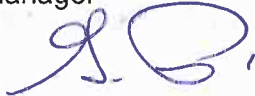




TO: Michael C. Van Milligen, City Manager

FROM: Gus Psihoyos, City Engineer 

DATE: December 11, 2018

SUBJECT: Upper Bee Branch Creek Railroad Culverts Project, Property Acquisition,
Canadian Pacific Railway [CIP 2642769, Project No. 1X0004]

INTRODUCTION

The purpose of this memorandum is to request approval to acquire easements from Canadian Pacific Railway, owner of 506 Garfield, as required for the Upper Bee Branch Railroad Culverts Project (Project).

BACKGROUND

Since 1999 there has been six Presidential Disaster Declarations which included the Bee Branch Creek Watershed. The Drainage Basin Master Plan, completed and adopted by the City Council in 2001, established that there are more than 1,100 properties at risk of flood damage as a result of the flash flooding. Based on a subsequent study in 2009 by the Federal Emergency Management Agency (FEMA), there are 1,373 properties in the flood prone area. In addition to homes, there are over 70 businesses in the at-risk area with over \$500 million in annual sales. Eighty-five percent (85 %) of the impacted properties have buildings that are potentially eligible for listing on the National Register of Historic Places, the official list of the Nation's historic places worthy of preservation. In fact, fifty-seven percent (57%) of the buildings are more than 100 years old. The flood prone area in the Bee Branch Watershed encompasses historic neighborhoods offering some of the community's most affordable workforce housing. Most residents are working families, many are elderly -- those least likely to recover from repetitive flood loss. Repetitive flood damage leads to disinvestment; from 2004 to 2009, while commercial property values grew by 39% citywide, they fell by 6% in the Bee Branch Watershed flood prone area.

The City has implemented many of the improvements outlined in the Drainage Basin Master Plan. But since 2001 several intense, storm events have occurred in the Dubuque metropolitan area so that revisiting the predicted hydrology and hydraulic behavior of the Bee Branch Watershed was appropriate. Over a twelve-year period starting in 1999, there have been three 100-year storms, two 50-year storms, one 25-year storm, and one 10-year storm. Finally, it is important to consider how additional flood mitigation efforts undertaken by the City since 2001 fit with the overall effort to mitigate flooding. Therefore, work began to update/amend the Drainage Basin Master Plan.

On November 18, 2013 the City Council passed Resolution 335-13 adopting the 2013 Drainage Basin Master Plan Amendment. The 2013 Amendment did not replace the 2001 Drainage Basin Master Plan. Instead, it built upon its foundation. The amended Drainage Basin Master Plan outlined several improvements throughout the Bee Branch watershed to mitigate the effects of future flooding and disasters. Collectively, the improvements form the basis of the Bee Branch Watershed Flood Mitigation Project outlined in Table 1 below.

Table 1. Twelve phases of the Bee Branch Watershed Flood Mitigation Project

Phase	Description	
1	Carter Road Detention Basin	Complete
2	West 32 nd Street Detention Basin	Complete
3	Historic Millwork District	Complete
4	Lower Bee Branch Creek Restoration	Complete
5	Flood Mitigation Gate Replacement	
6	Impervious Surface Reduction (Green Alleys)	Under Construction
7	Upper Bee Branch Creek Restoration	Partially Complete*
8	22 nd Street Storm Sewer Improvements	Under Construction
9	Flood Mitigation Maintenance Facility	
10	North End Storm Sewer Improvements	
11	Water Plant Flood Protection	
12	17 th Street Storm Sewer Improvements	Under Construction

*Upper Bee Branch Creek Restoration Project includes improvements through the railroad property at 506 Garfield Avenue also known as the Upper Bee Branch Creek Railroad Culverts Project

The Bee Branch Watershed Flood Mitigation Project will prevent an estimated \$582 million in damages over the 100-year design life of the project. Due to the contributions of local, state, and federal funding partners, Dubuque citizens will see a return on their investment of more than \$8 for each \$1 spent.

On November 18, 2013 the City Council adopted Resolution 336-13, approving the City's application for \$98,494,178 in state sales tax increment funding for the Bee Branch Watershed Flood Mitigation Project. In addition, the City Council passed Resolution 337-13 establishing that the City would provide up to \$76,678,802 of local monies to be used to meet the match requirement for the City's receipt of the \$98.5 million in state sales tax increment funding. The local match was to be provided from three sources: the Stormwater Utility fee, grants that the City already has acquired, and assessments associated with the construction of pervious (green) alleys. The local match also includes \$13 million in City expenditures associated with the completion of the first three phases of the 12-Phase Project.

The Bee Branch Watershed Flood Mitigation Project represents a multi - phased, fiscally responsible investment. It reflects a holistic approach to mitigate flooding as it will also improve water quality, stimulate investment, and enhance the quality of life of watershed residents.

On December 4, 2013, the Iowa Flood Mitigation Board voted to approve the City's use of \$98,494,178 for the Bee Branch Watershed Flood Mitigation Project. This funding will allow much of the protection to be provided over the next six years, instead of over the next 20 years (only some of the 240 alleys will take up to 20 years).

On February 3, 2014 the City Council adopted Resolution 31-14 authorizing the execution of an agreement with the State of Iowa Flood Mitigation Board and authorizing the City's use of sales tax increment funding for the Bee Branch Watershed Flood Mitigation Project.

On March 5, 2014 the City Council passed Ordinance 16-14 establishing the stormwater utility fee rate structure necessary to fund the various phases and improvements associated with the Bee Branch Watershed Flood Mitigation Project. The result was that the lowering of rates previously established by Ordinance 21-12 in Fiscal Years 2015, 2016, 2017, 2018, 2019, 2020, and 2021. A comparison the current Stormwater Utility rates established via Ordinance 16-14 to the previously adopted rates established via Ordinance 21-12 are outlined in Table 2 below.

Table 2. Comparison of the current Stormwater Utility rates established via Ordinance 16-14 to the previously adopted rates established via Ordinance 21-12.

	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22 & Beyond
Rates Established by Ordinance 21-12	\$8.00	\$8.50	\$9.00	\$9.00	\$9.00	\$9.00	\$9.00	\$9.00
Current Rates Established by Ordinance 16-14	\$5.98	\$6.38	\$6.81	\$7.27	\$7.76	\$8.29	\$8.85	\$9.00

In December of 2004, the City Council adopted the alignment for the Bee Branch Creek Restoration Project based on the work and recommendation of the Bee Branch Citizen Advisory Committee. The adopted alignment crossed the railroad yard at 506 Garfield Avenue now owned by Canadian Pacific.

In August of 2008, the City Council authorized the hiring of Strand & Associates (Madison, WI), in association with IIW Engineers (Dubuque, IA) and Ken Saiki Design (Madison, WI), to prepare the final design of the Bee Branch Creek Restoration Project which included the section through the railroad property at 506 Garfield Ave.

In 2008, the City initiated discussions IC&E Railroad, then owner of 506 Garfield. At that time, the City's conceptual design involving the construction of box culverts through the railroad property – half at a time, in order to keep the railroad in operation during construction of the City project. Later in 2008, DM&E acquired the IC&E and the property at 506 Garfield. The acquisition resulted in the establishment of new personnel for the City to deal with regarding the City's project. Finally, in 2010, Canadian Pacific

Railway (CP) acquired DM&E. From 2008 to 2010, several alternatives to increase the free-flow of stormwater through the railroad property were considered. They are as follows:

1. Precast arches (Conspan) - open cut method and track phasing.
2. Precast concrete bridge - open cut method (for substructure) and track phasing.
3. Cast in place concrete box culverts - open cut method and track phasing.
4. Precast concrete box culverts - trenchless method without track phasing.
5. Precast reinforced concrete pipe (RCP) - trenchless method without track phasing.
6. Steel culverts - trenchless method without track phasing.

Representatives from IC&E, DM&E, and CP have held differing opinions on preferred structure types. CP's initial preference was a precast bridge.

As a prerequisite to granting easements or selling the City interest in railroad property, CP outlined that they approve the design of improvements through their property. At one point, CP proposed designing the bridge themselves. This would have involved the City making payment to the railroad to cover the railroad's costs to design the bridge. The City's funding precluded this approach. As an alternative, CP indicated that they would be comfortable with the City's design team of Strand/IIW designing the bridge if HDR Engineering provided quality assurance and quality control (QA/QC) services. According to CP, HDR designs bridges for CP on a regular basis; if HDR approves the bridge design, CP will be comfortable with the design.

In June of 2011 the City entered into a contract with HDR Engineering (HDR) to provide quality assurance and quality control (QA/QC) review services relating to the design of the proposed railroad bridge.

In the spring of 2012, CP indicated that they could not begin to quantify or understand the impacts to the railroad until provided a 30% design of the proposed bridge. In May of 2012, a 30% level design was submitted to CP. While they were willing to do a cursory review of the design, CP was unwilling to provide a complete response until a memorandum of understanding (MOU) was in place. While non-binding, an MOU would outline the general expectations of both parties.

In June of 2012, CP provided a draft MOU to the City. City staff and City consultants immediately began reviewing the MOU. The challenge to formulating a response was that the proposed MOU included very specific terms that would typically be found in a formal agreement. The City hosted a conference call with CP, City consultants, and legislative representatives from Senator Harkin's Office, Senator Grassley's Office, and Representative Braley's Office to discuss the MOU. On June 29, 2012, the City returned the MOU to CP with the City's suggested changes.

In August of 2012, City staff met with CP staff in Minneapolis to reconcile the differences between the language in the MOU drafted by CP and the changes proposed

by the City. Two days after the meeting, the City sent CP a revised MOU that reflected the terms agreed upon at face-to-face meeting.

In September of 2012, CP notified the City that they had reviewed the City's draft revision of the MOU and agreed that it reflected the changes discussed at the August 2012 meeting. They also indicated that they would circulate the MOU for review and approval upon receipt of two original, executed copies from the City.

On September 7, 2012, the City Manager signed the non-binding MOU. The MOU was subsequently mailed to CP for their consideration and execution. Per the MOU:

- CP and the City will enter into formal agreements as follows:
 - A professional services agreement;
 - A binding purchase agreement;
 - An easement agreement;
 - A facilities relocation agreement;
 - A track design and construction agreement;
 - A construction, maintenance, and indemnification agreement; and
 - Any other agreements necessary such as utility agreements for sewer and fiber conduit installation.
- Pursuant to final agreements, the City will reimburse the Railroad for all reasonable and necessary actual costs and expenses incurred by the Railroad that are in any way related to the planning, design, and/or construction of the railroad bridge project.
- Both CP and the City were to use their best efforts to complete all Investigations, design criteria, and final plans and produce their respective reports by the end of 2012. CP shall use its best efforts to provide any comments to designs and plans within 45 days of receipt thereof.

In September of 2012, the City Council adopted Resolution 262-12 authorizing the execution of a professional Service Agreement with CP for the purpose of advancing the engineering design of the railroad bridge required as part of the Bee Branch Creek Restoration Project. Per the agreement:

1. CP shall furnish, *at the request and expense of City*, Services required for City to perform and complete the design engineering plans such as:
 - a. Physical access to CP property as appropriate;
 - b. Flagging protection as required for any work including without limitation in support of survey or geotechnical work;
 - c. Access to CP property and CP engineering records;
 - d. CP minimum engineering design requirements for freight rail infrastructure and other technical guidance;
 - e. Review of Design Engineering plans excluding review of structure plans and calculations; and
 - f. Incidental Services, including supervisory and legal expenses, necessary to complete the items hereinabove specified.
2. CP will make its best effort to provide the Services in a timely manner as they are requested by the City.

3. The City shall reimburse CP for their actual, reasonable, and necessary costs of Services and Reimbursable Expenses associated with their review of the City's proposed design, subject to a maximum of \$100,000.

Both the City and CP acknowledge that the \$100,000 limit is based on incomplete information as to the level of effort required of CP and subject to change, through an amendment to this Agreement. Further, at City's request, this Agreement may be amended to include CP review of structure plans and calculations and other additional services.

In October of 2012, in response to the City's proposed bridge design, CP provided probable construction costs for the track work required in CP's Dubuque Yard to construct the Bee Branch Restoration project. It totaled more than \$6 million to accommodate the track phasing associated with construction of the bridge. These costs, coupled with acquisition and relocation of the CP Yard Office, prompted evaluation of an alternative alignment to minimize the encroachment on CP property and impact to the yard and mainline tracks.

A closer look at the estimated track costs revealed that it was largely due to where the City project would cross through CP property. The proposed crossing impacted multiple switches that transfer trains from one track to another. For this reason, tracks currently used for sidings would need to be upgraded for use as temporary main line track. Crossing at original alignment also posed additional complications for the railroad relating to the relocation of their yard office. For these reasons, the City's engineering design team looked at alternative approaches to crossing the railroad property to minimize disruption to the railroad operation, reduce the City's overall project cost, and secure a path forward. Two design changes were identified. First, the design team developed the concept of boring culverts under the railroad tracks versus conventional trench excavation methods. The concept was presented to Canadian Pacific (CP) in April of 2013. In some ways, the approach was preferable to CP as it would have very little impact to the railroad operation during the installation of the culverts. Second, the design team shifted the alignment of the proposed culverts to the west to shorten the length of the railroad crossing and avoid the CP yard office. Once outside the CP track corridor, the culverts can be installed using conventional excavation methods.

In September of 2013 the City Council adopted Resolution 291-13 amending the alignment for the Bee Branch Creek Restoration Project in the vicinity of Garfield Avenue. Per the amendment, the alignment was shifted slightly to the west requiring the partial acquisition of 430 Garfield Avenue (Dubuque Furniture and Flooring) and a small easement through 525 E. 19th Street (A-1 Crane). While the new alignment avoids CP's yard office, it still requires an easement through CP property at 506 Garfield Avenue.

In November of 2013, the City submitted to CP 30% plans and specifications for the proposed culvert system for their review. In January of 2014, CP provided comments. Having incorporated CP's previous review comments, the 60% design was submitted to CP in May of 2014. CP provided the City comments in July of 2014. The City

subsequently submitted 90% design plans to CP in September of 2014. CP responded in November of 2014 and the City sent CP 99% plans in November of 2014. CP's January of 2015 response was considered a conditional approval of the design, citing four minor issues for the City to address. The improvements conditionally approved by CP are shown in Figure 1.

While the City was in a position to move forward negotiating a Construction Agreement with CP and possibly moving forward with the improvements through CP property, doing so could have delayed the upstream improvements such that the City would risk the loss of \$4 million in grant funding (EDA, IDOT, & RECAT). Therefore, the City proceeded with completing the Upper Bee Branch Creek project upstream of the railroad property.

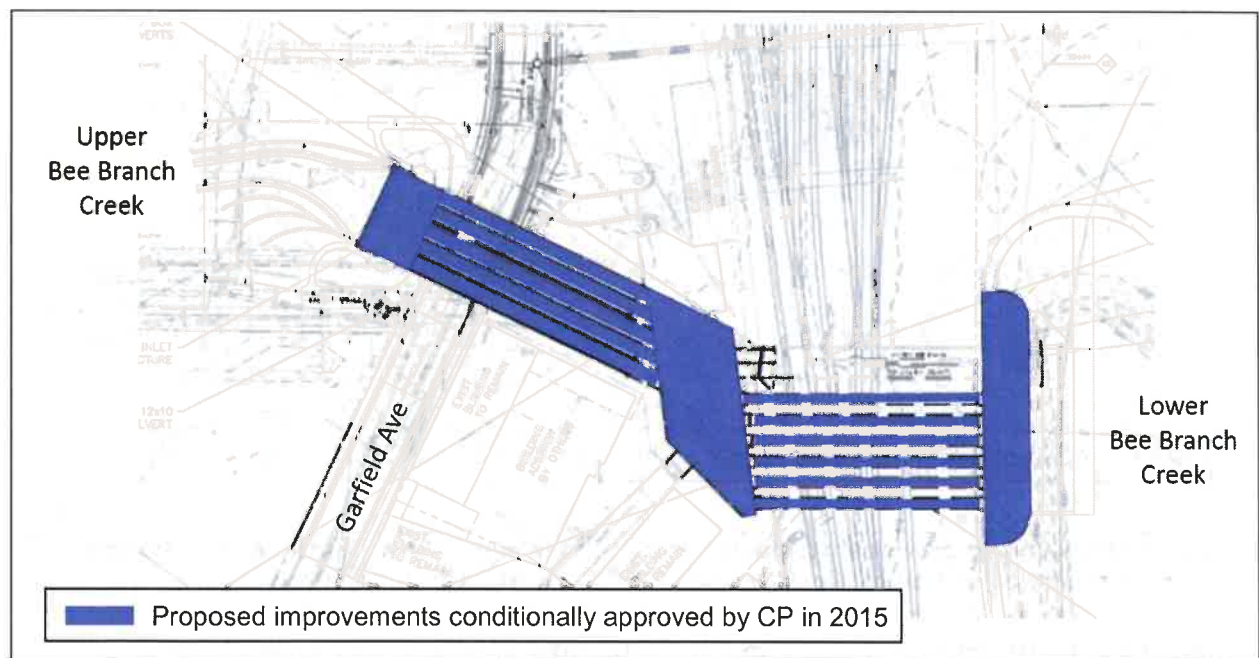


Figure 1. Extent of improvements conditionally approved by CP in early 2015.

Completed through multiple contracts, again due to funding, the City proceeded with the construction of the Upper Bee Branch Creek Restoration Project. In May of 2015, the City Council adopted Resolution 176-15 awarding the contract for the Upper Bee Branch Creek – Channel, Streets, & Utilities Project. In May of 2015, the City Council adopted Resolution 177-15 awarding the contract for the Upper Bee Branch Creek – Structures Project. In October of 2015, the City Council adopted Resolution 351-15 awarding the contract for the Upper Bee Branch Creek Mississippi River Trail Project, the third contract associated with the Upper Bee Branch Creek Restoration Project. In December of 2015, the City Council adopted Resolution 422-15 awarding the contract for the Bee Branch Creek Basin Overlook & 22nd Street Parking Lot Project, the fourth and final contract associated with the Upper Bee Branch Creek Restoration Project. Substantially complete, a ribbon cutting took place in July of 2017.

One of the consequences of moving forward with the construction of improvements upstream of CP property is that some of the improvements that were to be constructed as part of the plans previously reviewed by CP were constructed as part of the Upper Bee Branch Creek Restoration Project. Figure 2 shows a few of those elements. Therefore, the plans and specifications (bidding and construction documents) for the improvements through CP property needed to be reworked and re-designed to a certain extent to reflect the improvements in place as a result of the Project.

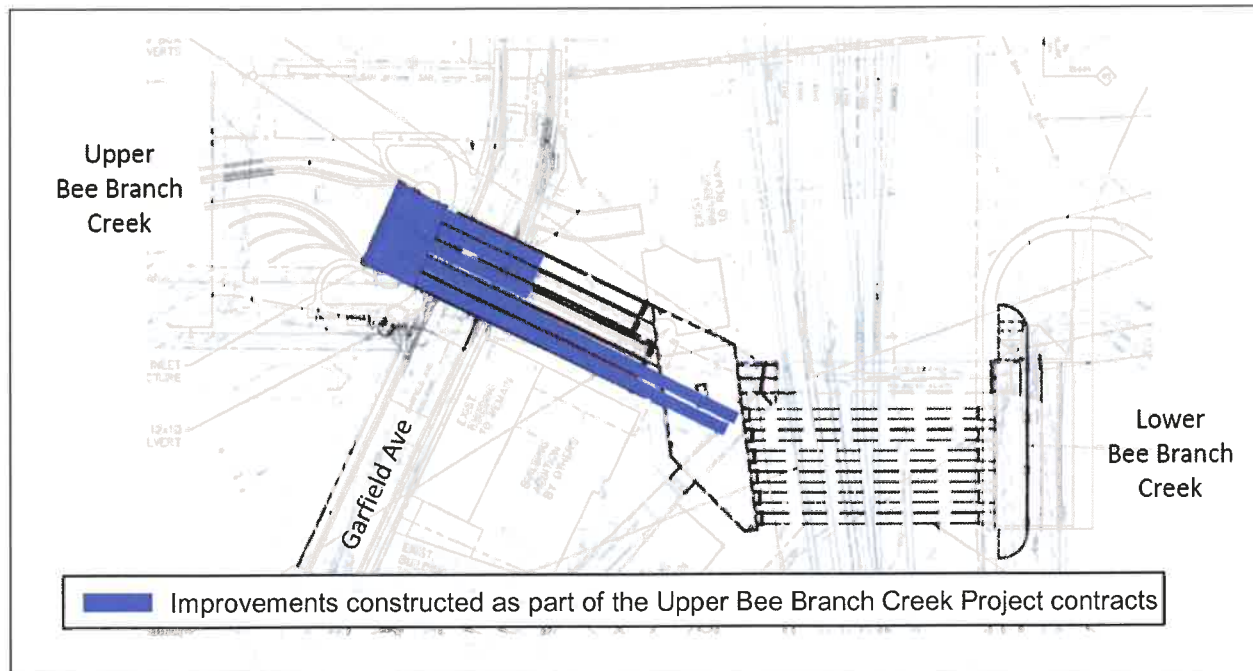


Figure 2. Improvements previously reviewed as part of the improvements through CP property that were constructed as part of the Upper Bee Branch Creek Restoration Project.

Because of the improvements now in place, the size and nature of some of the improvements previously required were no longer necessary. For example, the transition structure and the level control structure could be reduced in size which would result in cost savings.

In April of 2015, the City Council authorized a partnership with Iowa Economic Development Authority (IEDA) regarding the State's submission of the first phase of the competition to secure US Department of Housing and Urban Development (HUD) National Disaster Resilience Competition (NDRC) funding. The hope was to secure funding to help mitigate the flooding in the Bee Branch Watershed. Based on the first phase application, IEDA (and the City) was invited to proceed to phase II of the competition. In November of 2015, the City Council authorized the submission of an application for HUD NDRC funding for the (Upper) Bee Branch Railroad Culvert Infrastructure Improvements.

In January 2016, the State was awarded \$95.7 million in HUD National Disaster Resiliency Competition grant funds. Per the award, the City of Dubuque is to receive

\$8.4 million for a comprehensive "Bee Branch Healthy Homes Resiliency Program" to help residents address residual impacts from the flooding experienced within the Bee Branch Watershed. The City is also to receive \$23.1 million for storm water infrastructure improvements associated with the Bee Branch Watershed Flood Mitigation Project. The infrastructure improvements included funding for the (Upper) Bee Branch Railroad Culvert Infrastructure Improvements through Canadian Pacific property at 506 Garfield Ave.

In order to remain eligible for the HUD funding for the Bee Branch Railroad Culvert improvements, the City had to delay moving forward towards developing the final design of the improvements or move forward with acquiring property necessary for the project. The City first had to wait until a grant agreement was in place. In addition, the City had to follow the HUD rules and regulations as they relate to procuring engineering and legal services.

In October of 2016, the City Council adopted Resolution 362-16 authorizing the execution of a contract with the Iowa Economic Development Authority (IEDA) in order for the City to utilize \$23,293,253.00 in HUD National Disaster Resiliency Competition grant funds for the Bee Branch Watershed Flood Mitigation Project with \$9,000,000 specifically for the proposed culverts from the Lower Bee Branch Creek, through Canadian Pacific Railway property, to the Upper Bee Branch north of Garfield Avenue. This phase of the Bee Branch Creek Restoration Project is also referred to as the Bee Branch Railroad Culvert Infrastructure Improvements Project. The contract with IEDA requires that the City complete all of the improvements by June of 2021.

In March of 2017, in accordance with HUD requirements, the City executed a new contract with Strand to provide engineering design services as required for the Upper Bee Branch Railroad Culvert Infrastructure Improvements Project.

In June of 2017, the City Council authorized the hiring of Ahlers & Cooney law firm to provide legal services pertaining to the negotiations with CP and other property acquisitions necessary for the Bee Branch Railroad Culvert Infrastructure Improvements Project.

In July of 2017, the City and CP executed the Amended and Substituted Service Agreement reflecting the current approach to install the tunneled culvert system and establishing a new expiration date of December 31, 2018. Under the terms of the original agreement, the City paid CP \$100,499.56 for their reimbursable expenses. Per the amendment, both agreed that reimbursable expenses for CP services incurred after December 30, 2014 shall not exceed \$50,000, unless agreed upon through a subsequent amendment.

In August of 2018, the City Council adopted Resolution 231-18, establishing a fair market value of \$81,000.00 for easements through certain real estate owned by Canadian Pacific Railway at 506 Garfield Avenue as shown on Permanent Easement Exhibits A and B, and Temporary Easement Exhibits C, D, and E.

DISCUSSION

Since 2007, the City has been corresponding with the owner of the Dubuque Works rail yard at 506 Garfield Avenue. During that time, ownership of the railroad changed hands two times. The current owner, Canadian Pacific Railway (CP), took control in 2010. For the past eight years, the City has attempted to design improvements through CP property such that the construction of the improvements would not “unreasonably interfere” with CP’s operation of their railroad.

In January of 2015, CP provided a “conditional approval” of the design of the City’s project that involves installing six, 8-foot diameter culverts under CP’s tracks using tunneling methods.

By early 2016, the Legal Department had been exchanging with CP a draft construction agreement and draft easement agreements. At that time, the City had concerns with several legal and engineering issues related to the terms being put forth by CP. Of the issues, two were particularly onerous for the City: demanding that the City use welded pipe joints versus mechanical pipe joints and that the City assume ownership of the railroad’s existing box culverts.

In June of 2016, the design team of Strand/IIW sent a letter to CP seeking their approval to use Permalok (mechanical) joints for the project. In July of 2016, CP replied that they were willing to consider the City’s use of the Permalok (mechanical) joints with final approval subject to CP’s review of the complete design package/submittal. Therefore, the current plans and specifications reflect the use of Permalok joints. This significantly reduces the time it will take the contractor to install the steel culverts through CP property. In order to promote competitive bids, the contract documents do allow for a contractor to install the culverts with either mechanical joints or fully welded joints.

Ownership of the existing box culverts was primarily a legal/liability issue. Transferring ownership of the culverts that were constructed by the railroad circa 1930 to the City would shift liability and maintenance costs to the City. In order to better understand the implications of assuming ownership, Strand/IIW completed a comprehensive on-site inspection, including ground penetrating radar (GPR), to try and assess the condition of the existing box culverts.

When the City sought public input on the design of the Bee Branch Creek improvements, citizens voiced a desire for vehicular or pedestrian passage under the railroad tracks. Therefore, Strand/IIW also investigated if it was feasible to utilize the existing culverts for both flood control and as a hike/bike path under the railroad tracks. The feasibility would depend on how utilizing them for a hike/bike path would impact their flood mitigation utility and if the hike/bike path design could meet applicable trail design standards.

Strand/IIW reported that the visual inspection and accompanying GPR, coupled with the laser scanning, “indicate the twin box culvert is in good condition with little to no signs of

post- construction displacement. The structure appears suitable to continue to support the earth and rail loadings, convey stormwater, and provide passage for pedestrians and bicyclists if repurposed.” In addition, Strand completed a hydraulic (floodwater) capacity analysis of the proposed system considering the use of the existing box culverts for both flood control and a hike/bike path. Strand determined that the dual use would still provide the flood protection criteria established by the City Council. Finally, Strand provided a conceptual design of an ADA compliant trail and produced a rendering to better outline the look, feel, and function of the trail.

As outlined in the City’s 2014 TIGER Grant application, the estimated cost to construct a hike/bike trail bridge over CP tracks at Garfield Ave is \$5,030,000. In contrast, the additional costs associated with utilizing the existing box culverts for a hike/bike trail is estimated at just over \$1.1 million. The City had previously set aside \$800,000 in funding for a trail that would connect the lower and upper reaches of the Bee Branch Creek. This planned trail connection from Garfield Avenue, down Pine Street, around the Metz Building (currently under private redevelopment), to 16th Street could be eliminated if the connection is made at Garfield Avenue via the existing box culverts. Therefore, assuming ownership of the existing box culverts would provide a benefit to the City as it would allow for the direct connection of the trail systems associated with the lower and upper reaches of the Bee Branch Creek.

In September of 2017, the City sent a letter to the CP outlining the idea of using the existing culverts for both flood control and as a hike/bike path under the railroad tracks. In a follow-up phone conversation, CP’s attorney indicated that CP’s “initial reaction” was “favorable” and that the bike trail proposal “seemed acceptable.” This was followed up by an email from CP’s attorney stating that “CP is fine with the concept, contingent on the City accepting ownership as well as all inspection/ maintenance costs of the existing box culverts. Therefore, the proposed plans and specifications and the construction agreement and easement agreements have been updated to reflect the utilization of the existing box culverts for both flood control and as a hike/bike path under the railroad tracks.

CP has provided a signed Construction Agreement, Easement Agreements, and an Environmental Right of Entry Agreement (collectively “the Agreements”) for the City’s consideration. The City’s legal counsel played a role developing the terms of the Agreements, providing feedback and suggestions to CP. The attached memo from the Legal Department outlines the significant terms within the agreement.

Per the terms of the Agreements, the City will pay CP \$131,000.00 as a transaction fee. This fee is to cover the cost of the easements valued at \$81,000.00 and cover the cost of CP’s legal fees associated with negotiating the final terms of the Agreements. Covering CP’s legal fees associated with the development of the Agreements is consistent with the terms of the Service Agreement between the City and CP which outlines that the “City shall furnish or cause to be furnished, at its sole expense, all . . . incidental Services . . . including supervisory and legal expenses.”

Acquiring the easements from CP per the terms of the Construction Agreement and Easement Agreements, the City can proceed with the bidding of the Project and complete the project per the following schedule:

Step	Date
Initiate Bidding	December 17, 2018
Bid Letting	January 22, 2019
Award Contract	February 4, 2019
Contractor Submittals to CP	February of 2019
Construction Initiated	April of 2019
Tunneling Initiated	June of 2019
System Functional	Summer of 2020
Complete Construction	Spring of 2021*

*The HUD NDRC funding for the Bee Branch Railroad Culverts Project requires that construction is complete by June of 2021.

As stated above, the HUD NDRC funding for the Upper Bee Branch Creek Railroad Culverts Project requires that the work be complete by June of 2021. It is unlikely that the City would meet that deadline if execution of the Construction Agreement, Easement Agreements, and Environmental Right of Entry Agreements was delayed or rejected such that the City would be required to identify alternative funding for the improvements. In fact, any delay in moving forward with the Project would result in higher costs. The inflation of material costs alone for even a six-month delay could result in a project cost increase of \$500,000.

When complete, the Upper Bee Branch Creek Railroad Culverts Project will provide protection for the 500-year rainstorm (or event). With completion of several phases of the Bee Branch Watershed Flood Mitigation Project (i.e. the Carter Road Detention Basin, the W. 32nd Street Detention Basin, and both the lower and upper reaches of the Bee Branch Creek Restoration Project), the overall system currently provides protection for up to a 75-year event, which has proven adequate for storms in recent years. The prevailing design standard has been to provide a flood conveyance system capable of handling a 100-year event. As stated previously, over a 12-year period starting in 1999, Dubuque experienced three 100-year events. More recently, due to the upward trends in precipitation totals, some jurisdictions are now designing systems that provide protection from the 500-year event.

Based on the National Oceanic and Atmospheric Administration's (NOAA's) *Atlas 14, Precipitation-Frequency Atlas of the United States, Volume 8*, what was once considered a 100-year storm is now twice as likely to occur, and has a more than 50% chance of occurring within 30 years. This is consistent with the recently released Climate Science Special Report: Fourth National Climate Assessment, Volume I (Easterling, D.R. et. al.), which states that "annual precipitation in the Midwest has increased by 5% to 15% from the first half of the last century (1901–1960) compared to present day (1986–2015)." The National Climate Assessment goes on to say that "winter and spring precipitation . . . in the Midwest are projected to increase by up to 30% by the end of this century." A 30% increase would mean that today's 500-year

storm would become tomorrow's 100-year storm. In other words, designing for today's 500-year storm provides flood protection for tomorrow's 100-year storm.

The Upper Bee Branch Creek Railroad Culverts Project is a critical phase of the larger Bee Branch Watershed Flood Mitigation Project which will prevent an estimated \$582 million in damages over the 100-year design life of the project. Due to the contributions of local, state, and federal funding partners, Dubuque citizens will see a return on their investment of more than \$8 for each \$1 spent.

RECOMMENDATION

I recommend proceeding with the execution of the attached construction agreement and the attached easement agreements related to the acquisition of easements through property owned by Canadian Pacific Railway at 506 Garfield Avenue as necessary for the Upper Bee Branch Creek Railroad Culverts Project.

BUDGET IMPACT

Per the terms of the Agreements, the City will pay CP \$131,000.00. This will be funded through the FY19 appropriation in the amount of \$5,729,042 for the "Railroad Culverts (Phase 4 & 7 of Bee Branch Watershed Flood Mitigation Project)," CIP Nos 2642769, 7202769, and 3402690.

REQUESTED ACTION

I respectfully request adoption of the attached resolutions approving the terms of the Construction Agreement, Easement Agreements, and Environmental Right of Entry Agreement related to the acquisition and use of easements through property owned by Canadian Pacific Railway at 506 Garfield Avenue for the purpose of constructing and maintaining the improvements associated with the Upper Bee Branch Creek Railroad Culverts Project.

Attach.

Prepared by Deron Muehring

Cc:

Crenna Brumwell, City Attorney
Barry Lindahl, Senior Corporation Counsel
Jenny Larson, Budget Director
Steve Brown, Project Manager
Deron Muehring, Civil Engineer

