THE CITY OF LAKE ELMO

STAFF REPORT

DATE: July 6, 2021
REGULAR

AGENDA ITEM: Old Village Phase 5 and 6 Street, Drainage and Utility Improvements – Change Order in Process

SUBMITTED BY: Jack Griffin, City Engineer

REVIEWED BY: Kristina Handt, City Administrator
Marty Powers, Public Works Director
Chad Isakson, Project Engineer

ISSUE BEFORE COUNCIL: What direction should the City Council provide to staff in regards to the sanitary sewer design options for the Old Village Phase 5 and 6 Street Drainage, and Utility Improvements?

BACKGROUND: A-1 Excavating was awarded a construction contract on March 16, 2021 to complete the Old Village Phase 5 and 6 Street Drainage, and Utility Improvements. A preconstruction meeting was held to kick off the construction of the project on April 14, 2021 with the first few months of work to be focused on the deep sewer tunneling along 32nd Street North. The tunneling work was scheduled to be completed from 622 feet east of Lambert Avenue to 250 feet west of Lambert Avenue. Shortly after beginning work on the deep sewer, the contractor began to encounter large boulders/rocks that prevented any meaningful progress with the tunneling operation. The contractor excavated three large pits for the tunneling and made attempts to jack the casing pipe from three separate locations, with each attempt meeting the same resistance. The contractor had also increased the casing from a 24-inch to 36-inch pipe in an attempt to move past the obstructions, but had no success. On June 3rd, the contractor stopped drilling operations and notified the city that a 51-inch casing pipe would be required for the tunneling work at a significant cost increase. The larger casing pipe is needed to allow access by workers to excavate the larger boulder obstructions whenever encountered.

The current project contract has a milestone 1 completion date of October 15, 2021, milestone 2 completion date of October 14, 2022, substantial completion date of June 30, 2023 and final completion date of July 28, 2023. A future change order will likely result in modifications to the project schedule.

PROPOSAL DETAILS/ANALYSIS: Upon notification from the contractor that a larger casing pipe and tunneling method would be needed to continue with the current sewer design, the work on the deep sewer tunneling and overall project construction has been stopped to allow the city and engineering team to assess the cost impacts and to identify alternative sewer design options available for consideration by the city.

Two additional sewer design options have been identified, in addition to the original deep gravity sewer design, including a lift station option and low-pressure sewer option. Each option has cost impacts associated with the current construction contract for the Old Village Phase 5 and 6 Improvements that would be addressed through a change order with the general contractor, as well as potential future cost impacts to the sanitary sewer system for the expanded service areas. Staff will present the sewer design alternatives, together with the most recent estimated costs, and advantages and disadvantages for each option. Staff will be seeking council direction on the most favorable option for which staff should complete a final design for the purpose to preparing and processing a contract change order with A-1 Excavating.

OPTIONS:

1) Option 1: Deep gravity sewer option. Continue with original project gravity sewer design, and pursue deep sewer tunneling operation using alternative micro tunneling and 51-inch casing pipe.
    a. Sewer design option keeps the 15-inch trunk sewer stub to the north of the UPRR at a 910 invert elevation located at Klondike and 33rd Street.
    b. Sewer service to all properties remains unchanged, including the 12 grinder station properties for the current plan.
    c. Micro tunneling with 51-inch casing pipe still has construction risks and unknowns.
    d. Estimated cost increase for this contract is $1,100,000.
    e. Estimated additional future costs associated with this design option. $0.00.
    f. Contract time. 3-4 months additional project delay for tunneling work before street and utility work can be initiated. The anticipated 2021 street and utility work will be delayed to the 2022 construction season.

2) Option 2: Lift Station option. Install sanitary lift station at the city 201 system property alongside the proposed storm water basin. This allows for the remaining sanitary sewer pipe to be raised up in elevation and removes the deep gravity sewer from the project (along with its risks and costs).
    a. Sewer design option keeps the 15-inch trunk sewer stub to the north of the UPRR at a 910 invert elevation located at Klondike and 33rd Street.
    b. Sewer service to all properties remains unchanged, including the 12 grinder station properties for the current plan.
    c. Estimated cost increase for this contract is $260,000.
    d. Estimated additional future costs associated with this design option.
        i. Lift station operational and maintenance costs.
        ii. Potentially by-pass pumping costs.
    e. Contract time. If option is selected, the contractor may proceed without delay to begin street and utility work along 32nd Street. However, due to long lead and delivery times for lift station components, there will be a substantial delay in the new sewer being operational and ready for connection.

3) Option 3: Low Pressure Sewer option. Reroute the trunk gravity sewer to extend north along Lambert Avenue from 32nd Street North, and install a low-pressure sewer system, extending west from Lampert Avenue along 32nd Street North.
    a. This option raises the sewer invert by 5 feet (to a 915 invert elevation) that will be available for the 15-inch trunk sewer stub that will serve the service area north of the UPRR. The redesigned sewer stub would be located near Kraft Circle and 33rd Street.
    b. The low-pressure sewer extension adds another 13 properties that must utilize individual grinder stations (in addition to the 12 grinder station properties for the current plan).
    c. Estimated cost change for this contract would be a deduct of $450,000.
    d. Estimated additional future costs associated with this design option:
        a. $400,000. Future lift station to serve area north of UPRR.
        b. $200,000-$250,000. Low pressure booster station to serve 11 MUSA area properties along Klondike Avenue.
    e. Contract time. If option is selected, the contractor may proceed without delay to begin street and utility work along 32nd Street and/or Lampert Avenue.

FISCAL IMPACT: The fiscal impact will depend on the option selected moving forward. Staff will process an official contract change order for city approval upon the completion of the redesign and receipt of final contractor pricing. The costs associated with each option would be funded through the Sewer Enterprise Fund.

RECOMMENDATION: Staff is recommending that the City Council provide direction to staff to continue working on the redesign for the sanitary sewer for the Old Village Phase 5 and 6 Street Drainage, and Utility Improvements, for Option 2 to include a lift station to be located at the city owned property on 32nd Street North, and to direct the contractor to continue work on the project in accordance with the Option 2 sanitary sewer redesign layout.

"Move to direct staff to continue working on the redesign for the sanitary sewer for the Old Village Phase 5 and 6 Street Drainage, and Utility Improvements, for Option 2 to include a lift station to be located at the city owned property on 32nd Street North, and to direct the contractor to continue work on the project in accordance with the Option 2 sanitary sewer redesign layout".

ATTACHMENTS:

1. Option 1 sanitary sewer schematic.
2. Option 2 sanitary sewer schematic.
3. Option 3 sanitary sewer schematic.

OPTION 1: ORIGINAL DESIGN
WITH DEEP TUNNEL SEWER
1. ALL GRAVITY PIPE

FUTURE SEWER
EXTENSION FOR
NORTH OF UPRR

DEVELOPER CONNECTS
AT 910 INVERT

DEEP SEWER
THROUGH HILL

GP = GRINDER PUMP STATION

LEGEND

PROPOSED SANITARY SEWER

PROPOSED 8" WATER MAIN

N

scale 50 feet

100 0 100 200

CSAH 14

KLONDIKE AVE N

33RD ST N

34TH ST N

UPPER 33RD ST N

UPRR

LANGLEY CT

LAMPERT AVE

KRAFT CIR

33RD ST LN N

32ND ST N

LAKE ELMO AVE

36TH ST N

8" PVC

14" C-900 PVC

15" PVC

8" C-900 PVC

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

FILE NO. 151537

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OLD VILLAGE PHASE 5 & 6
SANITARY SEWER & WATER MAIN
OVERVIEW MAP

FIGURE NO. 2

OPTION 2: LIFT STATION OPTION
AND RAISE GRAVITY SEWER

FUTURE SEWER
EXTENSION FOR
NORTH OF UPRR

DEVELOPER CONNECTS
AT 910 INVERT

CSAH 14

KLONDIKE AVE N

33RD ST N

34TH ST N

UPPER 33RD ST N

UPRR

33RD ST LN N

32ND ST N

KRAFT CIR

LAMPERT AVE

LANGLY CT

LAKE ELMO AVE

KLONDIKE AVE N

36TH ST N

8" PVC

14" C-900 PVC

8" C-900 PVC

15" PVC

LS

GP

LEGEND

PROPOSED SANITARY SEWER

PROPOSED 8" WATER MAIN

N

scale 50 feet

100 0 100 200

LS = CITY OWNED LIFT STATION

GP = GRINDER PUMP STATION

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FIGURE
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OPTION 3: LOW PRESSURE SEWER

DEVELOPER CONNECTS
AT 915 INVERT
FUTURE LIFT STATION
REQUIRED

SEWER DEPTHS
INCREASE IN THIS AREA

LOW PRESSURE SEWER
INSTALLED ON 32ND STREET (WEST OF LAMPERT)

GP = GRINDER PUMP STATION

LEGEND

- PROPOSED SANITARY SEWER
- PROPOSED 8" WATER MAIN

N

scale 50 feet (100 0 100 200)

CSAH 14
KLONDIKE AVE N
33RD ST N
34TH ST N
UPPER 33RD ST N
UPRR
33RD ST LN N
32ND ST N
KRAFT CIR
LAMPERT AVE
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8" PVC
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