1100	SQ YD	\$ 60.00	\$ 66,000.00
ADA plates	512	SQ FT	\$ 40.00	\$ 20,480.00
storm mh adjust	25	EACH	\$ 500.00	\$ 12,500.00
inlet reconstruct	45	EACH	\$ 1,200.00	\$ 54,000.00
sanitary mh adjust	21	EACH	\$ 500.00	\$ 10,500.00
valve box/vault adjust	30	EACH	\$ 300.00	\$ 9,000.00
HMA surface, 3"	5010	TON	\$ 75.00	\$ 375,750.00
pavement marking	19200	FOOT	\$ 0.60	\$ 11,520.00
raised pavement markers	360	EACH	\$ 30.00	\$ 10,800.00
parkway restoration corridor	2100	SQ YD	\$ 10.00	\$ 21,000.00
traffic control	1	LUMP SUM	\$ 10,000.00	\$ 10,000.00
			subtotal	\$ 1,488,590.00
			10% contingency	\$ 148,859.00
			15% engineering	\$ 223,288.50
			STREET TOTAL	\$ 1,860,000.00

Additional Water Main Replacement from Main to Prospect

Item	Quantity	Unit	Unit Cost	Total Cost
surface mill, 3" reduction	-4400	SQ YD	\$ 7.00	\$ (30,800.00)
remove 4" water main	2800	FOOT	\$ 15.00	\$ 42,000.00
remove valve and box	9	EACH	\$ 500.00	\$ 4,500.00
remove fire hydrant	6	EACH	\$ 1,500.00	\$ 9,000.00
install new 8" water main	2500	FOOT	\$ 60.00	\$ 150,000.00
trench backfill	5600	CU YD	\$ 12.00	\$ 67,200.00
8" valve and box	9	EACH	\$ 2,500.00	\$ 22,500.00
connect to existing system	9	EACH	\$ 1,000.00	\$ 9,000.00
new domestic service w/box	45	EACH	\$ 2,500.00	\$ 112,500.00
new fire hydrant assembly	8	EACH	\$ 4,500.00	\$ 36,000.00
remove pavement for wm install	4400	SQ YD	\$ 12.00	\$ 52,800.00
new aggregate base, 12"	4400	SQ YD	\$ 11.00	\$ 48,400.00
new 5.5" binder	4400	SQ YD	\$ 19.00	\$ 83,600.00
			subtotal	\$ 637,500.00
			10% contingency	\$ 63,750.00
			15% engineering	\$ 95,625.00
			WATER TOTAL	\$ 800,000.00

GRAND TOTAL OVERLAY WITH WATER UPGRADE \$ 2,660,000.00

Logan Avenue Rehabilitation Project

Complete Reconstruct - 3 lane section with water main upgrade Main-Prospect

Item	Quantity	Unit	Unit Cost	Total Cost
pavement removal	27700	SQ YD	\$ 15.00	\$ 415,500.00
curb and gutter rem	9400	FOOT	\$ 6.00	\$ 56,400.00
Sidewalk removal	40200	SQ FT	\$ 1.00	\$ 40,200.00
storm sewer removal	5700	FOOT	\$ 20.00	\$ 114,000.00
storm inlet and mh removal	70	EACH	\$ 300.00	\$ 21,000.00
sanitary mh adjust	21	EACH	\$ 500.00	\$ 10,500.00
new storm sewer main, 18" ave	4700	FOOT	\$ 55.00	\$ 258,500.00
new storm laterals, 12" ave	800	FOOT	\$ 50.00	\$ 40,000.00
new storm inlets	40	EACH	\$ 2,400.00	\$ 96,000.00
new storm manholes	20	EACH	\$ 2,600.00	\$ 52,000.00
trench backfill - storm	8250	CU YD	\$ 11.00	\$ 90,750.00
remove 4" water main	2800	FOOT	\$ 15.00	\$ 42,000.00
remove valve and box	9	EACH	\$ 500.00	\$ 4,500.00
remove fire hydrant	6	EACH	\$ 1,500.00	\$ 9,000.00
install new 8" water main	2500	FOOT	\$ 60.00	\$ 150,000.00
trench backfill -wm	2800	CU YD	\$ 12.00	\$ 33,600.00
8" valve and box	9	EACH	\$ 2,500.00	\$ 22,500.00
connect to existing system	9	EACH	\$ 1,000.00	\$ 9,000.00
new domestic service w/box	45	EACH	\$ 2,500.00	\$ 112,500.00
new fire hydrant assembly	8	EACH	\$ 4,500.00	\$ 36,000.00
valve box/vault adjust	21	EACH	\$ 300.00	\$ 6,300.00
curb and gutter, b-6.18	9400	FOOT	\$ 25.00	\$ 235,000.00
aggregate base, 12"	25100	SQ YD	\$ 13.00	\$ 326,300.00
HMA pavement, 9"	22500	SQ YD	\$ 50.00	\$ 1,125,000.00
driveway pavement rem/replace	1100	SQ YD	\$ 60.00	\$ 66,000.00
sidewalk, 5' wide @ r.o.w.	49600	SQ FT	\$ 6.00	\$ 297,600.00
ADA plates	512	SQ FT	\$ 40.00	\$ 20,480.00
traffic signals @ Main and East	2	EACH	\$ 175,000.00	\$ 350,000.00
pavement marking	12000	FOOT	\$ 0.60	\$ 7,200.00
pavement marking symbols	1000	SQ FT	\$ 2.00	\$ 2,000.00
raised pavement markers	360	EACH	\$ 30.00	\$ 10,800.00
parkway restoration corridor	7300	SQ YD	\$ 10.00	\$ 73,000.00
traffic control	1	LUMP SUM	\$ 60,000.00	\$ 60,000.00
			subtotal	\$ 4,193,630.00
			10% contingency	\$ 419,363.00
			15% engineering	\$ 629,044.50
			STREET TOTAL	\$ 5,240,000.00

Logan Avenue Rehabilitation Project

Complete Reconstruct - 4 lane section with water main upgrade Main-Prospect

Item	Quantity	Unit	Unit Cost	Total Cost
pavement removal	26700	SQ YD	\$ 15.00	\$ 400,500.00
curb and gutter rem	9400	FOOT	\$ 6.00	\$ 56,400.00
Sidewalk removal	40200	SQ FT	\$ 1.00	\$ 40,200.00
storm sewer removal	5700	FOOT	\$ 20.00	\$ 114,000.00
storm inlet and mh removal	70	EACH	\$ 300.00	\$ 21,000.00
sanitary mh adjust	21	EACH	\$ 500.00	\$ 10,500.00
new storm sewer main, 18" ave	4700	FOOT	\$ 55.00	\$ 258,500.00
new storm laterals, 12" ave	1000	FOOT	\$ 50.00	\$ 50,000.00
new storm inlets	40	EACH	\$ 2,400.00	\$ 96,000.00
new storm manholes	20	EACH	\$ 2,600.00	\$ 52,000.00
trench backfill - storm	8550	CU YD	\$ 11.00	\$ 94,050.00
remove 4" water main	2800	FOOT	\$ 15.00	\$ 42,000.00
remove valve and box	9	EACH	\$ 500.00	\$ 4,500.00
remove fire hydrant	6	EACH	\$ 1,500.00	\$ 9,000.00
install new 8" water main	2500	FOOT	\$ 60.00	\$ 150,000.00
trench backfill -wm	5600	CU YD	\$ 12.00	\$ 67,200.00
8" valve and box	9	EACH	\$ 2,500.00	\$ 22,500.00
connect to existing system	9	EACH	\$ 1,000.00	\$ 9,000.00
new domestic service w/box	45	EACH	\$ 2,500.00	\$ 112,500.00
new fire hydrant assembly	8	EACH	\$ 4,500.00	\$ 36,000.00
valve box/vault adjust	21	EACH	\$ 300.00	\$ 6,300.00
curb and gutter, b-6.18	9400	FOOT	\$ 25.00	\$ 235,000.00
aggregate base, 12"	30300	SQ YD	\$ 13.00	\$ 393,900.00
HMA pavement, 9"	25400	SQ YD	\$ 50.00	\$ 1,270,000.00
driveway pavement rem/replace	1100	SQ YD	\$ 60.00	\$ 66,000.00
sidewalk, 4' wide	44900	SQ FT	\$ 6.00	\$ 269,400.00
ADA plates	512	SQ FT	\$ 40.00	\$ 20,480.00
traffic signals @ Main and East	2	EACH	\$ 175,000.00	\$ 350,000.00
pavement marking	19200	FOOT	\$ 0.60	\$ 11,520.00
raised pavement markers	360	EACH	\$ 30.00	\$ 10,800.00
parkway restoration corridor	5200	SQ YD	\$ 10.00	\$ 52,000.00
traffic control	1	LUMP SUM	\$ 60,000.00	\$ 60,000.00
			subtotal	\$ 4,391,250.00
			10% contingency	\$ 439,125.00
			15% engineering	\$ 658,687.50
			STREET TOTAL	\$ 5,490,000.00

Logan Avenue Rehabilitation Project

Additional Water Main Replacement from State to Main and Prospect to Biester St

Item	Quantity	Unit	Unit Cost	Total Cost
remove 8" main	2000	FOOT	\$ 15.00	\$ 30,000.00
remove 4" main side streets	800	FOOT	\$ 15.00	\$ 12,000.00
remove valve and box	21	EACH	\$ 500.00	\$ 10,500.00
remove fire hydrant	3	EACH	\$ 1,500.00	\$ 4,500.00
install new 8" water main	2800	FOOT	\$ 60.00	\$ 168,000.00
trench backfill	5600	CU YD	\$ 12.00	\$ 67,200.00
8" valve and box	21	EACH	\$ 2,500.00	\$ 52,500.00
connect to existing system	8	EACH	\$ 1,000.00	\$ 8,000.00
new domestic service w/box	15	EACH	\$ 2,500.00	\$ 37,500.00
new fire hydrant assembly	6	EACH	\$ 4,500.00	\$ 27,000.00
			subtotal	\$ 387,200.00
			10% contingency	\$ 38,720.00
			15% engineering	\$ 58,080.00
			WATER TOTAL	\$ 480,000.00

Logan Avenue Rehabilitation Project

Sanitary Sewer Main Replacement from State to Prospect

Item	Quantity	Unit	Unit Cost	Total Cost
remove sewer manholes	20	EACH	\$ 1,500.00	\$ 30,000.00
sanitary main removal	3400	FOOT	\$ 6.00	\$ 20,400.00
remove and replace services	57	EACH	\$ 2,800.00	\$ 159,600.00
new sewer main 8"	3400	FOOT	\$ 80.00	\$ 272,000.00
new manholes	12	EACH	\$ 3,200.00	\$ 38,400.00
connect to existing system	6	EACH	\$ 1,000.00	\$ 6,000.00
trench backfill	10200	CU YD	\$ 12.00	\$ 122,400.00
bypass pumping allowance	20	EACH	\$ 2,000.00	\$ 40,000.00
			subtotal	\$ 658,800.00
			10% contingency	\$ 65,880.00
			15% engineering	\$ 98,820.00
			SEWER TOTAL	\$ 820,000.00



MATCH LINE STATION 114+50
SEE BELOW



MATCH LINE STATION 129+00
SEE SHEET 02

FILE NAME	LOGAN AVE 3 LANE OPTION	DESIGNED BY	MMT	REVISIONS	NO.	TOTAL SHEETS	1
DATE	07/29/2016	DRAWN BY	JSL	REVISIONS	NO.	SHEETS	2
CHECKED BY		DATE		REVISIONS	NO.	SECTION	SECTION
PROJECT NO.	151000_01000000	PROJECT	LOGAN AVE 3 LANE OPTION	CONTRACT NO.	151000_01000000	COUNTY	BOONE
PROJECT NAME	LOGAN AVENUE 3 LANE OPTION	DATE	07/29/2016	CONTRACT NO.	151000_01000000	COUNTY	BOONE
PROJECT NO.	151000_01000000	DATE	07/29/2016	CONTRACT NO.	151000_01000000	COUNTY	BOONE

LOGAN AVENUE 3 LANE OPTION



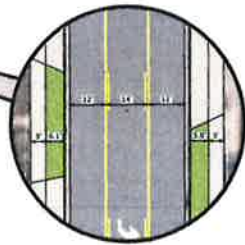


MATCH LINE STATION 143+00
SEE BELOW

MATCH LINE STATION 129+00
SEE SHEET 01



MATCH LINE STATION 143+00
SEE ABOVE



20 SCALE DETAIL

FILE NAME: ... PROJECT: ... DRAWN BY: ... CHECKED BY: ... DATE: ...	DESIGNED BY: ... DATE: ...	REVISIONS: 1. ... 2. ... 3. ...	COUNTY: BOONE SECTION: IX-XXXX-XX-XX CONTRACT NO. XXXXX HOUSE FILE NO. PROJECT
	USER NAME: ... DATE SCALE: 1:100 DATE SCALE: 1:200	REVISED: ... CHECKED: ... DATE: ...	SECTION: IX-XXXX-XX-XX COUNTY: BOONE CONTRACT NO. XXXXX HOUSE FILE NO. PROJECT



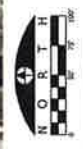
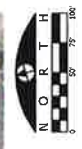


MATCH LINE STATION 114+50
SEE BELOW



MATCH LINE STATION 129+00
SEE SHEET 02

FILE NAME D:\Projects\11450-12900\11450-12900.dwg 11/14/2016 10:00 AM	DESIGNED	DATE	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY
	04/29/2016	04/29/2016									
USER NAME: matt thayer	PROJECT	LOGAN AVENUE 4 LANE OPTION	DATE	04/29/2016	BY	04/29/2016	DATE	04/29/2016	BY	04/29/2016	DATE
SCALE: 1" = 50'	SCALE	1" = 50'	SCALE	1" = 50'	SCALE	1" = 50'	SCALE	1" = 50'	SCALE	1" = 50'	SCALE
PROJECT NO. 11450-12900	PROJECT NO.	11450-12900	PROJECT NO.	11450-12900	PROJECT NO.	11450-12900	PROJECT NO.	11450-12900	PROJECT NO.	11450-12900	PROJECT NO.
CONTRACT NO. 11450-12900	CONTRACT NO.	11450-12900	CONTRACT NO.	11450-12900	CONTRACT NO.	11450-12900	CONTRACT NO.	11450-12900	CONTRACT NO.	11450-12900	CONTRACT NO.
TOTAL SHEETS: 3	TOTAL SHEETS	3	TOTAL SHEETS	3	TOTAL SHEETS	3	TOTAL SHEETS	3	TOTAL SHEETS	3	TOTAL SHEETS
SHEET NO. 2	SHEET NO.	2	SHEET NO.	2	SHEET NO.	2	SHEET NO.	2	SHEET NO.	2	SHEET NO.
SECTION: BOONE	SECTION	BOONE	SECTION	BOONE	SECTION	BOONE	SECTION	BOONE	SECTION	BOONE	SECTION
DISTRICT: 11450-12900	DISTRICT	11450-12900	DISTRICT	11450-12900	DISTRICT	11450-12900	DISTRICT	11450-12900	DISTRICT	11450-12900	DISTRICT



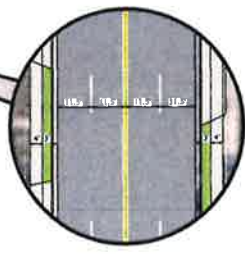


MATCH LINE STATION 143+00
SEE BELOW

MATCH LINE STATION 129+00
SEE SHEET 01



MATCH LINE STATION 143+00
SEE ABOVE



20 SCALE DETAIL

FILE NAME: \\s:\projects\143000\143000.dwg PROJECT: Logan Avenue 4 Lane Option PROJECT NUMBER: 143000	DESIGNED: MWT DRAWN: MWT CHECKED: MWT DATE: 04/29/2016	REVISIONS: 1. MWT 04/29/2016 2. MWT 04/29/2016	COUNTY: Boone SECTION: XX-XXXX-XX-XX SHEET NO.: 2 CONTRACT NO.: 7000X	PROJECT: LOGAN AVENUE 4 LANE OPTION
	USER NAME: mwt PLOT SCALE: 1:1.00 PLOT DATE: 4/29/2016	ARCD DESIGN RESOURCES INC.	PROJECT: LOGAN AVENUE 4 LANE OPTION	COUNTY: Boone SECTION: XX-XXXX-XX-XX SHEET NO.: 2 CONTRACT NO.: 7000X

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: 8/7/2017
Re: Newburg Road Bridge Improvements – Bid Tab

The following bids were received for the Newburg Road Bridge Improvement Project:

- | | |
|---|----------------|
| 1. Sjostrom & Sons, Inc.
1129 Harrison Avenue
Rockford, Illinois 61109 | \$765,432.10 |
| 2. Martin & Company
2456 E Pleasant Grove Road
Oregon, Illinois 61061 | \$1,209,709.25 |
| 3. Civil Constructors, Inc.
2283 Route 20 East
Freeport, Illinois 61032 | \$1,299,672.78 |

The current budget includes \$690,000 in our MFT budget for this project. The current unexpended balance in our MFT account is \$. The engineer's estimate for this project was \$734,552.00.

I would recommend approval of the low bid from Sjostrom & Sons, in the amount of \$765,432.10, for the Newburg Road Bridge Improvement Project, subject to IDOT review and approval. This work will be paid for from MFT funds.

BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: Newburg Bridge Construction Engineering

Attached is a proposal from Hampton, Lenzini & Renwick to complete the construction inspection and engineering for the Newburg Bridge Project. Sjostrom & Sons is the contractor for this project with their bid amount of \$765,432.10.

I would recommend approval of the proposal from Hampton, Lenzini & Renwick, at a cost not-to-exceed \$55,712.00, for construction engineering services for the Newburg Bridge Project. This work will be paid for from the Capital Fund.



Hampton, Lenzini and Renwick, Inc.
Civil Engineers • Structural Engineers • Land Surveyors • Environmental Specialists
www.hlrengineering.com

August 3, 2017

Mr. Brent Anderson
Director of Public Works
City of Belvidere
401 Whitney Boulevard, Suite 200
Belvidere, Illinois 61008

**Re: Construction Engineering Services
Newburg Road over Kishwaukee River**

Dear Mr. Anderson:

We prepared this letter to serve as the agreement between the City of Belvidere (Client) and Hampton, Lenzini and Renwick, Inc. (Consultant) for Construction Engineering services requested relative to the Newburg Road over Kishwaukee River project.

SCOPE OF SERVICES

The Client and Consultant have agreed to the following list of Basic Services the Consultant will provide to the Client:

- Pre-Construction Services: Lead pre-construction meeting, review shop drawings, project setup, schedule coordination
- Construction Services: On-site part-time resident engineering to perform observation, documentation, and checks of contractor crews (approximately 28 hours/week for 9 weeks). In addition, project management, quality assurance material testing of concrete, and soils investigation during excavation will be provided as outlined in the Not-To-Exceed Cost. Weekly updates will be provided to the Client regarding project status, budget, and schedule.
- Post-Construction Services: Punchlist and final inspection services will be provided to ensure that the project is acceptable to the Client. Final agreement to quantities will be performed with the contractor. Hardcopies of as-built drawings will be created and provided to the Client (with electronic files as desired). Final documentation and job box will be completed and turned into the client.

If agreed to in writing by the Client and Consultant, Additional Services shall be provided and shall be labeled as Exhibit B, appended hereto.

Services not set forth above as Basic Services and not listed in Exhibit A of this Agreement are specifically excluded from the scope of the Consultant's services. The Consultant assumes no responsibility to perform any services not specifically listed in Exhibit A.

All services provided shall meet with the approval of the City of Belvidere.

RESPONSIBILITIES OF CLIENT

The Client shall furnish, at the Client's expense, all information, requirements, reports, data, surveys, and instructions required by this Agreement that have not already been given to the Consultant during the design phase of the project. The Consultant may use such information, requirements, reports, data, surveys, and instructions in performing its services and is entitled to rely upon the accuracy and completeness thereof.

380 Shepard Drive
Elgin, Illinois 60123-7010
Tel. 847.697.6700
Fax 847.697.6753

6825 Hobson Valley Drive, Suite 302
Woodridge, Illinois 60517
Tel. 847.697.6700
Fax 847.697.6753

3085 Stevenson Drive, Suite 201
Springfield, Illinois 62703
Tel. 217.546.3400
Fax 217.546.8116

323 W. Third Street, P.O. Box 160
Mt. Carmel, Illinois 62863
Tel. 618.262.8651
Fax 618.263.3327

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 2

COMPENSATION

<u>Employee Classification</u>	<u>2017 Hourly Rate</u>
Principal	\$208.00
Engineer 6	160.00
Engineer 5	150.00
Engineer 4	130.00
Engineer 3	118.00
Engineer 2	108.00
Engineer 1	85.00
Structural 2	170.00
Structural 1	128.00
Technician 3	109.00
Technician 2	88.00
Technician 1	68.00
Intern/Temporary	51.00
Land Acquisition	117.00
Survey 2	118.00
Survey 1	91.00
Environmental 2	119.00
Environmental 1	55.00
Administration 2	117.00
Administration 1	63.00

Billing Terms

At this time, we estimate the cost of our services will not exceed **\$55,712.00**. Any additional services required beyond those set forth above will be charged at the rates stated above and be considered an addition to the not-to-exceed cost.

Invoices shall be submitted by the Consultant on a monthly basis, are due upon presentation and shall be considered past due if not paid within 30 calendar days of the invoice date.

Payment Terms

Payment for our services will be made on a monthly schedule with the understanding that interest at the rate of 1.5% per month, 18% per annum, will be charged and due on all invoices 30 days or more overdue. In addition, we reserve the right to stop our services on the project if any invoice is over 30 days old. In the event legal services are required to collect our fee, cost for legal services incurred by our firm will be paid by the Client.

If the Client fails to make payments when due or otherwise is in breach of this Agreement, the Consultant may suspend performance of services upon 30 calendar days' notice to the Client. The Consultant shall have no liability whatsoever to the Client for any costs or damages as a result of such suspension caused by any breach of this Agreement by the Client. Upon payment in full by the Client, the Consultant shall resume services under this Agreement, and the time schedule and compensation shall be equitably adjusted to compensate for the period of suspension plus any other reasonable time and expense necessary for the Consultant to resume performance.

If the Client fails to make payment to the Consultant in accordance with the payment terms herein, this shall constitute a material breach of this Agreement and shall be cause for termination of this Agreement by the Consultant.

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 3

If the Client objects to any portion of an invoice, the Client shall so notify the Consultant in writing within ten (10) calendar days of receipt of the invoice. The Client shall identify in writing the specific cause of the disagreement and the amount in dispute and shall pay that portion of the invoice not in dispute in accordance with the other payment terms of this Agreement. Any dispute over invoiced amounts due which cannot be resolved within ten (10) calendar days after presentation of invoice by direct negotiation between the parties shall be resolved within thirty (30) calendar days in accordance with the Dispute Resolution provision of this Agreement. Interest as stated above shall be paid by the Client on all disputed invoice amounts that are subsequently resolved in the Consultant's favor and shall be calculated on the unpaid balance from the due date of the invoice.

Payments to the Consultant shall not be withheld, postponed, or made contingent on the construction, completion, or success of the project or upon receipt by the Client of offsetting reimbursement or credit from other parties who may have caused Additional Services or expenses. No withholdings, deductions, or offsets shall be made from the Consultant's compensation for any reason unless the Consultant has been found to be legally liable for such amounts.

GENERAL TERMS AND CONDITIONS

Assignment

Neither party to this Agreement shall transfer, sublet, or assign any rights under or interest in this agreement without the prior written consent of the other party. Subcontracting to sub-consultants normally contemplated by the Consultant shall not be considered an assignment for purposes of this agreement.

Authorized Representatives

The Client and Consultant hereby designate their authorized representatives to act on their behalf with respect to the services and responsibilities under this agreement. The following designated representatives are authorized to receive notices, transmit information, and make decisions regarding the Project on behalf of their respective parties.

For the Client:

Name.....Mr. Brent Anderson
TitleDirector of Public Works
Address401 Whitney Boulevard, Belvidere, Illinois 60107
Office Phone815-544-9256
Cell Phone815-378-9244
E-mailbanderson@ci.belvidere.il.us

For the Consultant:

Name.....Mr. Scott Rodseth, PE
TitleProject Manager
Address380 Shepard Drive, Elgin, Illinois 60123
Office Phone847-697-6700
Cell Phone224-828-2911
E-mailsrodseth@hlreng.com

Name.....Joey Heger
TitleResident Engineer
Address380 Shepard Drive, Elgin, Illinois 60123
Office Phone847-697-6700
Cell PhoneN/A
E-mailjheger@hlreng.com

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 4

Changed Conditions

If, during the term of this Agreement, circumstances or conditions that were not originally contemplated by or known to the Consultant are revealed, to the extent that they affect the scope of services, compensation, schedule, allocation of risks, or other material terms of this Agreement, the Consultant may call for renegotiation of appropriate portions of this Agreement. The Consultant shall notify the Client of the changed conditions necessitating renegotiation, and the Consultant and the Client shall promptly and in good faith enter into renegotiation of this Agreement to address the changed conditions. If terms cannot be agreed to, the parties agree that either party has the absolute right to terminate this Agreement, in accordance with the Termination provision hereof.

Confidential Communications

The Consultant may be required to report on or render confidential opinions about the past or current performance and/or qualifications of others engaged or being considered for engagement directly or indirectly by the Client. Those about whom reports and opinions are rendered may as a consequence initiate claims against the consultant. To help create an atmosphere in which the Consultant may freely report or express such opinions candidly in the interest of the Client, the Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant against all damages, liabilities, or costs arising from the rendering of such confidential opinions and reports by the Consultant to the Client or to the Client's agents.

Consequential Damages

Notwithstanding any other provision of this Agreement, and to the fullest extent permitted by law, neither the Client nor the Consultant, their respective officers, directors, partners, employees, contractors, or sub-consultants shall be liable to the other or shall make any claim for any incidental, indirect, or consequential damages arising out of or connected in any way to the Project or to this Agreement. This mutual waiver of consequential damages shall include, but is not limited to, loss of use, loss of profit, loss of business, loss of income, loss of reputation, or any other consequential damages that either party may have incurred from any cause of action including negligence, strict liability, breach of contract, and breach of strict or implied warranty. Both the Client and the Consultant shall require similar waivers of consequential damages protecting all the entities or persons named herein in all contracts and subcontracts with others involved in this project.

Construction Observation

The Consultant shall visit the site at intervals appropriate to the stage of construction, or as otherwise agreed to in writing by the Client and the Consultant, in order to observe the progress and quality of the Work completed by the Contractor. Such visits and observation are not intended to be an exhaustive check or a detailed inspection of the Contractor's work but rather are to allow the Consultant, as an experienced professional, to become generally familiar with the Work in progress and to determine, in general, if the Work is proceeding in accordance with the Contract Documents.

Based on this general observation, the Consultant shall keep the Client informed about the progress of the Work and shall endeavor to guard the Client against deficiencies in the Work.

If the Client desires more extensive project observation or full-time project representation, the Client shall request that such services be provided by the Consultant as Additional Services in accordance with the terms of this Agreement.

The Consultant shall not supervise, direct, or have control over the Contractor's work nor have any responsibility for the construction means, methods, techniques, sequences, or procedures selected by the Contractor nor for the Contractor's safety precautions or programs in connection with the Work. These rights and responsibilities are solely those of the Contractor in accordance with the Contract Documents.

The Consultant shall not be responsible for any acts or omissions of the Contractor, subcontractor, any entity performing any portions of the Work, or any agents or employees of any of them. The Consultant does not

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 5

guarantee the performance of the Contractor and shall not be responsible for the Contractor's failure to perform its Work in accordance with the Contract Documents or any applicable laws, codes, rules, or regulations.

Contractor Insurance and Indemnity Requirements

The Client agrees, in any construction contracts in connection with this Project, to require all contractors of any tier to carry statutory Workers Compensation, Employers Liability Insurance and appropriate limits of Commercial General Liability Insurance (CGL). The Client further agrees to require all contractors to have their CGL policies endorsed to name the Client, the Consultant, and its sub-consultants as Additional Insureds and to provide Contractual Liability coverage sufficient to insure the hold harmless and indemnity obligations assumed by the contractors. The Client shall require all contractors to furnish to the Client and the Consultant certificates of insurance as evidence of the required insurance prior to commencing work and upon renewal of each policy during the entire period of construction. In addition, the Client shall require that all contractors will, to the fullest extent permitted by law, indemnify and hold harmless the Client, the Consultant, and its sub-consultants from and against any damages, liabilities, or costs, including reasonable attorneys' fees and defense costs, arising out of or in any way connected with the Project, including all claims by employees of the contractors.

Corporate Protection

It is intended by the parties to this Agreement that the Consultant's services in connection with the Project shall not subject the Consultant's individual employees, officers, or directors to any personal legal exposure for the risks associated with this Project. Therefore, and notwithstanding anything to the contrary contained herein, the Client agrees that as the Client's sole and exclusive remedy, any claim, demand, or suit shall be directed and/or asserted only against Hampton, Lenzini and Renwick, Inc., a Delaware corporation, and not against any of the Consultant's individual employees, officers, or directors.

Defects in Service

The Client shall promptly report to the Consultant any defects or suspected defects in the Consultant's services of which the Client becomes aware, so that the Consultant may take measures to minimize the consequences of such a defect. The Client further agrees to impose a similar notification requirement on all contractors in its Client/Contractor contract and shall require all subcontracts at any level to contain a like requirement. Failure by the Client and the Client's contractors or subcontractors to notify the Consultant shall relieve the Consultant of the costs of remedying the defects above the sum such remedy would have cost had prompt notification been given when such defects were first discovered.

Delays

The Client agrees that the Consultant is not responsible for damages arising directly or indirectly from any delays for causes beyond the Consultant's control. For purposes of this Agreement, such causes include, but are not limited to, strikes or other labor disputes; severe weather disruptions or other natural disasters; fires, riots, war, or other emergencies or acts of God; failure of any government agency or utility to act in timely manner; failure of performance by the Client or the Client's contractors or consultants; or discovery of any hazardous substances or differing site conditions.

In addition, if the delays resulting from any such causes increase the cost or time required by the Consultant to perform its services in an orderly and efficient manner, the Consultant shall be entitled to an equitable adjustment in schedule and/or compensation.

Entire Agreement

This Agreement, comprising pages 1 through 10, and Exhibit A, is the entire Agreement between the Client and the Consultant. It supersedes all prior communications, understandings, and agreements, whether oral or written. Amendments to this Agreement must be in writing and signed by both the Client and the Consultant.

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 6

Extension of Protection

The Client agrees that any and all limitations of the Consultant's liability and indemnifications by the Client to the Consultant shall include and extend to those individuals and entities the Consultant retains for performance of the services under this Agreement, including but not limited to the Consultant's officers, partners, and employees and their heirs and assigns, as well as the Consultant's sub-consultants and their officers, employees, heirs and assigns.

Governing Law and Jurisdiction

The Client and the Consultant agree that this Agreement and any legal actions concerning its validity, interpretation, and performance shall be governed by the laws of the State of Illinois.

It is further agreed that any legal action between the Client and the Consultant arising out of this Agreement or the performance of the services shall be brought in a court of competent jurisdiction in the County of Kane, Illinois.

Hazardous Materials – Suspension of Services

Both parties acknowledge that the Consultant's scope of services does not include any services related to the presence of any hazardous or toxic materials. In the event the Consultant or any other party encounters any hazardous or toxic materials, or should it become known to the Consultant that such materials may be present on or about the jobsite or any adjacent areas that may affect the performance of the Consultant's services, the Consultant may, at its option and without liability for consequential or any other damages, suspend performance of its services under this Agreement until the Client retains appropriate consultants or contractors to identify and abate or remove the hazardous or toxic materials and warrants that the jobsite is in full compliance with all applicable laws and regulations.

Indemnification

The Consultant agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Client, its officers, directors, and employees (collectively, Client) against all damages, liabilities, or costs, including reasonable attorneys' fees and defense costs, to the extent caused by the Consultant's negligent performance of professional services under this Agreement and that of its sub-consultants or anyone for whom the Consultant is legally liable.

The Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant, its officers, directors, employees, and sub-consultants (collectively, Consultant) against all damages, liabilities, or costs, including reasonable attorneys' fees and defense costs, to the extent caused by the Client's negligent acts in connection with the Project and the acts of its contractors, subcontractors, or consultants, or anyone for whom the Client is legally liable.

Neither the Client nor the Consultant shall be obligated to indemnify the other party in any manner whatsoever for the other party's own negligence.

Jobsite Safety

Neither the professional activities of the Consultant, nor the presence of the Consultant or its employees at a construction/project site, shall relieve the General Contractor of its obligations, duties, and responsibilities including, but not limited to, construction means, methods, sequence, techniques, or procedures necessary for performing, superintending, and coordinating the Work in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Consultant and its personnel have no authority to exercise any control over any construction contractor or its employees in connection with their work or any health or safety programs or procedures. The Client agrees that the General Contractor shall be solely responsible for jobsite safety, and warrants that this intent shall be carried out in the Client's contract with the General Contractor. The Client also agrees that the Client, the Consultant, and the Consultant's sub-consultants

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 7

shall be indemnified by the General Contractor and shall be made additional insureds under the General Contractor's policies of general liability insurance.

Mediation

In an effort to resolve any conflicts that arise during the construction of the Project or following the completion of the Project, the Client and the Consultant agree that all disputes between them arising out of or relating to this Agreement or the Project shall be submitted to nonbinding mediation unless the parties mutually agree otherwise.

The Client and the Consultant further agree to include a similar mediation provision in all agreements with independent contractors and consultants retained for the Project and to require all independent contractors and consultants also to include a similar mediation provision in all agreements with their subcontractors, sub-consultants, suppliers, and fabricators, thereby providing for mediation as the primary method for dispute resolution between the parties to all those agreements.

Notice of Delay

If the Consultant becomes aware of delays due to time allowances for review and approval being exceeded, delay by the Contractor, the Client, the Client's consultants, or any other cause beyond the control of the Consultant, which will result in the schedule for performance of the Consultant's services not being met, the Consultant shall promptly notify the Client. If the Client becomes aware of any delays or other causes that will affect the Consultant's schedule, the Client shall promptly notify the Consultant. In either event, the Consultant's schedule for performance of its services shall be equitably adjusted.

Ownership of Instruments of Service

The Client acknowledges the Consultant's construction documents, including electronic files, as instruments of professional service. Nevertheless, the final documents prepared under this Agreement shall become the property of the Client upon completion of services and payment in full of all fees due to the Consultant. The Client shall not reuse or make any modification to the final documents without the prior written authorization of the Consultant. The Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant, its officers, directors, employees, and sub-consultants against any damages, liabilities, or costs, arising from the unauthorized reuse or modification of the documents by the Client or any person or entity that acquires or obtains the documents from or through the Client without the written authorization of the Consultant.

Quality Control

The Consultant agrees to maintain written quality control procedures for the general guidance of its staff in providing services under this Agreement. Such procedures may be modified by the Consultant from time to time as appropriate to the Consultant's professional practice. The Consultant shall utilize these quality-control procedures to the extent practicable in rendering services in accordance with the standard of professional care.

Requests for Clarification or Interpretation

The Contractor may, after exercising due diligence to locate required information, request from the Consultant clarification or interpretation of the requirements of the Contract Documents. The Consultant shall, with reasonable promptness, respond to such Contractor's requests for clarification or interpretation. However, if the information requested by the Contractor is apparent from field observations, is contained in the Contract Documents, or is reasonably inferable from them, the Contractor shall be responsible to the Client for all reasonable costs charged by the Consultant to the Client for the Additional Services required to provide such information.

Right of Entry

The Client shall provide for the Consultant's right to enter the property owned by the Client and/or others in order for the Consultant to fulfill the Scope of Services included hereunder. Although the Consultant will exercise reasonable care in performing its services, the Client understands that use of testing or other equipment may

unavoidably cause some damage, the correction of which is not part of this Agreement. The Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant, its officers, directors, employees, and sub-consultants (collectively, Consultant) against any damages, liabilities, or costs, including reasonable attorneys' fees and defense costs, arising or allegedly arising from procedures associated with testing or investigative activities or connected in any way with the discovery of hazardous materials or suspected hazardous materials on the property.

Severability

Any term or provision of this Agreement found to be invalid under any applicable statute or rule of law shall be deemed omitted and the remainder of the Agreement shall remain in full force and effect.

Shop Drawing Review

The Consultant shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples, and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor. The Consultant's review shall be conducted with reasonable promptness while allowing sufficient time in the Consultant's judgment to permit adequate review. Review of a specific item shall not indicate that the Consultant has reviewed the entire assembly of which the item is a component. The Consultant shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Consultant in writing by the Contractor. The Consultant shall not be required to review partial submissions or those for which submissions of correlated items have not been received.

Standard of Care

In providing services under this Agreement, the Consultant will endeavor to perform in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

Supplanting of Former Consultant

In consideration of the risks and rewards involved in this Project, the Client agrees, to the maximum extent permitted by law, to indemnify and hold harmless the Consultant from any damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising or allegedly arising from any negligent acts, errors or omissions by any prior consultant employed by the Client on this project and from any claims of copyright or patent infringement by the Consultant arising from the use of any documents prepared or provided by the Client or any prior consultant of the Client's. The Client warrants that any documents provided to the Consultant by the Client or by the prior consultant may be relied upon as to their accuracy and completeness without independent investigation by the supplanting Consultant and that the Client has the right to provide such documents to the supplanting Consultant free of any claims of copyright or patent infringement or violation of any other party's rights in intellectual property.

Suspension of Services

If the Project or the Consultant's services are suspended by the Client for more than thirty (30) calendar days, consecutive or in the aggregate, over the term of this Agreement, the Consultant shall be compensated for all services performed and reimbursable expenses incurred prior to the receipt of notice of suspension. In addition, upon resumption of services, the Client shall compensate the Consultant for expenses incurred as a result of the suspension and resumption of its services, and the Consultant's schedule and fees for the remainder of the Project shall be equitably adjusted.

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 9

If the Consultant's services are suspended for more than ninety (90) days, consecutive or in the aggregate, the Consultant may terminate this Agreement upon giving not less than five (5) calendar days' written notice to the Client.

If the Client is in breach of the payment terms or otherwise is in material breach of this Agreement, the Consultant may suspend performance of services upon five (5) calendar days' notice to the Client. The Consultant shall have no liability to the Client, and the Client agrees to make no claim for any delay or damage as a result of such suspension caused by any breach of this Agreement by the Client. Upon receipt of payment in full of all outstanding sums due from the Client, or curing of such other breach which caused the Consultant to suspend services, the Consultant shall resume services and there shall be an equitable adjustment to the remaining project schedule and fees as a result of the suspension.

Termination

In the event of termination of this Agreement by either party, the Client shall within fifteen (15) calendar days of termination pay the Consultant for all services rendered and all reimbursable costs incurred by the Consultant up to the date of termination, in accordance with the payment provisions of this Agreement.

The Client may terminate this Agreement for the Client's convenience and without cause upon giving the Consultant not less than seven (7) calendar days' written notice.

Either party may terminate this Agreement for cause upon giving the other party not less than seven (7) calendar days' written notice for any of the following reasons:

- Substantial failure by the other party to perform in accordance with the terms of this Agreement and through no fault of the terminating party;
- Assignment of this Agreement or transfer of the Project by either party to any other entity without the prior written consent of the other party;
- Suspension of the Project or the Consultant's services by the Client for more than ninety (90) calendar days, consecutive or in the aggregate;
- Material changes in the conditions under which this Agreement was entered into, the Scope of Services or the nature of the Project, and the failure of the parties to reach agreement on the compensation and schedule adjustments necessitated by such changes.

In the event of any termination that is not the fault of the Consultant, the Client shall pay the Consultant, in addition to payment for services rendered and reimbursable costs incurred, for all expenses reasonably incurred by the Consultant in connection with the orderly termination of this Agreement, including but not limited to demobilization, reassignment of personnel, associated overhead costs and all other expenses directly resulting from the termination.

Third-Party Beneficiaries

Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the Client or the Consultant. The Consultant's services under this Agreement are being performed solely for the Client's benefit, and no other party or entity shall have any claim against the Consultant because of this Agreement or the performance or nonperformance of services hereunder. The Client and Consultant agree to require a similar provision in all contracts with contractors, subcontractors, sub-consultants, vendors and other entities involved in this Project to carry out the intent of this provision.

Unauthorized Changes

In the event the Client, the Client's contractors or subcontractors, or anyone for whom the Client is legally liable makes or permits to be made any changes to any reports, plans, specifications or other construction documents prepared by the Consultant without obtaining the Consultant's prior written consent, the Client shall assume full

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 10

responsibility for the results of such changes. Therefore the Client agrees to waive any claim against the Consultant and to release the Consultant from any liability arising directly or indirectly from such changes.

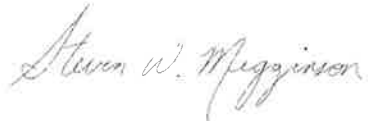
In addition, the Client agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Consultant from any damages, liabilities, or costs, including reasonable attorneys' fees and costs of defense, arising from such changes.

In addition, the Client agrees to include in any contracts for construction appropriate language that prohibits the Contractor or any subcontractors of any tier from making any changes or modifications to the Consultant's construction documents without the prior written approval of the Consultant and that further requires the Contractor to indemnify both the Consultant and the Client from any liability or cost arising from such changes made without such proper authorization.

If this agreement meets with the City of Belvidere's approval, please have the proper City officials sign and date where indicated on the next page and return one (1) copy for our file. If you have questions on any of the above, please call Scott Rodseth at our Elgin office at 224-828-2911 or srodseth@hlreng.com.

Yours truly,

HAMPTON, LENZINI AND RENWICK, INC.

A handwritten signature in cursive script that reads "Steve W. Megginson".

Steve Megginson, PE, SE
Vice President

Enclosure

Mr. Brent Anderson
City of Belvidere
August 2, 2017
Page 11

ACCEPTANCE

The terms and conditions of this letter agreement are hereby accepted by the City of Belvidere for Construction Engineering services set forth above.

By _____ Date _____
Title _____

ATTEST:

By _____
Title _____



Exhibit A
City of Belvidere
Not-To-Exceed Cost
Newburg Road over Kishwaukee River

2017 Hourly Rates

Employee Classification

Task	Description	Employee Classification				Direct Cost	Hours	Fee
		E5	T1	S2	ST1			
1. Pre-Construction Services (1 Week)								
	Lead preconstruction meeting and distribute minutes	4			4		8	\$ 1,112.00
	Project Setup, Shop Drawing Review, and Preliminary Coordination	4			36		40	\$ 5,208.00
2. Construction Services (9 Weeks)								
	Project Administration and QA/QC	40					40	\$ 6,000.00
	Verify Construction Layout / Cross Sections			8			8	\$ 944.00
	Part-Time Resident Engineering				208		208	\$ 26,624.00
	Documentation				36		36	\$ 4,608.00
	Progress Meetings	8			8		16	\$ 2,224.00
	QA Material Testing					\$ 3,000.00		\$ 3,000.00
3. Post-Construction Services (1 Week)								
	Punchlist, Miscellaneous Items, and Final Inspection	4			20		24	\$ 3,160.00
	Final Agreement to Quantities				4		4	\$ 512.00
	As-Built Drawings		4		4		8	\$ 784.00
	Final Documentation				12		12	\$ 1,536.00
Sub-Total		60	4	8	332	\$ 3,000.00	404	\$ 55,712.00

TOTAL NOT-TO-EXCEED COST	\$ 55,712.00
---------------------------------	---------------------

NOTES/ASSUMPTIONS

- Part time construction observation for 9 weeks (45 working days @ approx. 28 hours/week)
- No overtime or weekend hours

BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: Thickening Centrifuge Construction Engineering

Attached is a work order from Baxter & Woodman to complete the construction inspection and engineering for the Sludge Thickening Improvement Project at the WWTP. Mechanical Inc. is the contractor for this project with their bid amount of \$1,545,000.00

I would recommend approval of the work order from Baxter & Woodman at a cost not-to-exceed \$155,000 for construction engineering services for the Sludge Thickening Improvement Project at the WWTP. This work will be paid for from the Sewer Depreciation Fund.

**CITY OF BELVIDERE, ILLINOIS
WASTEWATER TREATMENT PLANT IMPROVEMENTS –
SLUDGE THICKENING IMPROVEMENTS
CONSTRUCTION ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT No. 160545.60

Project Description:

The proposed construction consists of demolition of existing equipment, building modifications, construction of new sludge thickening system, electrical work, and other miscellaneous items of work. The Project is more specifically described in Attachment A of this Work Order.

Engineering Services:

The general provisions of this contract are enumerated in the Professional Engineering Services Agreement between the City and Engineers dated September 22, 2009. A detailed scope of services for this Project is listed in Attachment B of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated September 22, 2009. The Engineers' fee shall be computed on the basis of their standard hourly billing rates for actual work time performed plus reimbursement of out-of-pocket expenses including travel, which in total amount will not exceed \$155,000.

Submitted by: **Baxter & Woodman, Inc.**

By: Debra Wald

Title: Vice President

Date: July 6, 2017

Approved by: **City of Belvidere, Illinois**

By: _____

Title: _____

Date: _____

Additional Comments and Conditions: The Project does not include improvements, modifications, or work to any other building or structure at the Wastewater Treatment Plant, or other location.

Project Description

The construction portion of this Project will remove and replace the two (2) existing gravity belt thickeners and associated sludge piping, mechanical, and electrical, with two (2) new centrifuges and associated sludge piping, mechanical, and electrical. A new polymer system, non-potable water system, and drain piping with oil separator will be installed. Removal, replacement, and relocation of various portions of the existing HVAC system are included in the Work. Various improvements to the existing Thickener Building structure will be performed, including concrete floor removal and replacement, addition of a new masonry partition wall, and wall structure removal. Installation of new overhead doors, entry doors, windows, and louvers will complete the Work.

Scope of Services

The following scope of services details the anticipated tasks necessary to successfully complete this Project.

CONSTRUCTION SERVICES

1. **Act as the Owner’s representative with duties, responsibilities and limitations of authority as assigned in the construction contract documents.**
2. **PROJECT INITIATION**
 - Prepare Award Letter, Agreement, Contract Documents, Performance/Payment Bonds, and Notice to Proceed.
 - Review Contractor insurance documents.
 - Attend and prepare agenda and minutes for the preconstruction conference, and review the Contractor’s proposed construction schedule and list of subcontractors.
3. **CONSTRUCTION ADMINISTRATION**
 - Attend periodic construction progress meetings. No more frequent than monthly meetings expected.
 - Shop drawing and submittal review by Engineer shall apply only to the items in the submissions and only for the purpose of assessing, if upon installation or incorporation in the Project, they are generally consistent with the construction documents. Owner agrees that the contractor is solely responsible for the submissions (regardless of the format in which provided, i.e. hard copy or electronic transmission) and for compliance with the contract documents. Owner further agrees that the Engineer’s review and action in relation to these submissions shall not constitute the provision of means, methods, techniques, sequencing or procedures of construction or extend to safety programs of precautions. Engineer’s consideration of a component does not constitute acceptance of the assembled item.
 - Review construction record drawings for completeness prior to submission to CADD.
 - Prepare construction contract change orders and work directives when authorized by the Owner.
 - Review the Contractor’s requests for payments as construction work progresses, and advise the Owner of amounts due and payable to the Contractor in accordance with the terms of the construction contract documents.
 - Research and prepare written response by Engineer to request for information from the Owner and Contractor.

-
- Project manager or other office staff visit site as needed.
4. FIELD OBSERVATION
- Engineer will provide a Resident Project Representative at the construction site on a periodic part-time basis from the Engineer' office of not more than eight (8) hours per regular weekday, not including legal holidays (for up to 500 hours) as deemed necessary by the Engineer, to assist the Contractor with interpretation of the Drawings and Specifications, to observe in general if the Contractor's work is in conformity with the Final Design Documents, and to monitor the Contractor's progress as related to the Construction Contract date of completion.
 - Through standard, reasonable means, Engineer will become generally familiar with observable completed work. If the Engineer observes completed work that is inconsistent with the construction documents, that information shall be communicated to the contractor and Owner to address. Engineer shall not supervise, direct, control, or have charge or authority over any contractor's work, nor shall the Engineer have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, or the safety precautions and programs incident thereto, for security or safety at the site, nor for any failure of any contractor to comply with laws and regulations applicable to such contractor's furnishing and performing of its work. Engineer neither guarantees the performance of any contractor nor assumes responsibility for any contractor's failure to furnish and perform the work in accordance with the contract documents, which contractor is solely responsible for its errors, omissions, and failure to carry out the work. Engineer shall not be responsible for the acts or omissions of any contractor, subcontractor, or supplier, or of any of their agents or employees or any other person, (except Engineer's own agents, employees, and consultants) at the site or otherwise furnishing or performing any work; or for any decision made regarding the contract documents, or any application, interpretation, or clarification, of the contract documents, other than those made by the Engineer.
 - Part-Time Field Observation provides that the Resident Project Representative will make intermittent site visits to observe the progress and quality of Contractor's executed Work. Part-Time Field Observation does not guarantee the Engineer will observe or comment on work completed by the contractor at times the Resident Project Representative is not present on site. Such visits and observations by the Resident Project Representative, if any, are not intended to be exhaustive or to extend to every aspect of Contractor's Work in progress or to involve detailed inspections of Contractor's Work in progress beyond the responsibilities specifically assigned to Engineer in this Agreement and the Contract Documents, but

rather are to be limited to spot checking, selective sampling, and similar methods of general observation of the Work based on Engineer's exercise of professional judgment as assisted by the Resident Project Representative, if any.

- Provide the necessary base lines, benchmarks, and reference points to enable the Contractor to proceed with the work.
- Keep a daily record of the Contractor's work on those days that the Engineers are at the construction site including notations on the nature and cost of any extra work, and provide weekly reports to the Owner of the construction progress and working days charged against the Contractor's time for completion.

5. PROJECT CLOSEOUT

- Provide construction inspection services when notified by the Contractor that the Project is complete. Prepare written lists of deficiencies during final completion inspections.
- Review the Contractor's written guarantees and issue a Certificate of Completion for the Project by the Owner.
- Review the Contractor's requests for final payment, and advise the Owner of the amounts due and payable to the Contractor in accordance with the terms of the construction contract documents.
- Prepare construction record drawings which show field measured dimensions of the completed work which the Engineers consider significant and provide the Owner with CD or electronic copy within ninety (90) days of the Project completion.

ESTIMATED MANHOURS AND FEE SUMMARY

Scope Item	Hours	Fee
Project Initiation Services	29	\$4,110
Construction Administration Services	236	\$34,570
Designer Review Services	232	\$31,780
Field Observation Services	500	\$69,300
Project Closeout Services	62	\$8,360
Operator Training Services	48	\$6,880
TOTAL ALL SERVICES	1,107	\$155,000

I:\Crystal Lake\BELVD\160545-Thick Cent Imp\Contract\160545.60 Thickening Centrifuge Work Order.doc

BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: Inflow and Infiltration (I/I) Study

Attached is a work order from Baxter & Woodman to complete an inflow and infiltration study of the entire sanitary sewer system in the City of Belvidere. I/I is clear water that enters the sanitary sewer system causing system overflows and basement backups. The last I/I work done on our system was in 1985, when every manhole in the system was sealed. Currently when it rains, the incoming flow at the WWTP increases dramatically, indicating an infusion of clear water into the sanitary system. The I/I study will pinpoint the area or areas where the largest amount of inflow is occurring, allowing us to remediate those areas in the most cost effective manner.

Due to the size and cost of this study, more time will be needed to develop a phased approach to complete this work. I should have a recommendation for the Council to review at the next committee meeting.

**CITY OF BELVIDERE, ILLINOIS
INFLOW & INFILTRATION STUDY
DESIGN ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT NO. 160837.30

Project Description:

Conduct various I/I study tasks throughout the South and North Side areas of the City's sanitary sewer system. In addition to dividing the system into South and North parts, we have also split the South Side into the original 2016 study area and the remainder of the South Side.

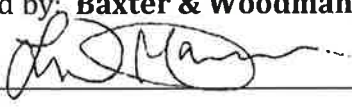
The Project is described in more detail in Attachment A of this Work Order.

Engineering Services:

The general provisions of this contract are enumerated in the Professional Engineering Services Agreement between the City and Engineers dated September 22, 2009. A detailed scope of services for this Project is listed in Attachment B of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated September 22, 2009. The Engineers' fee shall be computed on the basis of their standard hourly billing rates for actual work time performed plus reimbursement of out-of-pocket expenses including travel, which in total will not exceed \$930,100.

Submitted by: Baxter & Woodman, Inc.	Approved by: City of Belvidere, Illinois
By: <u></u>	By: _____
Title: <u>Executive Vice President/COO</u>	Title: _____
Date: <u>August 9, 2017</u>	Date: _____

Additional Comments and Conditions:

Project Description

I/I is clear water (stormwater or groundwater) that enters a separate sanitary sewer system. However, this clear water, which should enter the storm sewer system, is too much for the existing sanitary sewer system to handle and therefore causes Sewer System Overflows and basement backups. Both occurrences are public health problems and are regulated by the Illinois Environmental Protection Agency (IEPA).

In accordance with your request and based on our previous discussions, we prepared a Scope of Services (Attachment B) to conduct various I/I study tasks throughout the South and North Side areas of the City's sanitary sewer system. In addition to dividing the system into South and North parts, we have also split the South Side into the original 2016 study area and the remainder of the South Side.

Scope of Services

The following scope of services details the anticipated tasks necessary to successfully complete this Project.

1. PROJECT MANAGEMENT
 - Plan, schedule, and control activities to complete the Project. These activities include, but are not limited to budgeting, scheduling, and monitoring the scope of services.
 - Submit a monthly status report via email describing the tasks completed that month and outlining goals for the subsequent month.
 - Analysis, research, coordination, plan and forms creation, and secretarial/support work.
 - A Kickoff Meeting with City staff and the Project team will be conducted to establish clear lines of communication, introduce the City staff to the team members, and establish the City's detailed needs, objectives, and goals for the Project. The meeting will also be used to obtain drawings, GIS data, atlases, and other information to be supplied by the City; and to schedule future meetings.

2. MANHOLE INSPECTIONS
 - Visually inspect and perform a 360^o digital scanning camera inspection from the surface of each accessible manhole and complete an inspection record for each manhole.
 - Manhole diameter
 - Manhole material
 - Rim to pipe invert measurements
 - Sewer diameters, pipe materials, and flow directions
 - Document potential I/I sources and details of all pipes connected to the manhole.
 - Mapping grade GPS locations of structures.
 - Modified Level 1 inspections per NASSCO – MACP guidelines

Baxter & Woodman intends to partner with Midwest Water Group (MWG) for this project, and specifically for the manhole inspections.

3. SMOKE TESTING

- Prepare a letter and door hanger for the City to distribute to affected property owners.
- Conduct smoke testing of the sanitary sewer system using a high capacity blower and smoke candles or liquid smoke.
- Provide proper signage in local areas during the testing work.
- Document all inappropriate smoke emission points and building vent pipes that do not emit smoke.
- GPS locate (sub-meter accuracy) each identified defect and take at least one digital photograph of each defect.

Baxter & Woodman intends to partner with MWG to perform part of the work for this portion of the project, and specifically to perform the smoke testing field work, with Baxter & Woodman support for public notices, contact, and signage, and task management.

4. SL-RAT ACOUSTIC PIPELINE ASSESSMENT

- Set up transmitter and receiver on each sanitary sewer section between two manholes.
- Collect pipeline assessment data in online data organizer software
- Provide .CSV, .KML and .SHP exportable data files for each pipeline segment
- Collect GPS data off of GPS receiver and provide to Utility for mapping purposes
- Add manhole ID's for each starting and ending manhole for each pipe segment to data software as well as notes of any urgent needs for that starting and ending manhole point.
- Provide prioritized listing of pipeline segments in need of further inspection (via CCTV or pole camera) and coordinate location identification with selected televising contractor and Utility
- Provide prioritized listing of pipeline segments in need of further inspection (via CCTV or pole camera) and coordinate location identification with selected televising contractor and Utility

Baxter & Woodman intends to partner with MWG for this portion of the project, and specifically to perform the SL-RAT field work.

5. DYED-WATER TESTING

- Conduct dyed-water tests of the storm sewer system (in areas where smoke was identified during the smoke testing work) using inflatable plugs and dye mixed with water from adjacent fire hydrants.

- Monitor the flows in the adjacent sanitary sewer system for evidence of the dyed-water.
- Document results of the testing work.
- ***The exact number of locations and costs will not be known until smoke testing is completed.***

6. CCTV VIDEO AND REVIEW

- Prepare technical documents, request three (3) proposals from qualified CCTV contractors, and recommend a contractor to the City.
- Monitor work completed by the CCTV contractor.

- Review and document inspection results.
- ***The locations and cost for completing the CCTV, cleaning, and video review will not be known until the SL-Rat inspections are completed.***

City Responsibilities

- Prepare contact list for smoke testing notifications
- Mail or deliver smoke testing letters to property owners in subject areas
- Coordinate with Fire and Police Departments before smoke testing
- Locate and uncover manholes that cannot be found

	Section of City's Sanitary Sewer System		
	Original 2016 Study Area in South Side	Remainder of Study Area in South Side	North Side
Number of Manholes	440	1,016	927
Length of Sewer (feet)	98,500	227,500	222,000
Smoke Testing (2017)	\$77,000	\$174,200	\$161,000
Manhole Inspections (2017)	\$42,300	\$96,800	\$88,500
SL-RAT Pipeline Assessment (2017)	\$34,700	\$80,100	\$78,200
Dyed-Water Testing	To Be Determined	To Be Determined	To Be Determined
CCTV Video & Review	To Be Determined	To Be Determined	To Be Determined
Project Management and Report (2017)	\$26,200	\$36,900	\$34,200
Total Cost (2017)	\$180,200	\$388,000	\$361,900

ESTIMATED MANHOUR AND FEE SUMMARY

Scope Item	Hours/Mileage	Fee
Project Management (2017)	700/0	\$97,300
Manhole Inspections (2017)	1,830/11,100	\$227,600
Smoke Testing (2017)	2,655/12,400	\$412,200
SL-RAT Acoustic Pipeline Assessment (2017)	1,930/0	\$193,000
Dyed-Water Testing		TBD
CCTV Video and Review		TBD
TOTAL SERVICES (2017)	7,115/23,500	\$930,100

I:\Crystal Lake\BELVD\160837-2016 SSES\Contract\Work\160837.30 II Work Order.doc

BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: Sump Pump Inspection Proposal

Attached is a work order from Baxter & Woodman to complete a sump pump inspection program for the south side of Belvidere. Sump pumps can be a significant source of clear water into the sanitary sewer system. In accordance with our current ordinance code, it is illegal to have a sump pump connected to the sanitary sewer. The proposal includes an inspection of the exterior and interior of all premises.

Due to the size and cost of this study, more time will be needed to develop a phased approach to complete this work. Coordination with the I/I study will be required as well. I should have a recommendation for the Council to review at the next committee meeting.

**CITY OF BELVIDERE, ILLINOIS
SOUTH SIDE SUMP PUMP INSPECTIONS
DESIGN ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT NO. 170794.30

Project Description:

Provide the City with house inspections throughout the South Side, specifically the areas south of the Kishwaukee River.

The Project is described in more detail in Attachment A of this Work Order.

Engineering Services:

The general provisions of this contract are enumerated in the Professional Engineering Services Agreement between the City and Engineers dated September 22, 2009. A detailed scope of services for this Project is listed in Attachment B of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated September 22, 2009. The Engineers' fee shall be computed on the basis of their standard hourly billing rates for actual work time performed plus reimbursement of out-of-pocket expenses including travel, which in total will not exceed \$494,200.

Submitted by: **Baxter & Woodman, Inc.**

By: 

Title: Executive Vice President/COO

Date: August 9, 2017

Approved by: **City of Belvidere, Illinois**

By: _____

Title: _____

Date: _____

Additional Comments and Conditions:

Project Description

The intent of the project is to provide inspections of house interiors for the existence of sump pumps and to determine the discharge point for existing sump pumps.

In accordance with your request and based on our previous discussions, we prepared a Scope of Services (Attachment B) to perform approximately 4,700 house/sump pump inspections in the South Side of the City's sanitary sewer system.

Scope of Services

The following scope of services details the anticipated tasks necessary to successfully complete this Project.

1. PROJECT MANAGEMENT

- Plan, schedule, and control activities to complete the Project. These activities include, but are not limited to budgeting, scheduling, and monitoring the scope of services. Submit a monthly status report via email describing the tasks completed the previous month and outlining goals for the subsequent month.
- Meetings – A Kick-off Meeting with City staff and the Project team will be conducted to establish clear lines of communication, introduce the City staff to the team members, and establish the City's detailed needs, objectives, and goals for the Project. The meeting will also be used to obtain information, drawings, atlases, and other data to be supplied by the City, and establish a date for a future meeting.

2. FIELD WORK

- Establish a public notification program
 - Respond to resident issues or concerns.
 - Complete a social media/public outreach program.
 - Post signs in neighborhoods advising them of the work. Crews can post signs the day before work is to be completed.
 - Provide informational handouts to leave with residents explaining process and remedies to defects noted on property (could be checklist for inspection crew to check off and leave with property owner).
- Complete up to three (3) attempts to gain entry into building for inspection by knocking on the door at different times and days.
 - If no answer after first attempt, leave door tag with means of resident to call to set up appointment
 - Try a second day (different day of week and different time of day) with the same process.
 - On the third attempt, if no answer, then leave door tag notifying customer of last attempt and requesting that resident schedule appointment. Maintain a list of inaccessible buildings, and record in GIS.

- Record following attribute information:
 - Exterior premises – Photographs and location information for gutter and downspout location, downspout illegal connections and downspout disconnections, poorly disconnected downspout drains that act as area drains, sump pump discharge connection, evidence of sunken basement walkways and driveway drains, missing/damaged cleanout caps/covers (if visible), other defects of concern.
 - Interior premises – Photographs and location information (e.g. basement behind moveable wall, etc.) of sump pump & sump pump discharge piping, and the connection.
- GIS Identification – Use a GIS system to record resident/business addresses, assign unique identifier and record by field/color which buildings have been attempted (1, 2 or 3 times); which buildings have refused entry, and which building inspections have been completed.
- Deliverables will include final shape file of building inspection status; Database (.MDB) output of data, including report for each inspection. Photographs and notes also tied to the record in GIS. Reports will include:
 - a. Resident address
 - b. Number of Attempts – status of inspection (complete, incomplete, refused entry, other)
 - c. Crew Identification
 - d. Date and Time of inspection
 - e. Weather conditions on that day
 - f. Photographs/Defects Noted

Baxter & Woodman intends to partner with Midwest Water Group for this project. Midwest Water Group would be doing the majority of the field work, and specifically the door-to-door attempts to gain entry in the buildings for the sump pump inspections.

3. OFFICE WORK

- Prepare a draft report for City review. (Provide five (5) hard copies).
- Receive comments from City, and revise report.
- Prepare a final report for City use. (Provide five (5) hard copies).
 - Final Report would include an Executive Summary.
- Attend a final meeting with City staff.

City Responsibilities

- Prepare a list of addresses for inspection, and .SHP files of houses/buildings, if available.
- Notify the public through newspapers or other appropriate medium, to inform the public of the City sponsored sump pump inspection program.
- Provide proper identification credentials and/or letter on City letterhead authorizing Baxter & Woodman and Midwest Water Group as onsite Consultant for the City for the duration of project.

ESTIMATED MANHOOUR AND FEE SUMMARY

Scope Item	Hours/Mileage	Fee
Field Work	3,630/480	\$367,100
Office Work	1,261/60	\$127,100
TOTAL SERVICES	4,890/540	\$494,200

I:\Crystal Lake\BELVD\170794-South Side Sump Pumps\Contract\Work\170794.30 SSSP Inspections Work Order.doc

BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: South Side Stormwater Infrastructure Study

Attached is a work order from Baxter & Woodman to complete an engineering analysis of existing stormwater drainage infrastructure in Basin A and Basin B on the south side of the city and development of improvement alternatives. This work will be an update to the hydraulic analysis that was completed in 2010. The current budget includes \$250,000 for the creation of a detention facility along Bellwood Drive.

I would recommend approval of the work order from Baxter & Woodman at a cost not-to-exceed \$87,500 for the South Side Stormwater Infrastructure Study. This work will be paid for from capital funds.

**CITY OF BELVIDERE, ILLINOIS
SOUTHSIDE STORMWATER STUDY
ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT No. 170791.30

Project Description:

The Project consists of engineering analysis of existing stormwater drainage infrastructure and drainage problem areas on the south side of the City and development of improvement alternatives. The Project is more specifically described in Attachment A of this Work Order.

Engineering Services:

The general provisions of this contract are enumerated in the Professional Engineering Services Agreement between the City and Engineers dated September 22, 2009. A detailed scope of services for this Project is listed in Attachment B of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated September 22, 2009. The Engineers' fee shall be computed on the basis of their standard hourly billing rates for actual work time performed plus reimbursement of out-of-pocket expenses including travel, which in total amount will not exceed **\$87,500**.

Submitted by: **Baxter & Woodman, Inc.**

By: Deirdre Wald

Title: Vice President

Date: August 9, 2017

Approved by: **City of Belvidere, Illinois**

By: _____

Title: _____

Date: _____

Additional Comments and Conditions: None

Project Description

The Project consists of engineering analysis of existing stormwater drainage infrastructure and drainage problem areas on the south side of the City and development of improvement alternatives. Through conversation with City staff, the following drainage problem areas were described:

- East Avenue
- Bellwood Drive
- 4th Street and Fremont Street
- 7th Street and 7th Avenue

B&W staff have visited these locations and identified the existing storm drain infrastructure within the City's GIS.

Project tasks will include:

- Data collection and review, including some topographic survey
- Drainage analysis - hydrologic assessment of runoff rates and hydraulic analysis to determine system capacities
- Alternatives development and evaluation for improving existing drainage problems
- Public input meeting
- Progress updates and City staff input meetings
- Presentation of findings and alternatives at a City Council meeting
- Engineer's opinion of probable cost for the recommended alternatives
- Draft and final analysis and recommendations report

Scope of Services

The following scope of services details the anticipated tasks necessary to successfully complete this Project.

SOUTHSIDE STORMWATER STUDY

1. **PROJECT MANAGEMENT** - Plan, schedule, and control activities to complete the Project. These activities include, but are not limited to budget, schedule, and scope. Submit a monthly status report via email describing tasks completed the previous month and outlining goals for the subsequent month. (Estimated Fee: \$3,500)
2. **DATA COLLECTION AND REVIEW** - Obtain previously completed studies, models, and resident reports relevant to the Project. This information will be reviewed and utilized as appropriate to complete the Project. Obtain all available aerial contour mapping, storm sewer system data, water and sanitary sewer system data, aerial photography, parcel lines, street names and addresses from the City's GIS. (Estimated Fee: \$7,000)
3. **LIMITED TOPOGRAPHIC SURVEY** - Perform topographic survey within the project limits to obtain additional data to determine the effectiveness of potential drainage improvements. This task may include: surveying elements of the sewer system necessary to supplement data in the City's GIS and existing conditions XP-SWMM model; surveying critical ground elevations to determine overland flow depths; and surveying lowest opening elevations of residences within low-lying areas. This task includes three (3) days of field work by a two-person survey crew. State plane coordinates and NAVD 88 will be used for horizontal and vertical controls. (Estimated Fee: \$8,500)
4. **DRAINAGE ANALYSIS** - Perform a hydrologic assessment of the subject watershed to define runoff rates. Perform a hydraulic analysis to determine capacity of the existing (sewers, culverts, ditches etc.). All pipes on the south side that are 24-inches in diameter or greater will be included. XP-SWMM will be used to complete the analysis in the most efficient manner. Identify six to eight (6-8) Problem Areas that require additional analysis and provide more detailed modeling as necessary. (Estimated Fee: \$19,000)
5. **EVALUATE ALTERNATIVES** - Develop up to eight (8) alternatives representing different approaches for addressing the identified problem areas. Concept plans will be prepared for the recommended alternative. (Estimated Fee: \$17,000)

6. ENGINEER'S OPINION OF PROBABLE COST - Prepare Preliminary Opinions of Probable Construction and Total Project Costs for the Project including: construction cost; contingencies; construction engineering services; and other costs necessary for completion of the Project for the recommended alternatives. (Estimated Fee: \$4,500)
7. PUBLIC INPUT MEETING - Host one (1) meeting to engage the public in discussing their experiences with local flooding. (Estimated Fee: \$4,000)
8. MEETINGS - Attend up to four (4) meetings with City staff to discuss preliminary findings, refine alternatives, receive further direction, and obtain feedback on recommendations. (Estimated Fee: \$10,000)
9. PRESENTATION - Present the Project at one (1) City Council meeting. (Estimated Fee: \$2,000)
10. REPORT - Prepare one draft and a final report describing findings and recommendations. Assumptions and methodologies for each Problem Area will be documented, along with permitting requirements and potential funding opportunities, as applicable. Exhibits will be prepared to support final recommendations, showing the location of the recommended improvements. Alternatives will be ranked based on the cost of the improvements per property benefitting from the Project, along with other factors selected by City staff. The final report will include implementation information for the recommended improvements. (Estimated Fee: \$12,000)

ESTIMATED MANHOOUR AND FEE SUMMARY

Scope Item	Hours	Fee
Project Management	24	\$3,500
Data Collection and Review	58	\$7,000
Limited Topographic Survey	76	\$8,500
Drainage Analysis	164	\$19,000
Evaluate Alternatives	140	\$17,000
Engineer's Opinion of Probably Cost	40	\$4,500
Public Input Meeting	32	\$4,000
Staff Meetings	72	\$10,000
Presentation	14	\$2,000
Final Report	104	\$12,000
TOTAL ALL SERVICES	724	\$87,500

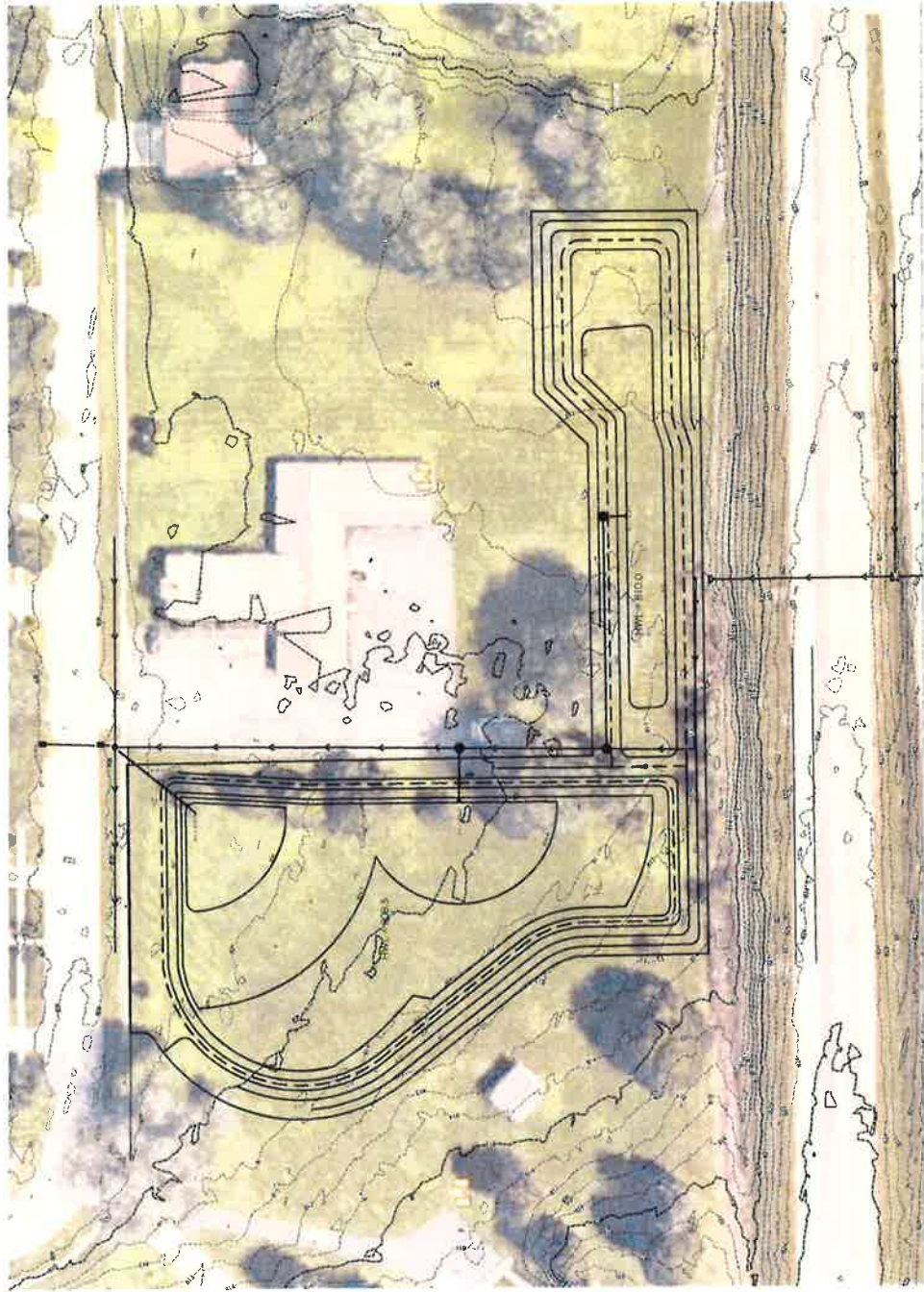
Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: 8/10/2017
Re: Bellwood Detention Update

The concept sketch for the Bellwood Drive detention facility completed by CES has been sent to the owners of the two parcels. To date, we have received a response from 531 Bellwood Drive. The owner has indicated that he would be willing to consider an easement for the installation of a detention facility at the rear of his property. CES is in the process of completing a preliminary design of the facility based on the concept sketch for the owner's review and approval. An appraisal will be made on the property based on the final design of the detention facility to determine the value of obtaining the easement.

We have been in contact with IDOT regarding the use of their right-of-way as part of the detention facility. They are willing to consider that option based on their review of the facility design.

We are still waiting for a response from the owners of 501 Bellwood Drive.



BELVIDERE PUBLIC WORKS

401 Whitney Boulevard

Belvidere, IL 61008

Phone 815-544-9256

Fax: 815-544-4255

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: August 7, 2017
Re: Wycliffe Sanitary Sewer Modeling

Attached is a work order from Baxter & Woodman to complete a review of the sanitary sewer in Wycliffe Subdivision that has been prone to backups, including hydraulic modeling of that system. This work will identify any improvements that can be made to the sanitary sewer system.

I would recommend approval of the work order from Baxter & Woodman at a cost not-to-exceed \$7,500 for the Wycliffe Sanitary Sewer Study. This work will be paid for from Line Item #61-5-820-6190..

**CITY OF BELVIDERE, ILLINOIS
WYCLIFFE AREA BASEMENT BACKUP INVESTIGATION
DESIGN ENGINEERING SERVICES
WORK ORDER**

ENGINEERS' PROJECT NO. 170793.30

Project Description:

Provide the City with an investigation into the basement backups occurring in several houses in the Wycliffe area. The basement backups are more specifically located in the area of Calgary Way and Bridgewater Drive.

The Project is described in more detail in Attachment A of this Work Order.

Engineering Services:

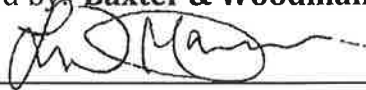
The general provisions of this contract are enumerated in the Professional Engineering Services Agreement between the City and Engineers dated September 22, 2009. A detailed scope of services for this Project is listed in Attachment B of this Work Order.

Compensation:

Compensation for the services to be provided under this Work Order will be in accordance with the Engineering Services Agreement dated September 22, 2009. The Engineers' fee shall be computed on the basis of their standard hourly billing rates for actual work time performed plus reimbursement of out-of-pocket expenses including travel, which in total will not exceed \$7,500.

Submitted by: **Baxter & Woodman, Inc.**

By: _____



Title: Executive Vice President/COO

Date: August 10, 2017

Approved by: **City of Belvidere, Illinois**

By: _____

Title: _____

Date: _____

Additional Comments and Conditions:

Project Description

An investigation into the basement backups occurring in several houses in the Wycliffe area. The basement backups are more specifically located in the area of Calgary Way and Bridgewater Drive.

In accordance with your request and based on our previous discussions, we prepared the following Scope of Services to conduct various tasks to determine causes of the basement backups in the far northeastern corner of the City's sanitary sewer system.

Scope of Services

The following scope of services details the anticipated tasks necessary to successfully complete this Project.

1. PROJECT MANAGMENT

- Plan, schedule, and control activities to complete the Project. These activities include, but are not limited to budgeting, scheduling, and monitoring the scope of services. Submit a monthly status report via email describing the tasks completed the previous month and outlining goals for the subsequent month.
- Meetings - A Kick-off Meeting with City staff and the Project team will be conducted to establish clear lines of communication, introduce the City staff to the team members, and establish the City's detailed needs, objectives, and goals for the Project. The meeting will also be used to obtain information, drawings, atlases, and other data to be supplied by the City.

2. FIELD WORK

- Site visit for Project Engineer and Survey Crew to establish elevations of sewer, pumping station, houses affected by basement backups, and houses in the area not affected by basement backups.
- Site visit will include an attempt to discuss each house's interior plumbing, and ejector or sump pump systems.

3. OFFICE WORK

- Review of field determined information, with CAD work to prepare a plan/profile of the basement backup area.
- Perform hydraulic analyses to determine the potential causes of the basement backups and the lack of basement backups in adjacent/neighborhood houses.
- Prepare recommendations to improve the sanitary sewer system and pumping station, if any.
- Prepare recommendation to improve / revise house plumbing and/or pumping systems to minimize or eliminate basement backups.
- Summarize the field and office work in a Memorandum.

ESTIMATED MANHOUR AND FEE SUMMARY

Scope Item	Hours/Mileage	Fee
Field Work	36/200	\$4,500
Office Work	24/0	\$3,000
TOTAL SERVICES	60/200	\$7,500

I:\Crystal Lake\BELVD\170793-Wycliffe BB Inv\Contract\Work\170793.30 Wycliffe BB Inv Work Order.doc

Memo

To: Mayor and City Council
From: Brent Anderson, Director of Public Works
Date: 8/10/2017
Re: Installation of Battery Backup at Traffic Signals

The current budget (Line Item 01-5-310-6024) includes the installation of a battery backup system at two intersections, Harrison Street & North State Street and Chrysler Drive & Appleton Road. We have received the following proposals to complete this work:

Engel Electric 1514 W 4 th St Sterling, IL 61081	\$12,910.00
William Charles Electric 5290 Nimitz Road Loves Park, IL 61130	\$15,650.00
Virgil Cook & Son 119 N 8 th St DeKalb, IL 60115	\$26,300.00

I would recommend approval of the proposal from William Engel Electric, in the amount of \$12,910.00, for the installation of two battery backup systems, to be paid from Line Item #01-5-310-6024.