

**2022 FULL DEPTH RECLAMATION AND  
RECONSTRUCTION IMPROVEMENTS PROJECT**

**MUNICIPAL PROJECT NO. 4422**

**FEASIBILITY REPORT**

Council Approval Date: December 7, 2021

**Prepared for**  
City of Baxter

**WIDSETH No. 2021-11648**

**2022 FULL DEPTH RECLAMATION AND RECONSTRUCTION  
IMPROVEMENTS PROJECT**


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City of Baxter

WIDSETH No. 2021-11648

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

  
Aric Welch  
Professional Engineer

41983  
License Number

December 7, 2021  
Date

**2022 FULL DEPTH RECLAMATION AND RECONSTRUCTION  
IMPROVEMENTS PROJECT**

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## **STATEMENT OF PURPOSE**

The purpose of this Report is to review the feasibility of improving various roadway segments within the municipal limits as part of the City of Baxter's ongoing pavement management program. Residential, office service and commercial roadways are scheduled for maintenance improvements in 2022. On October 19, 2021 and November 16, 2021, the City Council authorized Widseth to complete a Feasibility Report relative to these improvements.

Roadways and projects reviewed in this Report include:

- Glory Road (1,125' west of Isle Drive to Isle Drive)
- Design Road (Dellwood Drive to Golf Course Drive)
- Universal Road (Dellwood Drive to Golf Course Drive)
- Fairview Road (600' west of Conservation Drive to Conservation Drive)
- Woida Road (290' west of T.H. 371 to T.H. 371)
- Clearwater Road (Edgewood Drive to T.H. 371)
- Clearwater Road (T.H. 371 to Dellwood Drive)
- Edgewood Entrance (Edgewood Drive to T.H. 371)

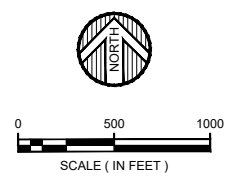
This Report will review existing conditions, propose feasible improvements, estimate project costs, discuss project implementation, and present conclusions and recommendations for the Project Area.

The Project Area is shown in Figure 1.



**LEGEND**

- FULL DEPTH RECLAMATION
- RECONSTRUCTION



BY: \_\_\_\_\_  
 REVISIONS: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 SCALE: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 JOB NUMBER: \_\_\_\_\_  
 DATE: 11/10/2021  
 L.C. NO. 4183  
 ARIC L. WELCH

DATE	REV	DESCRIPTION

DATE: OCT 2021  
 AS SHOWN  
 SCALE: ALW  
 DRAWN BY: ALW  
 CHECKED BY: ALW  
 JOB NUMBER: 2021-11468

2022 FULL DEPTH RECLAMATION & RECONSTRUCTION  
 CITY OF BAXTER  
 BAXTER, MINNESOTA  
 PROJECT AREA

## **EXISTING CONDITIONS**

Roadways included in the study include:

- Glory Road (1,100' west of Isle Drive to Isle Drive)
- Design Road (Dellwood Drive to Golf Course Drive)
- Universal Road (Dellwood Drive to Golf Course Drive)
- Fairview Road (600' west of Conservation Drive to Conservation Drive)
- Woida Road (290' west of T.H. 371 to T.H. 371)
- Clearwater Road (Edgewood Drive to T.H. 371)
- Clearwater Road (T.H. 371 to Dellwood Drive)
- Edgewood Entrance (Edgewood Drive to T.H. 371)

### **Glory Road**

The Glory Road Project Area is a mix of commercial and residential zoned parcels. The north side of Glory Road is currently zoned Medium Density Residential (R2), High Density Residential (R3), and Office Service (the area occupied by the Gracewin Development was recently rezoned from R2 and OS to R3). The south side of Glory Road is currently zoned Office Service.

Development in the Project Area is mixed. The north half of the roadway contains a townhome development and an office building complex. The remainder of the property along the north side of the roadway is being developed as a high-density residential use. The south side of the roadway is currently undeveloped and includes property owned by the City (stormwater basin) and right-of-way for Falcon Drive. The lot located in the southwest corner of the Glory Road and Isle Drive intersection is being developed by North Central Medical Supply.

The roadway corridor was last improved in 2000 with the "2000 Glory Road Improvements." The project included the construction of gravity sanitary sewer, water, storm sewer, stormwater treatment basin and urban (curb and gutter) roadway.

The sanitary sewer system consists of an 8" PVC main that flows east to Lift Station 11 located in the southeast corner of the Glory Road and Elder Drive intersection. Eight-inch (8") mainline stubs along with 6" and 4" service lines were extended to the right-of-way to service future developments. The existing sanitary sewer system was jetted and televised in October 2021. The City reviewed the condition of the existing structures and found deteriorated concrete rings and grout in manhole 815. There are no other known issues with the sanitary sewer in this area

other than depth. The existing sanitary sewer is over 25' deep in some locations and repair would require complete removal and replacement of the roadway and surrounding utilities.

The water system consists of 8" PVC watermain that is feed off of a 10" PVC watermain at Isle Drive. Six-inch (6") PVC stubs along with 1 ½" and 1" service lines are extended out to the property lines to service future developments. Hydrants are spaced approximately every 600 feet for fire protection. Inspections by City staff found valve boxes for valves 808, 809, and 357 need to be cleaned. There are no other known issues with the water system in this area.

The roadway at the west end of the Project Area transitions from a 26' wide rural roadway into a 44' wide urban roadway section. At the very east end of the Project, the roadway widens to 74.5' wide to match the existing width of Glory Road east of Isle Drive. The roadway is constructed with 5" of Class 5 aggregate base and 3.5" of bituminous. This roadway section does not meet the current City standard for a 10-ton roadway. In 2019, the roadway was given a PASER Rating of 5 which means the roadway is in poor to fair condition with numerous potholes and longitudinal, lateral and alligator cracking of the bituminous. Ground-penetrating radar (GPR) showed an average bituminous and Class 5 depth of 4.1" and 6.1" respectively. The coring study showed average bituminous and Class 5 depths of 4" and 5" respectively.

The curb and gutter and concrete pavement/valley gutters are also in poor condition. Many of the curb sections are cracked and many of the joints have severe deterioration. It is estimated that approximately 70% of the existing curb and gutter has reached the end of its useful life and in need of replacement.

Drainage from the roadway is collected in four (4) storm sewer catch basins and is piped through 15" and 18" Reinforced Concrete (RC) pipes to stormwater ponds located on each side of the roadway. The City has had many issues with deteriorating and leaking drainage structures that were constructed during this timeframe. It is likely the structures are leaking and, if they have not already been repaired, will likely need repair in the future. The storm sewer system was jetted and televised in October 2021. There are no known issues with the storm sewer system.

The stormwater infiltration basin located on the north side of the road was constructed in 2000 with the Project. The storm sewer outlet on the south side of the roadway initially drained into a

natural low area. This area was later improved into a regional stormwater basin. We are not aware of any maintenance being performed on either basin since their construction.

A 10' wide bituminous trail is located along the south side of the roadway from the future Falcon Drive corridor to Isle Drive. The trail is separated from the roadway by a 4' wide boulevard area. The trail section consists of 3" Class 5 aggregate base and 2" of bituminous. The trail is considered to be in poor condition.

Existing conditions and planned removals are shown in Appendix A.

### **Design Road**

The Design Road Project Area is zoned regional commercial. Both sides of the roadway are completely developed with a mix of office and retail uses. The Project Area begins at the service road adjacent to T.H. 371 (Dellwood Drive) and ends at Golf Course Drive. Design Road is currently designated by the City as Municipal State Aid (MSA) Route 120.

The roadway was originally improved in 1981 with the "1981 Utility Improvements" Project. The Project included the construction of gravity sanitary sewer, water, storm sewer crossings and urban roadway.

The sanitary sewer system consists of an 8" PVC main that flows east to a 10" PVC main located on Golf Course Drive. The sanitary sewer system is a part of the Lift Station 2 service area. Six-inch (6") service lines were extended to the right-of-way to service the adjacent properties. The sanitary sewer system was jetted and televised in October 2021. The City reviewed the condition of the existing structures and found deteriorated concrete rings and grout in manhole 699, 700 and 701. There are no other known issues with the sanitary sewer in this area.

The water system consists of a 10" PVC watermain that is connected to a 10" Ductile Iron (DI) main on Dellwood Drive, and a 10" PVC main on Golf Course Drive. One and one-half inch (1½") service lines are extended out to the property lines to service adjacent properties. Hydrants are spaced approximately every 550' for fire protection. Design Road was identified as an area that may contain plastic watermain fittings in a study completed in 2020. The City has experienced numerous failures of plastic watermain fittings which have resulted in costly repairs



and unaccounted for water loss. Inspections by City staff found the valve box for valve 1233 needs to be replaced and the valve boxes for valves 1232 and 1231 need to be cleaned. There are no other known issues with the water system in this Project Area.

The roadway is a 38.5' wide urban roadway section. The roadway is constructed with 5" of Class 5 aggregate base and 3.5" of bituminous. The roadway was resurfaced in 2002 with a 1" mill and a 1.5" overlay. This roadway section does not meet the current City standard for a 10-ton roadway. In 2019, the roadway was given a PASER Rating of 5 which means the roadway is poor to fair condition with numerous potholes and longitudinal, lateral and alligator cracking of the bituminous.

The curb and gutter and concrete pavement/valley gutters are also in poor condition. Many of the curb sections are cracked and many of the joints have severe deterioration. It is estimated that approximately 70% of the existing curb and gutter has reached the end of its useful life and needs replacement.

Drainage from the roadway is collected in storm sewer catch basins that are part of a system that conveys stormwater south through a 42" RC storm pipe towards Mills GM and Mills Fleet Farm. The system is tied to the storm sewer outfall on to the old golf course property and ditch system that is known as Whiskey Creek. This same 42" RC storm sewer pipe conveys stormwater from as far north as Woida Road. The system experiences overloading and surface flooding during heavy/intense rainfall events. Surface flooding of up to 18" has been observed at the intersection of Clearwater Road and Dellwood Drive with water backing into and affecting traffic on T.H. 371. The City has also had issues with deteriorating and leaking drainage structures that were constructed during this time frame. It is likely the structures are leaking and, if they have not already been repaired, will likely need repair in the future. The storm sewer system was jetted and televised in October 2021.

Existing conditions and planned removals are shown in [Appendix A](#).

## **Universal Road**

The Universal Road Project Area is zoned regional commercial. Both sides of the roadway are mostly developed with a mix of office and retail uses. There is one small undeveloped lot on the north side of the roadway. The Project Area begins at the service road adjacent to T.H. 371 (Dellwood Drive) and ends at Golf Course Drive.

The roadway was originally improved in 1996 with the “Universal Road Improvements” Project. The Project included the construction of gravity sanitary sewer, water and urban roadway. The storm sewer system was constructed in 1993 with the “Excelsior Road, Jackson Street, and Frontage Roads Improvements” Project. A portion of the storm sewer system on the east end of the Project Area was replaced in 2016 with the “Golf Course Drive Improvements” Project.

The sanitary sewer system consists of an 8” PVC main that flows west to a 10” PVC main located on Dellwood Drive. The sanitary sewer system is a part of the Lift Station 2 service area. Six-inch (6”) service lines were extended to the right-of-way to service the adjacent properties. The sanitary sewer system was jettted and televised in October 2021. The City reviewed the condition of the existing structures and found deteriorated concrete rings and grout in manhole 692 and deteriorated grout around the drop in manhole 690. There are no other known issues with the sanitary sewer in this area.

The water system consists of a 10” PVC watermain that is connected to a 10” DI main on Dellwood Drive and a 10” PVC main on Golf Course Drive. One and one-half inch (1½”) service lines are extended out to the property lines to service adjacent properties. Hydrants are spaced approximately every 485’ to 625’ for fire protection. Inspections by City staff found the valve boxes for valves 1260, 1259, 1235, 1674, and 1222 need to be cleaned. There are no other known issues with the water system in this Project Area.

The roadway is a 24’ wide rural roadway section. The roadway section does not meet the current City standard for a 10-ton roadway. In 2019, the roadway was given a PASER Rating of 3, which means the roadway is in very poor condition with numerous potholes and longitudinal, lateral, and alligator cracking of the bituminous.

Drainage from the roadway is collected in the rural ditches and catch basins located in the ditch line. A 30” RC storm sewer pipe carries stormwater from Dellwood Drive east to the 42” RC pipe

that flows south to Design Road. The 36" RC pipe installed in 2016 also connects to the 42" RC pipe flowing south and carries flows from Golf Course Drive north of Universal Road. The storm sewer system on Universal Drive is part of the same system as described under Design Road, below. It is likely the structures are leaking and, if they have not already been repaired, will likely need repair in the future. The storm sewer system was jetted and televised in October 2021. We are aware of three (3) storm sewer pipes from the lot located in the southeast corner of the Dellwood Drive and Universal Road intersection that tee into the 30" RC pipe with no drainage structure as a junction.

Existing conditions and planned removals are shown in Appendix A.

### **Fairview Road**

The Fairview Road Project Area is zoned regional commercial. The north side of the roadway is developed and contains two (2) buildings formerly occupied by Brothers Motorsports. A building previously located at the intersection with Conservation Drive (Buster's) has been removed. No defined right-of-way appears to exist in the Project Area. Thirty-three feet (33') of utility easement currently lies throughout the Project Area north of the section line. The south side of the roadway abuts T.H. 210. The Project Area begins just east of the westerly most building and ends at Conservation Drive.

The roadway was last improved in 1985, and sanitary sewer and water was installed in 1977.

The sanitary sewer system consists of a 10" PVC main that flows westerly to Lift Station 2. Six-inch (6") service lines were extended to the right-of-way to service the adjacent properties. The sanitary sewer system was jetted and televised in October 2021. There are no known issues with the sanitary sewer in this area.

The water system consists of a 12" PVC watermain. One and one-half inch (1½") service lines are extended out to the property lines to service adjacent properties. Hydrants are spaced approximately every 655' for fire protection. Inspections by City staff found valve boxes for valves 388 and 1449 need to be cleaned. There are no other known issues with the water system in this area.

The private roadway entrance is currently bituminous surfaced and in need of repairs. Currently, parking areas and driving surfaces are combined with no definition of ingress/egress locations. No municipal storm sewer exists in the Project Area, and storm water sheet drains to a lowland north of the buildings. Stormwater from Conservation Drive and Fairview Road east of Conservation Drive also cross the privately developed area to the lowland. In 2019, the roadway was given a PASER Rating of 2, which means the roadway is in extremely poor condition with numerous potholes and longitudinal, lateral, and alligator cracking of the bituminous.

In previous reports, it was noted that current Ordinance requirements are not followed in the Project Area. This situation is not uncommon for areas that were developed prior to the current Ordinances. Some of the most noticeable Ordinance violations are:

- ✓ No definition of ingress and egress to the property.
- ✓ No defined parking stalls or drive aisle arrangement.
- ✓ Parking/driving areas not set back the required distances from right-of-way lines.
- ✓ Right-of-way and roadway widths do not meet current Ordinance requirements.
- ✓ Green space and landscaping requirements are not being met.

While this situation does not create current hardships for the property owners, it may inhibit future development or expansion of the buildings. If future building permits are requested, the City would likely require that current Ordinances be followed.

Existing conditions and planned removals are shown in Appendix A.

### **Woida Road**

The Woida Road Project Area is from the west edge of Edgewood Drive to T.H. 371. Both sides of the road consist of roadway right-of-way and stormwater basins.

The roadway corridor was last improved in 2006 with the “Kirkwood Commercial Area Improvements.” Project. The Project included the construction of gravity sanitary sewer, storm sewer, and urban (curb and gutter) roadway.

The roadway is a 76.5’ wide urban roadway section. The roadway is constructed with 6” of Class 5 aggregate base and 3.5” of bituminous. This roadway section does not meet the current City standard for a 10-ton roadway. Visual observation of Woida Road indicated the PASER Rating has changed since the last city wide PASER survey in 2019. At staff request, Bolton

Menk reviewed the PASER ratings of the Woida Road segment in November 2021. The PASER Rating in 2019 was 5 and the current rating is 4. This indicates the pavement is approaching the end of its useful life when deterioration begins to accelerate.

The majority of the curb and gutter and concrete pavement/valley gutters are in good condition. There are few curb sections which are cracked or damaged. It is estimated that approximately 25% of the existing curb and gutter is in need of repair/replacement.

Drainage from the roadway is collected in eight (8) storm sewer catch basins and is piped through 21", and 24" RC pipes to stormwater ponds located on the southeast end of the Project Area. The City has had many issues with deteriorating and leaking drainage structures that were constructed during this time frame. It is likely the structures are leaking and, if they have not already been repaired, will likely need repair in the future.

The stormwater basin located on the north and south side of the road was constructed in 1993. The storm sewer basin outlets to the south into the storm sewer network that runs south on Edgewood Drive. We are not aware of any maintenance being performed on either basin since their construction.

The sanitary sewer system consists of a 10" PVC main that flows east connecting to the existing 10" PVC sanitary sewer that flows south along Edgewood Drive. The collection system is part of the Lift Station 2 service area. The ten-inch (10") mainline has an 8" PVC connecting from the south on Lynnwood Drive.

The water system consists of a 12" PVC watermain that extends down Woida Road with connections at Inglewood Drive, Holly Drive, Hemlock Drive, Franklin Drive, Wildflower Drive, Lynnwood Drive, and Edgewood Drive. Six-inch (6") and eight-inch (8") PVC stubs along with 1½" and 1" service lines are extended out to the property lines to service future developments. Hydrants are spaced approximately every 600' for fire protection. Inspections by City staff found broken top valve box sections and valve boxes for valves 322, 258 and 447 need to be cleaned. There are no other known issues with the water system in this area.

Existing conditions and planned removals are shown in [Appendix A](#).

### **T.H. 371 Frontage Road Intersections**

There are three (3) T.H. 371 frontage road intersections that have not been upgraded with recent City or MnDOT projects. These intersections include Clearwater Road and Edgewood Drive, Clearwater Road and Dellwood Drive, and the Private Drive (Gander Outdoors) and Dellwood Drive intersections. These intersections were last milled and inlaid in 2011 by MnDOT with the widening project on T.H. 371. The 2015 and 2016 full depth reclamation projects on Edgewood Drive, Dellwood Drive, and Clearwater Road stopped improvements short of these intersections with thought that MnDOT would again improve these intersections with future work on T.H. 371. In 2019, MnDOT completed a Mill and Overlay Project on T.H. 371. MnDOT only improved travel lanes on T.H. 371 and the intersections were not improved.

These roadways were constructed with 5" of Class 5 aggregate base and 3.5" of bituminous. The pavement at these intersections is in very poor condition and the section does not meet the City standard 10-ton roadway. PASER Ratings for these sections of roadways were not evaluated in 2019. Visual observation of the intersections indicates the current PASER Rating are likely 5 or less.

The curb and gutter at these intersections is in fair condition. There are only a couple of cracked panels that would require replacement. Each intersection has two (2) catch basins. The City has had many issues with deteriorating and leaking drainage structures that were constructed during this time frame. It is likely the structures are leaking and, if they have not already been repaired, repairs will be required in the future.

Inspections by City staff found valve boxes 1263, 1264, 1238, 1239, 1240 and 12654 need to be cleaned. There are no other known issues with the water system in this area.

Existing conditions and planned removals are shown in Appendix A.

In addition to the general maintenance recommendations provided with the 2016 Pavement Management Plan, Braun Intertec has been retained to conduct a Pavement Evaluation Report for the existing pavement sections and subgrade immediately beneath the pavement. Ground-penetrating radar (GPR) was utilized to determine thicknesses of the existing bituminous surface and supporting base layers. Pavement cores and auger borings were also used to verify pavement thicknesses and classify supporting base material. A copy of the Braun Report is included in Appendix E.

## **PROPOSED IMPROVEMENTS**

### **Glory Road**

Glory Road from 1,125' west of Isle Drive to Isle Drive was given a PASER Rating of 5 in 2019. It is likely the PASER Rating is lower at this time, as two additional years have passed. The current structural section of 3.5" of bituminous and 5" aggregate base does not meet the current City 10-ton design standard for commercial roadways. The City of Baxter has determined that roadways adjacent to R3 and OS zoning districts should be designed to meet a 10-ton design standard to provide long-term benefit to area property owners. This section of roadway is proposed to be improved utilizing full depth reclamation (FDR) and curb replacement.

The benefits of the FDR process include the reduction of reflective cracking, longer pavement life (typically 20 years with proper maintenance), improved ride, reduced maintenance costs, and a 10-ton design strength roadway, meeting City requirements. FDR uses a self-propelled pulverizing machine to grind the entire pavement section and a portion of the underlying gravel base material in place. This process destroys all existing pavement cracks and homogenizes the material into a useable aggregate base platform on which to pave a new bituminous surface.

FDR of the top 12" of the pavement and base section will be completed in two passes. After FDR is complete, 6" of material will be removed leaving a 6" reclaimed base. The reclaimed base will be compacted and 6" of bituminous will be constructed in three (3) separate lifts. This structural section will match pavement sections that have been constructed on previous FDR projects.

One hundred percent (100%) curb and gutter and concrete pavement/valley gutter replacement is proposed. Analysis indicates that when more than 50% of the curb and gutter requires replacement, it is more economical to remove and replace all curb and gutter versus selective removal and replacement. A new concrete valley gutter is proposed at Falcon Drive to help promote drainage across the intersection.

Lane configurations, pavement marking, and signage on Glory Road will be modified slightly to incorporate the change in traffic movements associated with the new developments on the north and south sides of the road.



Storm sewer improvements include reconstruction of the drainage structures. This work includes removal of the casting and concrete rings to the top of the concrete structure. The structure will be reconstructed with new concrete rings and a casting designed to help prevent the migration of sediment material from the roadway bed into the drainage structure.

A topographic and visual survey of the stormwater basin located along the south side of Glory Road showed signs of erosion and sediment build up. Cleaning of the basin and re-establishment of the original basin bottom elevation is proposed.

The bituminous trail is showing signs of failure and is nearing the end of its useful life. Reconstruction and extension of the trail through Falcon Drive and to the end of the curb and gutter section is proposed. The trail will be replaced with a new bituminous trail consisting of 5" aggregate base and 3" of bituminous. A new pedestrian crossing will be installed on the east side of Falcon Drive to provide trail access to the properties along the north side of the road. The trail will terminate at the end of the curb and gutter with a bike turn-off lane. New concrete pedestrian curb ramps will be constructed, and truncated domes installed at all City street crossings. The reconstruction of ADA compliant pedestrian curb ramps will improve traffic safety at these intersections.

Other improvements to Glory Road include the following:

- Adjust existing grades to minimize surface water ponding.
- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Abandon the existing 8" PVC sanitary sewer stub at STA 15+75 RT.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project).
- Replace existing driveways to the right-of-way (ROW) line.
- Install new pavement markings.
- Replace all signage.

Proposed improvements to the Project Area are shown in [Appendix A](#).

### **Design Road**

Design Road had a PASER Rating of 5, which means the roadway is in fair to poor condition. The current roadway constructed with 3.5" of bituminous and 5" of aggregate base does not

meet 10-ton design standards. The City of Baxter has determined that commercial roadways should meet 10-ton design requirements to better handle heavy commercial traffic commonly associated with commercial use and provide long-term benefit to area property owners. Based on age, condition of the roadway, and amount of storm sewer work required, Design Road is proposed to be reconstructed.

The roadway pavement and curb and gutter will be completely removed and replaced. The roadway will be reconstructed with 6" of aggregate base and 6" of bituminous, which meets the City's current 10-ton design standard. Concrete curb and gutter will be replaced, and all driveways will be replaced to the ROW line.

Lane configuration will remain the same with minor changes to the pavement markings and signage.

Considerable storm sewer modifications are proposed along Design Road. The 42" RC storm sewer pipe is proposed to be up sized to 48" and rerouted east across Golf Course Drive and then south to the existing ditch located on the old golf course property. This will bypass the system that currently flows under Fleet Farm. A 36" RC storm sewer pipe is also proposed to be extended west to T.H. 371. The pipe will pick up flows from Design Drive and Dellwood Drive, which are currently routed north along Dellwood Road. The pipe has been upsized to allow further modifications and route more storm water from T.H. 371 east towards the old golf course property and bypass the system that currently runs under the Fleet Farm site. Rerouting and upsizing the storm sewer pipe should increase capacity of the system and lessen the surface water flooding experienced in other areas of the system including the Clearwater Road and Dellwood Drive intersection.

The plastic watermain tee study completed in 2020 identified Design Road as an area that may contain plastic watermain tees. Exploratory excavations are proposed at each tee location to determine the tee material type. If plastic tees are encountered, they will be removed and replaced with mechanical joint ductile iron tees. The City has identified two valves that need to be replaced and one valve box that needs to be replaced all the way down to the valve.

Other improvements to Design Road include the following:

- Adjust existing grades to minimize surface water ponding.

- Reconstruct drainage structures and install new storm sewer curb inlet castings and water infiltration barrier.
- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project)
- Replace existing driveways to the ROW line.
- Install new pavement markings.
- Replace all signage.

Proposed improvements to the Project Area are shown in Appendix A.

### **Universal Road**

Universal Road had a PASER Rating of 3 in 2019. The roadway has reached the end of its useful life and needs to be reconstructed. Improvements include complete removal of the existing roadway and construction of a new 36' wide urban roadway. The roadway section will be completed with 6" aggregate base and 6" of bituminous. This section meets the 10-ton City roadway standard for all commercial areas.

New curb and gutter will be installed along with new stormwater inlets along the north side of the roadway. The new curb inlets will be tied into the existing storm sewer structures located on the south side of the roadway. The south curb line will line up with the existing structures on the south side of the road. Three (3) new storm sewer structures are proposed where the storm pipes from the property located in the southeast corner of the Dellwood Drive and Universal Road tie into the existing 30" RC pipe.

Lane configuration will remain the same with minor changes to the pavement markings and signage.

Considerable storm sewer modifications are proposed along Universal Road and Dellwood Drive. A new catch basin is proposed along the north side of Universal Road to collect flows in the north curb line. On Dellwood Drive, extension of a 15" RC storm sewer pipe is proposed north to Clearwater Road. The pipe will end with a structure and grate to provide an overflow for the ditched area just south of Clearwater Road. Surface water will flow into the new 15" RC pipe as water begins to back up in the system to the north. Extension of the 15" pipe and inlet

structure should increase capacity of the system and lessen the surface water flooding experienced in other areas of the system including the Clearwater Road and Dellwood Drive intersection.

Other improvements to Universal Road include the following:

- Adjust existing grades to minimize surface water ponding.
- Reconstruct drainage structures and install new storm sewer curb inlet castings and water infiltration barrier.
- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Remove and replace grout around drop in manhole 690.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project).
- Replace existing driveways to the ROW line.
- Install new pavement markings.
- Replace all signage.

Proposed improvements to the Project Area are shown in [Appendix A](#).

### **Fairview Road**

Fairview Road had a PASER Rating of 2 in 2019. The roadway has reached the end of its useful life and needs to be reconstructed. Improvements include complete removal of the existing roadway and construction a new 36' wide urban roadway with curb and gutter and storm sewer.

The roadway will be constructed with 6" aggregate base and 6" of bituminous. This section meets the 10-ton City roadway standard for all commercial areas.

New curb and gutter will be installed along with a new storm sewer collection system. Water will be collected by the inlets and directly northerly between the two existing buildings to a stormwater treatment basin located just north of the easterly most building and east of the existing wetland. An overflow will be constructed in the stormwater basin to direct excess stormwater flows into the wetland which is connected to the Whiskey Creek stormwater system that flows through the Northland Arboretum and into a large wetland complex that is connected to the Mississippi River.

Other improvements to Fairview Road include the following:

- Adjust existing grades to minimize surface water ponding.
- Reconstruct drainage structures and install new storm sewer curb inlet castings and water infiltration barrier.
- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project).
- Remove existing parking areas and construct defined driveway entrances.
- Install new pavement markings.
- Replace all signage.

Proposed improvements to the Project Area are shown in [Appendix A](#).

### **Woida Road**

Woida Road from Edgewood Drive to T.H. 371 has a current PASER Rating of 4. The recommended rehabilitation method is FDR.

It is important to note, the current section of 6" Class 5 aggregate base and 3.5" does not meet current City 10-ton design standards for commercial and State Aid roadways. The current City standard for a 10-ton roadway design is 6" aggregate base and 6" of bituminous pavement. This section of roadway is proposed to be rehabilitated using Full Depth Reclamation in order to bring the roadway up to a 10-ton design standard.

The benefits of the FDR process include the reduction of reflective cracking, longer pavement life (typically 20 years with proper maintenance), improved ride, reduced maintenance costs, and a 10-ton design strength roadway, meeting City requirements. FDR uses a self-propelled pulverizing machine to grind the entire pavement section and a portion of the underlying gravel base material in place. This process destroys all existing pavement cracks and homogenizes the material into a useable aggregate base platform on which to pave a new bituminous surface.

FDR of the top 12" of the pavement and base section will be completed in two passes. After FDR is complete, 6" of material will be removed leaving a 6" reclaimed base. The reclaimed base will be compacted and 6" of bituminous will be constructed in three separate lifts. This

structural section will match pavement sections that have been constructed on previous FDR projects.

Approximately 25% of the curb and gutter and concrete pavement/valley gutter replacement is proposed. Analysis indicated that a majority of the curb and gutter was still in good condition. There are only a few cracked curb sections that require removal and replacement.

Lane configurations, pavement marking and signage on Woida Road will remain the same.

Storm sewer improvements include reconstruction of the drainage structures. This work includes removal of the casting and concrete rings to the top of the concrete structure. The structure will be reconstructed with new concrete rings and a casting designed to help prevent the migration of sediment material from the roadway bed into the drainage structure.

The bituminous trail is in good condition and the ADA ramp within the project limits does meet ADA standards. The transition from driveway to gutter does not meet ADA standards, but this will be corrected with the reconstruction of the driveway.

Other improvements to Woida Road include the following:

- Adjust existing grades to minimize surface water ponding.
- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project).
- Replace existing driveways to the ROW line.
- Install new pavement markings.
- Replace all signage that was installed during the last construction.

Proposed improvements to the Project Area are shown in Appendix A.

### **T.H. 371 Frontage Road Intersections**

The bituminous has reached the end of its useful life and needs to be reconstructed. Improvements include complete removal of the existing roadway and construction of a new pavement section. The pavement section will be completed with 6" of aggregate base and 6" of bituminous. This section meets the 10-ton City roadway standard for all commercial areas.

Curb and gutter will be selectively removed and replaced to repair the broken panels. The new curb inlets will be tied into the existing storm sewer structures located on the north and south side of the intersections.

Other improvements to include the following:

- Reconstruct sanitary sewer manhole castings/rings and install water infiltration barrier.
- Replace and adjust the upper sections of water valve boxes (City staff should clean valve boxes prior to the start of the project).
- Install new pavement markings.
- Replace all signage.

Proposed improvements to the Project Area are shown in Appendix A.

### **Do-Nothing Option**

The Do-Nothing Option was considered as an option to all proposed improvements. Doing nothing does not promote preserving the existing roadway network via pavement management and does not prepare for future long-term transportation plans being considered by the City.

## **ESTIMATED PROJECT COSTS**

Estimated project costs for the proposed improvements are summarized below:

### Glory Road

Roadway:	\$433,885
City Trail:	<u>\$63,780</u>
Subtotal:	\$497,665

### Design Road

Roadway:	\$435,905
Storm Sewer:	\$516,890
Water:	<u>\$93,035</u>
Subtotal:	\$1,045,830

### Universal Road

Roadway:	\$405,540
Storm Sewer:	<u>\$121,065</u>
Subtotal:	\$526,605

### Fairview Road

Roadway:	\$243,140
Storm Sewer:	<u>\$331,500</u>
Subtotal:	\$574,640

### Woida Road

Roadway:	\$138,760
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### TH 371 Frontage Road Intersections

Roadway:	\$230,845
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**ESTIMATED TOTAL PROJECT COST: \$3,014,345**

The costs estimated herein are intended to convey a general and approximate picture of the costs that could potentially be incurred today in carrying out the proposed work. Costs can vary widely depending upon many factors such as weather, economic conditions, size of project, and the workload of available contractors. Actual costs can only be determined by bidding the



project. Detailed breakdowns of the estimates are provided in the Appendix. Costs estimated above include estimated construction costs, 15% contingencies, and soft costs including engineering, administration, financing, and legal fees.

**The costs are calculated in 2021 dollars and need to be updated in the future based on the current economic conditions at the time the project is being considered.**

Engineers Estimates are located in Appendix B.

## **PROJECT IMPLEMENTATION**

Funding for improvements would be obtained from assessments to benefitted property owners and contributions from the City of Baxter. The estimated assessments included in this Report were calculated in accordance with City policy utilizing the Front Footage Assessment Method. A detailed description of the assessment methods utilized by the City of Baxter can be found in the most recent version of the “City of Baxter – Assessment Policy for Public Initiated Improvements”.

Based on the improvement type, project costs have been split into various project areas for the purposes of assessment and City cost calculation. Utilizing the previously mentioned methodology, the following project allocations were determined.

### **Glory Road**

The Glory Road Project Area contains a mix of R2, R3, and OS zoning. In “Commercial” districts, 100% of the full depth reclamation improvement costs, up to 44’ in width, are assessed to the adjacent benefitting properties. Zoning districts included in this “Commercial” assessment category include R2, R3, OS, C1, C2 and I. In accordance with past practice, the front footage assessment method was selected. Assessments are calculated by dividing the total assessable project cost by the total assessable frontage. The assessable frontage is based on the length as calculated at the building set back line which is 35’ in commercial zoning districts.

Assessable project costs are calculated by subtracting City costs from the total project cost. On Glory Road, City costs include, excess bituminous width at the east end of the project area, Falcon Drive radius, bituminous trail and front footage assessment for the City-owned stormwater basin along the south side of the roadway.

Based on the above methodology and assumptions, the following was determined:

<u>Estimated Commercial Project Costs:</u>	\$497,665
City Roadway:	\$44,185
City Trail:	<u>\$63,780</u>
Total Remaining Assessable Costs:	\$389,700
Total Estimated Frontage:	2,053
Estimated Cost per Foot:	\$189.82

In accordance with City policy, assessments for full depth reclamation projects are collected over a 12-year term. The interest rate would be set at 1.5% above the True Interest Cost rate on the bond issue. Interest would also be added based on the number of days between when the assessment is adopted by the Council and the end of the calendar year in which the assessment is certified.

**Design Road**

In accordance with City policy, 100% of roadway reconstruction costs, up to 44' in width in commercial areas, are assessed to the adjacent benefitting properties. In accordance with past practice, the front footage assessment method was selected. Assessments are calculated by dividing the total assessable project cost by the total assessable frontage. The assessable frontage is based on the length as calculated at the building set back line which is 35' in commercial zoning districts.

The City was assumed to pick up water costs associated with the replacement of plastic watermain tees. The City was also assumed to pick up 50% of storm sewer costs as it relates to the improvement of the regional storm sewer system from Design Road north to Woida Road which includes the storm sewer reroute east and south into the ditch on the old golf course property. The other 50% of this storm sewer cost was assumed to be contributed by MnDOT for drainage from the T.H. 371 right-of-way. MnDOT was assumed to pay 100% of the 36" storm sewer pipe extended to T.H. 371 for future diversion of storm water in the T.H. 371 corridor.

Based on the above methodology and assumptions, the following were determined:

<u>Total Estimated Project Costs:</u>	\$1,045,830
City Storm Sewer:	\$101,435
City Water:	\$93,035
MnDOT Storm Sewer:	<u>\$415,455</u>
Total Remaining Assessable Costs:	\$435,905
Total Estimated Assessable Frontage:	2,216
Estimated Cost per Foot:	\$196.71

In accordance with City policy, assessments for reconstruction projects are collected over a 12-year term. The interest rate would be set at 1.5% above the True Interest Cost rate on the bond

issue. Interest would also be added based on the number of days between when the assessment is adopted by the Council and the end of the calendar year in which the assessment is levied.

**Universal Road**

In accordance with City policy, 100% of roadway reconstruction costs, up to 44' in width in commercial areas, are assessed to the adjacent benefitting properties. In accordance with past practice, the front footage assessment method was selected. Assessments are calculated by dividing the total assessable project cost by the total assessable frontage. The assessable frontage is based on the length as calculated at the building set back line which is 35' in commercial zoning districts.

Based on the above methodology and assumptions, the following were determined:

<u>Total Estimated Roadway Project Cost:</u>	\$405,540
City Costs:	<u>\$0</u>
Total Remaining Assessable Costs:	\$405,540
Total Estimated Assessable Frontage:	2,228
Estimated Cost per Foot:	\$182.02
<u>Total Estimated Storm Sewer Project Cost:</u>	\$121,065
City Costs:	\$26,035
MnDOT Costs:	<u>\$26,035</u>
Total Remaining Assessable Costs:	\$68,995
Total Estimated Assessable Frontage:	2,228
Estimated Cost per Foot:	\$30.97

In accordance with City policy, assessments for reconstruction projects are collected over a 12-year term. The interest rate would be set at 1.5% above the True Interest Cost rate on the bond issue. Interest would also be added based on the number of days between when the assessment is adopted by the Council and the end of the calendar year in which the assessment is levied.

**Fairview Road**

In accordance with City policy, 100% of roadway reconstruction costs, up to 44' in width in commercial areas, are assessed to the adjacent benefitting properties. In accordance with past practice, the front footage assessment method was selected. Assessments are calculated by dividing the total assessable project cost by the total assessable frontage. The assessable frontage is based on the length as calculated at the building set back line which is 35' in commercial zoning districts.

The City was assumed to pick up 50% of the roadway and storm sewer project costs since the roadway directly abuts T.H. 210, and there is no assessable property south of the roadway. This is consistent with other frontage roads including Fairview Road west of T.H. 371 and Foley Road.

Based on the above methodology and assumptions, the following were determined:

<u>Total Estimated Roadway Project Cost:</u>	\$243,140
City Costs (50%):	<u>\$121,570</u>
Total Remaining Assessable Costs (50%):	\$121,570
Total Estimated Assessable Frontage:	522
Estimated Cost per Foot:	\$232.89
<u>Total Estimated Storm Sewer Project Cost:</u>	\$331,500
City Costs (50%):	<u>\$165,750</u>
Total Remaining Assessable Costs (50%):	\$165,750
Total Estimated Assessable Frontage:	522
Estimated Cost per Foot:	\$317.53

In accordance with City policy, assessments for reconstruction projects are collected over a 12-year term. The interest rate would be set at 1.5% above the True Interest Cost rate on the bond issue. Interest would also be added based on the number of days between when the assessment is adopted by the Council and the end of the calendar year in which the assessment is levied.

Detailed assessment rate calculations and assessment exhibits are included in Appendix B.

**Woida Road**

The Woida Road improvements are a city-wide benefit with no direct assessable frontage. For this reason, the costs are not assessed and are paid by the City, similar to the highway abutting side of the frontage roads.

Based on the above methodology and assumptions, the following was determined:

Estimated Project Costs:	\$138,760
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**T.H. 371 Frontage Road Intersections**

The T.H. 371 Frontage Road Intersection improvements are a city-wide benefit with no direct assessable frontage. For this reason, the costs are not assessed and are paid by the City, similar to the highway abutting side of the frontage roads.

Estimated Project Cost:	\$230,845
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## CONCLUSIONS AND RECOMMENDATIONS

This Report has studied the feasibility of roadway improvements and other related work for the following roadway segments:

- Glory Road (1,125' west of Isle Drive to Isle Drive)
- Design Road (Dellwood Drive to Golf Course Drive)
- Universal Road (Dellwood Drive to Golf Course Drive)
- Fairview Road (600' west of Conservation Drive to Conservation Drive)
- Woida Road (290' west of T.H. 371 to T.H. 371)
- Clearwater Road (Edgewood Drive to T.H. 371)
- Clearwater Road (T.H. 371 to Dellwood Drive)
- Edgewood Entrance (Edgewood Drive to T.H. 371)

### Glory Road

The Glory Road Project Area includes Glory Road from 1,125' west of Isle Drive to Isle Drive. In accordance with the 2016 Pavement Management Plan and the Braun Pavement and Geotechnical Evaluation Report, FDR is the recommended reconstruction technique. Other improvements included replacement of concrete curb and gutter, storm sewer modifications and trail improvements.

The estimated assessment rate for this project is \$189.82 per foot. This calculated assessment rate is similar to the rate for projects completed in 2021.

The Glory Road cost summary is as follows:

<b>Total Project Cost:</b>	<b>\$497,665</b>
Assessed Project Costs	
<b>Benefiting Property Assessments:</b>	<b>\$322,315</b>
City Property Assessment:	\$67,385
City Cost Summary	
Roadway:	\$44,185
Trail:	\$63,780
City Property Assessments:	<u>\$67,385</u>
<b>Estimated City Costs:</b>	<b>\$175,350</b>

**Design Road**

The Design Road Project Area extends from Dellwood Drive to Golf Course Drive. In accordance with the 2016 Pavement Management Plan and the Braun Pavement and Geotechnical Evaluation Report, roadway reconstruction is recommended. Other improvements included replacement of concrete curb and gutter, storm sewer modifications and water improvements.

The estimated assessment rate for this project is \$196.71 per foot. The Design Road cost summary is as follows:

<b>Total Project Cost:</b>	<b>\$1,045,830</b>
Assessed Project Costs	
<b>Benefiting Property Assessments:</b>	<b>\$435,905</b>
<b>MnDOT Storm Sewer Costs:</b>	<b>\$415,455</b>
City Cost Summary	
Storm Sewer:	\$101,435
Water:	<u>\$93,035</u>
<b>Estimated City Costs:</b>	<b>\$194,470</b>

**Universal Road**

The Universal Road Project Area extends from Dellwood Drive to Golf Course Drive. The roadway is proposed to be reconstructed to current city standards for commercial areas. Improvements include the construction of a 36' wide urban roadway with concrete curb and gutter and storm sewer modifications.

The estimated assessment rate for roadway improvements is \$182.02 per foot and \$30.97 per foot for storm sewer. The Universal Road cost summary is as follows:

<b>Total Project Cost:</b>	<b>\$526,605</b>
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Assessed Project Costs

**Benefiting Property Assessments: \$474,535**

**MnDOT Storm Sewer Costs: \$26,035**

**Estimated City Storm Sewer Costs: \$26,035**

**Fairview Road**

The Fairview Road project area extends from 600' west of Conservation Drive to Conservation Drive. The roadway is proposed to be reconstructed to current city commercial standards. Improvements include the construction of a 36' wide urban roadway with concrete curb and gutter and storm sewer and stormwater treatment basin.

The estimated assessment rate for roadway improvements is \$233.89 per foot and \$317.53 per foot for storm sewer. The Fairview Road cost summary is as follows:

**Total Project Cost: \$574,640**

Assessed Project Costs

**Benefiting Property Assessments: \$287,320**

City Cost Summary

Roadway: \$121,570

Storm Sewer: \$165,750

**Estimated City Costs: \$287,320**

**Woida Road**

The Woida Road Project Area extends from the west edge of Edgewood Woida Road from 330' west of Lynnwood Drive to T.H. 371. In accordance with the 2016 Pavement Management Plan and the Braun Pavement and Geotechnical Evaluation Report, FDR is the recommended reconstruction technique. Other improvements included replacement of concrete curb and gutter and storm sewer structure improvements.

The estimated assessment rate for this project is \$172.75 per foot. The Woida Road cost summary is as follows:

The Woida Road cost summary is as follows:

**Total Project Cost:** **\$138,760**

City Cost Summary

**Roadway:** **\$138,760**

**T.H. 371 Frontage Road Intersections**

The T.H. 371 Frontage Road Intersections Project Area includes Clearwater Road and Edgewood Drive, Clearwater Road and Dellwood Drive and the Private Drive (Gander Outdoors) and Dellwood Drive. In accordance with the 2016 Pavement Management Plan and the Braun Pavement and Geotechnical Evaluation Report, FDR is the recommended reconstruction technique. Other improvements included replacement of concrete curb and gutter, storm sewer modifications, and trail improvements.

The T.H. 371 Frontage Road Intersections cost summary is as follows:

**Total Project Cost:** **\$230,845**

City Cost Summary

**Roadway:** **\$230,845**

**Total Project Area Cost Summary**

<b>Estimated Total Project Cost:</b>	<b>\$3,014,345</b>	
Estimated Assessable Project Costs		
<b>Benefitting Property Assessments:</b>	<b>\$1,520,075</b>	<b>50%</b>
City of Baxter Frontage Contribution:	\$67,385	
City Cost Summary		
Roadway:	\$535,360	
Road Assessments:	\$67,385	
Storm Sewer:	\$293,220	
Trail:	\$63,780	
Water:	<u>\$93,035</u>	
<b>Total Estimated City Cost:</b>	<b>\$1,052,780</b>	<b>35%</b>
<b>MnDOT Estimated Storm Sewer Cost:</b>	<b>\$441,490</b>	<b>15%</b>

In conclusion, we believe the proposed improvements are feasible, and we do not foresee any major problems other than normal inconveniences associated with construction such as noise and traffic disturbance. These situations would be temporary in nature and we anticipate that construction would last approximately 3 months, depending on the contractor, weather, and other factors.

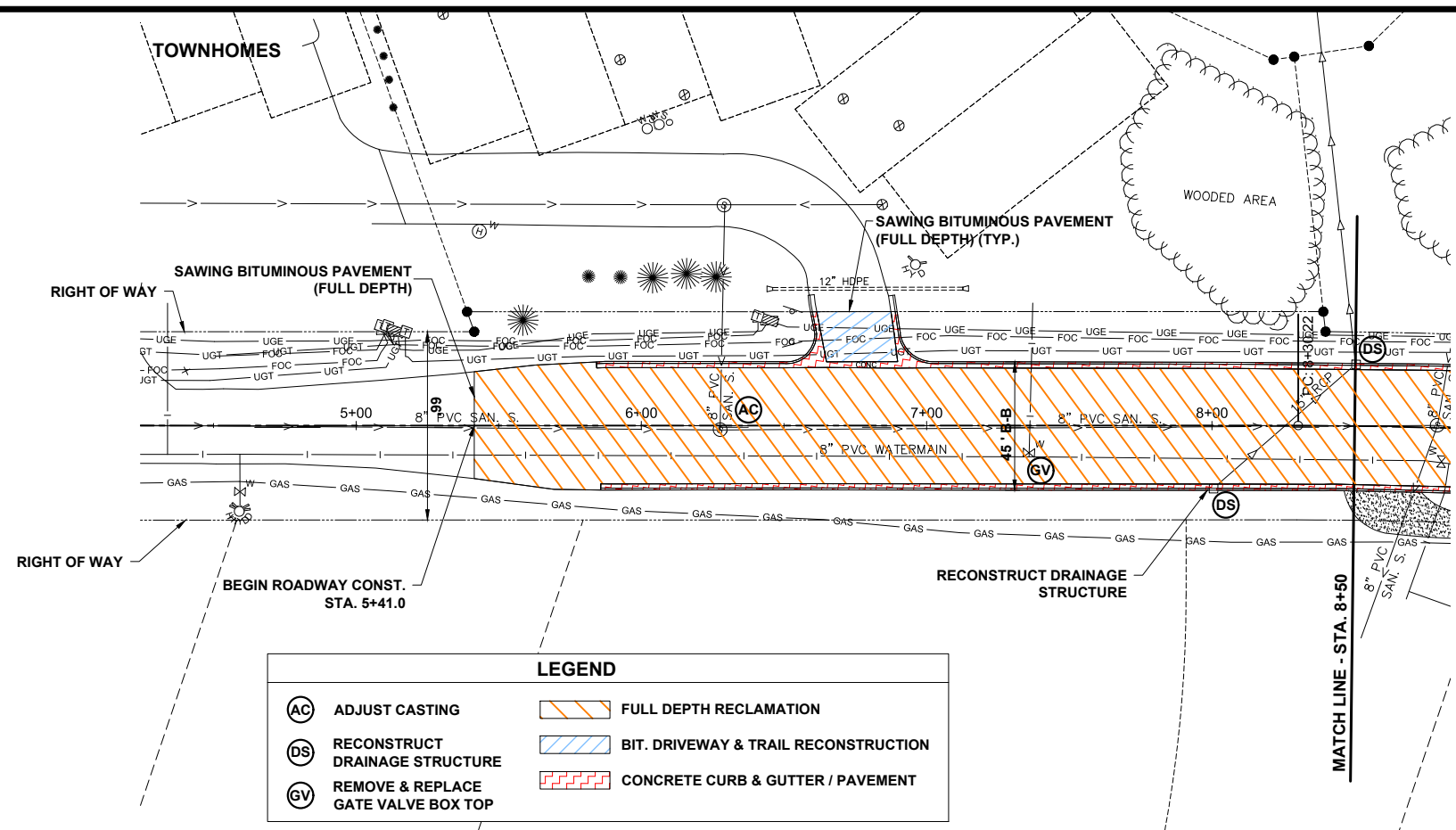
We recommend the City proceed as shown in the Project Schedule included in Appendix D:

# APPENDICES

- Appendix A
  - 2022 Mill & Inlay & Full Depth Reclamation Plan Sheets
- Appendix B
  - Cost Estimates, Assessment Calculations and Assessment Exhibits
- Appendix C
  - Braun Intertec Pavement and Geotechnical Report
- Appendix D
  - Project Schedule

# **Appendix A**

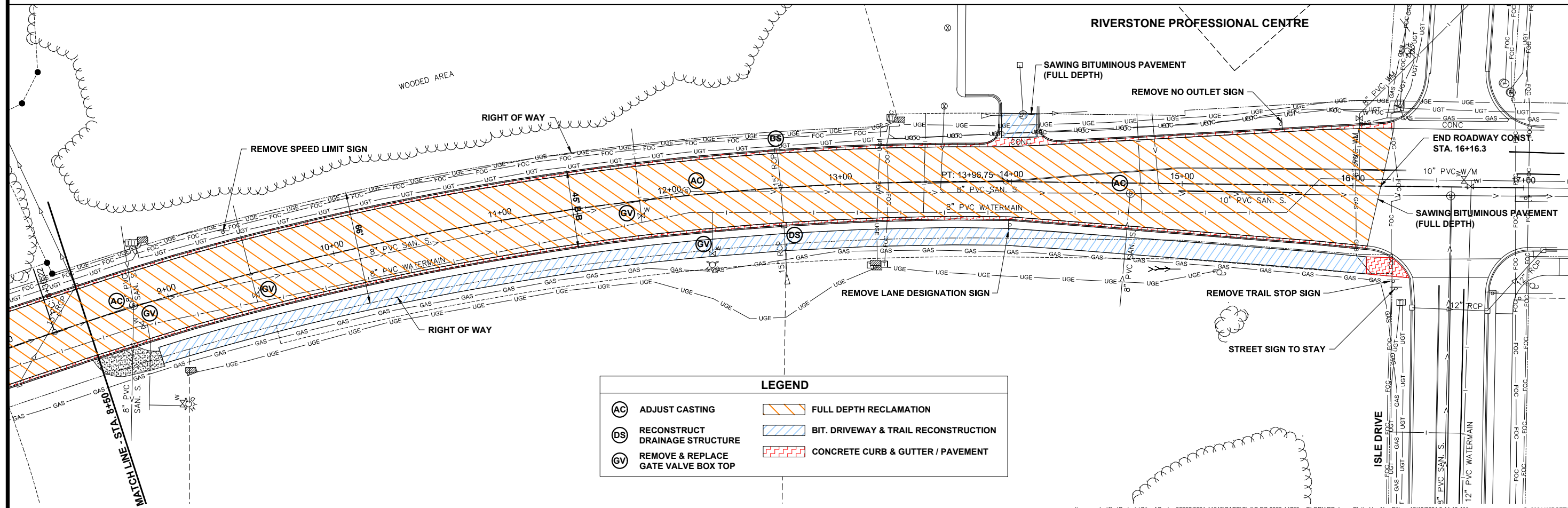
**2022 Mill & Inlay & Full Depth Reclamation Plan Sheets**



**LEGEND**

(AC)	ADJUST CASTING	[Hatched Pattern]	FULL DEPTH RECLAMATION
(DS)	RECONSTRUCT DRAINAGE STRUCTURE	[Blue Hatched Pattern]	BIT. DRIVEWAY & TRAIL RECONSTRUCTION
(GV)	REMOVE & REPLACE GATE VALVE BOX TOP	[Red Hatched Pattern]	CONCRETE CURB & GUTTER / PAVEMENT

# GLORY ROAD



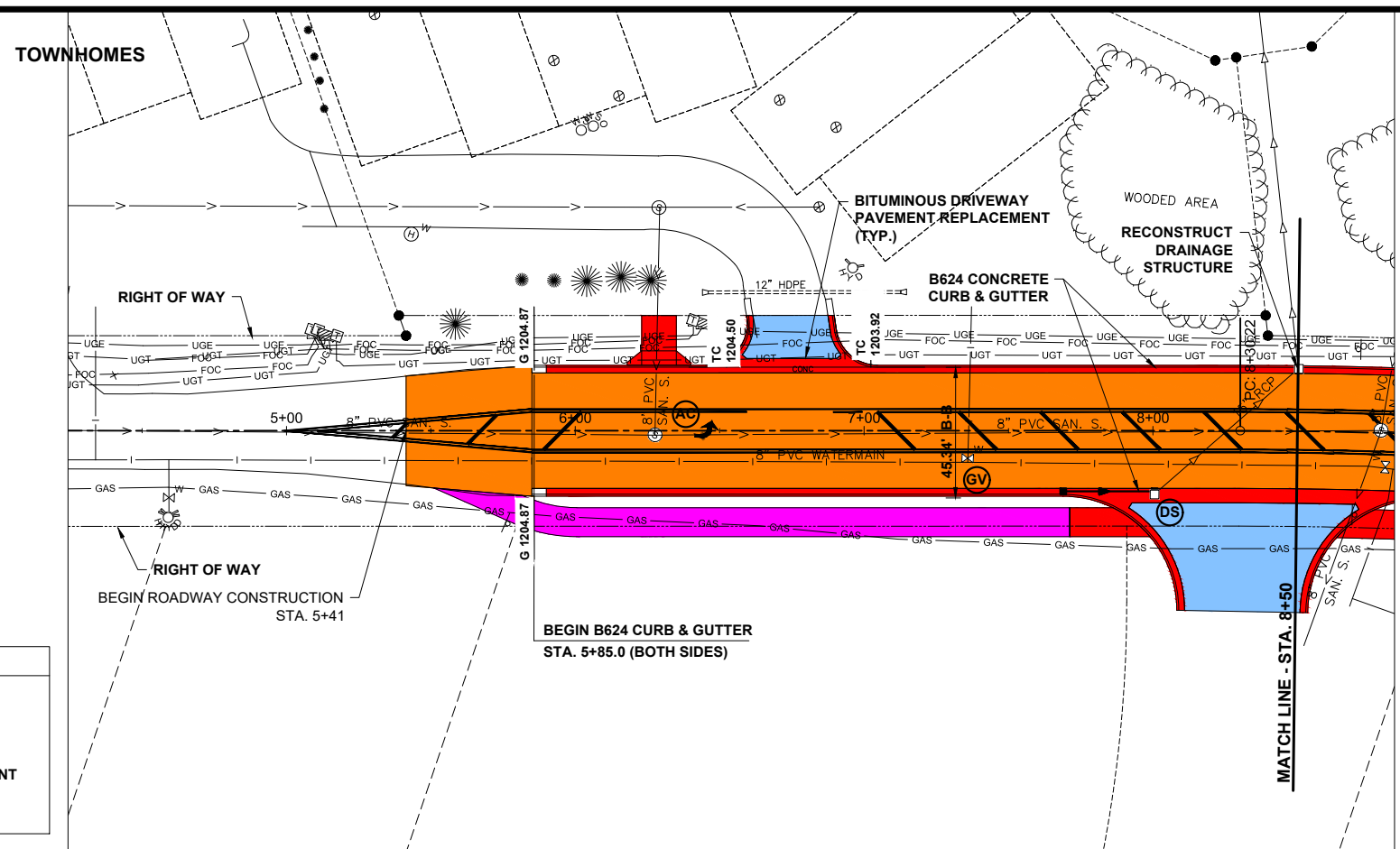
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(DS)	RECONSTRUCT DRAINAGE STRUCTURE	[Blue Hatched Pattern]	BIT. DRIVEWAY & TRAIL RECONSTRUCTION
(GV)	REMOVE & REPLACE GATE VALVE BOX TOP	[Red Hatched Pattern]	CONCRETE CURB & GUTTER / PAVEMENT

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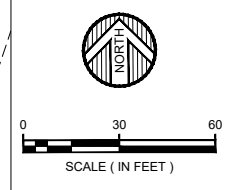
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JOB NUMBER: 2021-11648	2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
EXIST. CONDS. & REMOVALS - GLORY ROAD



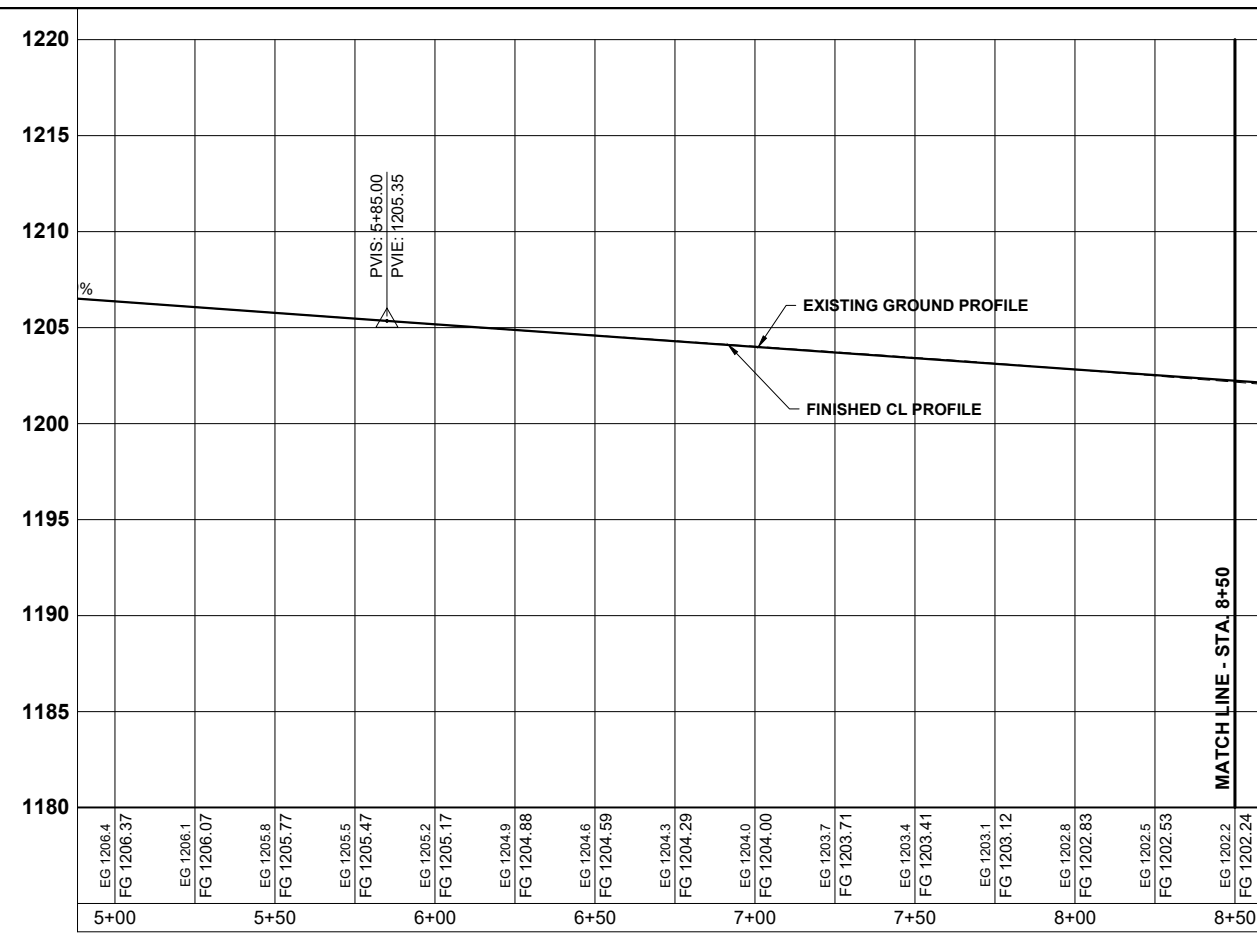
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<b>(GV)</b> REMOVE & REPLACE GATE VALVE BOX TOP	<b>(RED)</b> CONCRETE CURB & GUTTER / PAVEMENT
	<b>(PINK)</b> BITUMINOUS TRAIL



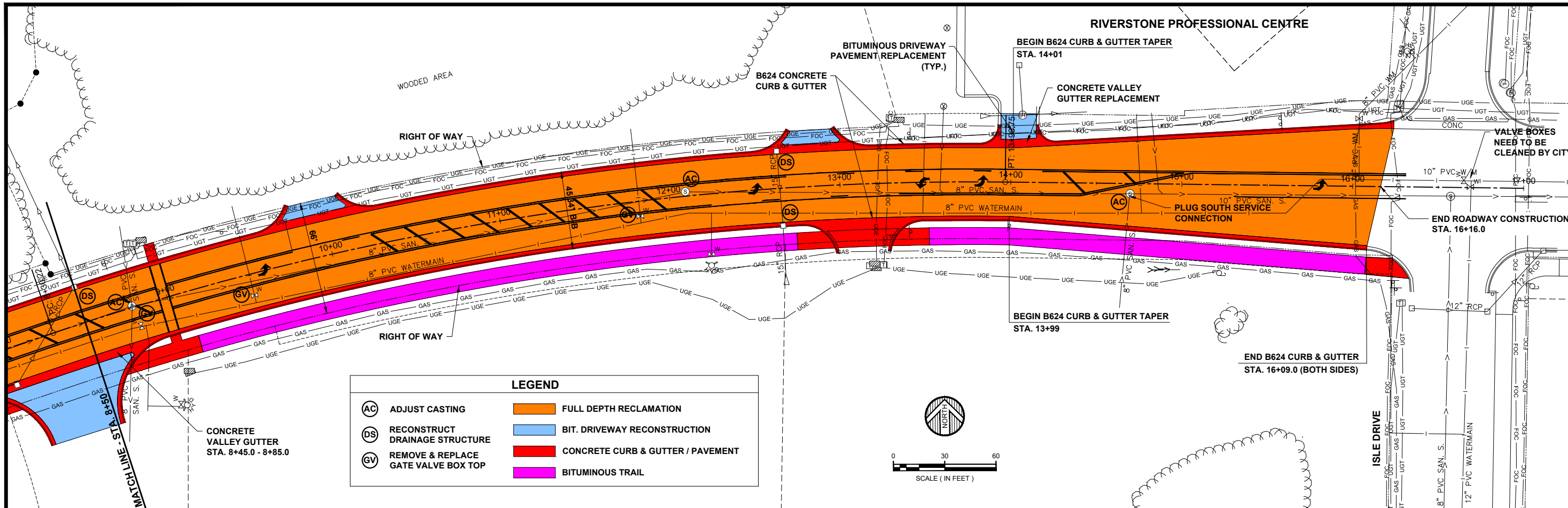
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NOTE:  
SALVAGE EXISTING 911 SIGNS  
AND REINSTALL BEHIND MAILBOX

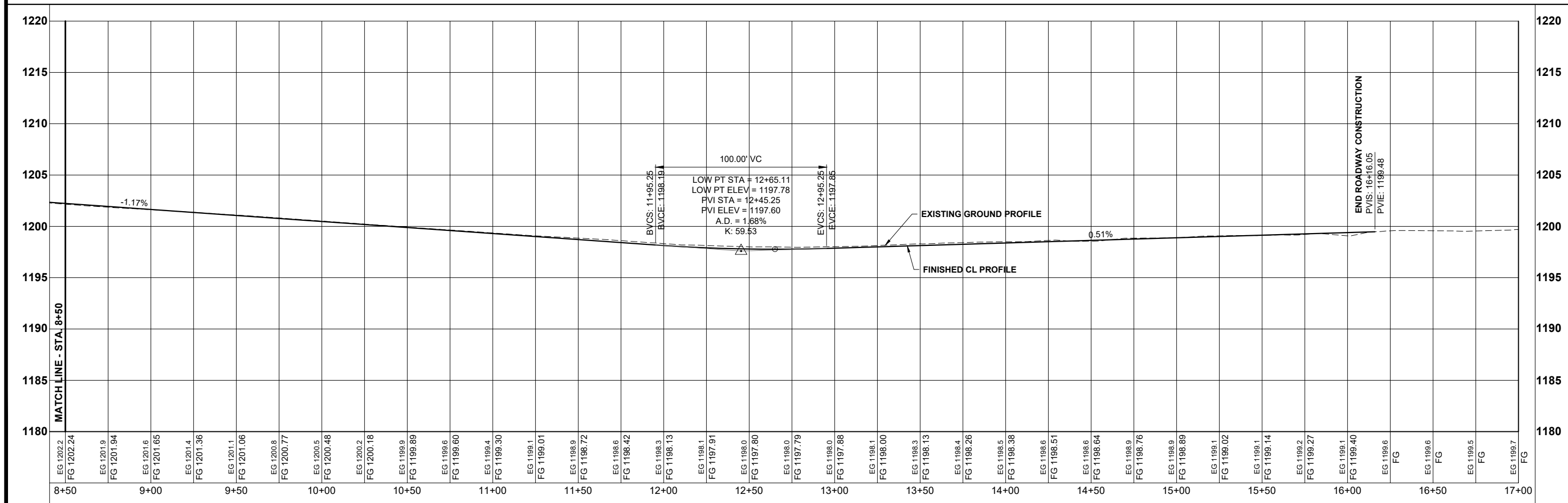


MATCH LINE - STA. 8+50

MATCH LINE - STA. 8+50



# GLORY ROAD



**WIDSETH**  
 ARCHITECTS - ENGINEERS - SCIENTISTS - SURVEYORS

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 CHECKED BY: ALW  
 JOB NUMBER: 2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
 CITY OF BAXTER  
 BAXTER, MINNESOTA

PLAN & PROFILE - GLORY ROAD

SHEET NO. **34**

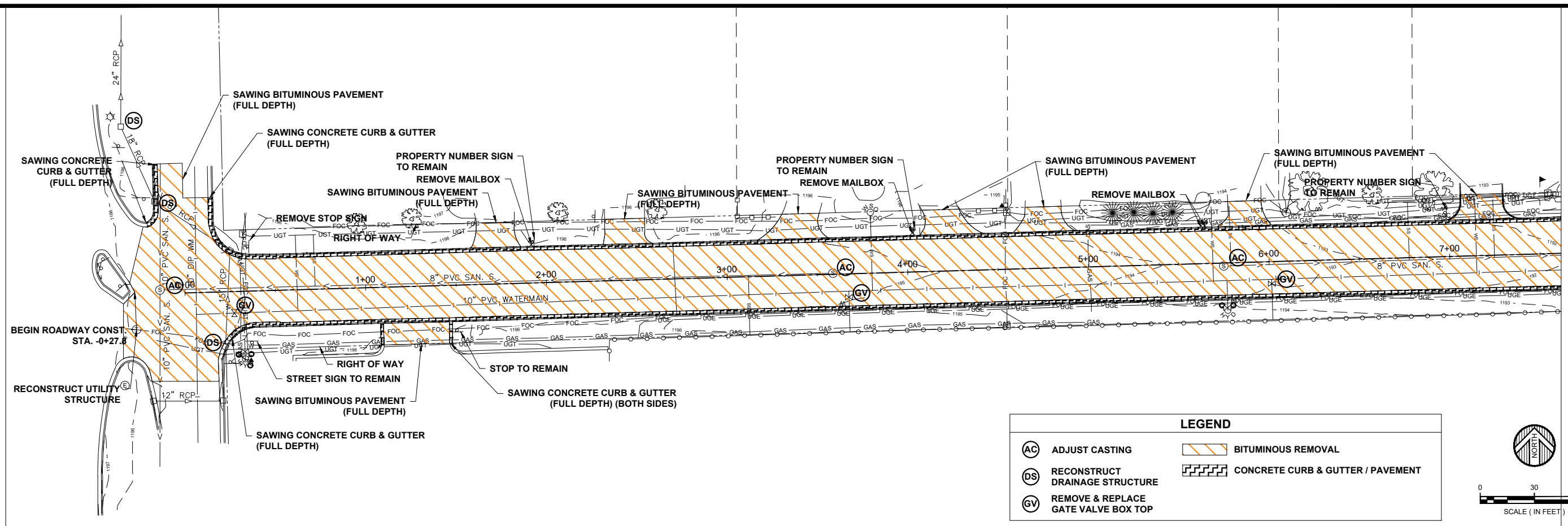
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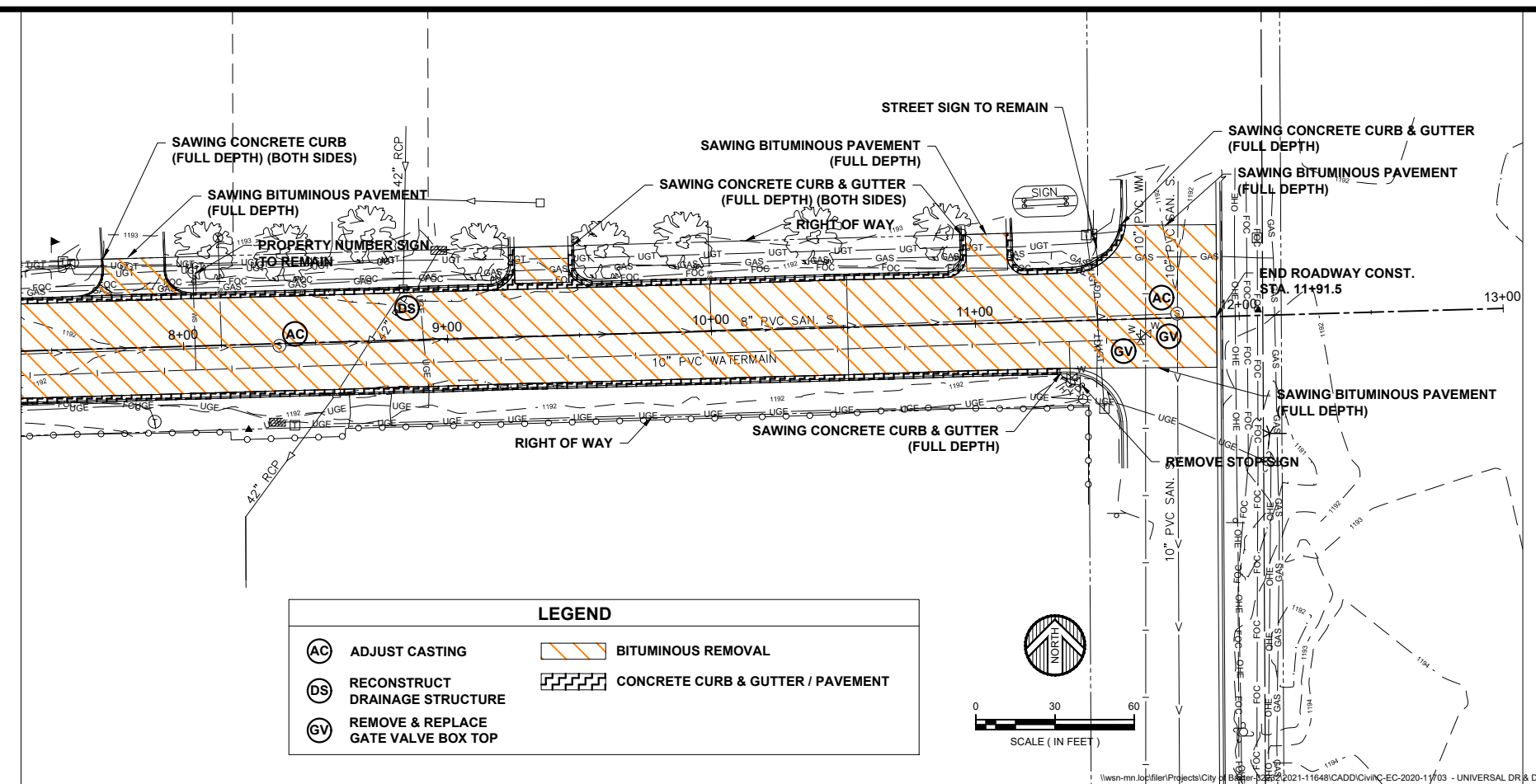
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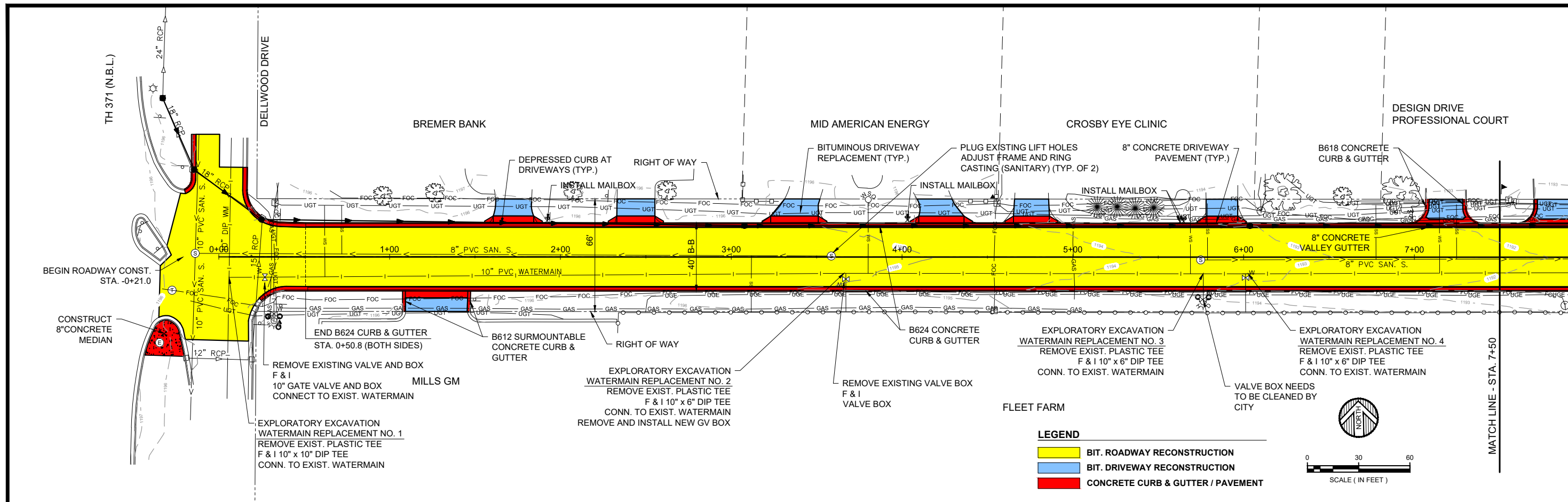
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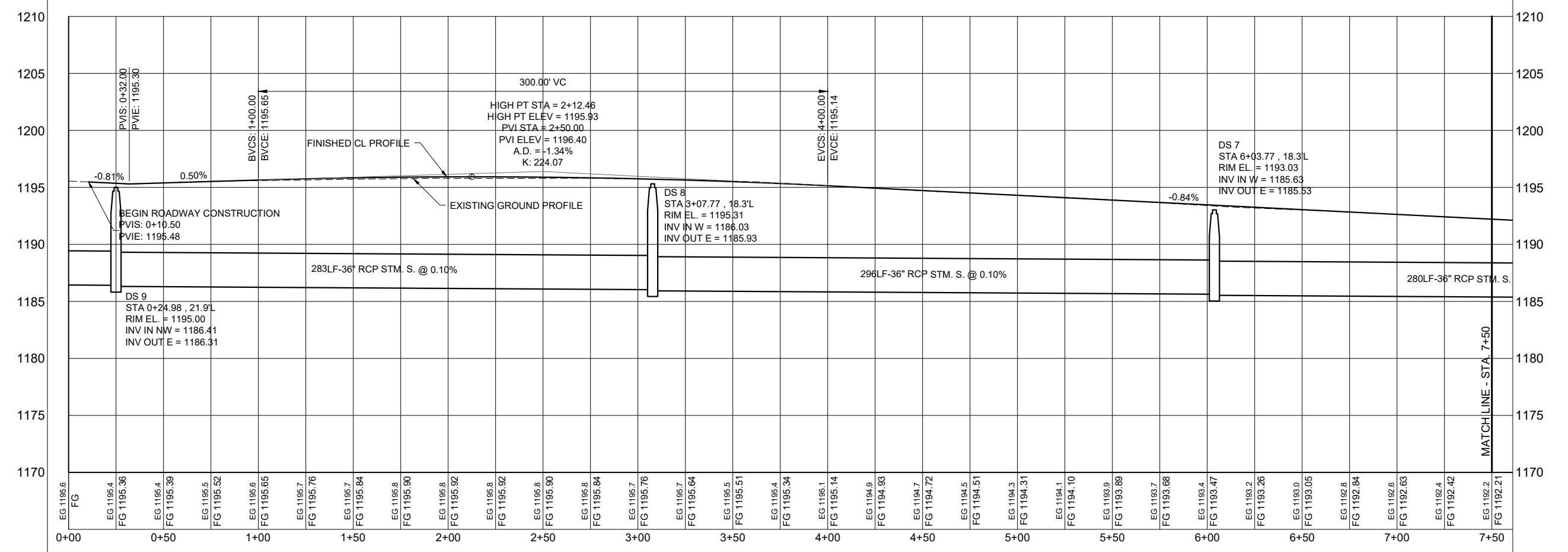
# DESIGN ROAD





# DESIGN ROAD

NOTE:  
SALVAGE EXISTING 911 SIGNS  
AND REINSTALL BEHIND MAILBOX



MEMBER CERTIFY THAT THIS PLAN, SPECIFICATION, AND REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: 11/16/2021  
LIC. NO. 41883

NO.	DATE	REVISION DESCRIPTION

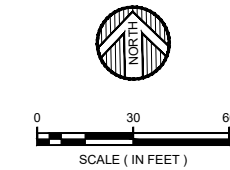
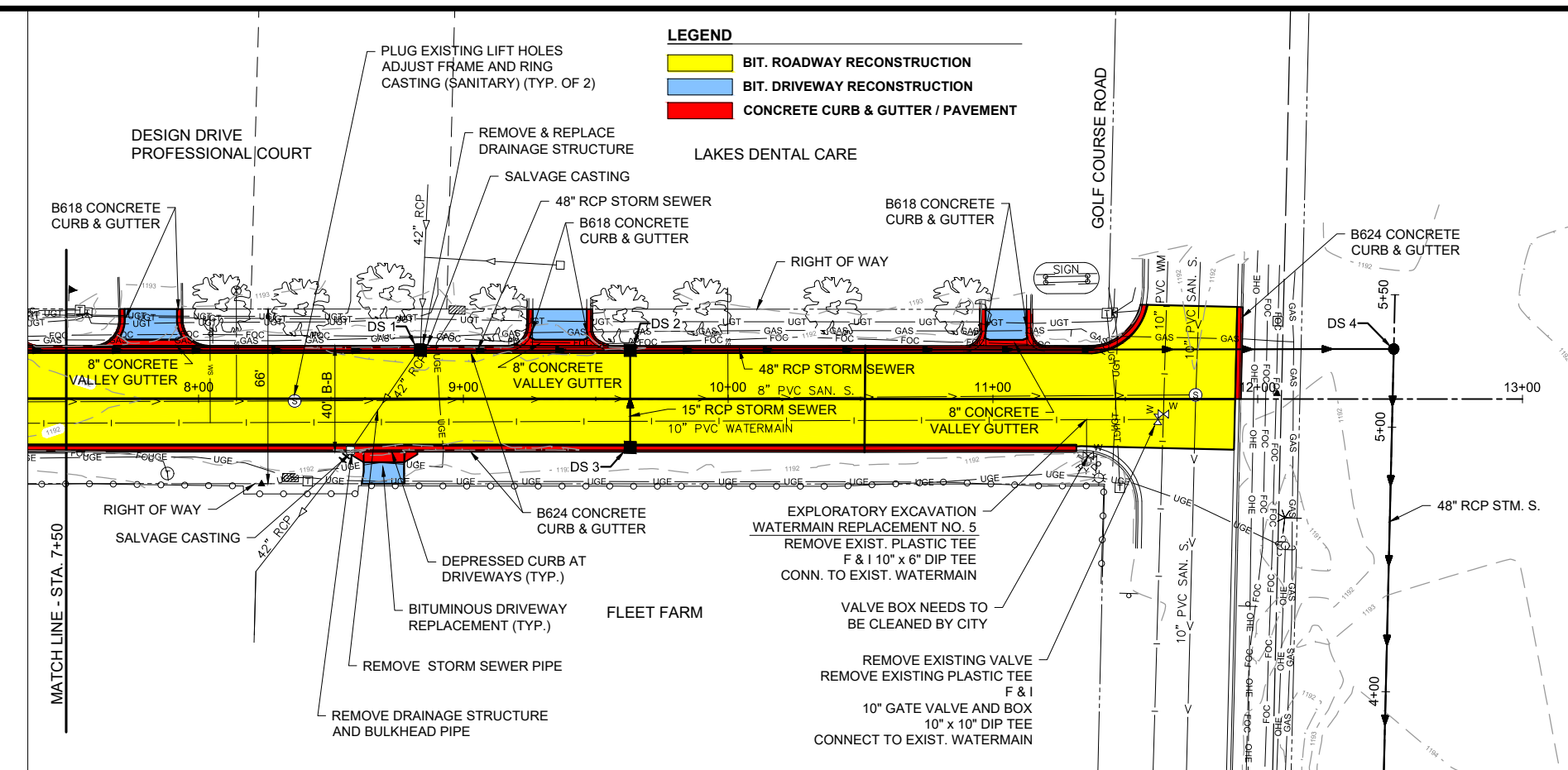
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JOB NUMBER: 2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
PLAN & PROFILE - DESIGN ROAD

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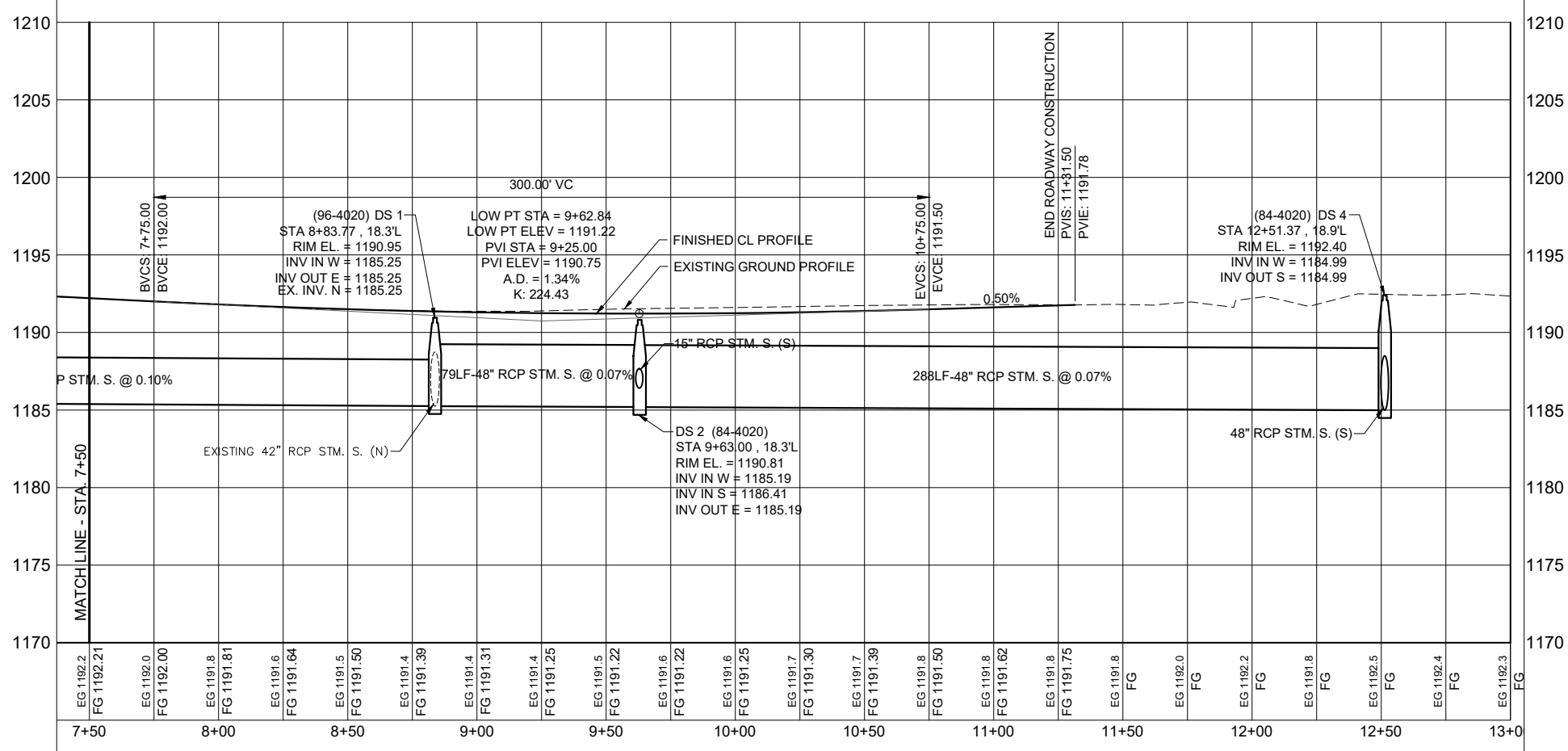
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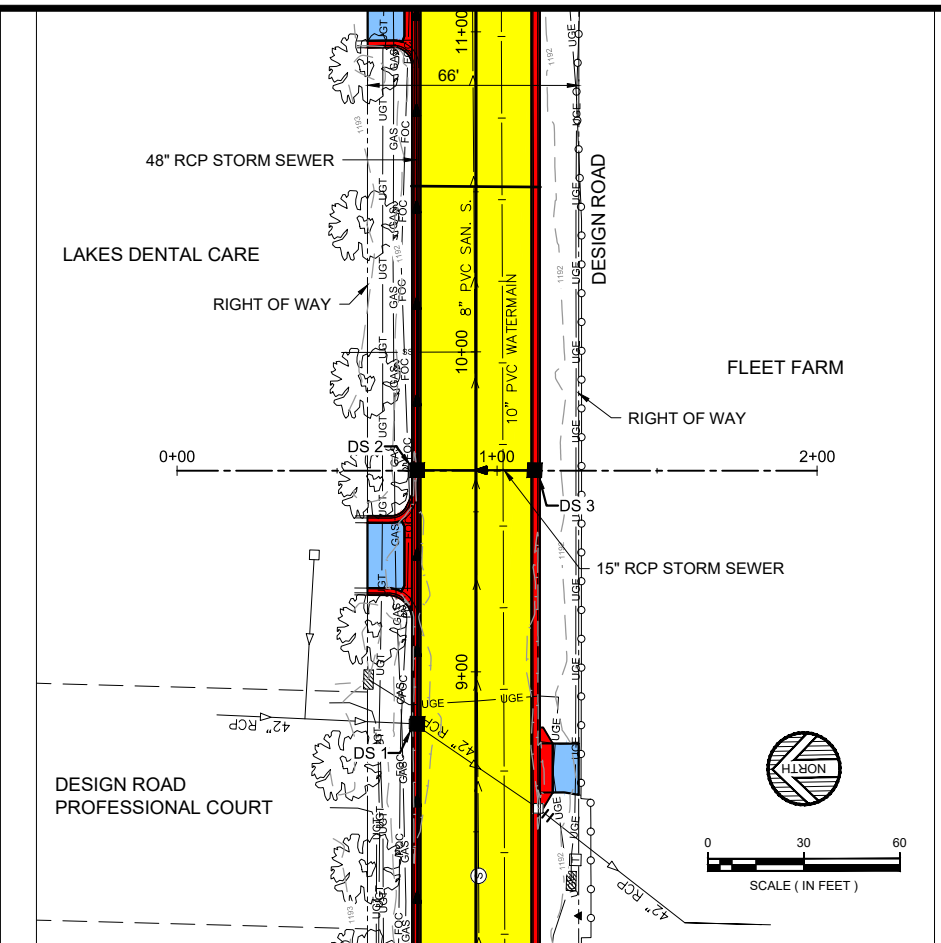
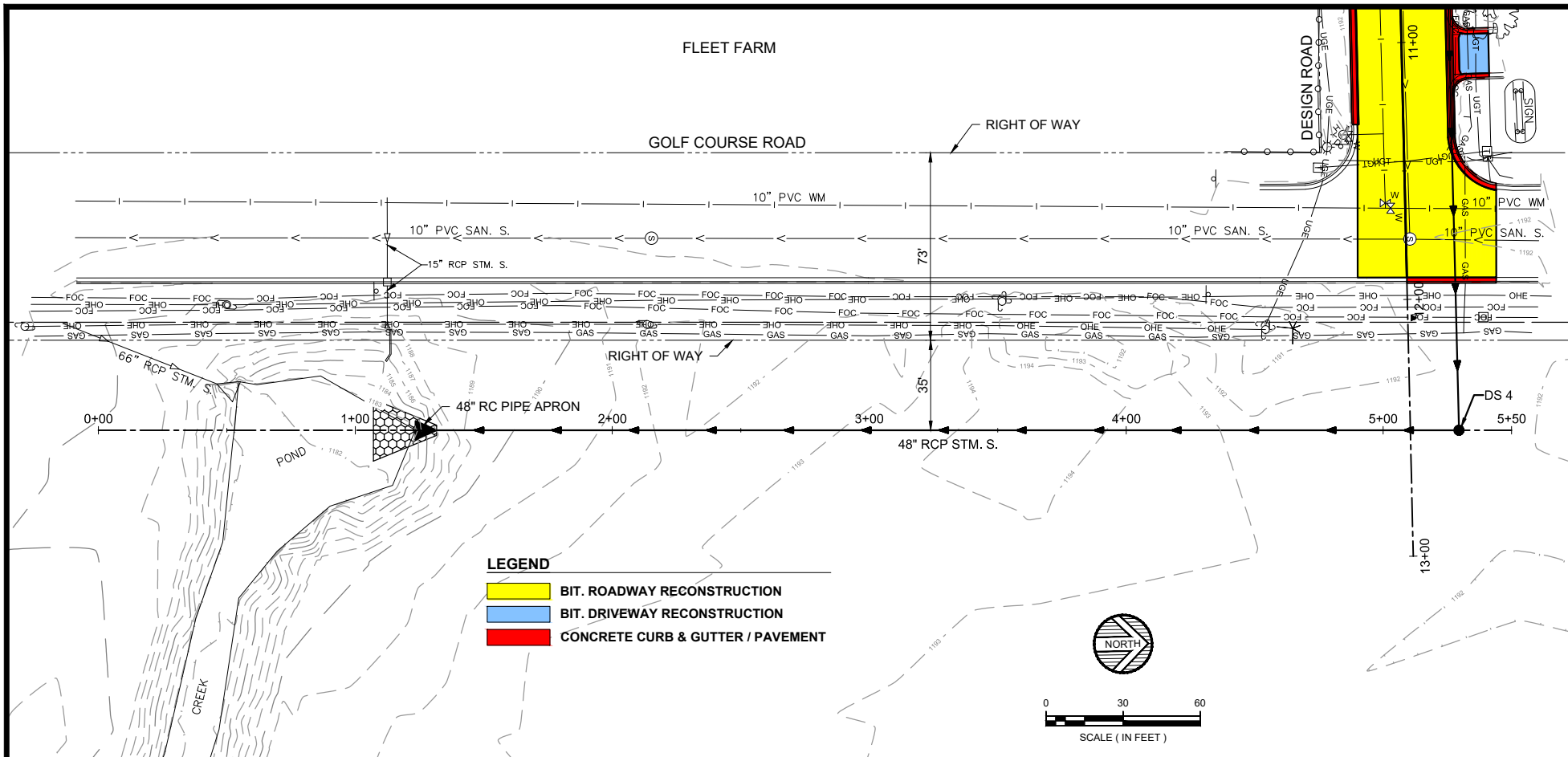
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- BIT. DRIVEWAY RECONSTRUCTION
- CONCRETE CURB & GUTTER / PAVEMENT



# DESIGN ROAD

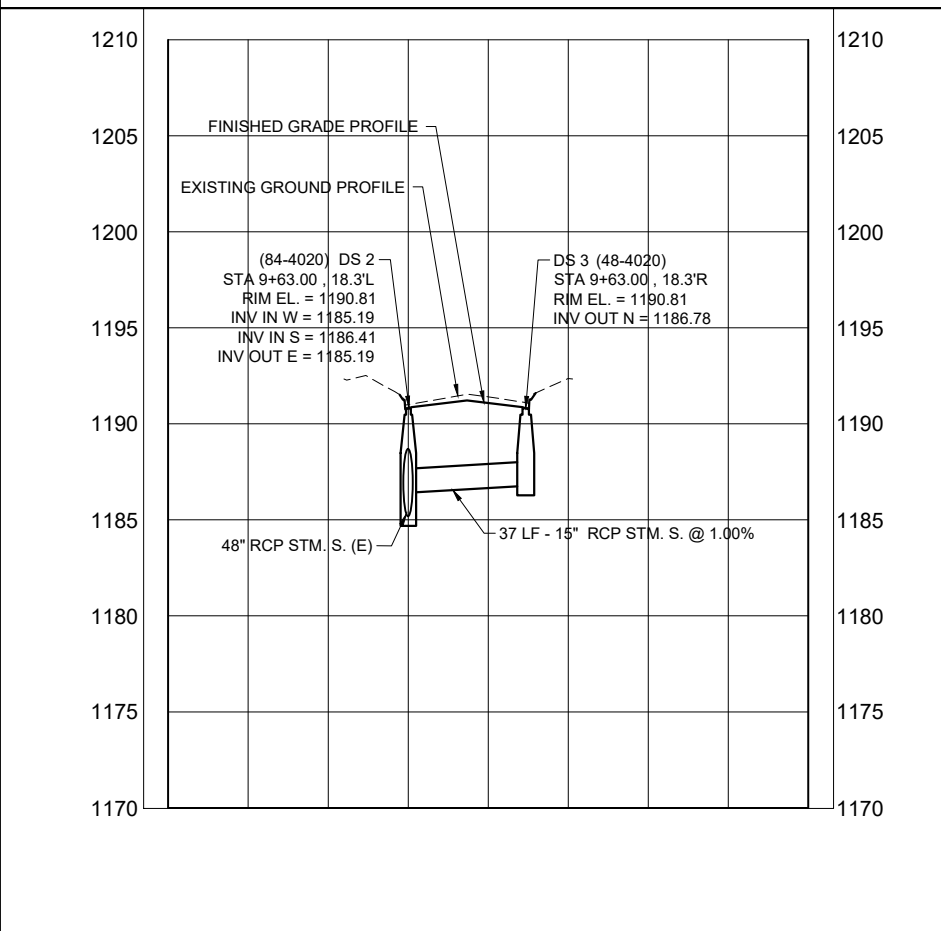
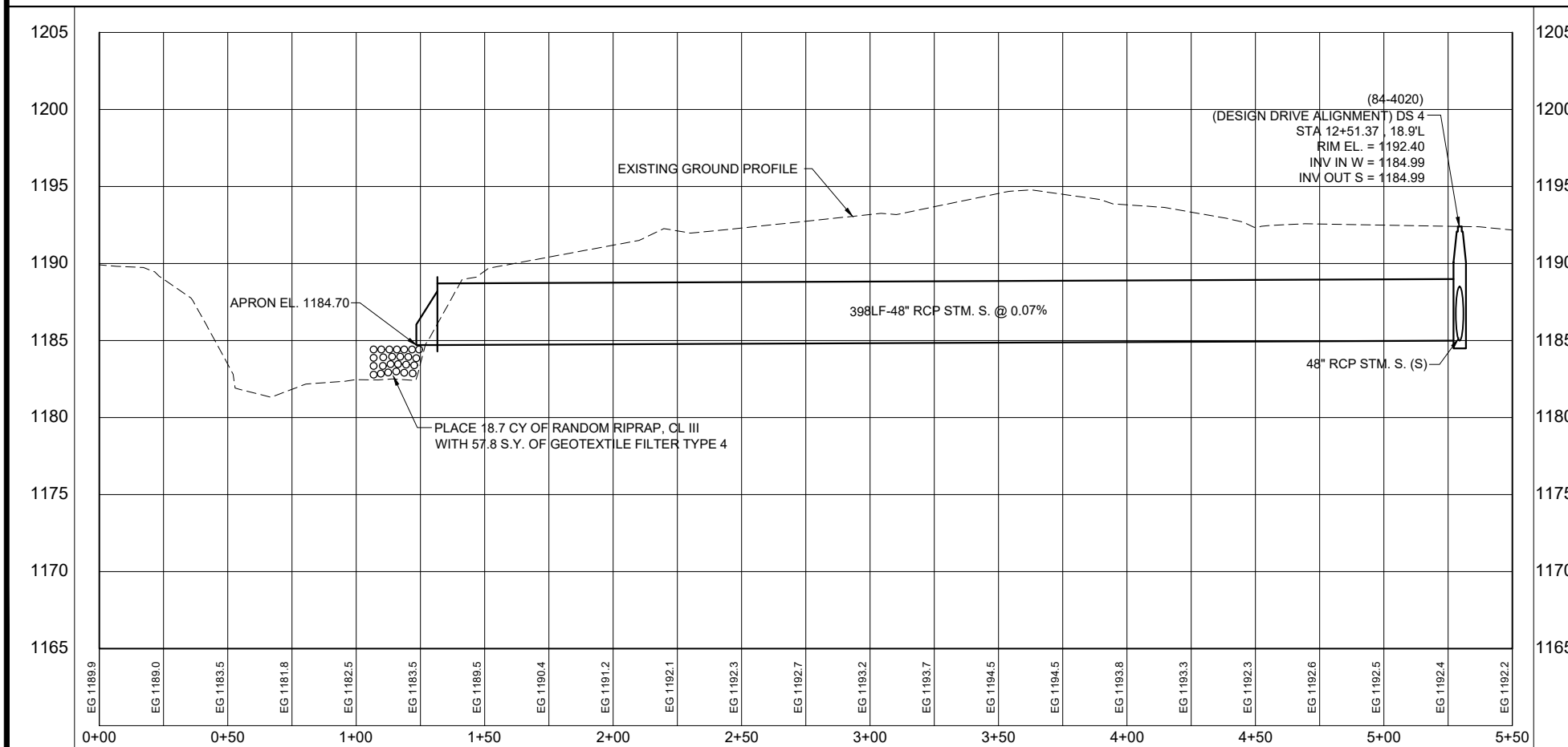
NOTE:  
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AND REINSTALL BEHIND MAILBOX





# GOLF COURSE - STORM SEWER

# DS 3 TO DS 2 - STORM SEW.



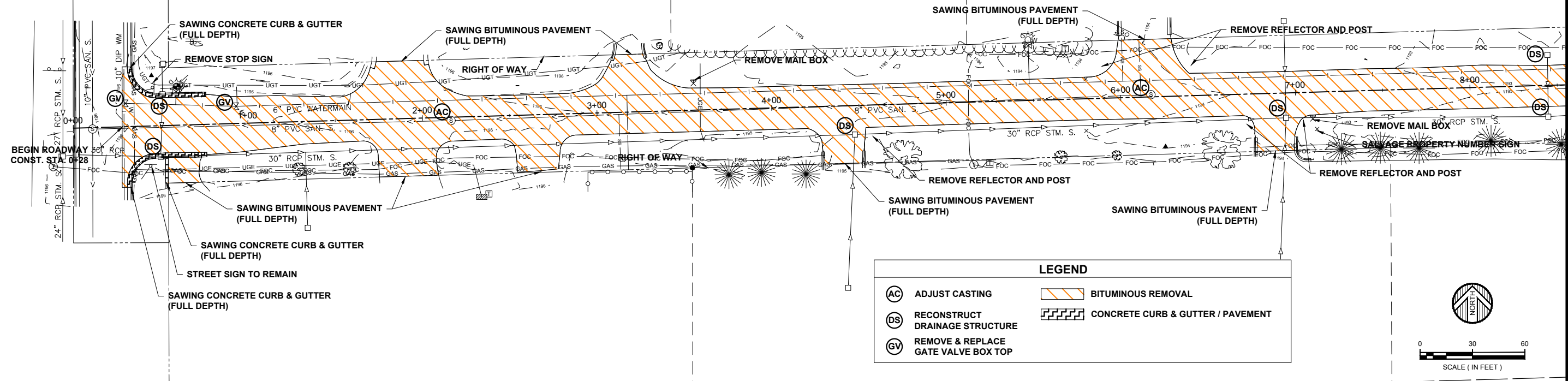
**WIDSETH**  
ARCHITECTS - ENGINEERS - SCIENTISTS - SURVEYORS

MEMBER COUNTY HAS THIS PLAN SUPERVISION FOR REPORT THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

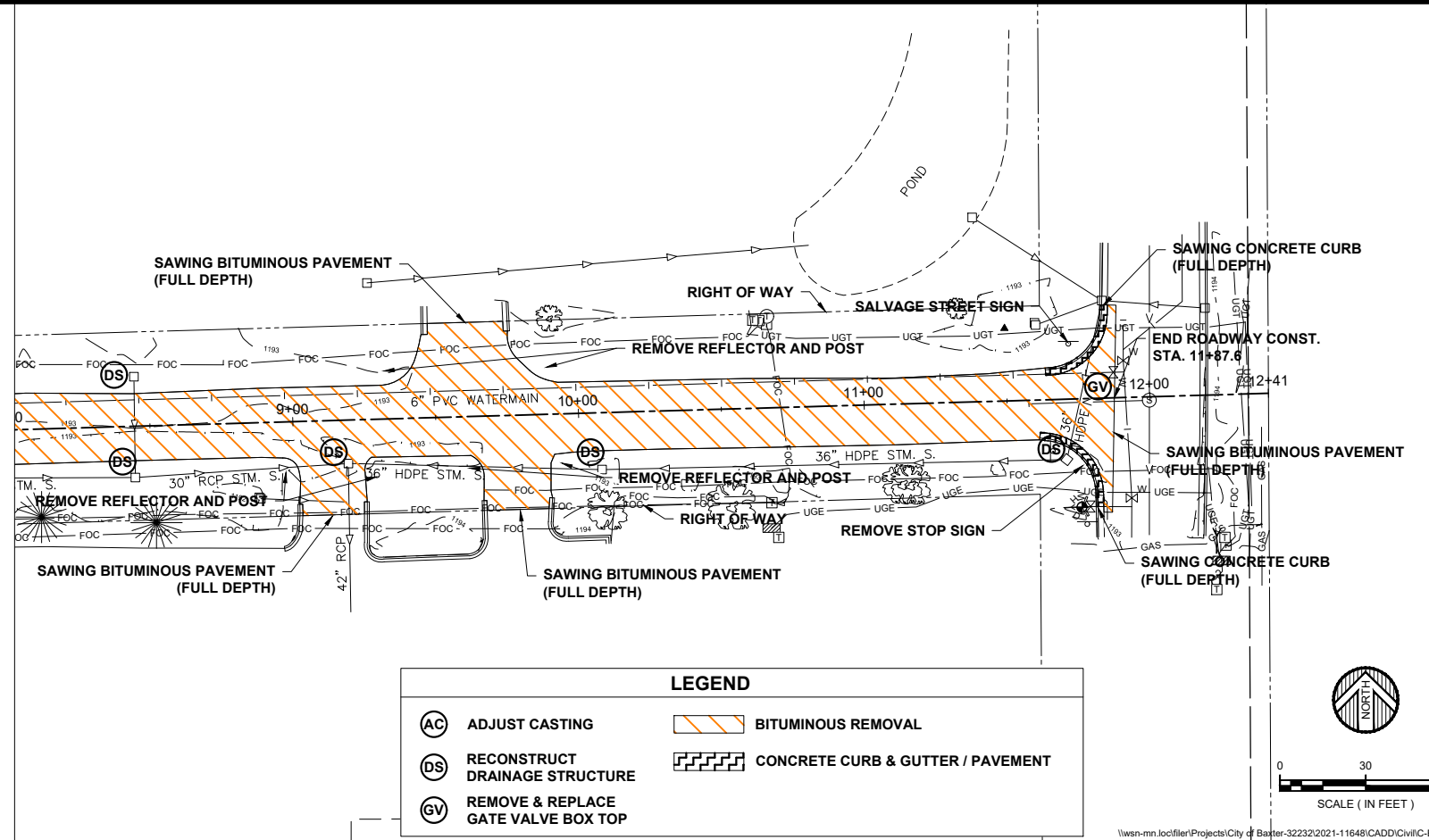
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2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
PLAN & PROFILE - GOLF COURSE STORM SEWER

SHEET NO. **37**



# UNIVERSAL ROAD

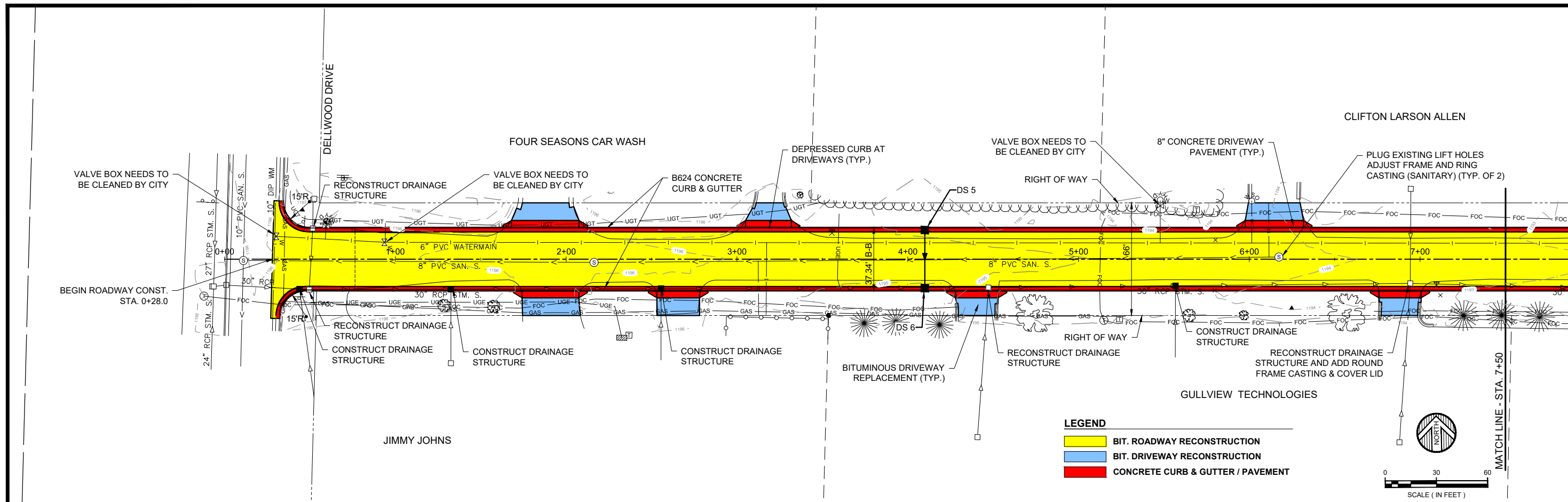


BY: MEMBER CATEGORY: THIS PLAN, SPECIFICATIONS, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
DATE: --- LIC. NO. 4183

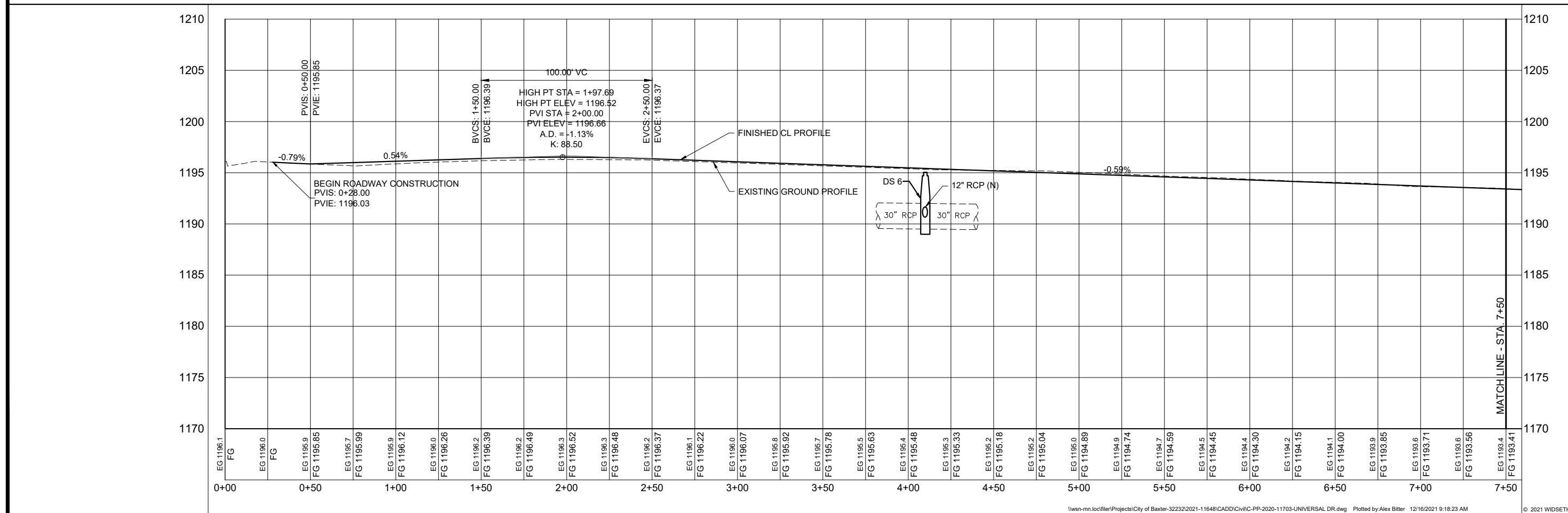
REVISIONS DESCRIPTION	DATE	REV

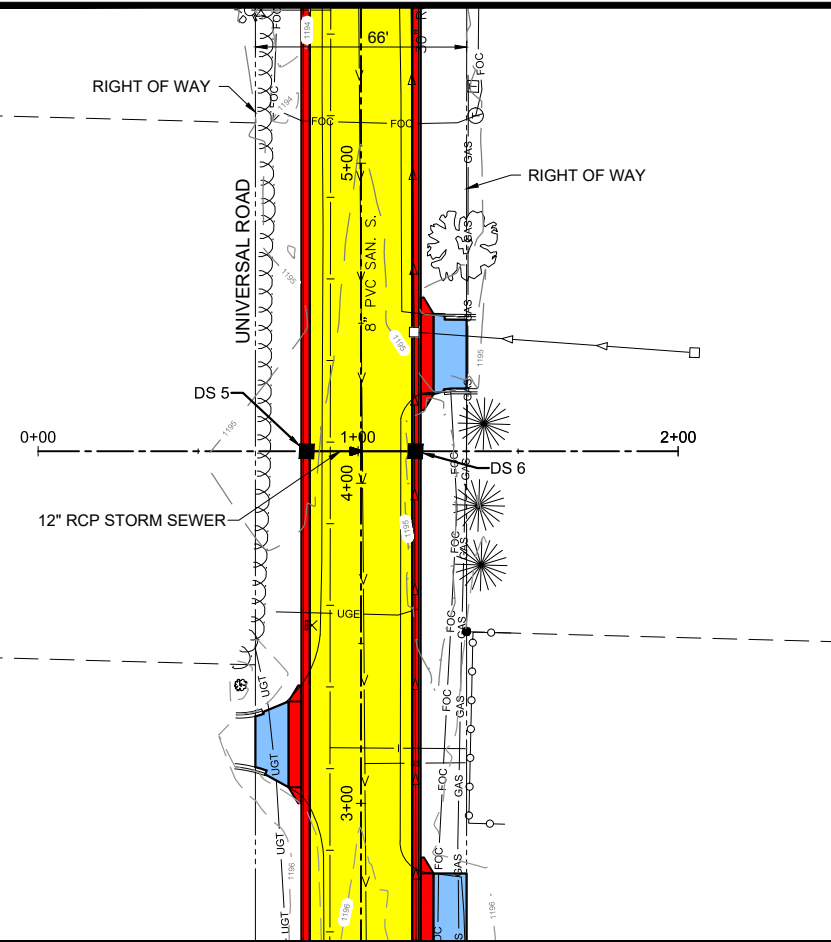
DATE: NOV. 2021	NOV. 2021
SCALE: AS SHOWN	AS SHOWN
DRAWN BY: ADB	ADB
CHECKED BY: ALW	ALW
JOB NUMBER: 2021-11648	2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
EXIST. COND. & REMOVALS - UNIVERSAL ROAD

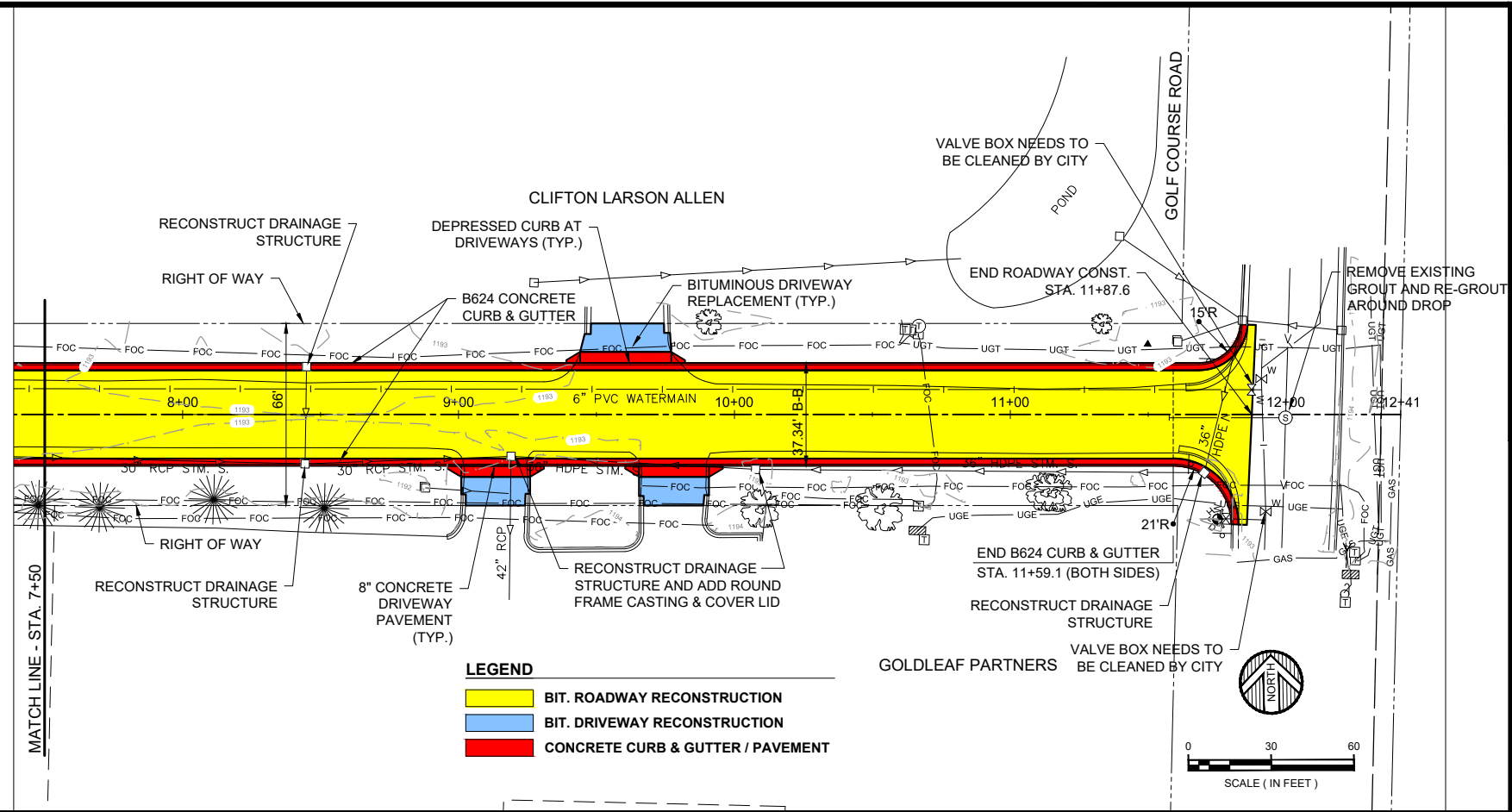
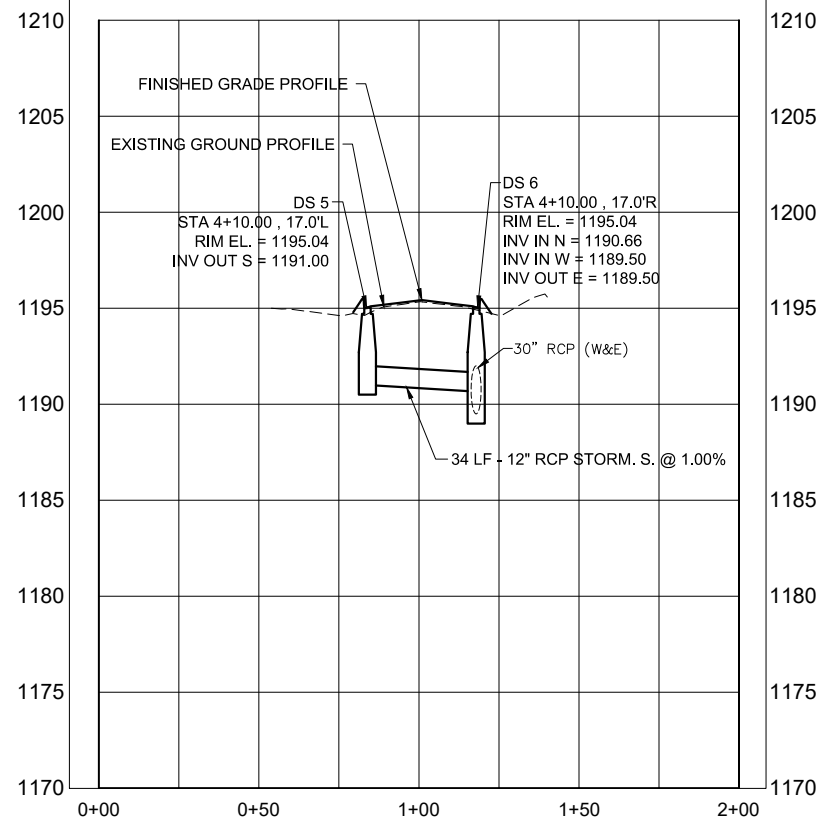


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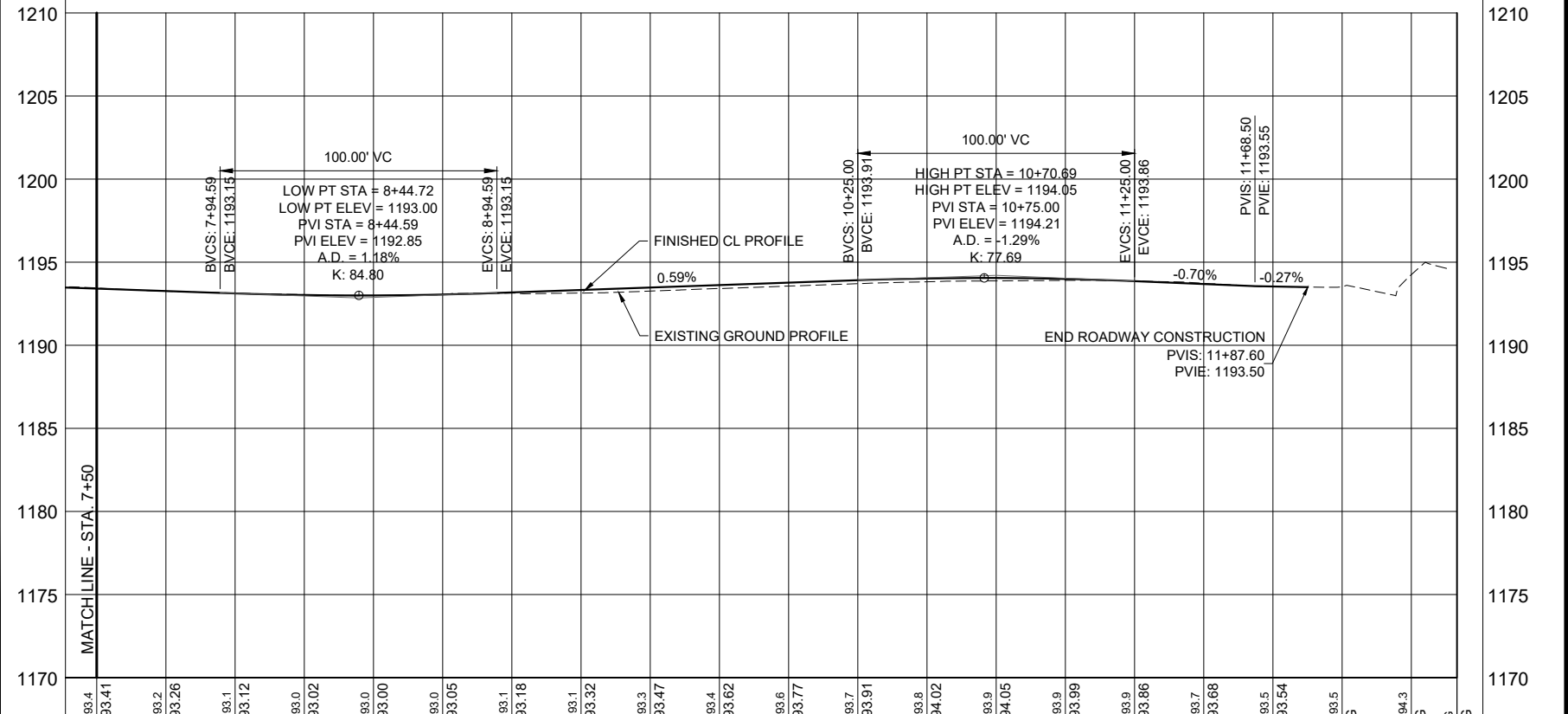




### DS 5 TO DS 6 - STORM SEWER



### UNIVERSAL ROAD



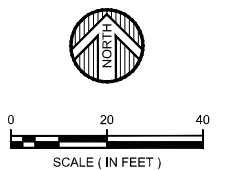
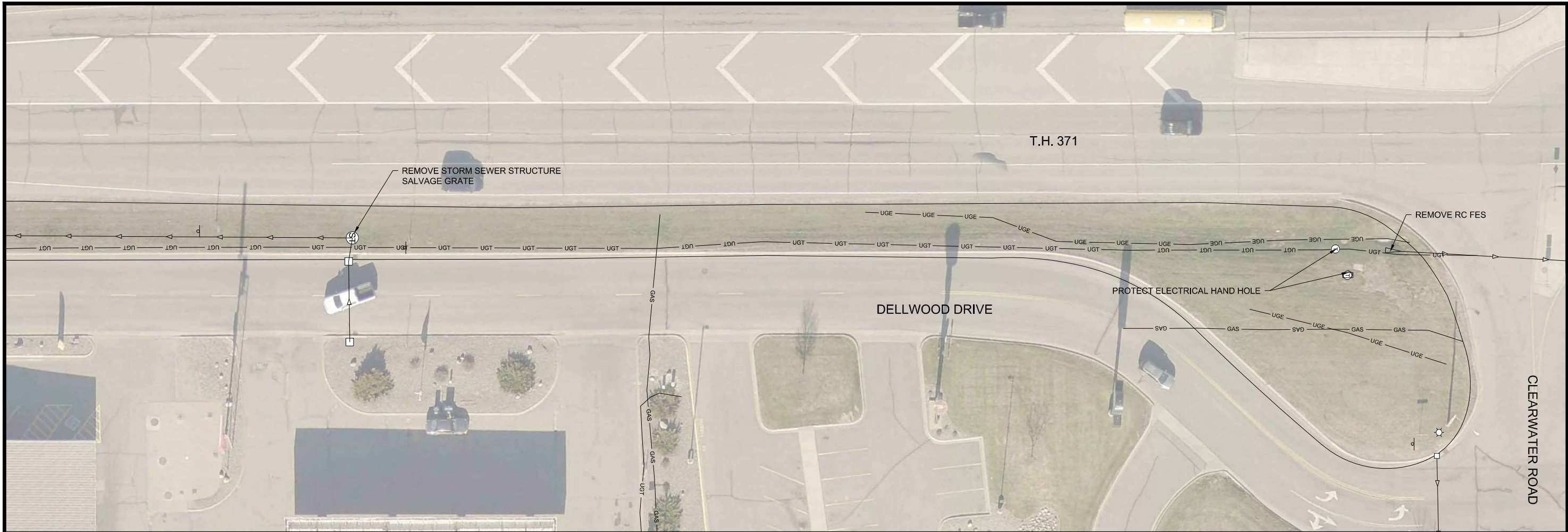
**WIDSETH**  
ARCHITECTS - ENGINEERS - SCIENTISTS - SURVEYORS

DATE: NOV. 2021  
SCALE: AS SHOWN  
DRAWN BY: ADB  
CHECKED BY: ALW  
JOB NUMBER: 2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
PLAN & PROFILE - UNIVERSAL ROAD

SHEET NO. **39**

DATE: ---  
LIC. NO. 41883  
ARIC L. WELCH



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DATE: --- L.C. NO. 41883  
ARIC L. WELCH

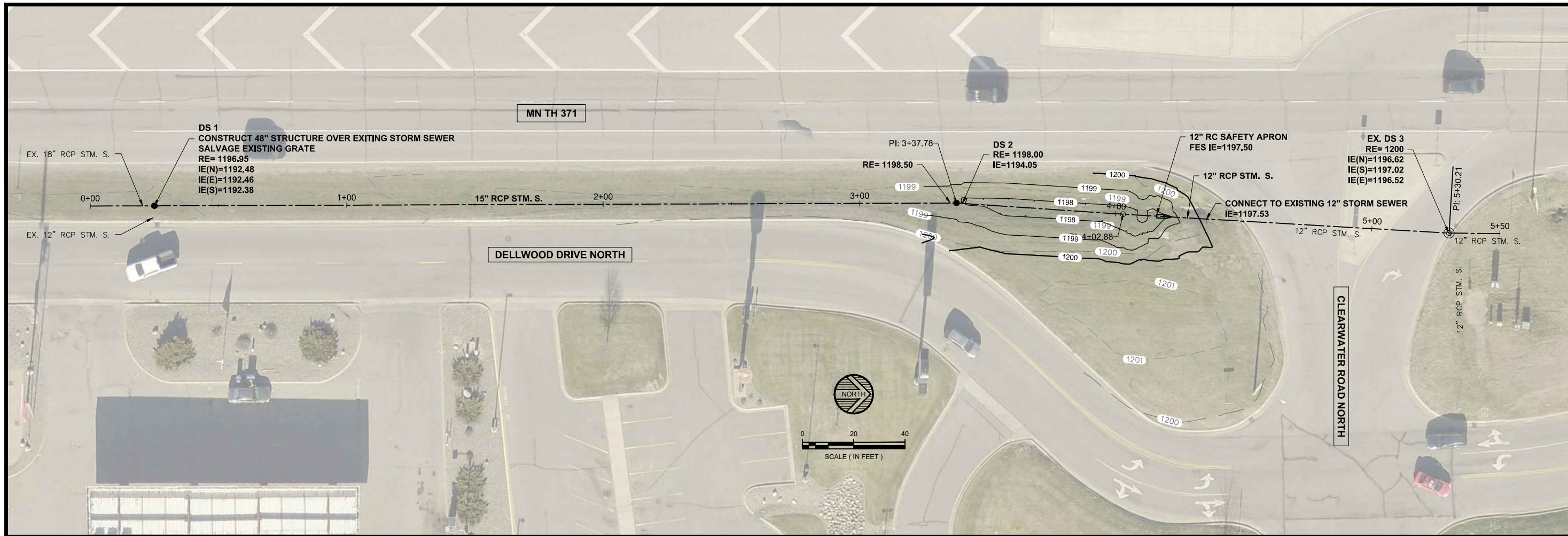
DATE	REV	REVISIONS DESCRIPTION

DATE: NOV. 2021  
SCALE: AS SHOWN  
DRAWN BY: ADB  
CHECKED BY: ALW  
JOB NUMBER: 2021-11648

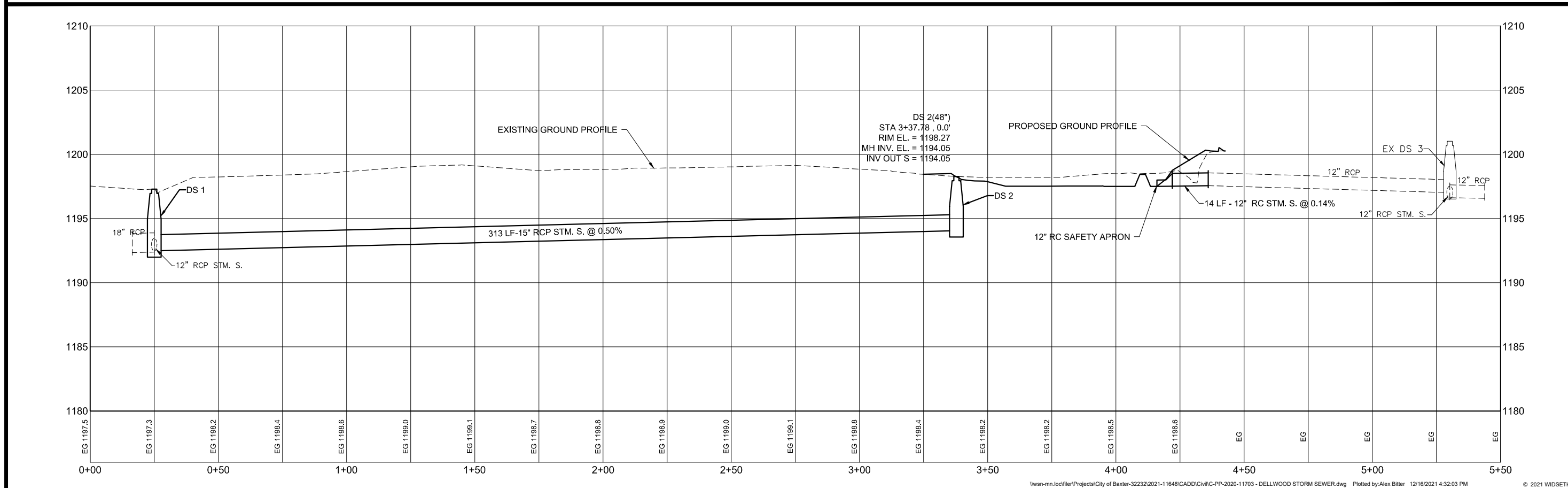
2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
EXIST. COND & REMOVALS - DELLWOOD DR. STORM SEWER

SHEET NO.  
**XX**





# DELLWOOD DRIVE NORTH - STORM SEWER



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BY: ARIC L. WELCH, DATE: 11/16/2021, LC. NO. 41883

REV#	DATE	DESCRIPTION

DATE: NOV. 2021  
 SCALE: AS SHOWN  
 DRAWN BY: ADB  
 CHECKED BY: ALW  
 JOB NUMBER: 2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
 CITY OF BAXTER  
 BAXTER, MINNESOTA

PLAN & PROFILE - DELLWOOD DRIVE STORM SEWER

SHEET NO. 40

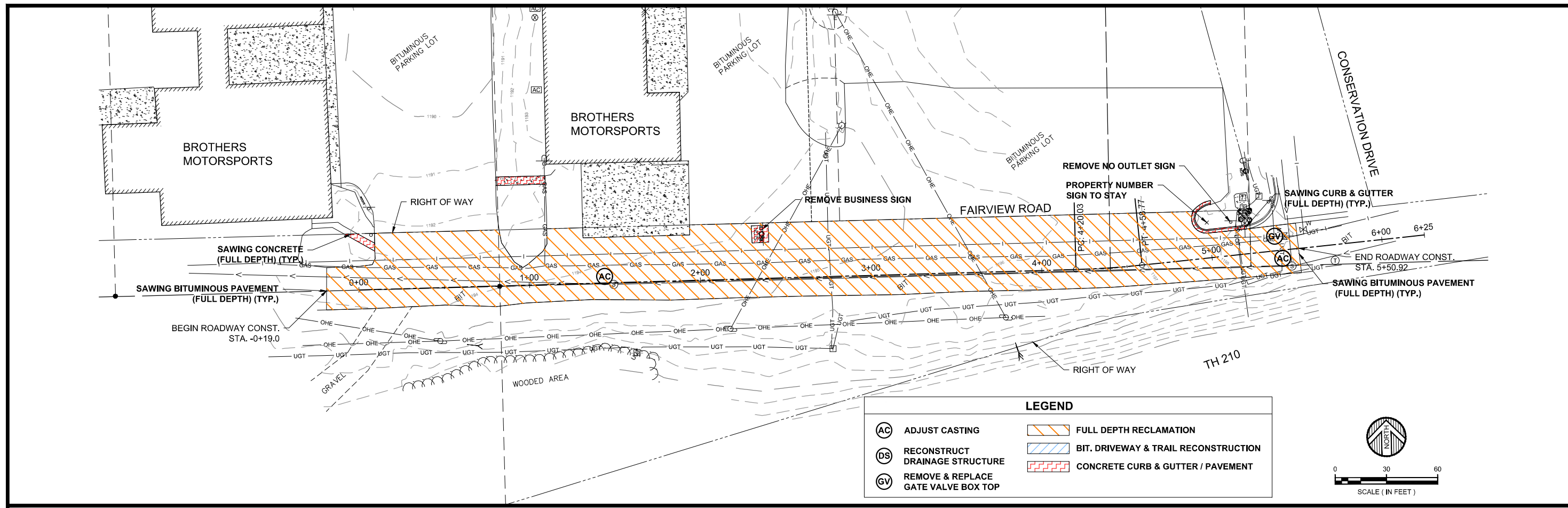
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DATE	REVISION DESCRIPTION

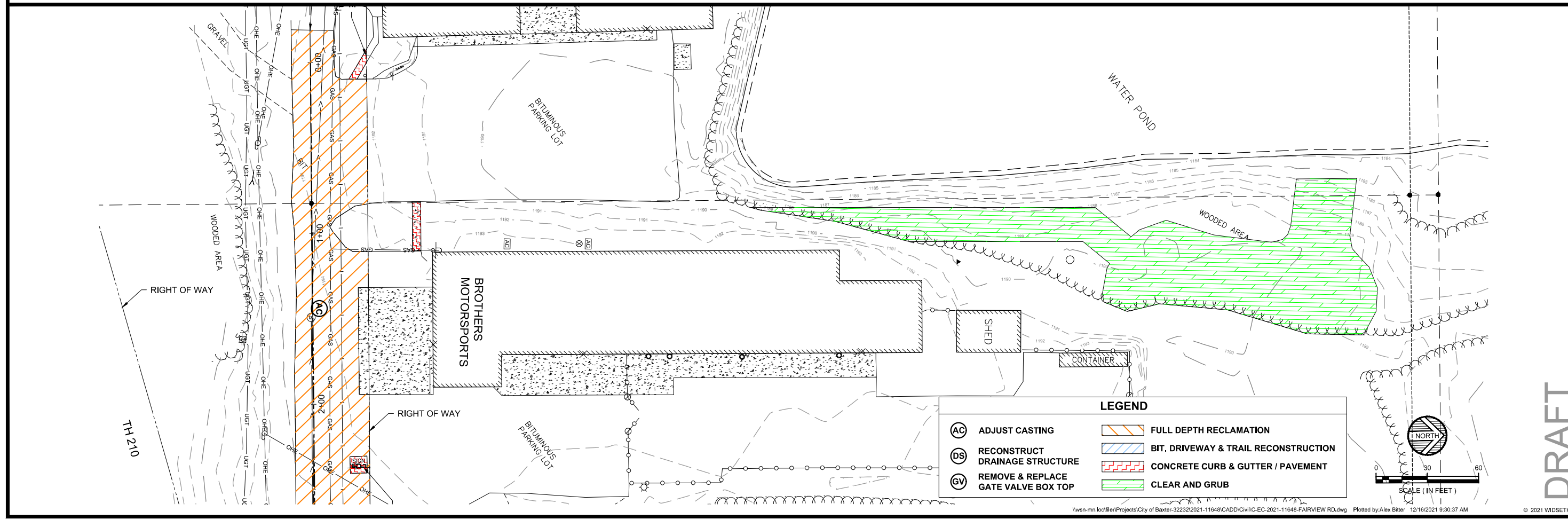
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JOB NUMBER:	2021-11648

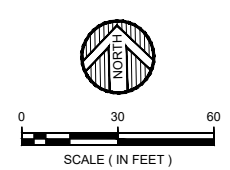
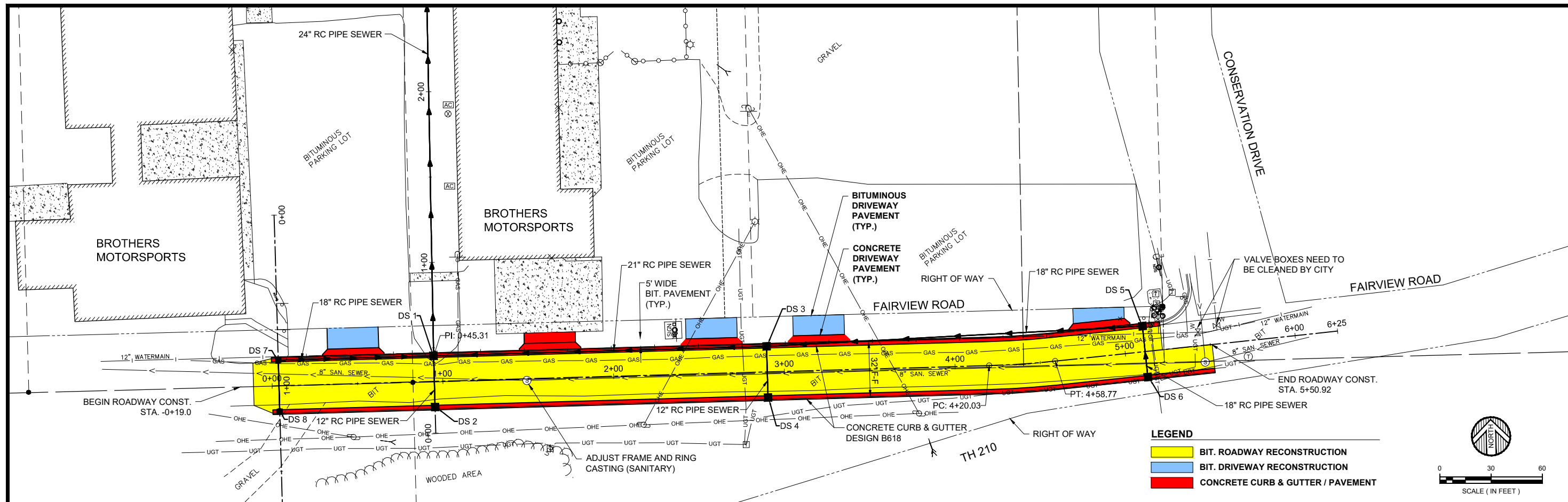
2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
EXIST. COND. & REMOVALS - FAIRVIEW ROAD

DRAFT



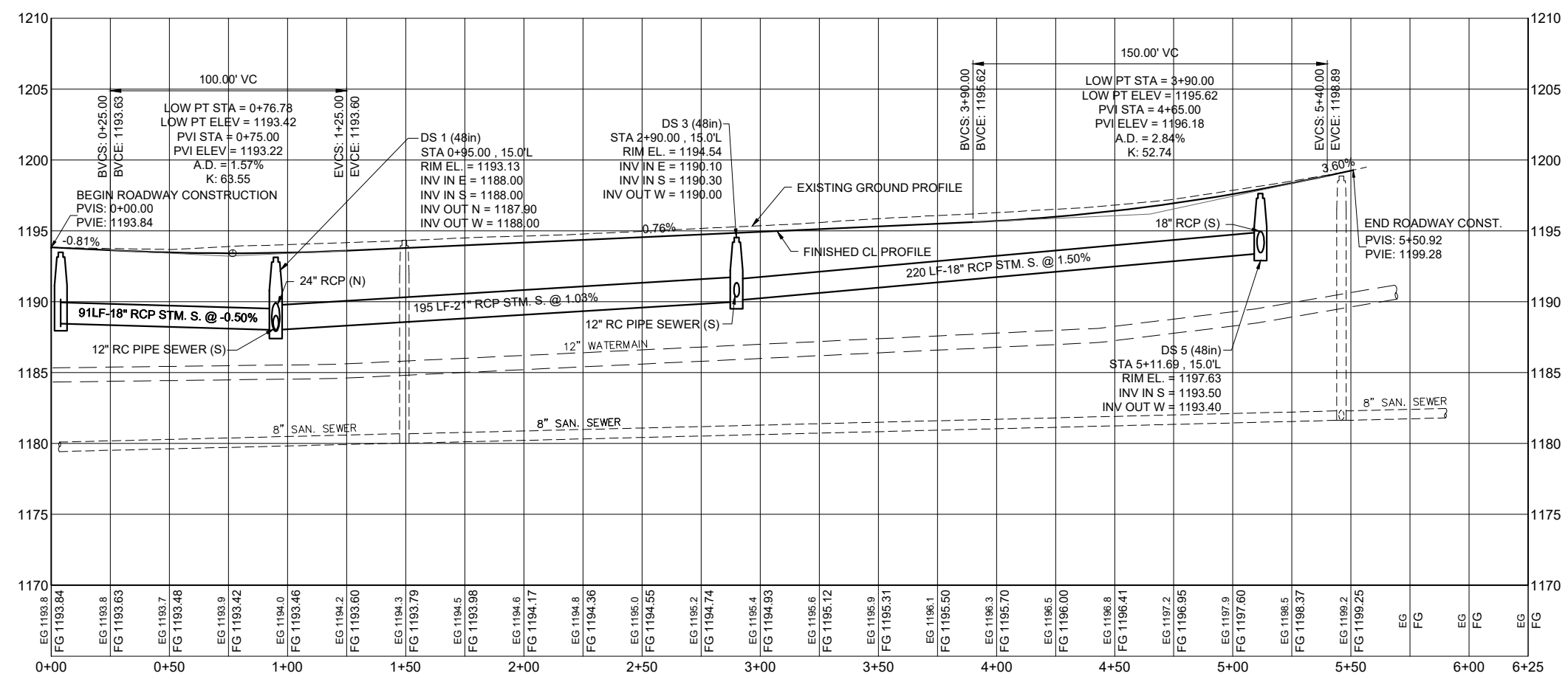
# FAIRVIEW ROAD





**FAIRVIEW ROAD**

NOTE:  
 SALVAGE EXISTING 911 SIGNS  
 AND REINSTALL BEHIND MAILBOX



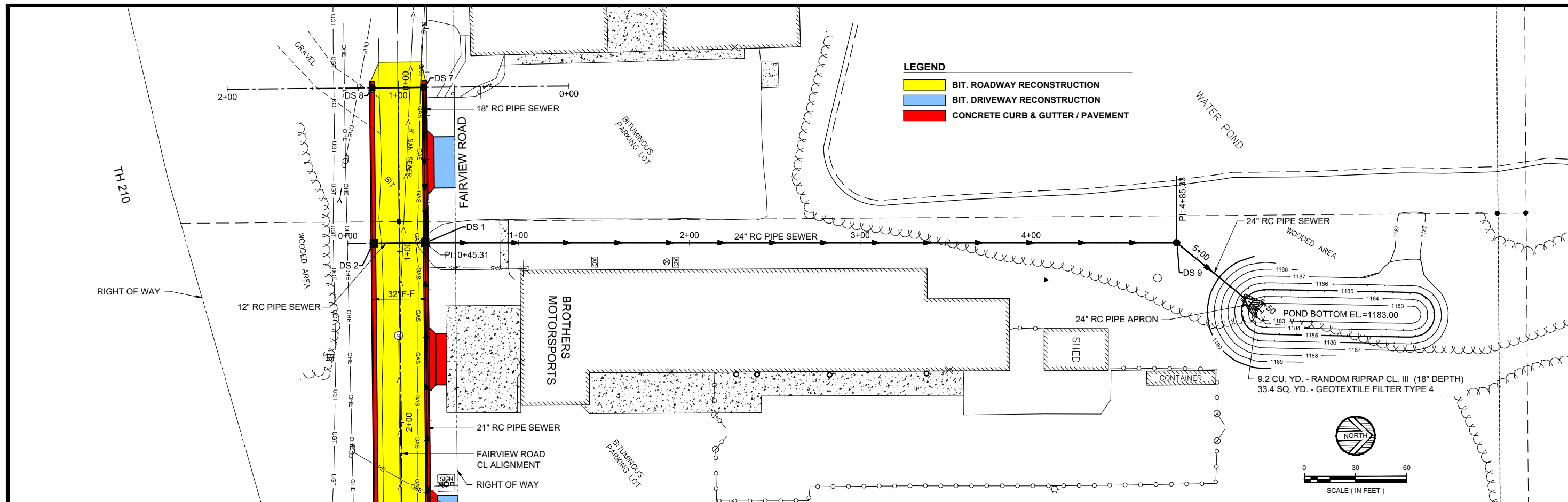
**DRAFT**

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BY: \_\_\_\_\_  
REVISIONS DESCRIPTION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REV: \_\_\_\_\_

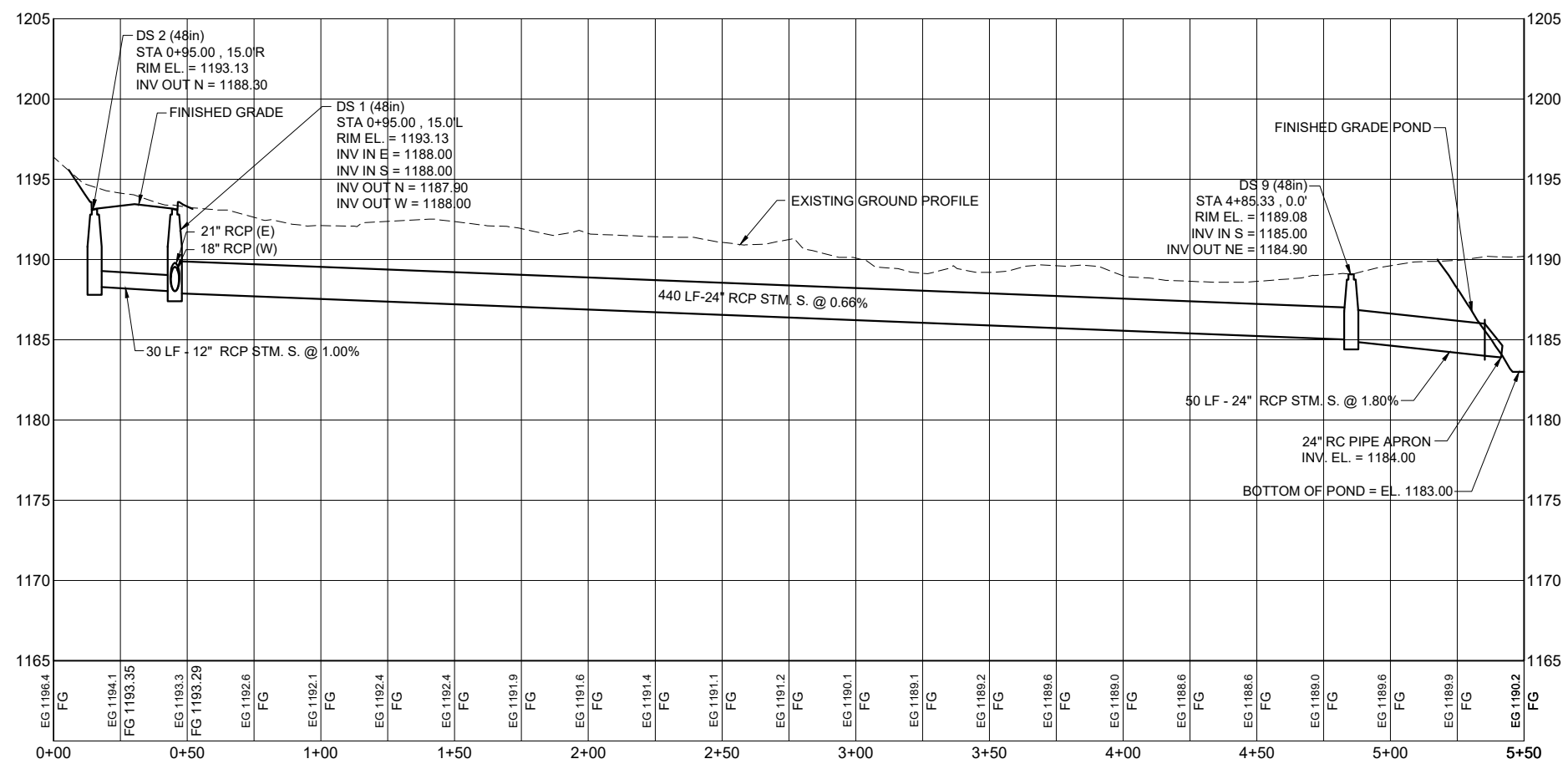
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DRAWN BY: ADB  
CHECKED BY: ALW  
JOB NUMBER: 2021-11648

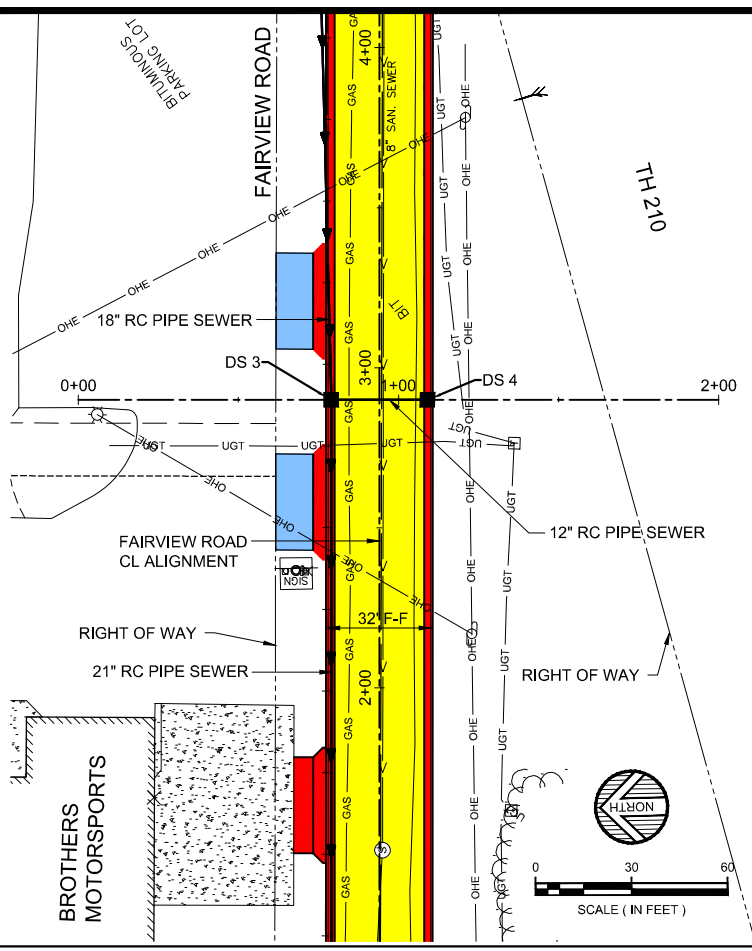
2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
PLAN & PROFILE - STORM SEWER ALIGNMENT



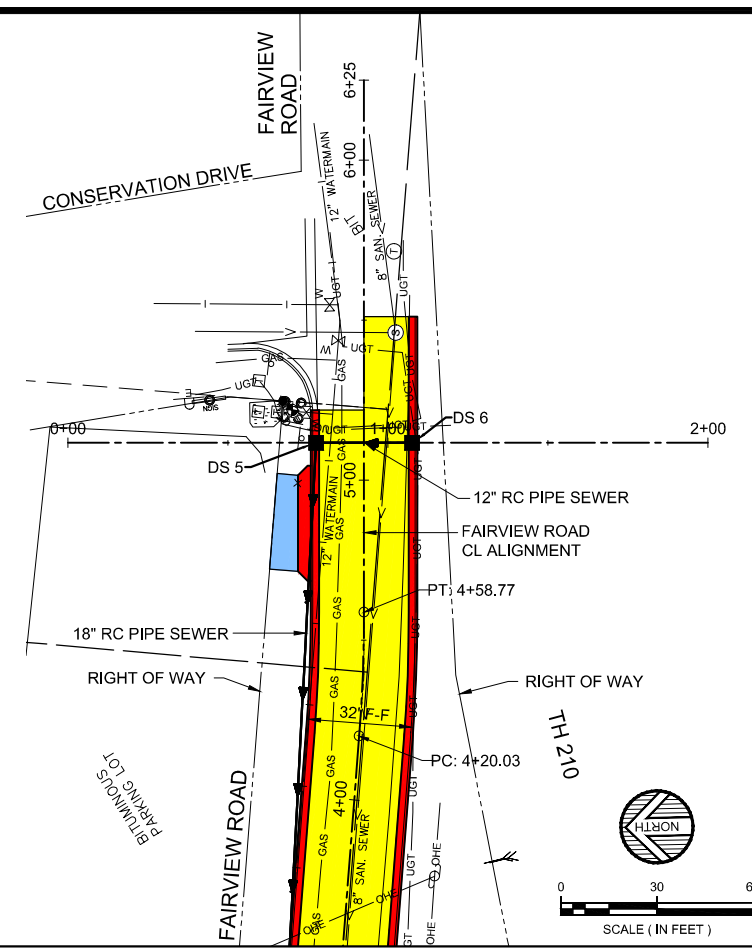
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NOTE:  
SALVAGE EXISTING 911 SIGNS  
AND REINSTALL BEHIND MAILBOX

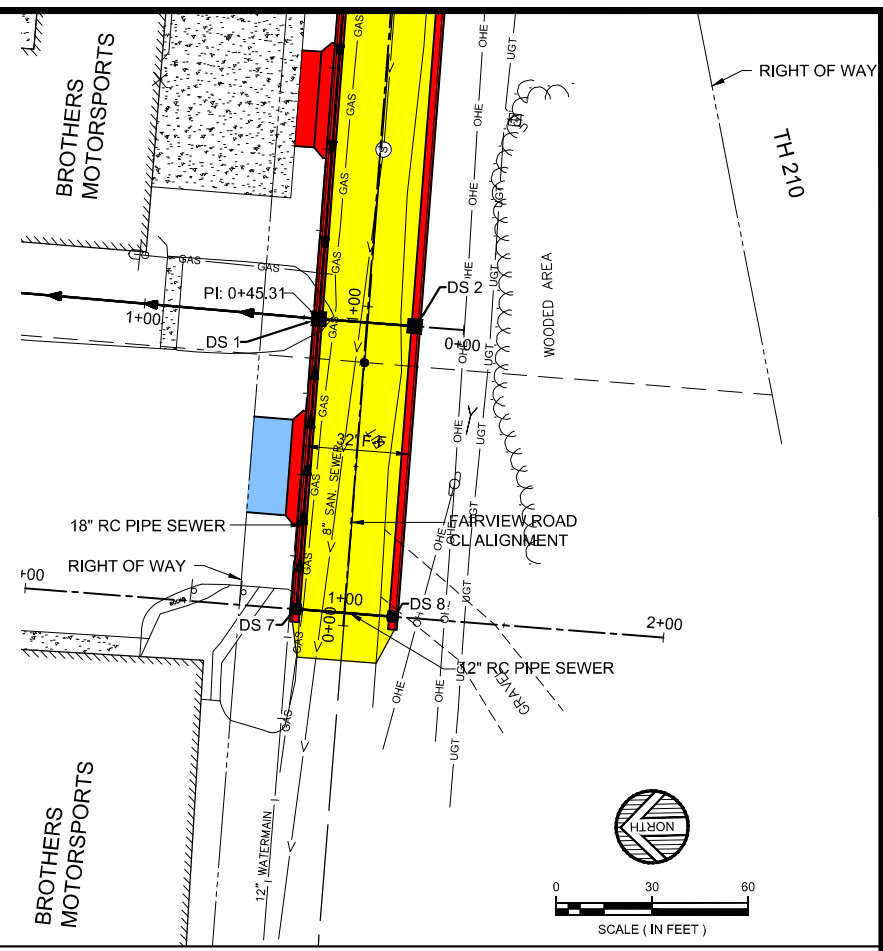




**DS 4 TO DS 3**

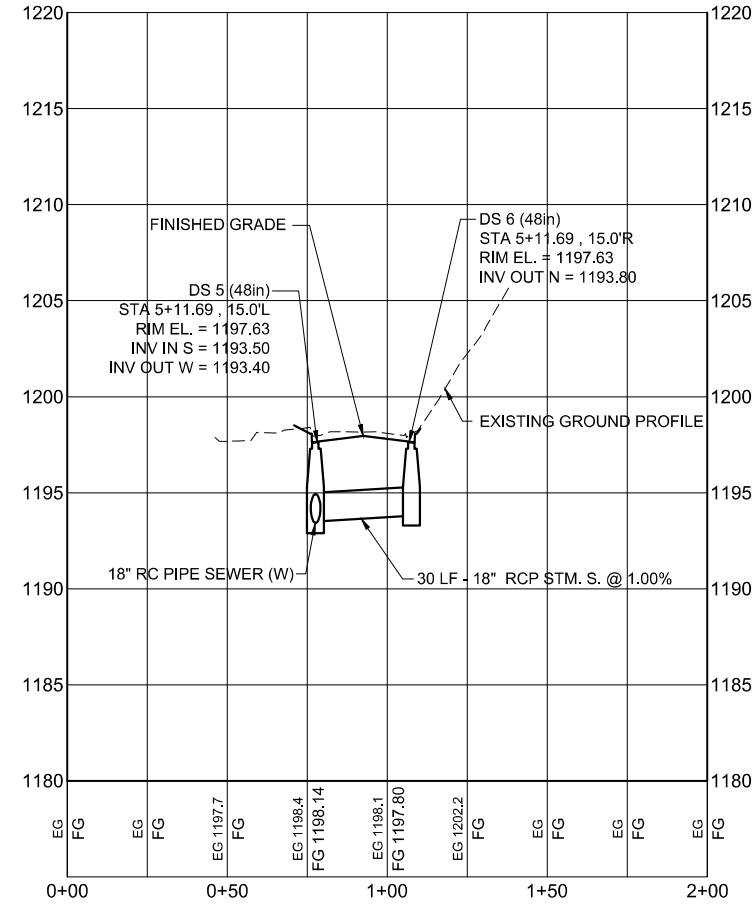
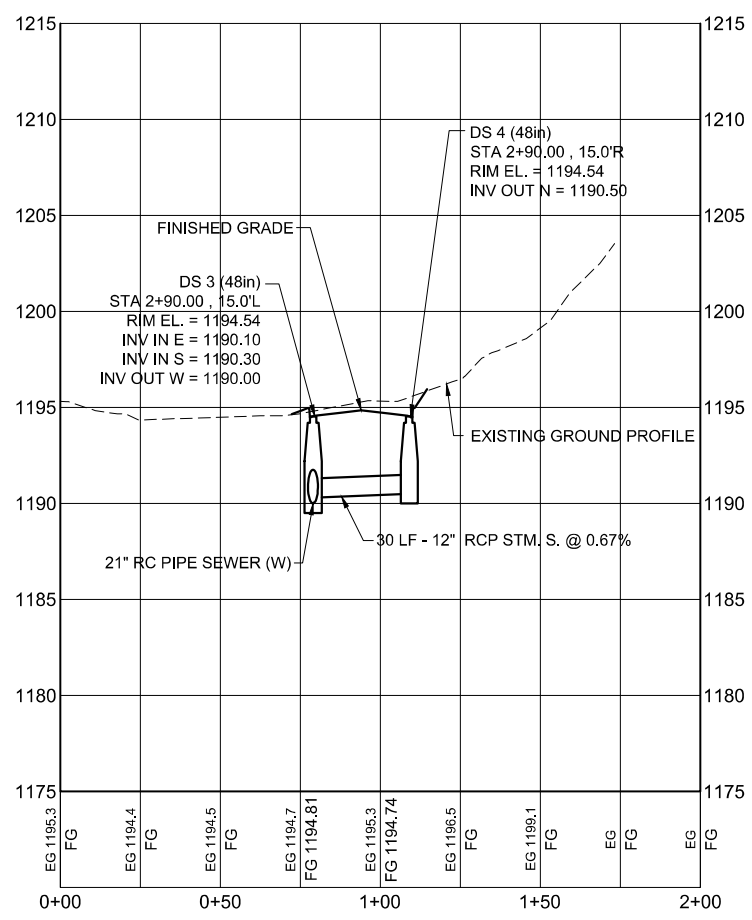


**DS 6 TO DS 5**



**DS 8 TO DS 7**

NOTE:  
SALVAGE EXISTING 911  
SIGNS AND REINSTALL  
BEHIND MAILBOX

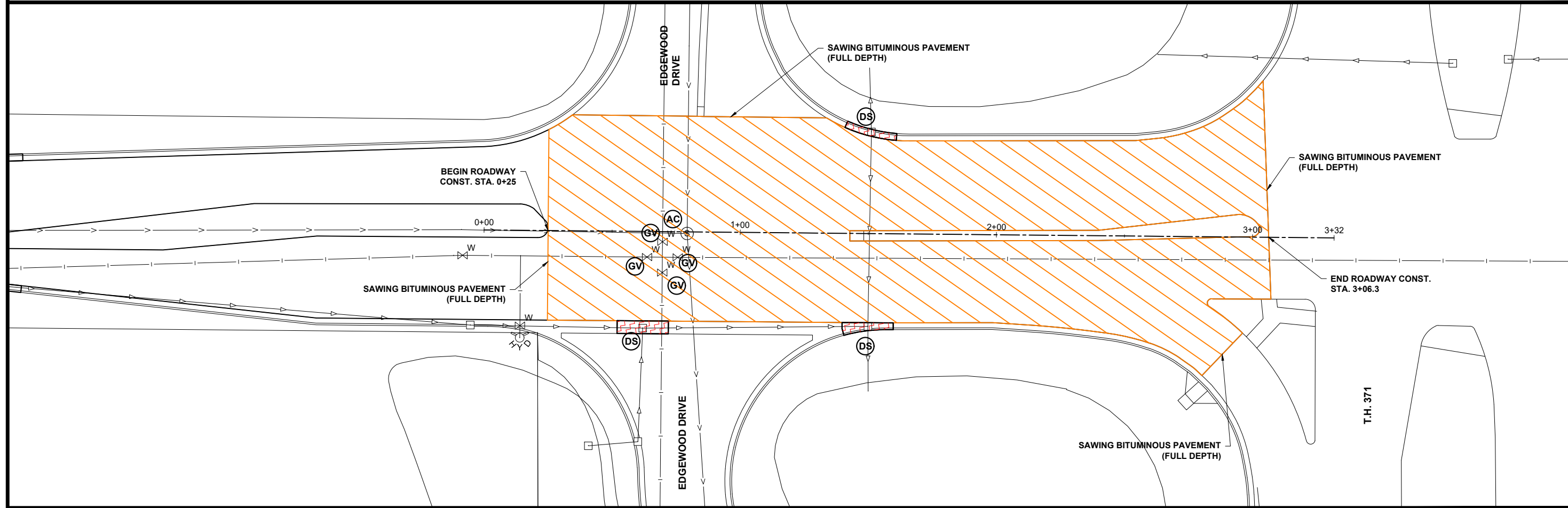


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SCALE: AS SHOWN  
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CHECKED BY: ALW  
JOB NUMBER: 2021-11648

2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
CITY OF BAXTER  
BAXTER, MINNESOTA  
PLAN & PROFILE - DS4-DS3 - DS6-DS5

SHEET NO.  
**38**



# WOIDA ROAD

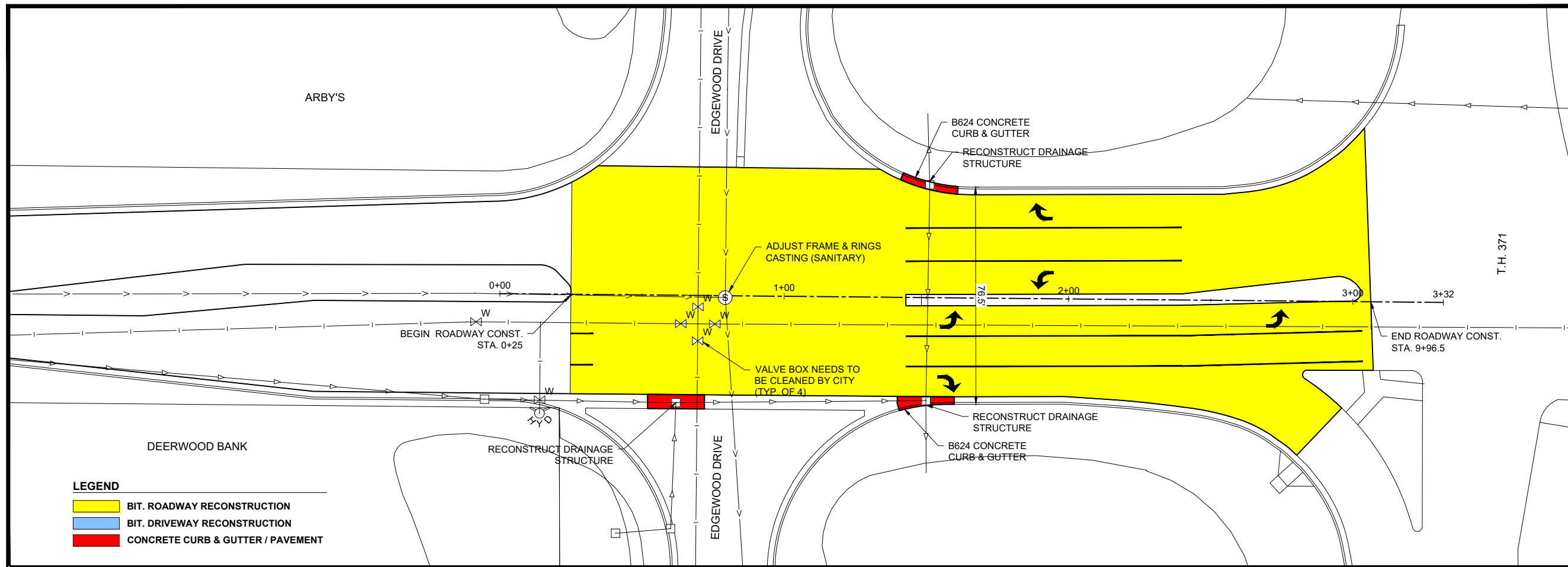
LEGEND			
(AC)	ADJUST CASTING	[Orange Hatched]	FULL DEPTH RECLAMATION
(DS)	RECONSTRUCT DRAINAGE STRUCTURE	[Blue Hatched]	BIT. DRIVEWAY & TRAIL RECONSTRUCTION
(GV)	REMOVE & REPLACE GATE VALVE BOX TOP	[Red Hatched]	CONCRETE CURB & GUTTER / PAVEMENT

MEMBER CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 ARIC L. WELCH LIC. NO. 41883

REVISION DESCRIPTION	DATE	REVISION

DATE: NOV. 2021	AS SHOWN
SCALE: ADB	ALW
DRAWN BY: ADB	CHECKED BY: ALW
JOB NUMBER: 2021-11648	

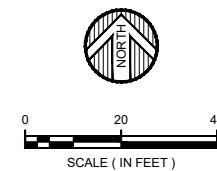
2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
 CITY OF BAXTER  
 BAXTER, MINNESOTA  
 EXIST. COND. & REMOVALS - WOIDA ROAD



**LEGEND**

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<span style="display:inline-block; width:15px; height:10px; background-color:red; border:1px solid black;"></span>	CONCRETE CURB & GUTTER / PAVEMENT

# WOIDA ROAD

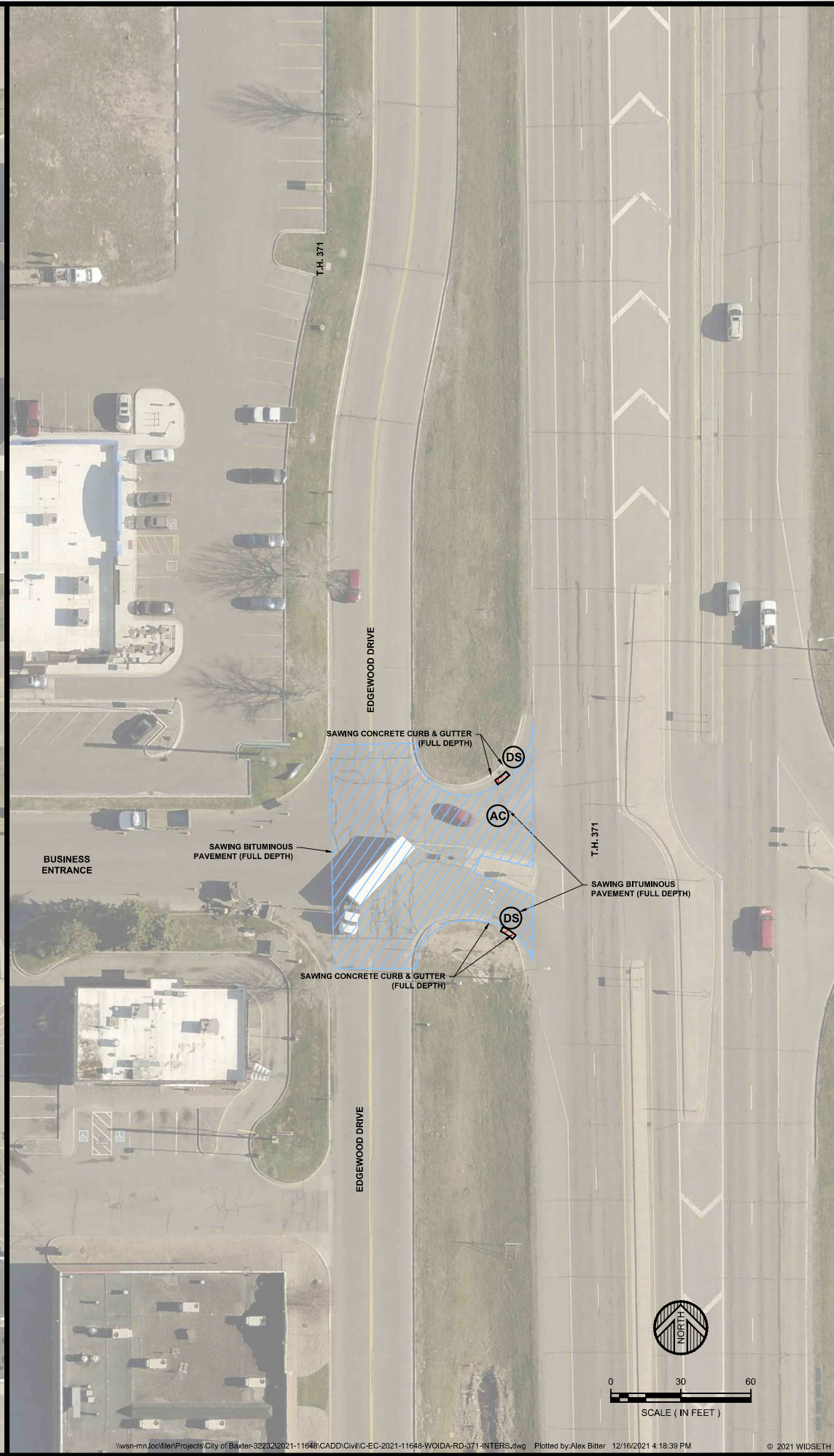
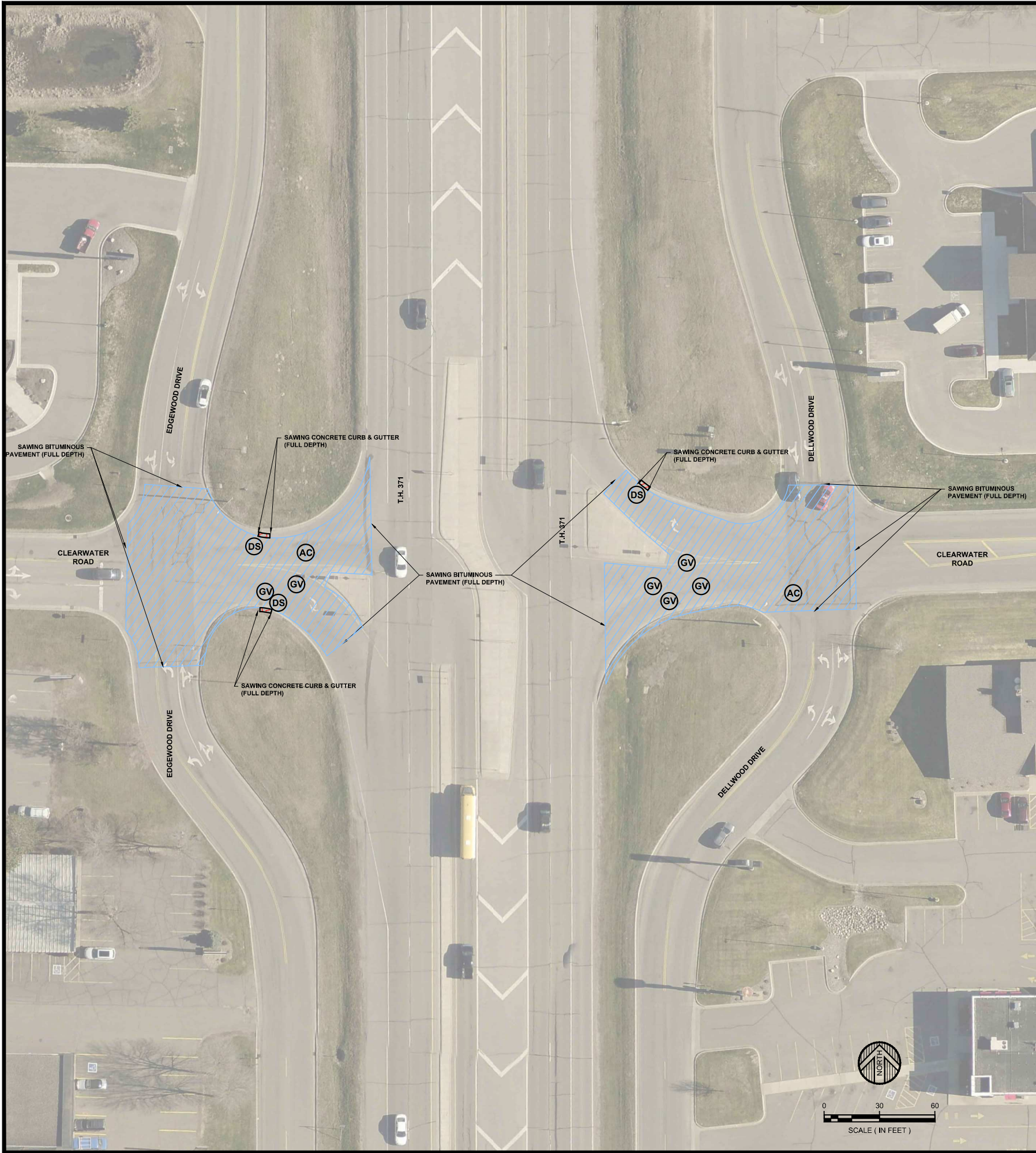


MEMBER COUNTY THAT IS AN SUPERVISOR ON REPORT  
 THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER  
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 ARIC L. WELCH DATE: --- LIC. NO. 41883

REVISION DESCRIPTION	DATE	BY

DATE: NOV. 2021	AS SHOWN
DRAWN BY: ADB	CHECKED BY: ALW
JOB NUMBER: 2021-11648	

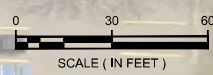
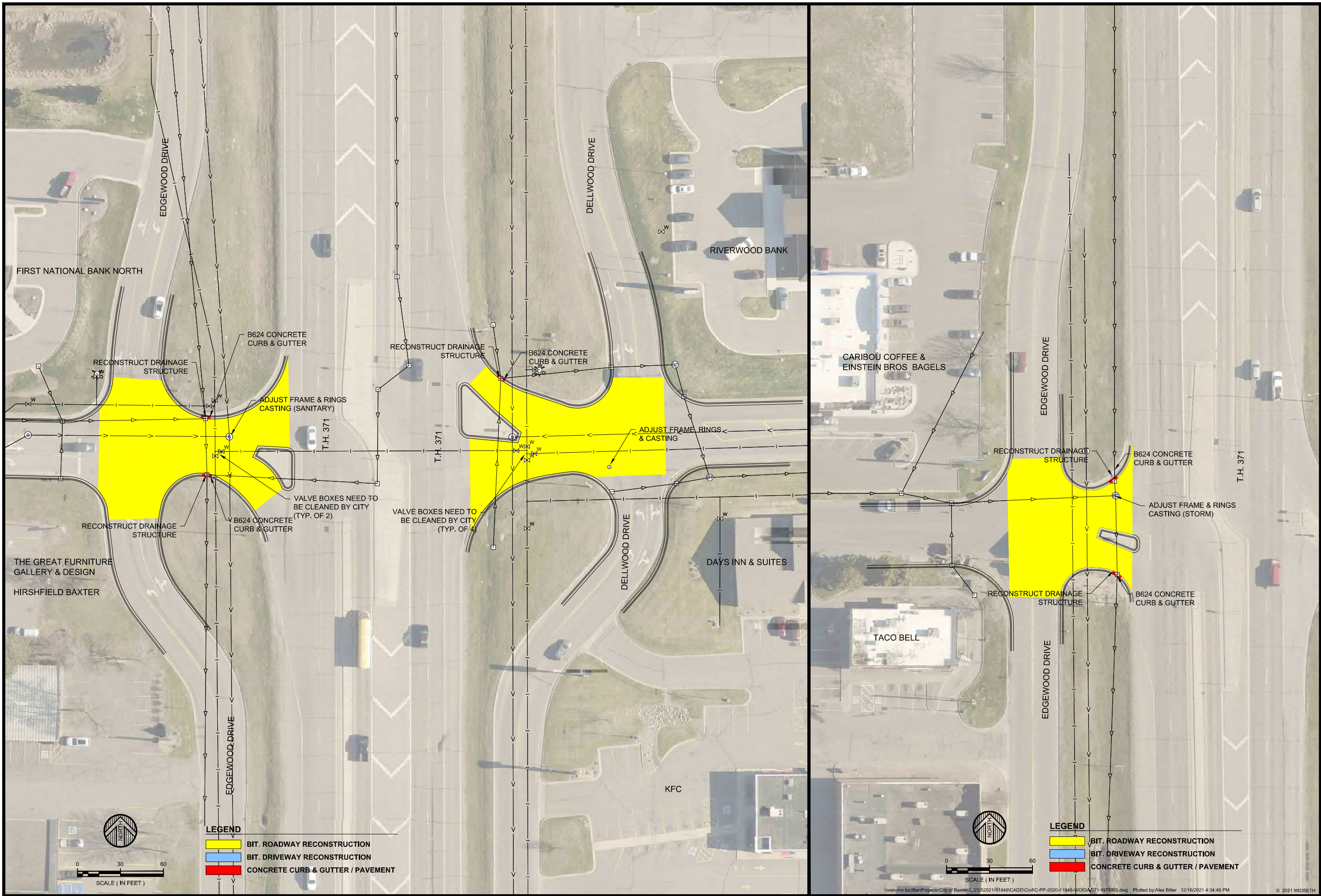
2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
 CITY OF BAXTER  
 BAXTER, MINNESOTA  
 PLAN - WOIDA ROAD



<b>2022 FDR &amp; RECONSTRUCTION IMPROVEMENTS PROJECT</b> CITY OF BAXTER BAXTER, MINNESOTA <b>EXIST. COND. &amp; REMOVALS - T.H. 371 INTERSECTIONS</b>		DATE: NOV. 2021 SCALE: AS SHOWN DRAWN BY: ADB CHECKED BY: ALW JOB NUMBER: 2021-11648	REVISIONS DESCRIPTION DATE REV# _____ _____ _____ _____	BY: _____ DATE: _____ LIC. NO. 47883
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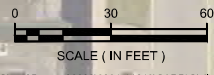
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**LEGEND**

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<span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	BIT. DRIVEWAY RECONSTRUCTION
<span style="background-color: red; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	CONCRETE CURB & GUTTER / PAVEMENT



**LEGEND**

<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	BIT. ROADWAY RECONSTRUCTION
<span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	BIT. DRIVEWAY RECONSTRUCTION
<span style="background-color: red; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>	CONCRETE CURB & GUTTER / PAVEMENT

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2022 FDR & RECONSTRUCTION IMPROVEMENTS PROJECT  
 CITY OF BAXTER  
 BAXTER, MINNESOTA  
 PLAN - T.H. 371 FRONTAGE ROAD INTERSECTIONS

# **Appendix B**

## **Cost Estimates, Assessment Calculations and Assessment Exhibits**

**2022 GLORY ROAD IMPROVEMENTS**  
**BAXTER, MN**  
**PROJECT AREA - GLORY ROAD FROM 1,600' WEST OF ISLE DRIVE TO ISLE DRIVE**  
**Estimate Date: November 2021**

**GLORY ROAD - COMMERCIAL**

**PROJECT TOTAL**

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	ASSESSABLE ROADWAY		CITY ROADWAY		CITY TRAIL		EST QUANTITY	TOTAL COST
					EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST		
1	2021.501	MOBILIZATION	LUMP SUM	\$16,100.00	0.78	\$12,558.00	0.09	\$1,449.00	0.13	\$2,093.00	1	\$16,100.00
2	2104.502	REMOVE CASTING (SANITARY)	EACH	\$225.00	2	\$450.00					2	\$450.00
3	2104.502	REMOVE CATCH BASIN GRATE CASTING	EACH	\$225.00	4	\$900.00					4	\$900.00
4	2104.502	ABANDON PIPE SEWER (SANITARY)	EACH	\$3,500.00			1	\$3,500.00			1	\$3,500.00
5	2104.502	REMOVE SIGN TYPE C	EACH	\$30.00	4	\$120.00					4	\$120.00
6	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	\$7.50	25	\$187.50					25	\$187.50
7	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$5.50	180	\$990.00					180	\$990.00
8	2104.503	REMOVE CURB AND GUTTER	LIN FT	\$4.50	2040	\$9,180.00					2040	\$9,180.00
9	2104.504	REMOVE CONCRETE PAVEMENT	SQ YD	\$10.50	30	\$315.00			26	\$273.00	56	\$588.00
10	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	\$5.00	135	\$675.00			795	\$3,975.00	930	\$4,650.00
11	2104.602	SALVAGE SIGN SPECIAL (911)	EACH	\$20.00	2	\$40.00					2	\$40.00
12	2104.602	RELOCATE SPRINKLER SYSTEM	EACH	\$525.00	3	\$1,575.00					3	\$1,575.00
13	2105.607	EXCAVATION SPECIAL	CU YD	\$16.00	900	\$14,400.00	60	\$960.00			960	\$15,360.00
14	2112.619	RECLAIMED AGGREGATE BASE PREPARATION	ROAD STA	\$200.00	12	\$2,400.00					12	\$2,400.00
15	2123.510	COMMON LABORERS	HOUR	\$80.00	5	\$400.00	2	\$160.00	2	\$160.00	9	\$720.00
16	2123.610	SKID LOADER	HOUR	\$125.00	5	\$625.00	2	\$250.00	2	\$250.00	9	\$1,125.00
17	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	\$120.00	5	\$600.00	1	\$120.00			6	\$720.00
18	2215.504	FULL DEPTH RECLAMATION	SQ YD	\$2.25	5365	\$12,071.25	355	\$798.75			5720	\$12,870.00
19	2302.604	BITUMINOUS DRIVEWAY REPLACEMENT	SQ YD	\$24.00	125	\$3,000.00	225	\$5,400.00			350	\$8,400.00
20	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2;C)	TON	\$75.00	1280	\$96,000.00	85	\$6,375.00			1365	\$102,375.00
21	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2;C)	TON	\$75.00	640	\$48,000.00	45	\$3,375.00			685	\$51,375.00
22	2504.602	ADJUST VALVE BOX	EACH	\$250.00	4	\$1,000.00					4	\$1,000.00
23	2506.502	CASTING ASSEMBLY (700-7)	EACH	\$775.00	2	\$1,550.00					2	\$1,550.00
24	2506.602	RECONSTRUCT DRAINAGE STRUCTURE	EACH	\$1,200.00	4	\$4,800.00					4	\$4,800.00
25	2506.602	ADJUST FRAME AND RING CASTING (SANITARY)	EACH	\$600.00	2	\$1,200.00					2	\$1,200.00
26	2521.518	6" CONCRETE WALK	SQ FT	\$9.00					900	\$8,100.00	900	\$8,100.00
27	2521.518	3" BITUMINOUS WALK	SQ FT	\$2.50					9000	\$22,500.00	9000	\$22,500.00
28	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$18.00	2045	\$36,810.00	50	\$900.00			2095	\$37,710.00
29	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	\$80.00	30	\$2,400.00	90	\$7,200.00			120	\$9,600.00
30	2531.618	TRUNCATED DOMES	SQ FT	\$47.50					56	\$2,660.00	56	\$2,660.00
31	2563.601	TRAFFIC CONTROL	LUMP SUM	\$2,760.00	0.78	\$2,152.80	0.09	\$248.40	0.13	\$358.80	1	\$2,760.00
32	2564.518	SIGN PANELS TYPE C	SQ FT	\$50.00	38.5	\$1,925.00			18	\$900.00	56.5	\$2,825.00
33	2564.602	INSTALL SIGN TYPE SPECIAL (911)	EACH	\$20.00	2	\$40.00					2	\$40.00
34	2573.502	STORM DRAIN INLET PROTECTION	EACH	\$150.00	4	\$600.00					4	\$600.00
35	2574.507	SCREENED TOPSOIL BORROW (LV)	CU YD	\$35.00	155	\$5,425.00			50	\$1,750.00	205	\$7,175.00
36	2574.508	FERTILIZER TYPE 3	POUND	\$1.00	180	\$180.00			30	\$30.00	210	\$210.00
37	2575.505	SEEDING	ACRE	\$450.00	1.2	\$540.00			0.2	\$90.00	1.4	\$630.00
38	2575.508	SEED MIXTURE 25-131	POUND	\$3.25	60	\$195.00			4	\$13.00	64	\$208.00
39	2575.508	SEED MIXTURE 25-151	POUND	\$4.50	240	\$1,080.00			40	\$180.00	280	\$1,260.00
40	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	\$2.50	2340	\$5,850.00			390	\$975.00	2730	\$6,825.00
41	2582.503	4" SOLID LINE PAINT	LIN FT	\$0.35	150	\$52.50					150	\$52.50
42	2582.503	8" SOLID LINE PAINT	LIN FT	\$0.75					80	\$60.00	80	\$60.00
43	2582.503	12" SOLID LINE PAINT	LIN FT	\$5.00	40	\$200.00					40	\$200.00
44	2582.503	4" BROKEN LINE PAINT	LIN FT	\$0.25	230	\$57.50					230	\$57.50
45	2582.503	4" DOUBLE SOLID LINE PAINT	LIN FT	\$0.50	920	\$460.00					920	\$460.00
46	2582.518	PAVEMENT MESSAGE PAINT	SQ FT	\$6.00	15.45	\$92.70					15.45	\$92.70

ESTIMATED CONSTRUCTION COST:	78.31%	\$271,097.25	8.88%	\$30,736.15	12.82%	\$44,367.80	100.00%	\$346,201.20
CONTINGENCIES (15%):		\$40,664.59		\$4,610.42		\$6,655.17		\$51,930.18
SUBTOTAL:		\$311,761.84		\$35,346.57		\$51,022.97		\$398,131.38
ENGINEERING, LEGAL, ADMINISTRATION AND OTHER SOFT COSTS (25%):		\$77,940.46		\$8,836.64		\$12,755.74		\$99,532.85
<b>ESTIMATED TOTAL PROJECT COST:</b>		<b>\$389,702.30</b>		<b>\$44,183.22</b>		<b>\$63,778.71</b>		<b>\$497,664.23</b>

**ASSESSMENT CALCULATIONS**

FULL DEPTH RECLAMATION - COMMERCIAL	
ESTIMATED ASSESSABLE PROJECT COSTS:	\$389,702.30
ESTIMATED ASSESSABLE FRONTAGE:	2053
ESTIMATED COST PER ASSESSABLE FOOT:	\$189.82

**PROJECT COST SUMMARY**

**TOTAL PROJECT COSTS: \$497,664.23**

**ASSESSED PROJECT COSTS**

**BENEFITTING PROPERTY ASSESSMENTS: \$322,315.88**  
 CITY PROPERTY ASSESSMENTS: \$67,386.42

**CITY COST SUMMARY**

ROADWAY: \$44,183.22  
 TRAIL: \$63,778.71  
 CITY PROPERTY ASSESSMENTS: \$67,386.42  
**TOTAL ESTIMATED CITY COSTS: \$175,348.35**



**2022 UNIVERSAL DRIVE IMPROVEMENTS**

**BAXTER, MN**

**PROJECT AREA - UNIVERSAL ROAD FROM DELLWOOD DRIVE TO GOLF COURSE DRIVE**

**Estimate Date: October 2021**

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE
1	2021.501	MOBILIZATION	LUMP SUM	\$17,000.00
2	2104.502	REMOVE CASTING (SANITARY)	EACH	\$225.00
3	2104.502	REMOVE CATCH BASIN GRATE CASTING	EACH	\$225.00
4	2104.502	REMOVE SIGN TYPE C	EACH	\$30.00
5	2104.502	REMOVE PIPE APRON	EACH	\$250.00
6	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$5.50
7	2104.503	REMOVE CURB AND GUTTER	LIN FT	\$4.50
8	2104.504	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	SQ YD	\$5.00
9	2105.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	\$6.00
10	2104.602	SALVAGE SIGN SPECIAL (911)	EACH	\$20.00
11	2105.507	COMMON EXCAVATION	CU YD	\$15.00
12	2211.507	AGGREGATE BASE (CV) CLASS 5 (P)	CU YD	\$35.00
13	2302.604	BITUMINOUS DRIVEWAY REPLACEMENT	SQ YD	\$24.00
14	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2;C)	TON	\$75.00
15	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2;C)	TON	\$75.00
16	2501.502	12" RC SAFETY APRON	EACH	\$1,250.00
17	2503.503	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$50.00
18	2503.503	15" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$55.00
19	2503.602	CONNECT TO EXISTING STORM SEWER	EACH	\$1,000.00
20	2504.602	ADJUST VALVE BOX	EACH	\$250.00
21	2506.502	CASTING ASSEMBLY (700-7)	EACH	\$775.00
22	2506.602	CASTING ASSEMBLY (NEENAH R-3250-DVSP)	EACH	\$800.00
23	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	\$585.00
24	2506.602	RECONSTRUCT DRAINAGE STRUCTURE	EACH	\$1,200.00
25	2506.602	ADJUST FRAME AND RING CASTING (SANITARY)	EACH	\$600.00
26	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$18.00
27	2531.501	CONCRETE CURB AND GUTTER DESIGN B612	LIN FT	\$22.00
28	2563.601	TRAFFIC CONTROL	LUMP SUM	\$3,000.00
29	2564.518	SIGN PANELS TYPE C	SQ FT	\$50.00
30	2564.602	INSTALL SIGN TYPE SPECIAL (911)	EACH	\$20.00
31	2573.502	STORM DRAIN INLET PROTECTION	EACH	\$150.00
32	2574.507	SCREENED TOPSOIL BORROW (LV)	CU YD	\$35.00
33	2574.508	FERTILIZER TYPE 3	POUND	\$1.00
34	2575.505	SEEDING	ACRE	\$450.00
35	2575.508	SEED MIXTURE 25-151	POUND	\$4.50
36	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	\$2.50
37	2582.503	24" SOLID LINE PAINT	LIN FT	\$0.35
38	2582.503	4" BROKEN LINE PAINT	LIN FT	\$0.25
39	2582.503	4" DOUBLE SOLID LINE PAINT	LIN FT	\$0.50

UNIVERSAL DRIVE						PROJECT TOTAL	
ROADWAY		STORMSEWER		CITY/MNDOT STORMSEWER		EST QUANTITY	TOTAL COST
EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST		
0.77	\$13,090.00	0.13	\$2,210.00	0.1	\$1,700.00	1	\$17,000.00
2	\$450.00					2	\$450.00
		8	\$1,800.00			8	\$1,800.00
1	\$30.00					1	\$30.00
				1	\$250.00	1	\$250.00
446	\$2,453.00					446	\$2,453.00
174	\$783.00					174	\$783.00
570	\$2,850.00					570	\$2,850.00
3307	\$19,842.00					3307	\$19,842.00
2	\$40.00					2	\$40.00
1100	\$16,500.00			40	\$600.00	1140	\$17,100.00
845	\$29,575.00					845	\$29,575.00
323	\$7,752.00					323	\$7,752.00
1115	\$83,625.00					1115	\$83,625.00
560	\$42,000.00					560	\$42,000.00
				1	\$1,250.00	1	\$1,250.00
		36	\$1,800.00	21	\$1,050.00	57	\$2,850.00
				313	\$17,215.00	313	\$17,215.00
		4	\$4,000.00	2	\$2,000.00	6	\$6,000.00
1	\$250.00					1	\$250.00
3	\$2,325.00			1	\$775.00	4	\$3,100.00
		6	\$4,800.00			6	\$4,800.00
		40	\$23,400.00	4	\$2,340.00	44	\$25,740.00
		8	\$9,600.00			8	\$9,600.00
2	\$1,200.00					2	\$1,200.00
2335	\$42,030.00					2335	\$42,030.00
10	\$220.00					10	\$220.00
0.77	\$2,310.00	0.13	\$390.00	0.1	\$300.00	1	\$3,000.00
3	\$150.00					3	\$150.00
2	\$40.00					2	\$40.00
12	\$1,800.00			1	\$150.00	13	\$1,950.00
215	\$7,525.00			140	\$4,900.00	355	\$12,425.00
67	\$67.00			90	\$90.00	157	\$157.00
0.4	\$180.00			0.3	\$135.00	0.7	\$315.00
160	\$720.00			120	\$540.00	280	\$1,260.00
1560	\$3,900.00			1170	\$2,925.00	2730	\$6,825.00
32	\$11.20					32	\$11.20
80	\$20.00					80	\$20.00
750	\$375.00					750	\$375.00

ESTIMATED CONSTRUCTION COST:	77.01%	\$282,113.20	13.10%	\$48,000.00	9.89%	\$36,220.00	100.00%	\$366,333.20
CONTINGENCIES (15%):		\$42,316.98		\$7,200.00		\$5,433.00		\$54,949.98
SUBTOTAL:		\$324,430.18		\$55,200.00		\$41,653.00		\$421,283.18
ENGINEERING, LEGAL, ADMINISTRATION AND OTHER SOFT COSTS (25%):		\$81,107.55		\$13,800.00		\$10,413.25		\$105,320.80
<b>ESTIMATED TOTAL PROJECT COST:</b>		<b>\$405,537.73</b>		<b>\$69,000.00</b>		<b>\$52,066.25</b>		<b>\$526,603.98</b>

**ASSESSMENT CALCULATIONS**

ASSESSABLE PROJECT COSTS:	\$405,537.73	\$69,000.00
ASSESSABLE FRONTAGE:	2228	2228
COST PER ASSESSABLE FOOT:	\$182.02	\$30.97

**ESTIMATED PROJECT COST SUMMARY**

<b>ESTIMATED TOTAL PROJECT COST:</b>		<b>\$526,603.98</b>
<b>ESTIMATED ASSESSABLE PROJECT COSTS:</b>	<b>90.1%</b>	<b>\$474,537.73</b>
<b>MNDOT STORM SEWER COSTS (50%):</b>	<b>4.9%</b>	<b>\$26,033.13</b>
<b>CITY COST SUMMARY</b>		
<b>STORM SEWER (50%):</b>	<b>4.9%</b>	<b>\$26,033.13</b>

**2022 FAIRVIEW ROAD IMPROVEMENTS**  
**BAXTER, MN**  
**PROJECT AREA - DESIGN ROAD FROM 600' WEST OF CONSERVATION DRIVE TO CONSERVATION DRIVE**  
**Estimate Date: October 2021**

**PROJECT TOTAL**

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	ROADWAY		STORM SEWER		EST QUANTITY	TOTAL COST
					EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST		
1	2021.501	MOBILIZATION	LUMP SUM	\$20,000.00					1	\$20,000.00
2	2104.502	REMOVE CASTING (SANITARY)	EACH	\$225.00	2	\$450.00			2	\$450.00
3	2104.502	REMOVE CATCH BASIN GRATE CASTING	EACH	\$225.00					0	\$0.00
4	2104.502	REMOVE DRAINAGE STRUCTURE	EACH	\$500.00					0	\$0.00
5	2104.502	REMOVE SIGN TYPE C	EACH	\$30.00					4	\$120.00
6	2104.502	REMOVE GATE VALVE AND BOX	EACH	\$400.00	2	\$800.00			2	\$800.00
7	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$5.50	630	\$3,465.00			630	\$3,465.00
8	2104.503	REMOVE CURB AND GUTTER	LIN FT	\$4.50	20	\$90.00			20	\$90.00
9	2105.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	\$6.00	3300	\$19,800.00			3300	\$19,800.00
10	2104.602	SALVAGE SIGN SPECIAL (911)	EACH	\$20.00	1	\$20.00			1	\$20.00
11	2104.602	SALVAGE MAILBOX	EACH	\$35.00	1	\$35.00			1	\$35.00
12	2105.507	COMMON EXCAVATION	CU YD	\$14.00	700	\$9,800.00	2600	\$36,400.00	3300	\$46,200.00
13	2211.507	AGGREGATE BASE (CV), CLASS 5	CU YD	\$27.00	350	\$9,450.00			350	\$9,450.00
14	2302.604	BITUMINOUS DRIVEWAY REPLACEMENT	SQ YD	\$24.00	250	\$6,000.00			250	\$6,000.00
15	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2:C)	TON	\$75.00	445	\$33,375.00			445	\$33,375.00
16	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2:C)	TON	\$75.00	225	\$16,875.00			225	\$16,875.00
17	2501.502	24" RC PIPE APRON (DESIGN 3100G)	EACH	\$1,450.00			1	\$1,450.00	1	\$1,450.00
18	2503.503	12" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$55.00			100	\$5,500.00	100	\$5,500.00
19	2503.503	18" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$65.00			430	\$27,950.00	430	\$27,950.00
20	2503.503	21" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$75.00			210	\$15,750.00	210	\$15,750.00
21	2503.503	24" RC PIPE SEWER DESIGN 3006 CLASS V	LIN FT	\$85.00			520	\$44,200.00	520	\$44,200.00
22	2506.502	CONSTRUCT DRAINAGE STRUCTURE DESIGN 48-4020	LIN FT	\$585.00			60	\$35,100.00	60	\$35,100.00
23	2506.602	CASTING ASSEMBLY (NEENAH R-3250-DVSP)	EACH	\$800.00			10	\$8,000.00	10	\$8,000.00
24	2506.602	ADJUST FRAME AND RING CASTING (SANITARY)	EACH	\$600.00	2	\$1,200.00			2	\$1,200.00
25	2511.504	GEOTEXTILE FILTER TYPE 4	SQ YD	\$10.00			20	\$200.00	20	\$200.00
26	2511.507	RANDOM RIPRAP CLASS III	CU YD	\$90.00			10	\$900.00	10	\$900.00
27	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$18.00	970	\$17,460.00			970	\$17,460.00
28	2531.507	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	\$80.00	100	\$8,000.00			100	\$8,000.00
29	2540.602	INSTALL MAILBOX SUPPORT	EACH	\$110.00	1	\$110.00			1	\$110.00
30	2563.601	TRAFFIC CONTROL	LUMP SUM	\$2,500.00	0.42	\$1,050.00	0.58	\$1,450.00	1	\$2,500.00
31	2564.518	SIGN PANELS TYPE C	SQ FT	\$50.00	30	\$1,500.00			30	\$1,500.00
32	2564.602	INSTALL SIGN TYPE SPECIAL (911)	EACH	\$20.00	1	\$20.00			1	\$20.00
33	2571.524	CONIFEROUS TREE 6' HT B&B	TREE	\$795.00			5	\$3,975.00	5	\$3,975.00
34	2571.524	DECIDUOUS TREE 2.5" CAL B&B	TREE	\$795.00			5	\$3,975.00	5	\$3,975.00
35	2573.502	STORM DRAIN INLET PROTECTION	EACH	\$150.00			10	\$1,500.00	10	\$1,500.00
36	2575.504	SOD, TYPE LAWN	SQ YD	\$7.50	1810	\$13,575.00			1810	\$13,575.00
37	2574.507	SCREENED TOPSOIL BORROW (LV)	CU YD	\$35.00	300	\$10,500.00	300	\$10,500.00	600	\$21,000.00
38	2574.508	FERTILIZER TYPE 3	POUND	\$1.00			300	\$300.00	300	\$300.00
39	2575.505	SEEDING	ACRE	\$450.00			1	\$450.00	1	\$450.00
40	2575.508	SEED MIXTURE 25-151	POUND	\$4.50			400	\$1,800.00	400	\$1,800.00
41	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	\$2.50			3900	\$9,750.00	3900	\$9,750.00
42	2582.503	4" DOUBLE SOLID LINE PAINT	LIN FT	\$0.50			500	\$250.00	500	\$250.00

ESTIMATED CONSTRUCTION COST:	42.31%	\$162,095.00	57.69%	\$221,000.00	100.00%	\$383,095.00
CONTINGENCIES (20%):		\$32,419.00		\$44,200.00		\$76,619.00
SUBTOTAL:		\$194,514.00		\$265,200.00		\$459,714.00
ENGINEERING, LEGAL, ADMINISTRATION AND OTHER SOFT COSTS (25%):		\$48,628.50		\$66,300.00		\$114,928.50
<b>ESTIMATED TOTAL PROJECT COST:</b>		<b>\$243,142.50</b>		<b>\$331,500.00</b>		<b>\$574,642.50</b>

**ASSESSMENT CALCULATIONS**

TOTAL ESTIMATED PROJECT COST:	\$243,142.50	\$331,500.00
CITY COSTS (50%):	\$121,571.25	\$165,750.00
ASSESSABLE PROJECT COSTS (50%):	\$121,571.25	\$165,750.00
ASSESSABLE FRONTAGE:	522	522
COST PER ASSESSABLE FOOT:	\$232.90	\$317.53

**PROJECT COST SUMMARY**

**TOTAL PROJECT COSTS: \$574,642.50**

ASSESSED PROJECT COSTS

**BENNEFITTING PROPERTY ASSESSMENTS: \$287,321.25**

CITY COST SUMMARY

ROADWAY: \$121,571.25

STORM SEWER: \$165,750.00

**TOTAL ESTIMATED CITY COSTS: \$287,321.25**

**2022 WOIDA ROAD IMPROVEMENTS**  
**BAXTER, MN**  
**PROJECT AREA - EDGEWOOD DRIVE TO TH 371**  
**Estimate Date: November 2021**

ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	WOIDA ROAD - EDGEWOOD EAST		PROJECT TOTAL	
					CITY ROADWAY		EST QUANTITY	TOTAL COST
					EST QUANTITY	TOTAL COST	EST QUANTITY	TOTAL COST
1	2021.501	MOBILIZATION	LUMP SUM	\$5,400.00	1	\$5,400.00	1	\$5,400.00
2	2104.502	REMOVE CASTING (SANITARY)	EACH	\$225.00	1	\$225.00	1	\$225.00
3	2104.502	REMOVE CATCH BASIN GRATE CASTING	EACH	\$225.00	2	\$450.00	2	\$450.00
4	2104.502	REMOVE SIGN TYPE C	EACH	\$30.00	8	\$240.00	8	\$240.00
5	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	\$7.50	40	\$300.00	40	\$300.00
6	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$5.50	210	\$1,155.00	210	\$1,155.00
7	2104.503	REMOVE CURB AND GUTTER	LIN FT	\$4.50	80	\$360.00	80	\$360.00
8	2104.504	REMOVE CONCRETE PAVEMENT	SQ YD	\$10.50	12	\$126.00	12	\$126.00
12	2105.607	EXCAVATION SPECIAL	CU YD	\$16.00	380	\$6,080.00	380	\$6,080.00
13	2112.619	RECLAIMED AGGREGATE BASE PREPARATION	ROAD STA	\$200.00	2.5	\$500.00	2.5	\$500.00
14	2123.510	COMMON LABORERS	HOUR	\$80.00	5	\$400.00	5	\$400.00
15	2123.610	SKID LOADER	HOUR	\$125.00	5	\$625.00	5	\$625.00
16	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR	\$120.00	5	\$600.00	5	\$600.00
17	2215.504	FULL DEPTH RECLAMATION	SQ YD	\$2.25	2260	\$5,085.00	2260	\$5,085.00
19	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2:C)	TON	\$75.00	545	\$40,875.00	545	\$40,875.00
20	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2:C)	TON	\$75.00	275	\$20,625.00	275	\$20,625.00
21	2504.602	ADJUST VALVE BOX	EACH	\$250.00	4	\$1,000.00	4	\$1,000.00
22	2506.502	CASTING ASSEMBLY (700-7)	EACH	\$775.00	1	\$775.00	1	\$775.00
23	2506.602	RECONSTRUCT DRAINAGE STRUCTURE	EACH	\$1,200.00	3	\$3,600.00	3	\$3,600.00
24	2506.602	ADJUST FRAME AND RING CASTING (SANITARY)	EACH	\$600.00	1	\$600.00	1	\$600.00
25	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$18.00	80	\$1,440.00	80	\$1,440.00
27	2531.604	8" CONCRETE VALLEY GUTTER	SQ YD	\$80.00	12	\$960.00	12	\$960.00
29	2563.601	TRAFFIC CONTROL	LUMP SUM	\$1,800.00	1	\$1,800.00	1	\$1,800.00
30	2564.518	SIGN PANELS TYPE C	SQ FT	\$50.00	36	\$1,800.00	36	\$1,800.00
31	2573.502	STORM DRAIN INLET PROTECTION	EACH	\$150.00	3	\$450.00	3	\$450.00
32	2574.507	SCREENED TOPSOIL BORROW (LV)	CU YD	\$35.00	5	\$175.00	5	\$175.00
33	2574.508	FERTILIZER TYPE 3	POUND	\$1.00	5	\$5.00	5	\$5.00
34	2575.505	SEEDING	ACRE	\$450.00	0.04	\$18.00	0.04	\$18.00
35	2575.508	SEED MIXTURE 25-131	POUND	\$3.25	1	\$3.25	1	\$3.25
36	2575.508	SEED MIXTURE 25-151	POUND	\$4.50	7	\$31.50	7	\$31.50
37	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	\$2.50	65	\$162.50	65	\$162.50
38	2582.503	4" SOLID LINE PAINT	LIN FT	\$0.35	520	\$182.00	520	\$182.00
41	2582.518	PAVEMENT MESSAGE PAINT	SQ FT	\$6.00	80	\$480.00	80	\$480.00

ESTIMATED CONSTRUCTION COST:	\$96,528.25
CONTINGENCIES (15%):	\$14,479.24
SUBTOTAL:	\$111,007.49
ENGINEERING, LEGAL, ADMINISTRATION AND OTHER SOFT COSTS (25%):	\$27,751.87
<b>ESTIMATED TOTAL PROJECT COST:</b>	<b>\$138,759.36</b>

**ASSESSMENT CALCULATIONS**  
ASSESSABLE PROJECT COSTS:  
ASSESSABLE FRONTAGE:  
COST PER ASSESSABLE FOOT:

<b>ESTIMATED PROJECT COST SUMMARY</b>	
ESTIMATED TOTAL PROJECT COST:	\$138,759.36
ESTIMATED ASSESSABLE PROJECT COSTS:	0.0% \$0.00
CITY COST SUMMARY	
ROADWAY:	100.0% \$138,759.36

# 2022 TH 371 FRONTAGE ROAD INTERSECTIONS

BAXTER, MN

PROJECT AREA - DESIGN DRIVE AND CLEARWATER ROAD FRONTAGE ROAD INTERSECTIONS

Estimate Date: October 2021

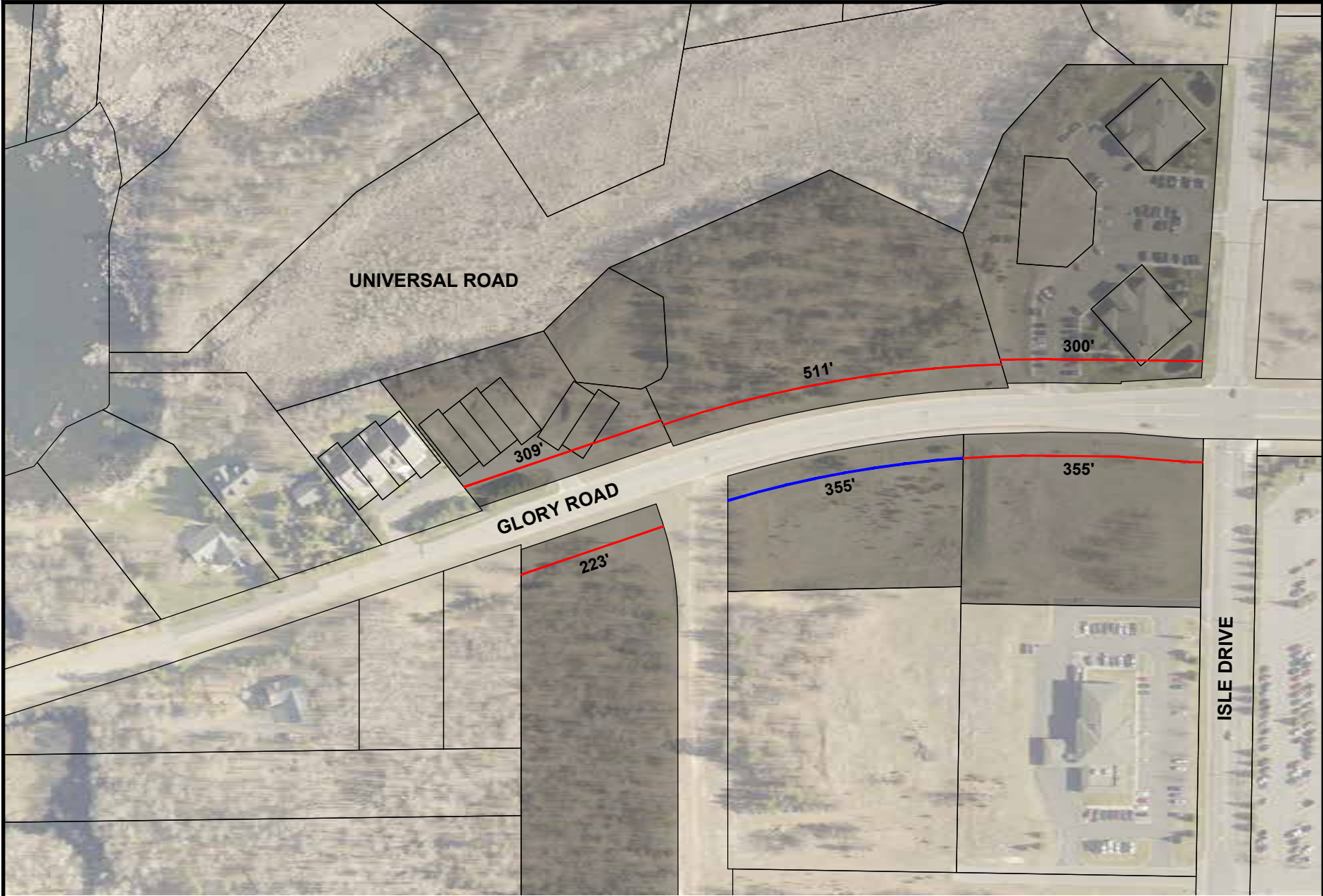
ITEM NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT	UNIT PRICE	PROJECT TOTAL	
					EST QUANTITY	TOTAL COST
1	2021.501	MOBILIZATION	LUMP SUM	\$7,500.00	1	\$7,500.00
2	2104.502	REMOVE CASTING (SANITARY)	EACH	\$225.00	1	\$225.00
3	2104.502	REMOVE CATCH BASIN GRATE CASTING	EACH	\$225.00	5	\$1,125.00
4	2104.502	REMOVE SIGN TYPE C	EACH	\$30.00	6	\$180.00
5	2104.503	SAWING CONCRETE PAVEMENT (FULL DEPTH)	LIN FT	\$7.50	60	\$450.00
6	2104.503	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	\$5.50	680	\$3,740.00
7	2104.503	REMOVE CURB AND GUTTER	LIN FT	\$4.50	80	\$360.00
9	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	\$5.00	3205	\$16,025.00
12	2105.607	EXCAVATION SPECIAL	CU YD	\$16.00	1070	\$17,120.00
14	2123.510	COMMON LABORERS	HOURL	\$80.00	10	\$800.00
15	2123.610	SKID LOADER	HOURL	\$125.00	10	\$1,250.00
16	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOURL	\$120.00	10	\$1,200.00
19	2360.509	TYPE SP 9.5 WEARING COURSE MIXTURE (2;C)	TON	\$75.00	775	\$58,125.00
20	2360.509	TYPE SP 12.5 NON WEARING COURSE MIXTURE (2;C)	TON	\$75.00	390	\$29,250.00
21	2504.602	ADJUST VALVE BOX	EACH	\$250.00	6	\$1,500.00
22	2506.502	CASTING ASSEMBLY (700-7)	EACH	\$775.00	3	\$2,325.00
23	2506.602	RECONSTRUCT DRAINAGE STRUCTURE	EACH	\$1,200.00	5	\$6,000.00
24	2506.602	ADJUST FRAME AND RING CASTING (SANITARY)	EACH	\$600.00	3	\$1,800.00
25	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	\$18.00	80	\$1,440.00
29	2563.601	TRAFFIC CONTROL	LUMP SUM	\$5,000.00	1	\$5,000.00
30	2564.518	SIGN PANELS TYPE C	SQ FT	\$50.00	50	\$2,500.00
31	2573.502	STORM DRAIN INLET PROTECTION	EACH	\$150.00	5	\$750.00
32	2574.507	SCREENED TOPSOIL BORROW (LV)	CU YD	\$35.00	20	\$700.00
33	2574.508	FERTILIZER TYPE 3	POUND	\$1.00	15	\$15.00
34	2575.505	SEEDING	ACRE	\$450.00	0.1	\$45.00
35	2575.508	SEED MIXTURE 25-131	POUND	\$3.25	2	\$6.50
36	2575.508	SEED MIXTURE 25-151	POUND	\$4.50	20	\$90.00
37	2575.508	HYDRAULIC REINFORCED FIBER MATRIX	POUND	\$2.50	195	\$487.50
38	2582.503	4" SOLID LINE PAINT	LIN FT	\$0.35	800	\$280.00
41	2582.518	PAVEMENT MESSAGE PAINT	SQ FT	\$6.00	50	\$300.00

ESTIMATED CONSTRUCTION COST:	\$160,589.00
CONTINGENCIES (15%):	\$24,088.35
SUBTOTAL:	\$184,677.35
ENGINEERING, LEGAL, ADMINISTRATION AND OTHER SOFT COSTS (25%):	\$46,169.34
<b>ESTIMATED TOTAL PROJECT COST:</b>	<b>\$230,846.69</b>

**ESTIMATED PROJECT COST SUMMARY**

ESTIMATED TOTAL CITY COST: **\$230,846.69**





**ASSESSMENT TOTALS**

ASSESSMENT TYPE	TOTAL NUMBER
ROADWAY FRONTAGE	1698'
ROADWAY FRONTAGE - CITY	355'

**LEGEND**

- ASSESSABLE FRONTAGE
- ASSESSABLE FRONTAGE - CITY
- ASSESSABLE PROPERTIES



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER/LAND SURVEYOR IN THE STATE OF MINNESOTA.  
DATE: \_\_\_\_\_  
LIC. NO.: 41903

REVISIONS DESCRIPTION	BY	DATE

DATE: OCT 2021  
SCALE: AS SHOWN  
DRAWN BY: ALW  
CHECKED BY: ALW  
JOB NUMBER: 2021-11468

2022 FULL DEPTH RECLAMATION & RECONSTRUCTION  
CITY OF BAXTER  
BAXTER, MINNESOTA  
GLORY ROAD ASSESSMENT EXHIBIT



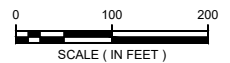
**ASSESSMENT TOTALS**

PROJECT  
UNIVERSAL ROAD  
DESIGN DRIVE

TOTAL FOOTAGE  
2228  
2216

**LEGEND**

— ASSESSABLE FRONTAGE  
■ ASSESSABLE PROPERTIES





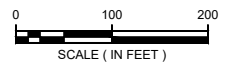
**ASSESSMENT TOTALS**

**PROJECT**  
FAIRVIEW ROAD

**TOTAL FOOTAGE**  
522'

**LEGEND**

 **ASSESSABLE FRONTAGE**



DATE	REV#	REVISIONS DESCRIPTION	BY

# **Appendix C**

**Braun Intertec Pavement and Geotechnical Report**

# Pavement and Geotechnical Evaluation Report

City of Baxter 2021 Improvement Projects  
Baxter, Minnesota

*Prepared for*

## Widseth

### Professional Certification:

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.



Amy J. Grothaus, PE  
Account Manager, Senior Engineer  
License Number: 51327  
November 30, 2020



Project B2008827

Braun Intertec Corporation

November 30, 2020

Project B2008827

Aric Welch, PE  
Widseth  
7804 Industrial Park Road  
Baxter, MN 56425-2720

Re: Pavement and Geotechnical Evaluation Report  
City of Baxter 2021 Improvement Projects  
Baxter, Minnesota

Dear Mr. Welch:

We are pleased to present this Pavement and Geotechnical Evaluation Report for the City of Baxter's 2021 Improvement Projects.

Thank you for choosing Braun Intertec as your consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please contact Amy Grothaus at 651.261.7122 (agrothaus@braunintertec.com).

Sincerely,

BRAUN INTERTEC CORPORATION



Amy J. Grothaus, PE  
Account Manager, Senior Engineer



Charles M. Cadenhead Jr, PE  
Vice President, Principal Engineer

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### **Appendix A**

Project Repair Maps and Exploration Location Maps

### **Appendix B**

GPR Graphical Results

### **Appendix C**

Core Photo Log

### **Appendix D**

Log of Boring Sheets ST-1 to ST-6

Descriptive Terminology



## **A. Introduction**

### **A.1. Project Description**

This Pavement and Geotechnical Evaluation Report addresses the City of Baxter's 2021 Improvement Projects. The projects consist of about 0.20 miles of mill-and-overlay, about 0.84 miles of full-depth reclamation (FDR) and about 0.56 miles of reconstruction as depicted on the maps provided in Appendix A. A list of the street segments and planned repairs is as follows:

#### **Mill-and-overlay**

- College Road from east of Conifer Drive to CSAH 48

#### **FDR**

- College Road from Cypress Drive to east of Conifer Drive
- Glory Road from Isle Drive to 1,059 feet west
- Isle Drive from 1,804 feet south of Glory Road to 327 feet north of Glory Road

#### **Reconstruction**

- Design Road from Dellwood Drive to Golf Course Drive
- Universal Road from Dellwood Drive to Golf Course Drive
- Fairview Road from Conservation Drive to 626 feet west

As part of that work, it is requested that Ground Penetrating Radar (GPR) testing, pavement coring and hand auger borings, and soil borings be performed.

### **A.2. Purpose**

For streets planned for mill-and-overlay and FDR, the purpose of the pavement evaluation is to determine the thicknesses of the in-place pavement materials and to note underlying material conditions for use in providing recommendations related to the planned repairs.

For streets planned for reconstruction, the purpose of our geotechnical evaluation will be to characterize subsurface geologic conditions at selected boring locations, evaluate their impact on the projects, and provide geotechnical recommendations for design and construction of the streets.

### **A.3. Background Information and Reference Documents**

We reviewed the following information:

- Maps indicating the streets planned for repair.
- Aerial Maps available from Google Earth®.
- USDA Websoil survey of Crow Wing County.

We have described our understanding of the proposed construction and site to the extent others reported it to us. Depending on the extent of available information, we may have made assumptions based on our experience with similar projects. If we have not correctly recorded or interpreted the project details, the project team should notify us. New or changed information could require additional evaluation, analyses and/or recommendations.

### **A.4. Scope of Services**

We performed our scope of services for the project in accordance with our Proposal QTB124718 to Mr. Aric Welch, dated August 6, 2020, and authorized on October 7, 2020. The following list describes the tasks completed in accordance with our authorized scope of services.

- On streets planned for mill-and-overlay or FDR, estimating pavement thickness data in a single direction of travel with an air-coupled Ground Penetrating Radar (GPR).
- Conducting a total of ten bituminous pavement cores and hand auger borings, noting their conditions and measuring their thicknesses.
- Staking and clearing the exploration location of underground utilities. We acquired the surface elevations and locations with GPS technology using the State of Minnesota's permanent GPS base station network. The Soil Boring Location Sketch included in Appendix A shows the approximate locations of the borings.
- On streets planned for reconstruction, performing a total of six standard penetration test borings, extending them to a depth of 10 feet.

- Performing laboratory testing on select samples to aid in soil classification and engineering analysis.
- Preparing this report containing our findings and recommendations for pavement design and construction.

## B. Results

### B.1. GPR Testing

On streets planned for mill-and-overlay and FDR, GPR was used to approximate pavement layer thicknesses along the streets. The data was collected at a nominal 1-foot interval. Where “ground truth” data (pavement coring and hand auger borings) were performed, the interpreted layers from the GPR scan were compared directly to the measured thicknesses to validate the accuracy of the GPR analysis.

Based on our analysis using the RADAN software program, the average pavement layer thicknesses are provided in Table 1.

**Table 1. GPR Measured Thicknesses**

Planned Repair	Street	Segment	Average Bituminous Thickness (in)	Average Aggregate Base Thickness (in)
Mill-and-overlay	College Road	Conifer Drive to CSAH 48	4.9	4.5
FDR	College Road	Cypress Drive to east of Conifer Drive	5.6	5.2
	Glory Road	Isle Drive to 1,059 feet west	4.1	6.1
	Isle Drive	1,804 feet south of Glory Road to 327 feet north of Glory Road	4.3	6.5

Appendix B provides the GPR data in graphical form. We highly recommend referring to Appendix B to see how thicknesses vary along each street.

## B.2. Pavement Core and Hand Auger Boring Results

On streets planned for mill-and-overlay and FDR, we performed a total of 10 pavement core and hand auger borings. Explorations were selected based on analysis of the GPR data. A map of exploration locations is provided in Appendix A.

Information from the cores and hand auger borings was used to obtain pavement layer thicknesses for the bituminous and aggregate base layers, if present, as well as to assess bituminous material conditions. Results are provided in Table 2. Although not tested, underlying subbase materials appeared to consist of poorly graded sands.

**Table 2. Pavement Core and Hand Auger Boring Results**

Core	Roadway	Bituminous Thickness (inches)	Apparent Aggregate Base Thickness* (inches)	Core Condition
C-1	College Road	5 1/4	7 3/4	Low-severity stripping in bottom 1 inch
C-2		5 1/4	8 1/4	Good condition
C-3		5	7 1/2	Good condition
C-4		4 3/4	Refusal	Good condition
C-5	Isle Drive	4 1/2	11 1/2	Good condition
C-6		3 3/4	7 1/4	Low-severity stripping in bottom 1 inch
C-7		4 1/4	9 1/4	Good condition
C-8		4	7 1/2	Low-severity stripping in bottom 1 inch
C-9	Glory Road	4	5 1/2	Good condition
C-10		3 1/2	4 1/2	Low-severity stripping throughout core

*\*We did not perform gradation analysis on the apparent aggregate base material encountered as part of the pavement section, in accordance with our scope of work. Therefore, we cannot conclusively determine if the encountered material satisfies a particular specification.*

As noted in Table 2, several of the pavement cores had low-severity underlying stripping. When present, stripping represents the deterioration of the asphalt/aggregate bond in a bituminous pavement due to the presence of moisture. Stripping often begins at the bottom of the bituminous layer, where it may be in contact with saturated aggregate or soil, and proceeds upward.

Low-severity stripping is common in bituminous pavements over time. However, those that have stripped to moderate to severe degrees would typically not be considered for rehabilitation methods that may leave any damaged portion of the pavement in place, such as mill-and-overlay.

Photographs of the pavement cores are provided in Appendix C.

### B.3. Geotechnical Results

#### B.3.a. Soil Boring Results

We based the geologic origins used in this report on the soil types, in-situ and laboratory testing, and available common knowledge of the geological history of the site. Because of the complex depositional history, geologic origins can be difficult to ascertain. We did not perform a detailed investigation of the geologic history for the site.

Table 3 provides a summary of the soil boring results, in the general order we encountered the strata. Please refer to the Log of Boring sheets in Appendix D for additional details. The Descriptive Terminology sheets in Appendix D include definitions of abbreviations used in Table 3.

**Table 3. Subsurface Profile Summary\***

Strata	Soil Type - ASTM Classification	Range of Penetration Resistances	Commentary and Details
Pavement section			<ul style="list-style-type: none"> <li>▪ Overall thickness ranges from 9 to 11 inches.</li> <li>▪ Bituminous thicknesses varied between 2 and 5 inches.</li> <li>▪ Apparent aggregate base thicknesses varied between 5 and 8 inches.</li> </ul>
Fill	SP-SM, SM		<ul style="list-style-type: none"> <li>▪ Encountered in all borings with the exception of Boring ST-1.</li> <li>▪ Thicknesses at boring locations varied from about 1 to 3 feet.</li> <li>▪ Moisture condition generally moist.</li> <li>▪ Soils were brown in color.</li> </ul>
Glacial deposits	SP, SM	2 to 21 BPF	<ul style="list-style-type: none"> <li>▪ Silt (ML) layer encountered in Boring ST-3 at a depth of about 2 1/2 feet and was about 3 1/2 feet thick.</li> <li>▪ Moisture condition generally moist to wet.</li> <li>▪ Soils were brown and gray in color.</li> </ul>
	ML	6 to 9 BPF	

\*Abbreviations defined in the attached Descriptive Terminology sheets.

We did not perform gradation analysis on the apparent aggregate base material encountered as part of the pavement section, in accordance with our scope of work. Therefore, we cannot conclusively determine if the encountered material satisfies a particular specification.

For simplicity in this report, we define existing fill to mean existing, uncontrolled or undocumented fill.

**B.3.b. Groundwater**

Table 4 summarizes the depths where we observed groundwater; the Log of Boring sheets in Appendix D also include this information and additional details.

**Table 4. Groundwater Summary**

Location	Road	Surface Elevation	Measured or Estimated Depth to Groundwater (ft)	Corresponding Groundwater Elevation (ft)*
ST-1	Universal Drive	1196.5	5	1191 1/2
ST-2		1193.5	5	1188 1/2
ST-3	Design Road	1196.2	5	1191
ST-4		1192.1	7 1/2	1184 1/2

*\*Rounded to the nearest half-foot.*

Nearby wells indicate static groundwater varies between about 1183 and 1188 feet. Project planning should expect seasonal and annual fluctuations of groundwater.

**B.3.c. Laboratory Test Results**

Table 5 presents the results of our laboratory tests.

**Table 5. Laboratory Classification Test Results**

<b>Location</b>	<b>Sample Depth (ft)</b>	<b>Classification</b>	<b>Moisture Content (w, %)</b>	<b>Percent Passing a #200 Sieve</b>
ST-1	5	SP	20	--
ST-3	2 1/2	ML	22	73
ST-5	5	SP	4	--
ST-6	2 1/2	SM	3	13

The moisture contents of the tested samples of poorly graded sand and silty sand varied from approximately 3 to 20 percent, indicating that the materials tested were both below and above their probable optimum moisture content. Moisture content testing on the sample of silt indicated the sample tested was near its probable optimum moisture content.

Our mechanical analyses indicated that the silty sand tested contained 13 percent silt and clay by weight, and the sample of silt tested contained 73 percent silt and clay by weight.

## **C. Recommendations**

### **C.1. Discussion**

#### **C.1.a. Discussion of Planned Repairs**

As previously noted, the planned projects consist of about 0.20 miles of mill-and-overlay, about 0.84 miles of full-depth reclamation (FDR) and about 0.56 miles of reconstruction as depicted on the maps provided in Appendix A.

#### **C.1.b. Pavement Mill-and-Overlay (College Road from east of Confier Drive to CSAH 48)**

A detailed visual assessment of the pavement surface condition was not included in the scope of our evaluation. Publically available street-side and aerial imagery suggest transverse cracks are the most common surface distress.

The cores obtained on this portion of College Road (Cores C-3 and C-4) were both in good condition, with limited material distress, and had thicknesses of 5 and 4 3/4 inches respectively. GPR indicated an overall average thickness of about 5 inches.

In our opinion, since the roadway has a thick enough pavement and moderate surface condition, mill-and-overlay is a suitable repair option. It should be noted this approach will include additional costs associated with maintaining the reflective cracking that will likely appear within one to two years.

### **C.1.c. FDR (College Road from Cypress Drive to east of Conifer Drive, Glory Road, Isle Drive)**

Based on our discussion, we understand the in-place concrete curb and gutter will be replaced on streets planned for FDR. Where FDR is proposed, GPR, pavement coring and hand auger borings encountered approximately 8 to 16 inches of total pavement on the streets. From a materials thickness and quality standpoint, it appears FDR can be utilized in order to obtain materials for aggregate base on the project.

We recommend thorough quality control practices, including frequent sieve analyses of the reclaimed material, if the product will be reused directly on site as aggregate base.

Our complete recommendations for each of the repair options is provided below.

## **C.2. Mill-and-Overlay**

For College Road from east of Conifer Drive to CSAH 48 where mill-and-overlay will be performed, we recommend a minimum mill-and-overlay depth of 1 1/2 inches. However, as previously noted, the overall thickness is about 5 inches. As such, a deeper mill could be performed and would help in further prolonging reflective cracking. As an option, the City could also consider a "Texas Underseal" in which a seal coat application would be applied to the milled surface prior to the placement of the overlay. This will also help with the progression of reflective cracking.

For the mill-and-overlay, we recommend a mix consisting of SPWEA240C.



### **C.3. Full Depth Reclamation (FDR)**

The FDR process involves pulverizing and blending the existing bituminous pavement along with a portion of underlying aggregate base. In general, the reclaimed material can either be left in place or windrowed and stockpiled so that grading, excavation work, utility repairs or stabilization of subgrade soils can proceed. The left-in-place or replaced reclaim is then compacted and overlaid with bituminous pavement.

From a design perspective, reclamation should not extend into materials that are unsuitable for reclamation, such as silts and clays. During FDR, variation of existing pavement depth should be anticipated. Adjustments to the reclamation depth will be required where the pavement section depths change along each street.

#### **C.3.a. Pulverization and Compaction**

We recommend following MnDOT Specification 2215 for FDR for the reclaiming process.

Based on the GPR, pavement coring and hand auger boring thicknesses, on streets planned for FDR, we recommend a reclamation depth of about 8 inches. As thicknesses vary within the GPR scans, reclaim depths should be adjusted.

Following reclamation, reclaimed material should be graded to allow for the required bituminous section. Any excess material should be removed.

Following pulverization of the in-place materials, we recommend all exposed materials be surface compacted.

#### **C.3.b. Proofroll**

Following compaction, we recommend exposed materials be proof rolled to check for the presence of localized weak areas. The proofroll should be performed with a fully loaded, tandem axle dump truck at walking speed.

The proofroll should be observed by a geotechnical engineer or qualified observer. Any detected weak areas should be corrected with a subcut and backfilled with excess reclaimed material or other suitable material such as MnDOT Class 5 aggregate base or Select Granular.

### **C.3.c. Design Section**

Based on information provided, we understand the City's standard design for FDR will consist of the following pavement section:

- 5 inches bituminous SPWEA340C
- 6 inches aggregate base (reclaim material).

We understand the bituminous will consist of 3 inches of wear coarse placed in two lifts and consisting of SPWEA340C, and 2 inches of non-wear course consisting of SPNWB330B.

We recommend requirements outlined in MnDOT Specification 2360. We recommend tack coat meeting MnDOT Specification 2357 as required between lifts as well as placed along vertical faces where paving will match adjacent pavement.

## **C.4. Reconstruction**

### **C.4.a. Pavement Subgrade Preparation**

For streets planned for reconstruction, we recommend the following steps for pavement subgrade preparation, assuming final grades will be near existing grades.

1. Remove existing pavement materials, within 2 feet of the surface of the proposed pavement grade.
2. Have a geotechnical representative observe the excavated subgrade to evaluate if additional subgrade improvements are necessary.
3. Prior to placement of fill or pavement materials, scarify, moisture condition and surface compact the subgrade.
4. Proofroll the pavement subgrades prior to placement of fill or pavement materials as described in Section C.2.b.
5. Correct any areas that yield or rut more than 1 inch during the proofroll. We recommend a geotechnical representative observe the proofrolling as noted above.
6. In accordance with Section C.2.c., place compacted fill to bottom of pavement section. See Section C.2.d for pavement design details.

**C.4.b. Pavement Subgrade Proofroll**

After preparing the subgrade as described above and prior to the placement of the aggregate base, we recommend proofrolling the subgrade soils with a fully loaded tandem-axle truck. We also recommend having a geotechnical representative observe the proofroll. Areas that fail the proofroll likely indicate soft or weak areas that will require additional soil correction work to support pavements.

The contractor should correct areas that display excessive yielding or rutting during the proofroll, as determined by the geotechnical representative. Possible options for subgrade correction include moisture conditioning and recompaction, subcutting and replacement with soil or crushed aggregate, chemical stabilization and/or geotextiles. We recommend performing a second proofroll after the aggregate base material is in place, and prior to placing bituminous or concrete pavement.

**C.4.c. Engineered Fill Materials and Compaction**

Table 6 below contains our recommendations for fill materials.

**Table 6. Engineered Fill Materials**

<b>Locations To Be Used</b>	<b>Engineered Fill Classification</b>	<b>Possible Soil Type Descriptions</b>	<b>Gradation</b>	<b>Additional Requirements</b>
Below pavements	Pavement fill	SM, SP, SP-SM	100% passing 3-inch sieve	Organic Content (OC) < 5% Plasticity Index (PI) < 15%
Below landscaped surfaces, where subsidence is not a concern	Non-structural fill		100% passing 6-inch sieve	< 10% OC

We recommend spreading engineered fill in loose lifts of approximately 12 inches thick. We recommend compacting engineered fill in accordance with the criteria presented below in Table 3.

**Table 7. Compaction Recommendations Summary**

Reference	Relative Compaction, percent (ASTM D698 – Standard Proctor)	Moisture Content Variance from Optimum, percentage points	
		< 20% Passing #200 Sieve	> 20% Passing #200 Sieve
Within 3 feet of pavement subgrade	100	±3	-1 to +3
More than 3 feet below pavement subgrade, utility trench backfill	95	±3	±3
Below landscaped surfaces	90	±5	±4

\*Increase compaction requirement to meet compaction required for structure supported by this engineered fill.

The project documents should not allow the contractor to use frozen material as engineered fill or to place engineered fill on frozen material.

We recommend performing density tests in engineered fill to evaluate if the contractors are effectively compacting the soil and meeting project requirements.

**C.4.d. Design Section**

Based on information provided, we understand the City’s standard design for reconstruction of residential roadways consists of the following pavement section:

- 5 inches bituminous SPWEA340C
- 6 inches aggregate base (reclaim material).

We understand the bituminous will consist of 3 inches of wear coarse placed in two lifts and consisting of SPWEA340C, and 2 inches of non-wear course consisting of SPNWB330B.

We recommend requirements outlined in MnDOT Specification 2360. We recommend tack coat meeting MnDOT Specification 2357 as required between lifts as well as placed along vertical faces where paving will match adjacent pavement.

## **C.5. Utilities**

### **C.5.a. Excavation Oversizing**

When removing unsuitable materials below utilities or pavements, we recommend extending the excavation outward and downward at a slope of 1H:1V (horizontal:vertical) or flatter.

### **C.5.b. Subgrade Stabilization**

We anticipate the soils at typical invert elevations will generally be suitable for utility support. However, if construction encounters unfavorable conditions such as soft clay, organic soils or perched water at invert grades, the unsuitable soils may require some additional subcutting and replacement with sand or crushed rock to prepare a proper subgrade for pipe support. If these unsuitable or unstable soils remain in place, there is a risk of excessive settlement of the utility pipe or structures due to consolidation of the underlying soft clay soils. If crushed rock is used as pipe bedding, we recommend wrapping the aggregate in geotextile fabric to prevent the migration of fine-grained materials into the voids of the aggregate.

We recommend a geotechnical engineer observe all utility trench excavations and subcuts.

### **C.5.c. Excavated Slopes**

Based on the borings performed, we anticipate the majority of on-site soils in excavations will consist of sands and silty sands. These soils are typically considered Type C Soil under OSHA (Occupational Safety and Health Administration) guidelines. OSHA guidelines indicate unsupported excavations in Type C soils should have a gradient no steeper than 1 1/2H:1V. Slopes constructed in this manner may still exhibit surface sloughing. OSHA requires an engineer to evaluate slopes or excavations over 20 feet in depth.

An OSHA-approved qualified person should review the soil classification in the field. Excavations must comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches." This document states excavation safety is the responsibility of the contractor. The project specifications should reference these OSHA requirements.

### **C.5.d. Selection, Placement, and Compaction of Backfill**

We recommend compacting backfill placed above and below utilities to a minimum of 95 percent of standard Proctor density. The exception is within 3 feet vertically of pavement subgrades, where the minimum compaction level should be increased to 100 percent. The fill should be within 3 percentage points of its optimum moisture content for sands; clays should only exceed their optimum moisture contents by 1 percent.

To achieve compaction over wet subgrades, we recommend the use of sands or gravel with less than 5 percent by weight passing the number 200 sieve and less than 50 percent passing the number 40 sieve.

#### **C.5.e. Corrosion Potential**

The soil borings indicated the site predominantly consists of sandy soils. We consider these soils non- to slightly corrosive to metallic conduits. If utilities extend through clay soils, we recommend bedding the utilities in sandy soil free of any clay lumps or constructing the utilities with non-corrosive materials.

## **D. Procedures**

### **D.1. Ground Penetrating Radar**

#### **D.1.a. GPR Data Collection**

GPR data was collected on October 13, 2020. GPR collection occurred at posted speed limits and data was recorded continuously along the streets to a depth of up to 2 feet. Analysis of this data provides a continuous estimate of layer thickness for identifiable layers.

Scans of the pavement were collected according to GSSI, Inc. (manufacturer) SIR-20 processor settings at a specified interval of approximately one scan per lineal foot in the outer wheel path in a single travel direction. A calibration file, required for data post-processing, was collected at the onset of testing. Distance along the roadway is measured using a Distance Measuring Instrument (DMI).

#### **D.1.b. GPR Analysis**

Data collected by the GPR unit was returned to our office and analyzed to estimate the pavement thickness. Pavement layer interpretation was accomplished using RADAN 7.0, a software package included with the GSSI RoadScan system.

The software includes tools to aid in delineating pavement layer transitions and automatically calculates their depths from the pavement surface using the calibration file(s) collected prior to or following testing.

Where “ground-truth” data (pavement cores and hand auger borings) were performed, the interpreted layers from the GPR scan were compared directly to the measured thicknesses from the pavement cores and hand auger borings to validate the accuracy of the GPR analysis.

## **D.2. Pavement Coring and Hand Auger Borings**

Pavement coring and hand auger borings were performed on November 6, 2020. Explorations were conducted within drive lanes using a 4-inch core barrel. The bituminous pavement was repaired with a cold-mix bituminous patch immediately after coring.

The cores were measured to obtain approximate bituminous thickness and their material conditions were noted based on visual observation. Images of the cores can be found in the Core Photo Log attached to this report in Appendix C.

## **D.3. Penetration Test Borings**

We drilled the penetration test borings with a truck-mounted core and auger drill equipped with hollow-stem auger on October 26, 2020. We performed the borings in general accordance with ASTM D6151 taking penetration test samples at 2 1/2-foot intervals in general accordance to ASTM D1586. The boring logs show the actual sample intervals and corresponding depths. We also collected bulk samples of auger cuttings at selected locations for laboratory testing.

## **D.4. Exploration Logs**

### **D.4.a. Log of Boring Sheets**

Appendix D includes Log of Boring sheets for our penetration test borings. The logs identify and describe the penetrated geologic materials, and present the results of penetration resistance and other in-situ tests performed. The logs also present the results of laboratory tests performed on penetration test samples and groundwater measurements.

We inferred strata boundaries from changes in the penetration test samples and the auger cuttings. Because we did not perform continuous sampling, the strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may occur as gradual rather than abrupt transitions.

#### **D.4.b. Geologic Origins**

We assigned geologic origins to the materials shown on the logs and referenced within this report, based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance and other in-situ testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past.

### **D.5. Material Classification and Testing**

#### **D.5.a. Visual and Manual Classification**

We visually and manually classified the geologic materials encountered based on ASTM D2488. When we performed laboratory classification tests, we used the results to classify the geologic materials in accordance with ASTM D2487. The Appendix includes a chart explaining the classification system we used.

#### **D.5.b. Laboratory Testing**

The exploration logs in Appendix D note most of the results of the laboratory tests performed on geologic material samples. The remaining laboratory test results follow the exploration logs. We performed the tests in general accordance with ASTM or AASHTO procedures.

### **D.6. Groundwater Measurements**

The drillers checked for groundwater while advancing the penetration test borings, and again after auger withdrawal. We then filled the boreholes, as noted on the boring logs.

## **E. Qualifications**

### **E.1. Continuity of Professional Responsibility**

#### **E.1.a. Plan Review**

We based this report on a limited amount of information, and we made a number of assumptions to help us develop our recommendations. We should be retained to review the geotechnical aspects of the designs and specifications.



This review will allow us to evaluate whether we anticipated the design correctly, if any design changes affect the validity of our recommendations, and if the design and specifications correctly interpret and implement our recommendations.

#### **E.1.b. Construction Observations and Testing**

We recommend retaining us to perform the required observations and testing during construction as part of the ongoing geotechnical evaluation. This will allow us to correlate the subsurface conditions exposed during construction with those encountered by the borings and provide professional continuity from the design phase to the construction phase. If we do not perform observations and testing during construction, it becomes the responsibility of others to validate the assumption made during the preparation of this report and to accept the construction-related geotechnical engineer-of-record responsibilities.

#### **E.2. Use of Report**

This report is for the exclusive use of the addressed parties. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses and recommendations may not be appropriate for other parties or projects.

#### **E.3. Standard of Care**

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

## Appendix A



**Legend**

- Road Centerlines\_4K
- Streets
- Municipal Boundaries
- Historical Parcels
- Mill & Overlay/inlay
- FDR
- Reconstruction
- Topsoil Shouldering

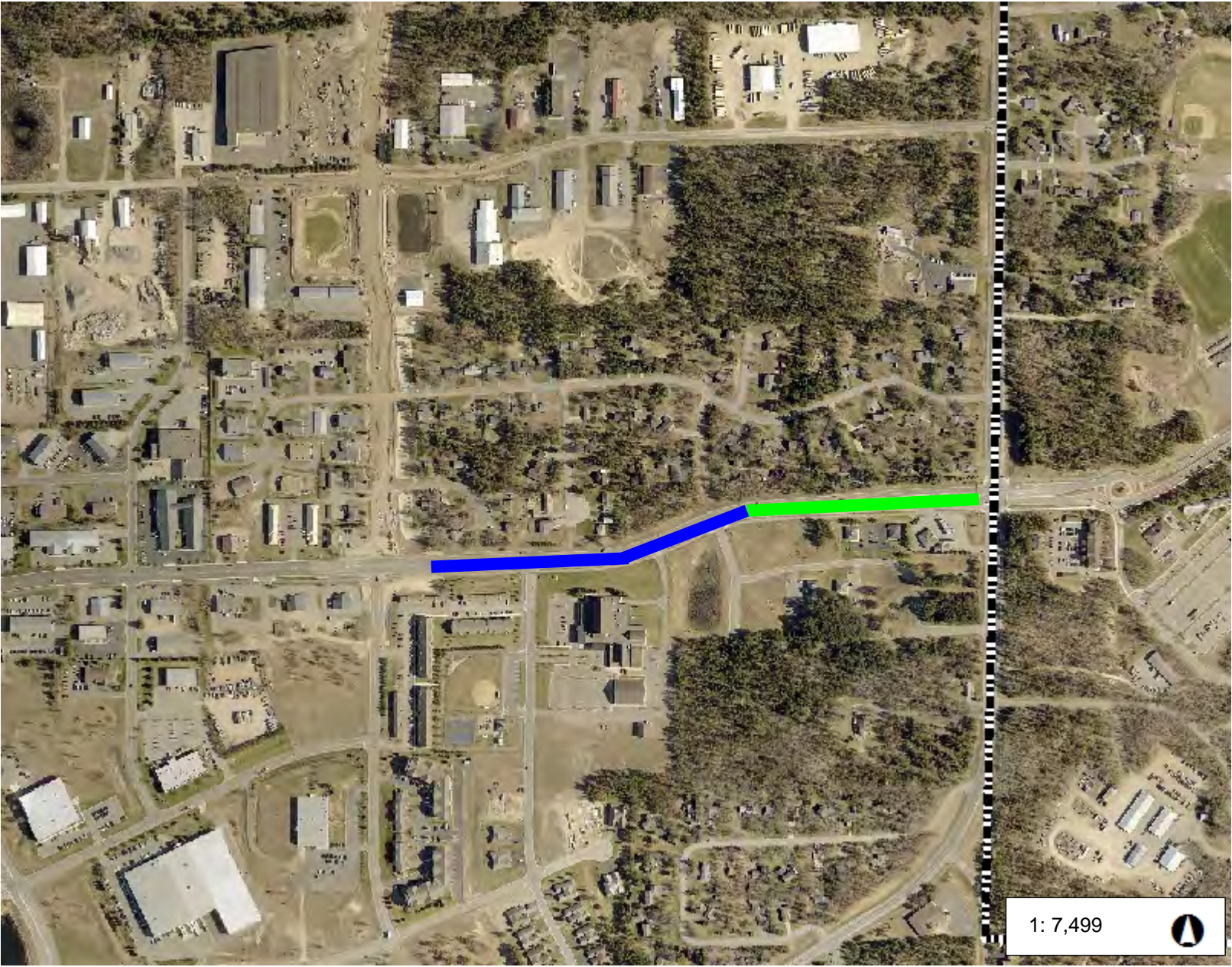
**Notes**

1: 7,499

1,249.8      0      624.88      1,249.8 Feet

NAD\_1983\_HARN\_Adj\_MN\_Crow\_Wing\_Feet  
City of Baxter

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
**THIS MAP IS NOT TO BE USED FOR NAVIGATION**



**Legend**

- Road Centerlines\_4K
- Streets
- Municipal Boundaries
- Historical Parcels

- Mill & Overlay/inlay
- FDR
- Reconstruction
- Topsoil Shouldering

1: 7,499

1,249.8      0      624.88      1,249.8 Feet

NAD\_1983\_HARN\_Adj\_MN\_Crow\_Wing\_Feet  
City of Baxter

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
**THIS MAP IS NOT TO BE USED FOR NAVIGATION**

**Notes**



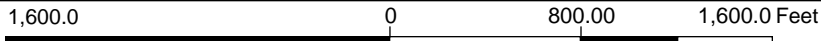
**Legend**

-  Road Centerlines\_9K
-  Streets
-  Municipal Boundaries
-  Historical Parcels

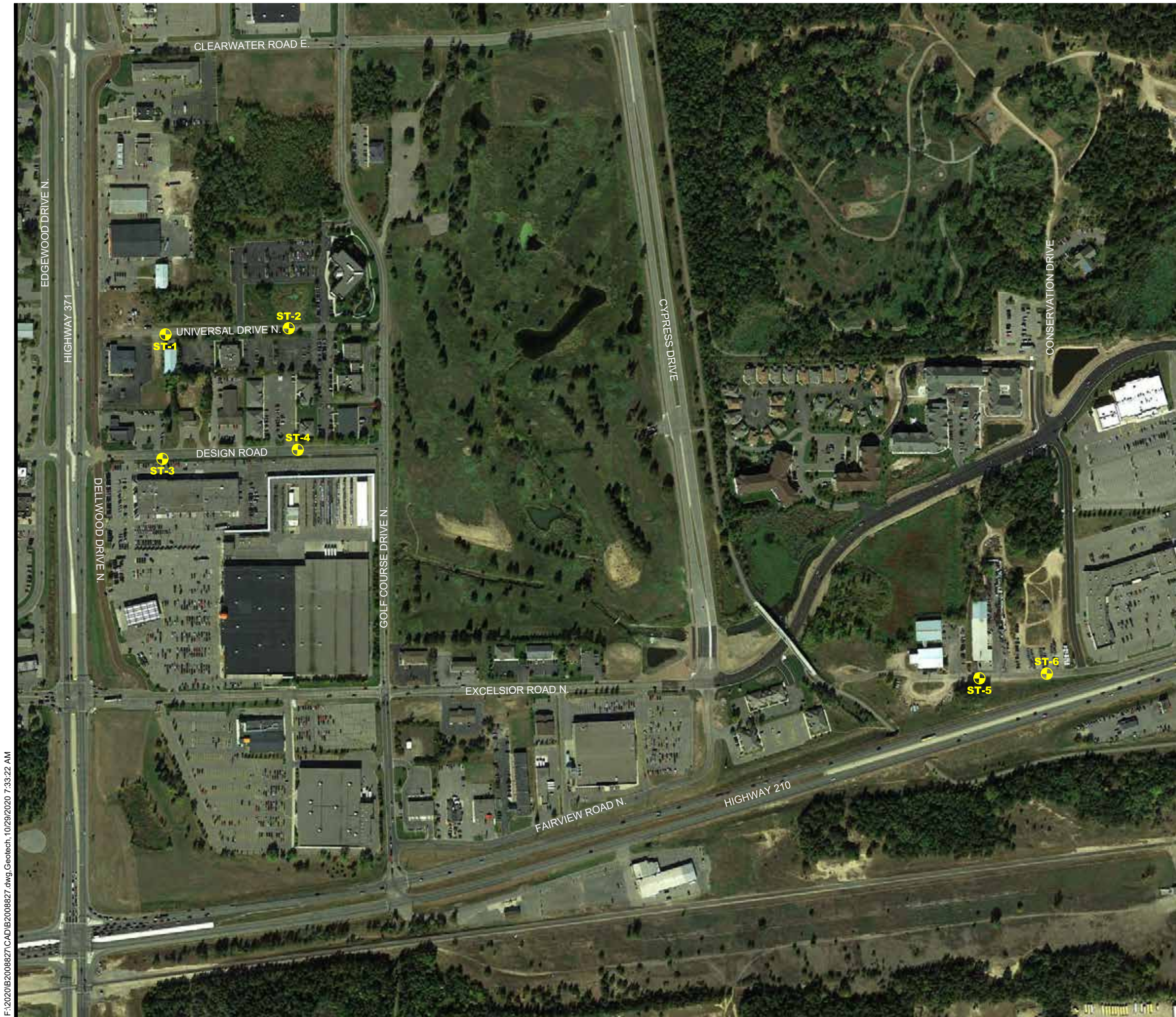
-  Mill & Overlay/inlay
-  FDR
-  Reconstruction
-  Topsoil Shouldering

**Notes**



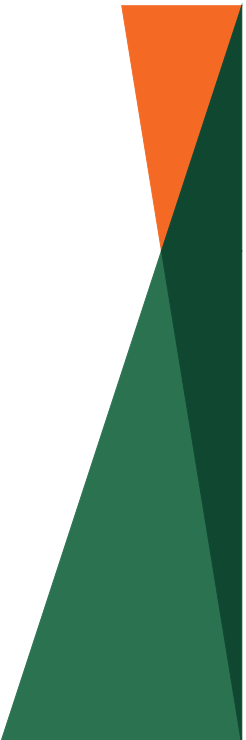
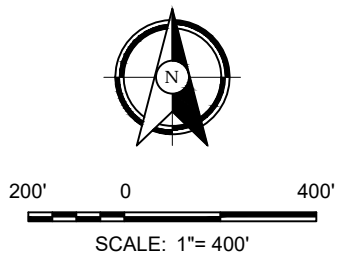
NAD\_1983\_HARN\_Adj\_MN\_Crow\_Wing\_Feet  
City of Baxter

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.  
**THIS MAP IS NOT TO BE USED FOR NAVIGATION**



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 DENOTES APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING



Drawing Information

Project No:	B2008827
Drawing No:	B2008827
Drawn By:	JAG
Date Drawn:	10/15/20
Checked By:	AJG
Last Modified:	10/29/20

Project Information

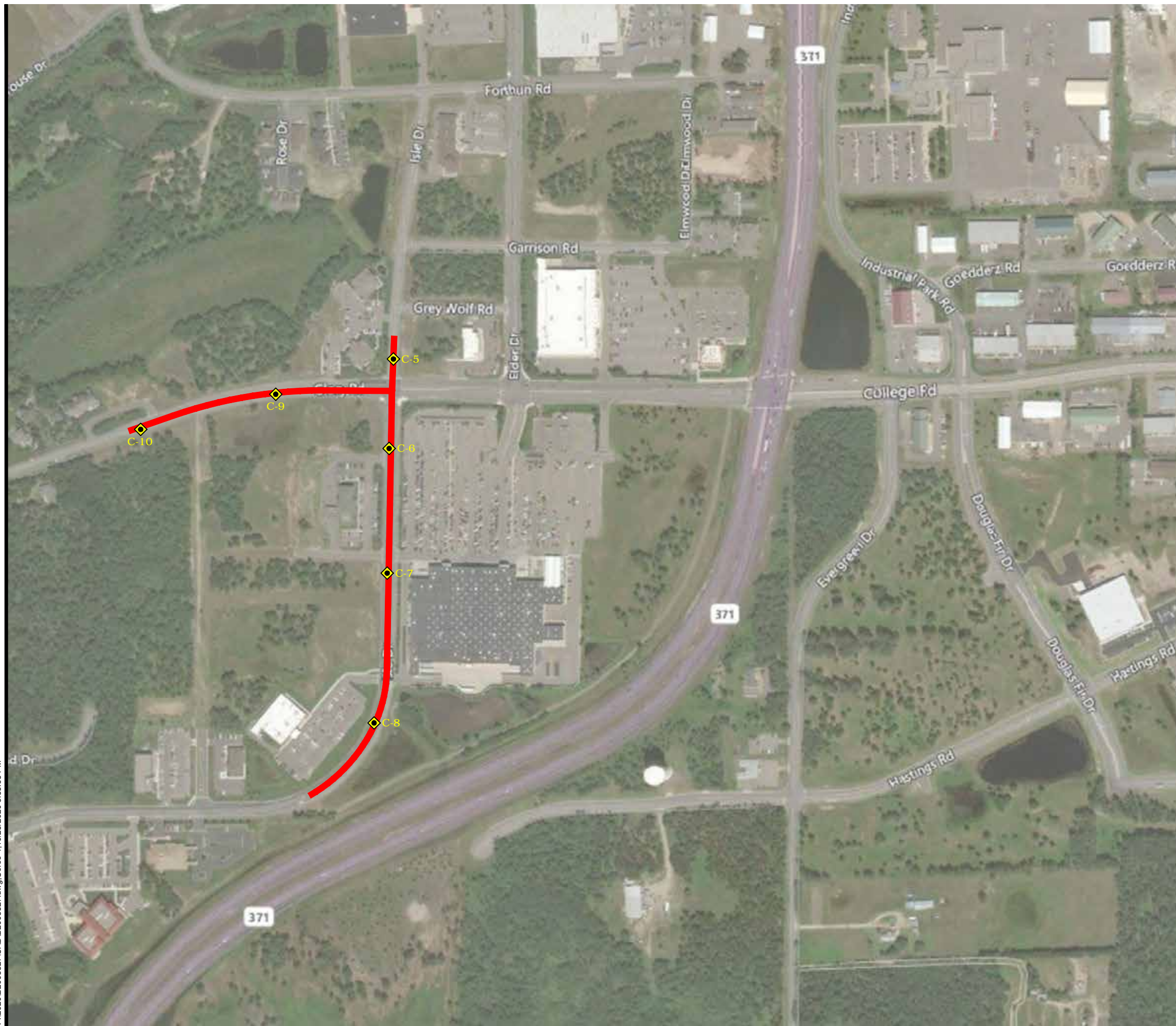
City of Baxter 2021  
Streets Improvements  
Project



Various Streets

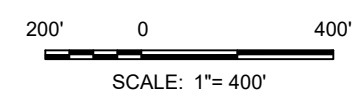
Baxter, Minnesota

**Soil Boring  
Location Sketch**

F:\2020\B2008827\CAD\B2008827.dwg Cores-1, 10/28/2020 3:58:35 PM



-  PAVEMENT CORE AND HAND AUGER BORING LOCATION
-  GPR TESTING LOCATION



Drawing Information

Project No:	B2008827
Drawing No:	B2008827
Drawn By:	JAG
Date Drawn:	10/15/20
Checked By:	AJG
Last Modified:	10/28/20

Project Information

City of Baxter 2021  
Streets Improvements  
Project



Various Streets

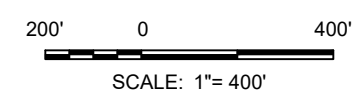
Baxter, Minnesota

**Pavement Core  
and GPR Testing  
Location Map**

F:\2020\B2008827\CAD\B2008827.dwg, Cores-2, 10/28/2020 3:58:35 PM



-  PAVEMENT CORE AND HAND AUGER BORING LOCATION
-  GPR TESTING LOCATION



Drawing Information

Project No:	B2008827
Drawing No:	B2008827
Drawn By:	JAG
Date Drawn:	10/15/20
Checked By:	AJG
Last Modified:	10/28/20

Project Information

City of Baxter 2021  
Streets Improvements  
Project

Various Streets

Baxter, Minnesota

**Pavement Core  
and GPR Testing  
Location Map**



## Appendix B

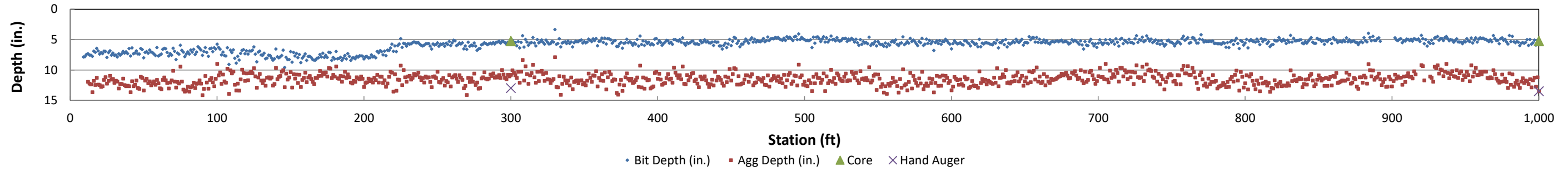
# GPR Results: College Road - Cypress Dr to Highland Scenic Rd

Location City of Baxter 2021 Improvement  
 Project No. B2008827  
 Roadway College Road  
 From Cypress Dr  
 To Highland Scenic Rd

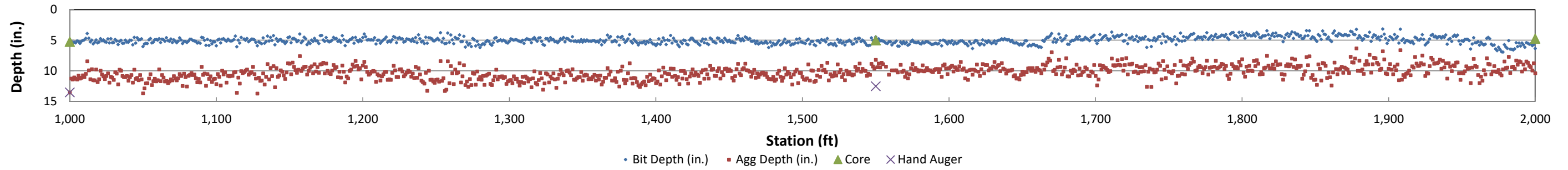


Note: stations are positive in the NB or EB direction; SB or WB scans have been reversed

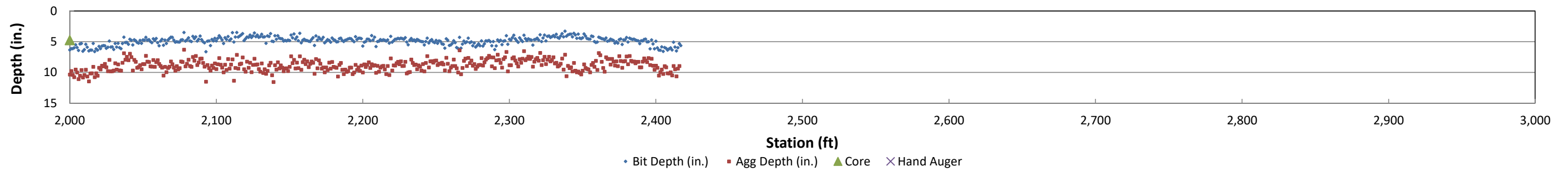
### College Road (WB)



### College Road (WB)



### College Road (WB)



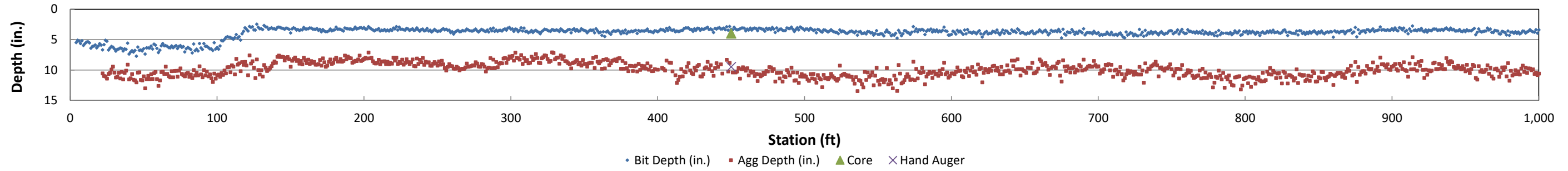
# GPR Results: Glory Road - Isle Drive to West end

Location City of Baxter 2021 Improvement  
Project No. B2008827  
Roadway Glory Road  
From Isle Drive  
To West end

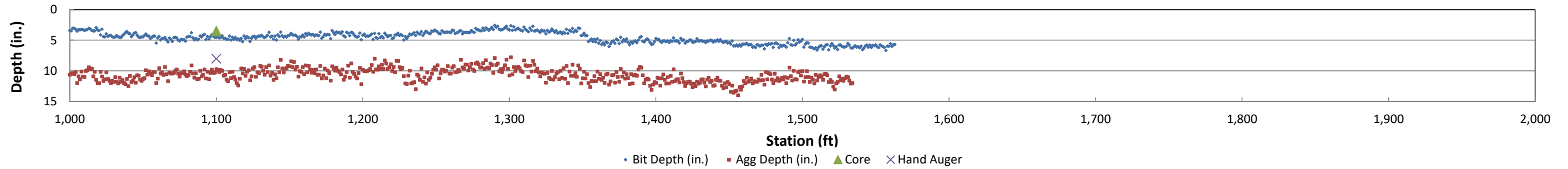


Note: stations are positive in the NB or EB direction; SB or WB scans have been reversed

### Glory Road (WB)



### Glory Road (WB)



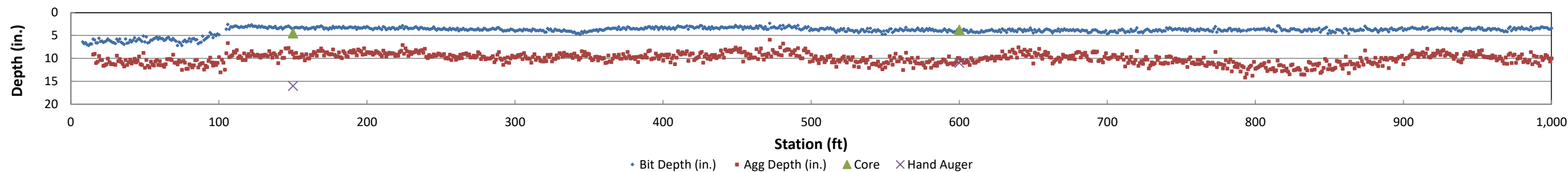
# GPR Results: Isle Drive - Grey Wolf Road to South end

Location City of Baxter 2021 Improvement  
 Project No. B2008827  
 Roadway Isle Drive  
 From Grey Wolf Road  
 To South end

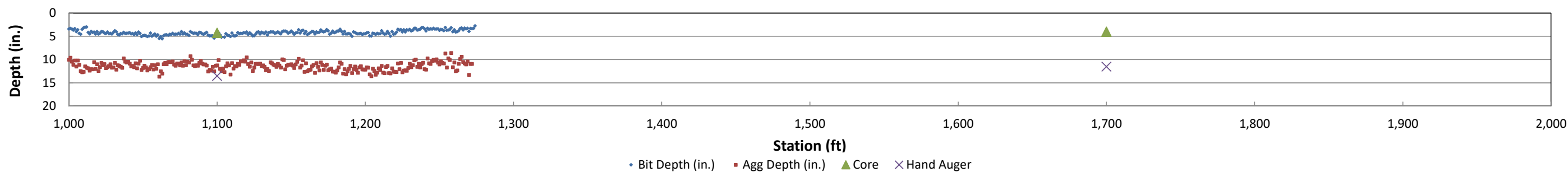


Note: stations are positive in the NB or EB direction; SB or WB scans have been reversed

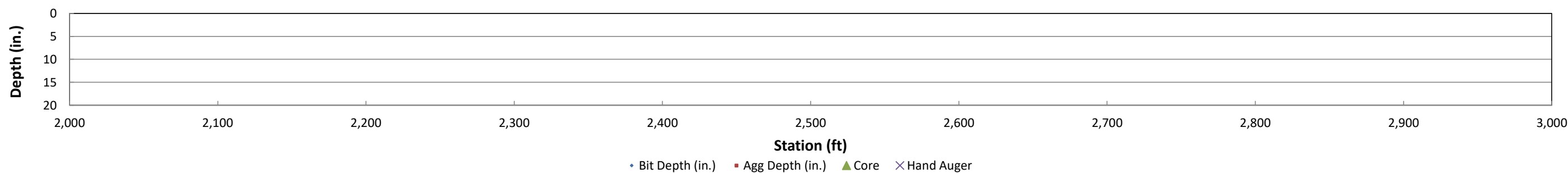
### Isle Drive (SB)



### Isle Drive (SB)



### Isle Drive (SB)



## Appendix C



Core #: C-1  
Pavement: 5 1/4 inches      Agg Base: 7 3/4 inches  
Location: College Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-2  
Pavement: 5 1/4 inches      Agg Base: 8 1/4 inches  
Location: College Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-3  
Pavement: 5 inches      Agg Base: 7 1/2 inches  
Location: College Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC





Core #: C-4  
Pavement: 4 3/4 inches      Agg Base: Refusal in HAB  
Location: College Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-5  
Pavement: 4 1/2 inches      Agg Base: 11 1/2 inches  
Location: Isle Drive  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-6  
Pavement: 3 3/4 inches      Agg Base: 7 1/4 inches  
Location: Isle Drive  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-7  
Pavement: 4 1/4 inches      Agg Base: 9 1/4 inches  
Location: Isle Drive  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-8  
Pavement: 4 inches      Agg Base: 7 1/2 inches  
Location: Isle Drive  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-9  
Pavement: 4 inches      Agg Base: 5 1/2 inches  
Location: Glory Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC



Core #: C-10  
Pavement: 3 1/2 inches      Agg Base: 4 1/2 inches  
Location: Glory Road  
Date: November 6, 2020

Project: B2008827

**BRAUN**  
INTERTEC

## Appendix D



<b>Project Number B2008827</b> <b>Geotechnical Evaluation</b> <b>City of Baxter 2021 Streets Improvements Projects</b> <b>Various Streets</b> <b>Baxter, Minnesota</b>					BORING: <b>ST-1</b>		
					LOCATION: See attached sketch		
					NORTHING: 173841	EASTING: 556517	
DRILLER: C. McClain	LOGGED BY: A. Grothaus		START DATE: 10/26/20	END DATE: 10/26/20			
SURFACE ELEVATION: 1196.5 ft	RIG: 7514	METHOD: 3 1/4" HSA	SURFACING: Bituminous	WEATHER: Clear			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1195.6 0.9		PAVEMENT, 3 inches of bituminous over 8 inches of apparent aggregate base					
		POORLY GRADED SAND (SP), fine to medium-grained, trace Gravel, brown, moist to wet, very loose to medium dense (GLACIAL OUTWASH)		2-4-7 (11) 10"			
			5	1-4-6 (10) 13"		20	
				1-2-2 (4) 13"			
1185.5 11.0		END OF BORING	10	1-2-3 (5) 10"			
		Boring then backfilled with auger cuttings					Water observed at 5.0 feet while drilling.
			15				
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2008827</b>					<b>BORING: ST-2</b>	
<b>Geotechnical Evaluation</b>					LOCATION: See attached sketch	
<b>City of Baxter 2021 Streets Improvements Projects</b>					NORTHING: 173867 EASTING: 557023	
<b>Various Streets</b>					START DATE: 10/26/20 END DATE: 10/26/20	
<b>Baxter, Minnesota</b>					SURFACING: Bituminous WEATHER: Clear	
DRILLER: C. McClain		LOGGED BY: A. Grothaus				
SURFACE ELEVATION: 1193.5 ft		RIG: 7514		METHOD: 3 1/4" HSA		

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1192.6		PAVEMENT, 5 inches of bituminous over 6 inches of apparent aggregate base					
0.9		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, trace Gravel, brown, moist		2-3-4 (7) 13"			
1190.5		POORLY GRADED SAND (SP), fine to medium-grained, brown to gray, wet, very loose (GLACIAL OUTWASH)		1-1-3 (4) 14"			
3.0			5	1-1-1 (2) 8"			
				1-1-3 (4) 18"			
1182.5		END OF BORING					Water observed at 5.0 feet while drilling.
11.0		Boring then backfilled with auger cuttings					

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2008827</b>					<b>BORING: ST-3</b>		
<b>Geotechnical Evaluation</b>					LOCATION: See attached sketch		
<b>City of Baxter 2021 Streets Improvements Projects</b>					NORTHING: 173332 EASTING: 556504		
<b>Various Streets</b>					START DATE: 10/26/20 END DATE: 10/26/20		
<b>Baxter, Minnesota</b>					SURFACING: Bituminous WEATHER: Clear		
DRILLER: C. McClain		LOGGED BY: A. Grothaus		SURFACE ELEVATION: 1196.2 ft		RIG: 7514	METHOD: 3 1/4" HSA
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1195.4		PAVEMENT, 5 inches of bituminous over 5 inches of apparent aggregate base					
0.8		FILL: SILTY SAND (SM), fine to medium-grained, with Gravel, brown, moist		3-3-3 (6) 10"		22	P200=73%
1193.7		SILT (ML), fine to medium-grained, brown, wet, medium (GLACIAL OUTWASH)		3-4-5 (9) 12"			
2.5			5	1-1-1 (2) 14"			
1190.2		POORLY GRADED SAND (SP), fine to medium-grained, brown, wet, very loose to medium dense (GLACIAL OUTWASH)		1-4-10 (14) 18"			
6.0			10				
1185.2		END OF BORING					
11.0		Boring then backfilled with auger cuttings					
			15				Water observed at 5.0 feet while drilling.
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2008827</b> <b>Geotechnical Evaluation</b> <b>City of Baxter 2021 Streets Improvements Projects</b> <b>Various Streets</b> <b>Baxter, Minnesota</b>					BORING: <b>ST-4</b>		
					LOCATION: See attached sketch		
					NORTHING: 173369	EASTING: 557059	
DRILLER: C. McClain	LOGGED BY: A. Grothaus		START DATE: 10/26/20	END DATE: 10/26/20			
SURFACE ELEVATION: 1192.1 ft	RIG: 7514	METHOD: 3 1/4" HSA	SURFACING: Bituminous	WEATHER: Clear			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1191.2 0.9		PAVEMENT, 4 1/2 inches of bituminous over 6 inches of apparent aggregate base					
1189.6 2.5		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, with Gravel, brown, moist		2-2-5 (7) 8"			
		POORLY GRADED SAND (SP), fine to medium-grained, brown to gray, moist to wet, very loose to loose (GLACIAL OUTWASH)	5	1-2-2 (4) 12"			
				1-3-3 (6) 18"			
1181.1 11.0		END OF BORING	10	1-2-3 (5) 10"			
		Boring then backfilled with auger cuttings					Water observed at 7.5 feet while drilling.
			15				
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

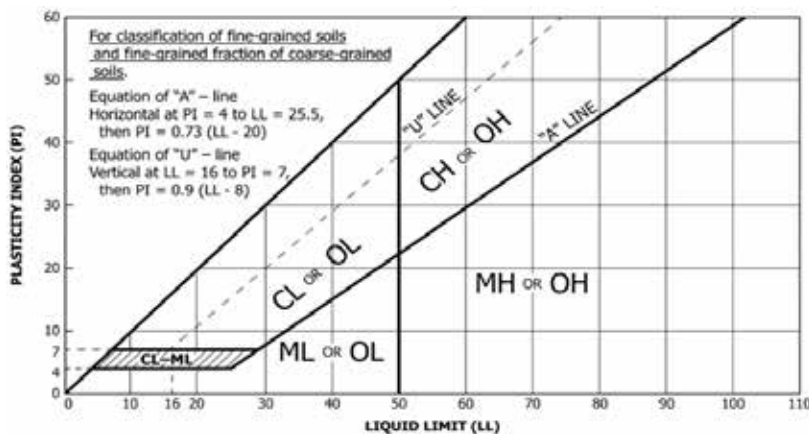
<b>Project Number B2008827</b> <b>Geotechnical Evaluation</b> <b>City of Baxter 2021 Streets Improvements Projects</b> <b>Various Streets</b> <b>Baxter, Minnesota</b>					BORING: <b>ST-5</b>		
					LOCATION: See attached sketch		
					NORTHING: 172432	EASTING: 559853	
DRILLER: C. McClain	LOGGED BY: A. Grothaus		START DATE: 10/26/20	END DATE: 10/26/20			
SURFACE ELEVATION: 1195.1 ft	RIG: 7514	METHOD: 3 1/4" HSA	SURFACING: Bituminous	WEATHER: Clear			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1194.4 0.8		PAVEMENT, 3 inches of bituminous over 6 inches of apparent aggregate base					
1192.6 2.5		FILL: POORLY GRADED SAND with SILT (SP-SM), fine to medium-grained, with Gravel, brown, moist		2-5-11 (16) 11"			
		POORLY GRADED SAND (SP), fine to medium-grained, light brown, moist, loose to medium dense (GLACIAL OUTWASH)	5	5-6-7 (13) 16"		4	
				2-2-3 (5) 18"			
1184.1 11.0		END OF BORING	10	3-4-3 (7) 18"			
		Boring then backfilled with auger cuttings					Water not observed while drilling.
			15				
			20				
			25				
			30				

See Descriptive Terminology sheet for explanation of abbreviations

<b>Project Number B2008827</b> <b>Geotechnical Evaluation</b> <b>City of Baxter 2021 Streets Improvements Projects</b> <b>Various Streets</b> <b>Baxter, Minnesota</b>					BORING: <b>ST-6</b>		
					LOCATION: See attached sketch		
					NORTHING: 172451	EASTING: 560130	
DRILLER: C. McClain	LOGGED BY: A. Grothaus		START DATE: 10/26/20	END DATE: 10/26/20			
SURFACE ELEVATION: 1196.9 ft	RIG: 7514	METHOD: 3 1/4" HSA	SURFACING: Bituminous	WEATHER: Clear			
Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	Blows (N-Value) Recovery	q <sub>p</sub> tsf	MC %	Tests or Remarks
1196.0		PAVEMENT, 2 inches of bituminous over 8 inches of apparent aggregate base					
0.8							
1194.9		FILL: POORLY GRADED SAND with SILT (SP-SM), trace Gravel, brown, moist		6-11-10 (21) 13"		3	P200=13%
2.0		SILTY SAND (SM), fine to medium-grained, brown, moist, very loose to medium dense (GLACIAL OUTWASH)		2-3-4 (7) 18"			
			5	1-2-2 (4) 15"			
			10	1-1-2 (3) 15"			
1185.9		END OF BORING					Water not observed while drilling.
11.0		Boring then backfilled with auger cuttings					
			15				
			20				
			25				
			30				

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests				Soil Classification	
				Group Symbol	Group Name <sup>B</sup>
Coarse-grained Soils (more than 50% retained on No. 200 sieve)	Gravels (More than 50% of coarse fraction retained on No. 4 sieve)	Clean Gravels (Less than 5% fines <sup>C</sup> )	$C_u \geq 4$ and $1 \leq C_c \leq 3^D$	GW	Well-graded gravel <sup>E</sup>
		Gravels with Fines (More than 12% fines <sup>C</sup> )	$C_u < 4$ and/or ( $C_c < 1$ or $C_c > 3$ ) <sup>D</sup>	GP	Poorly graded gravel <sup>E</sup>
			Fines classify as ML or MH	GM	Silty gravel <sup>EFG</sup>
	Sands (50% or more coarse fraction passes No. 4 sieve)	Clean Sands (Less than 5% fines <sup>H</sup> )	$C_u \geq 6$ and $1 \leq C_c \leq 3^D$	SW	Well-graded sand <sup>I</sup>
		Sands with Fines (More than 12% fines <sup>H</sup> )	$C_u < 6$ and/or ( $C_c < 1$ or $C_c > 3$ ) <sup>D</sup>	SP	Poorly graded sand <sup>I</sup>
			Fines classify as ML or MH	SM	Silty sand <sup>FGI</sup>
	Fines classify as CL or CH	SC	Clayey sand <sup>FGI</sup>		
Fine-grained Soils (50% or more passes the No. 200 sieve)	Silt and Clays (Liquid limit less than 50)	Inorganic	PI > 7 and plots on or above "A" line <sup>J</sup>	CL	Lean clay <sup>KLM</sup>
			PI < 4 or plots below "A" line <sup>J</sup>	ML	Silt <sup>KLM</sup>
	Silt and Clays (Liquid limit 50 or more)	Inorganic	PI plots on or above "A" line	CH	Fat clay <sup>KLM</sup>
			PI plots below "A" line	MH	Elastic silt <sup>KLM</sup>
		Organic	Liquid Limit - oven dried < 0.75	OL	Organic clay <sup>KLMN</sup>
			Liquid Limit - not dried < 0.75	OH	Organic silt <sup>KLMQ</sup>
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor			PT	Peat

- A. Based on the material passing the 3-inch (75-mm) sieve.
- B. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- C. Gravels with 5 to 12% fines require dual symbols:  
GW-GM well-graded gravel with silt  
GW-GC well-graded gravel with clay  
GP-GM poorly graded gravel with silt  
GP-GC poorly graded gravel with clay
- D.  $C_u = D_{60} / D_{10}$        $C_c = ( \&_u )' / : \&_r T \&_u )$
- E. If soil contains  $\geq 15\%$  sand, add "with sand" to group name.
- F. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
- G. If fines are organic, add "with organic fines" to group name.
- H. Sands with 5 to 12% fines require dual symbols:  
SW-SM well-graded sand with silt  
SW-SC well-graded sand with clay  
SP-SM poorly graded sand with silt  
SP-SC poorly graded sand with clay
- I. If soil contains  $\geq 15\%$  gravel, add "with gravel" to group name.
- J. If Atterberg limits plot in hatched area, soil is CL-ML, silty clay.
- K. If soil contains 15 to < 30% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
- L. If soil contains  $\geq 30\%$  plus No. 200, predominantly sand, add "sandy" to group name.
- M. If soil contains  $\geq 30\%$  plus No. 200 predominantly gravel, add "gravelly" to group name.
- N. PI  $\geq 4$  and plots on or above "A" line.
- O. PI < 4 or plots below "A" line.
- P. PI plots on or above "A" line.
- Q. PI plots below "A" line.



DD	Dry density, pcf	OC	Organic content, %	LL	Liquid limit
WD	Wet density, pcf	q <sub>p</sub>	Pocket penetrometer strength, tsf	PL	Plastic limit
P200	% Passing #200 sieve	MC	Moisture content, %	PI	Plasticity index
		q <sub>u</sub>	Unconfined compression test, tsf		

**Particle Size Identification**

- Boulders..... over 12"
- Cobbles..... 3" to 12"
- Gravel  
Coarse..... 3/4" to 3" (19.00 mm to 75.00 mm)  
Fine..... No. 4 to 3/4" (4.75 mm to 19.00 mm)
- Sand  
Coarse..... No. 10 to No. 4 (2.00 mm to 4.75 mm)  
Medium..... No. 40 to No. 10 (0.425 mm to 2.00 mm)  
Fine..... No. 200 to No. 40 (0.075 mm to 0.425 mm)
- Silt..... No. 200 (0.075 mm) to .005 mm
- Clay..... < .005 mm

**Relative Proportions<sup>M</sup>**

- trace..... 0 to 5%
- little..... 6 to 14%
- with.....  $\geq 15\%$

**Inclusion Thicknesses**

- lens..... 0 to 1/8"
- seam..... 1/8" to 1"
- layer..... over 1"

**Apparent Relative Density of Cohesionless Soils**

- Very loose ..... 0 to 4 BPF
- Loose ..... 5 to 10 BPF
- Medium dense..... 11 to 30 BPF
- Dense..... 31 to 50 BPF
- Very dense..... over 50 BPF

**Consistency of Cohesive Soils Per Foot Approximate Unconfined Compressive Strength**

- Very soft..... 0 to 1 BPF..... < 0.25 tsf
- Soft..... 2 to 4 BPF..... 0.25 to 0.5 tsf
- Medium..... 5 to 8 BPF..... 0.5 to 1 tsf
- Stiff..... 9 to 15 BPF..... 1 to 2 tsf
- Very Stiff..... 16 to 30 BPF..... 2 to 4 tsf
- Hard..... over 30 BPF..... > 4 tsf

**Moisture Content:**

- Dry: Absence of moisture, dusty, dry to the touch.
- Moist: Damp but no visible water.
- Wet: Visible free water, usually soil is below water table.

**Drilling Notes:**

Blows/N-value: Blows indicate the driving resistance recorded for each 6-inch interval. The reported N-value is the blows per foot recorded by summing the second and third interval in accordance with the Standard Penetration Test, ASTM D1586.

Partial Penetration: If the sampler could not be driven through a full 6-inch interval, the number of blows for that partial penetration is shown as #/x" (i.e. 50/2"). The N-value is reported as "REF" indicating refusal.

Recovery: Indicates the inches of sample recovered from the sampled interval. For a standard penetration test, full recovery is 18", and is 24" for a thinwall/shelby tube sample.

WOH: Indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

WOR: Indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

Water Level: Indicates the water level measured by the drillers either while drilling (  $\nabla$  ), at the end of drilling (  $\blacktriangledown$  ), or at some time after drilling (  $\blacktriangledown$  ).

# **Appendix D**

## **Project Schedule**



**PROPOSED PROJECT SCHEDULE**  
**2022 FULL DEPTH RECLAMATION AND RECONSTRUCTION IMPROVEMENTS PROJECT**  
**BAXTER, MN**  
**Friday, November 12, 2021**

MAJOR TASKS AND MILESTONES	DATES	REMARKS	NOTES
Resolution Ordering Preparation of Feasibility Report	Tuesday, October 19, 2021	City Council Meeting	
Recommendation to Approve Feasibility Report	Wednesday, November 3, 2021	Utilities Commission Meeting	
Review Feasibility Study at Council Workshop	Tuesday, December 7, 2021	City Council Meeting	
Resolution Receiving Feasibility Report and Calling Improvement Hearing			
Mailed Notice for Improvement Hearing	Thursday, December 9, 2021	One notice at least 10 days prior to hearing	
First Published Notice for Improvement Hearing	Sunday, December 12, 2021	Twice in local newspaper, one week apart, last notice must be at least three days prior to hearing.	3
Second Published Notice for Improvement Hearing	Sunday, December 19, 2021		
Review Plans and Specifications	Wednesday, January 5, 2022	Utilities Commission Meeting	
Improvement Hearing	Thursday, January 6, 2022	6:00 p.m. at Baxter City Hall	6
Review Plans and Specifications at Council Workshop	Tuesday, January 18, 2022	City Council Meeting	
Resolution Ordering Improvement			
Resolution Approving Plans and Specifications and Ordering Advertisement for Bids			
Bidding Publication	Sunday, January 23, 2022	Publication must be made at least three weeks before last day to submit bids, at least once in official newspaper and once in trade paper or First Class city newspaper.	3
Bid Opening	Tuesday, February 15, 2022	By default bid remains subject to acceptance for 60 days after the Bid opening.	
Resolution Ordering Assessment Hearing	Tuesday, March 1, 2022	City Council Meeting	
Bid review with Utilities Commission	Wednesday, March 2, 2022	Utilities Commission Meeting	
Mailed Notice for Assessment Hearing	Thursday, March 3, 2022	One notice at least two weeks prior to hearing	
Published Notice for Assessment Hearing	Sunday, March 6, 2022	Once in local newspaper at least two weeks prior to hearing.	
Assessment Hearing	Thursday, March 24, 2022	6:00 p.m. at Baxter City Hall	
Resolution Adopting Assessment Rolls	Tuesday, April 5, 2022	City Council Meeting	
End of Assessment Appeal Period	Wednesday, May 5, 2021	Appeals to district court must be made within 30 days after adoption of the assessment roll.	
Notice of Award	Tuesday, May 17, 2022	City Council Meeting. Contractor has 15 days to deliver signed agreement, bonds, and insurance certificates.	
Pre-Construction Meeting	May, 2022		
Public Information Meeting - Construction	May, 2022	6:00 p.m. at Baxter City Hall	
Begin Construction	June, 2022		
Construction Complete	September 2022		

**NOTES**

1. City Council Meetings held on 1st and 3rd Tuesdays @ 7:00 p.m.
2. Utilities Commission Meetings held on 1st Wednesday following the 1st Council Meeting @ 5:30 p.m.
3. Brainerd Dispatch is currently only running legal notices on Wednesdays and Sundays. Deadline for Wednesday publication is noon on Monday and deadline for Sunday publication is noon on Thursday.
4. The project schedule assumes all Council actions are taken at a regular scheduled meetings. The schedule could be accelerated with special meetings.
5. **All dates are subject to change, this is a living document. Dates may change based on coordination with other 2022 projects.**
6. Could hold Improvement Hearing on December 30, 2021.