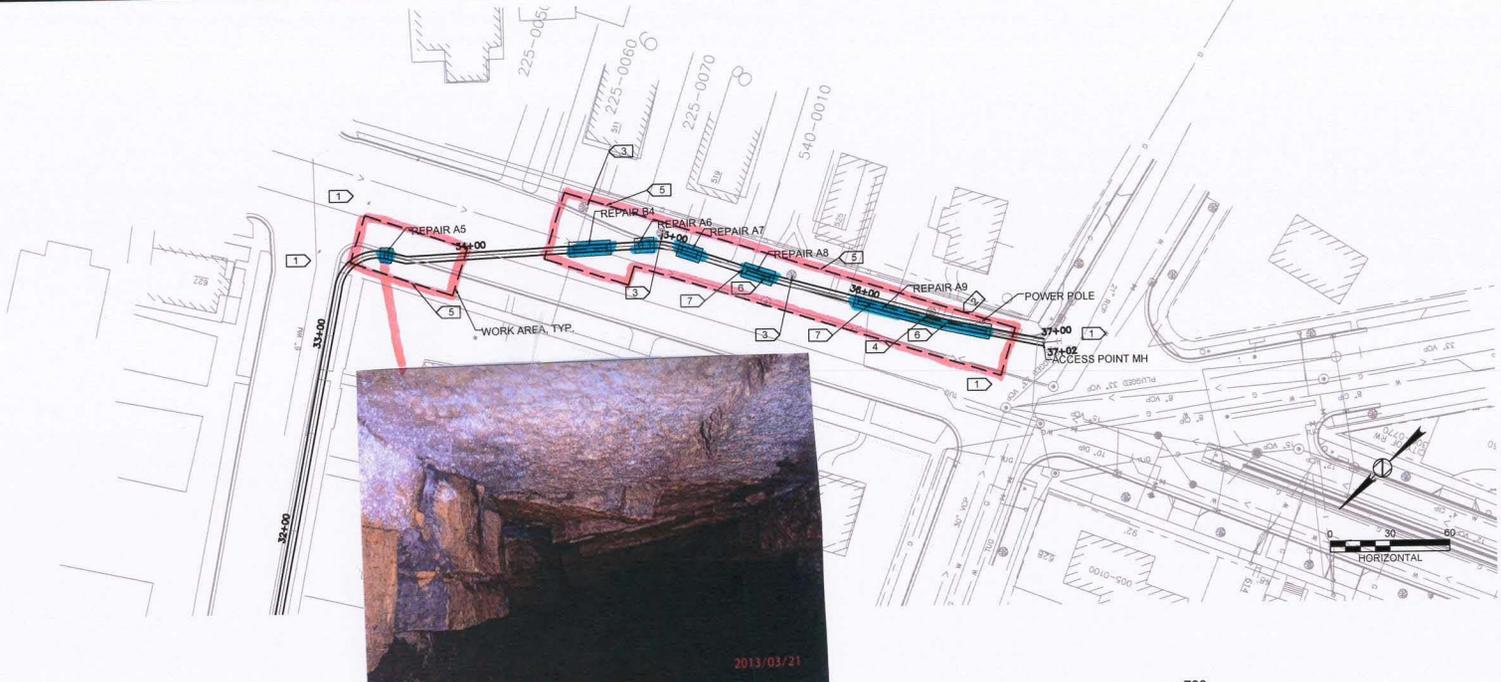
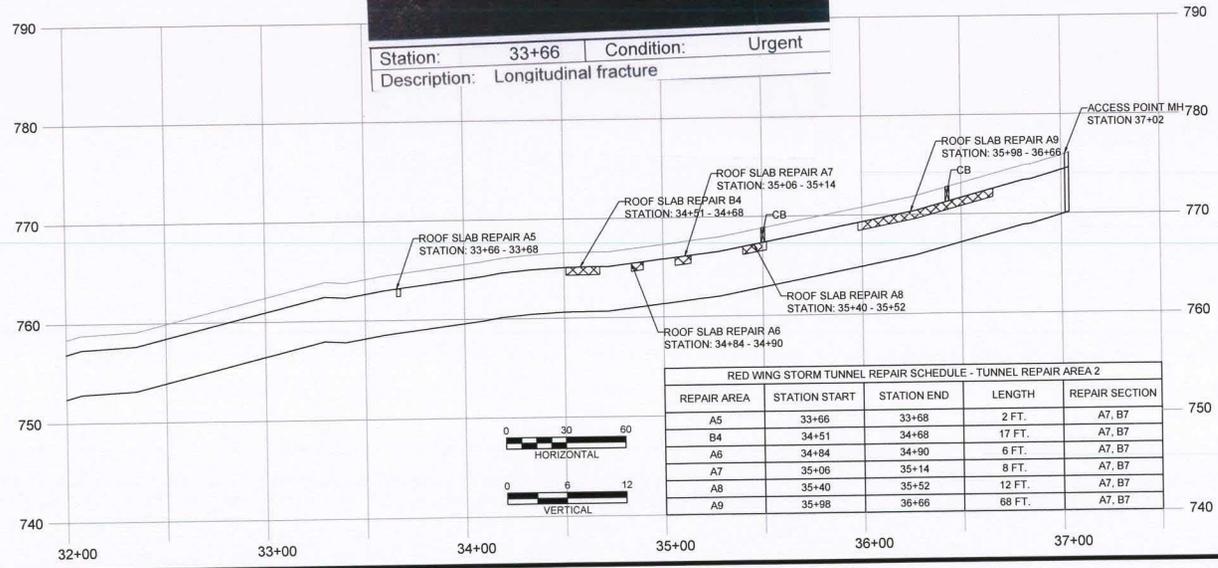


KEYNOTES: X

1. KEEP PEDESTRIAN CROSSING OPEN
2. REMOVE AND REPLACE DAMAGED SIDEWALK, SEE DETAILS A/10 AND D/10.
3. PROTECT TREE
4. REMOVE AND REPLACE TREE WITH 2" BASSWOOD, SEE DETAIL D/11.
5. PROTECT SIDEWALK.
6. REMOVE AND REPLACE CATCH BASIN, SEE DETAILS B/11 AND C/11.
7. REMOVE AND REPLACE DRIVEWAY APRON, SEE DETAILS A/10 AND C/10.



Station: 33+66 Condition: Urgent
Description: Longitudinal fracture



RED WING STORM TUNNEL REPAIR SCHEDULE - TUNNEL REPAIR AREA 2

REPAIR AREA	STATION START	STATION END	LENGTH	REPAIR SECTION
A5	33+66	33+68	2 FT.	A7, B7
B4	34+51	34+68	17 FT.	A7, B7
A6	34+84	34+90	6 FT.	A7, B7
A7	35+06	35+14	8 FT.	A7, B7
A8	35+40	35+52	12 FT.	A7, B7
A9	35+98	36+66	68 FT.	A7, B7



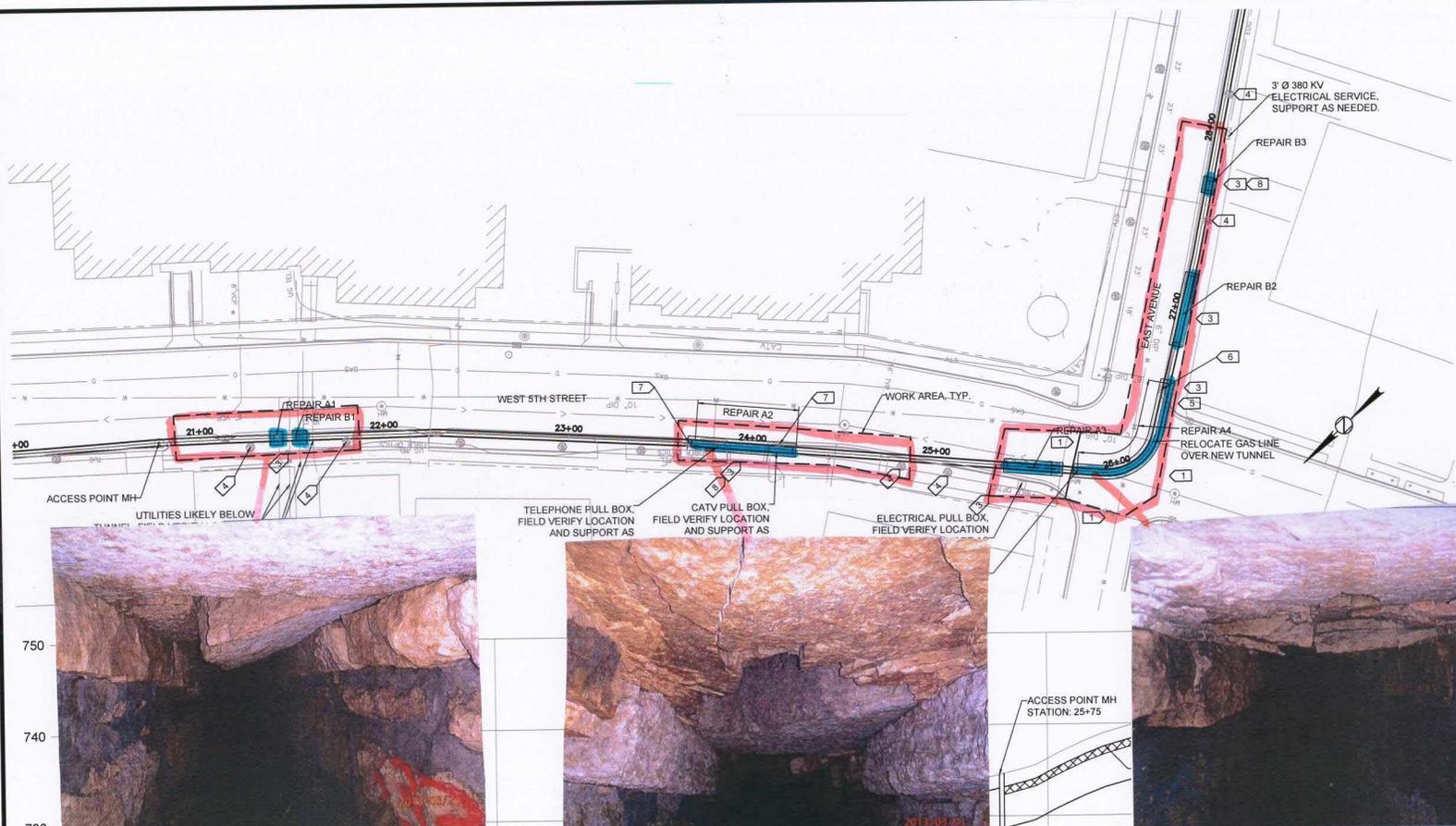
I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Signature: *Brendt Nelson* Printed Name: BRENDT NELSON

Date: 2/14/17 License No. 18566

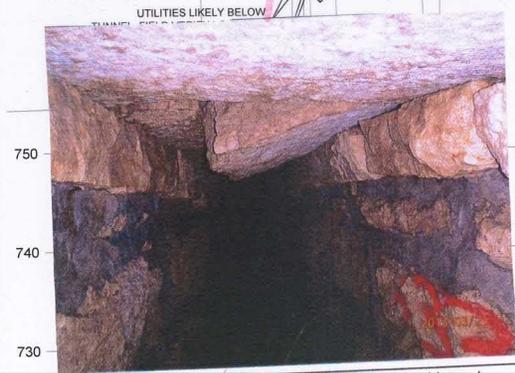
DESIGNED: BKN DRAWN: KOW CHECKED: BOW
TITLE: STORM SEWER REPAIRS
PHASE 1 TUNNEL REPAIRS - 2017
TUNNEL REPAIR AREA 2
BUSH STREET STORM TUNNEL PLAN AND PROFILE (32+00 TO 37+00)

Sheet No. 5 of 13 Sheets

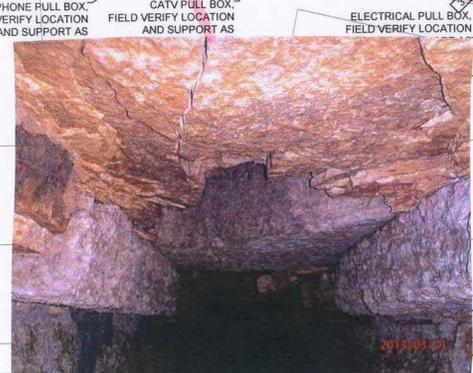
- KEYNOTES: (X)
- KEEP PEDESTRIAN CROSSING OPEN.
 - REMOVE AND REPLACE DAMAGED SIDEWALK, SEE DETAILS A/10 AND D/10.
 - PROTECT SIDEWALK.
 - PROTECT TREE.
 - REMOVE AND REPLACE PEDESTRIAN RAMP, SEE DETAIL A/11.
 - REMOVE AND REPLACE CATCH BASIN, SEE DETAILS B/11 AND C/11.
 - REMOVE AND REPLACE DOUBLE CATCH BASIN, SEE DETAILS B/11 AND C/11.
 - REMOVE AND REPLACE DRIVEWAY APRON, SEE DETAILS A/10 AND C/10.



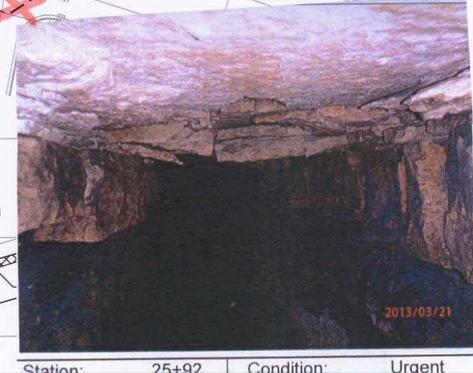
— Areas with repairs
 — WORK AREA



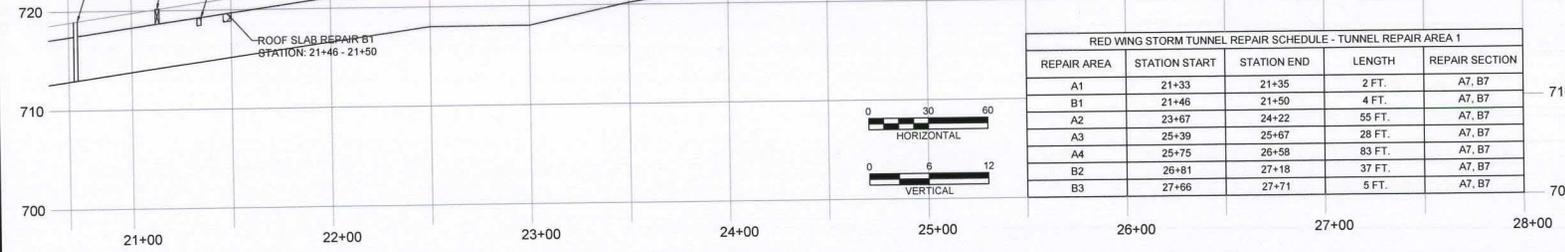
Station: 21+33 Condition: Urgent
 Description: Failed Roof Slab



Station: 23+86 Condition: Urgent
 Description: Longitudinal Fractures



Station: 25+92 Condition: Urgent
 Description: Longitudinal Fracture.



RED WING STORM TUNNEL REPAIR SCHEDULE - TUNNEL REPAIR AREA 1				
REPAIR AREA	STATION START	STATION END	LENGTH	REPAIR SECTION
A1	21+33	21+35	2 FT.	A7, B7
B1	21+46	21+50	4 FT.	A7, B7
A2	23+67	24+22	55 FT.	A7, B7
A3	25+39	25+67	28 FT.	A7, B7
A4	25+75	26+58	83 FT.	A7, B7
B2	26+81	27+18	37 FT.	A7, B7
B3	27+66	27+71	5 FT.	A7, B7

of **RED WING**
 IC WORKS DEPARTMENT
 MOSKWA, DIRECTOR OF PUBLIC WORKS
 STARK P.C., ENVIRONMENTAL ENGINEER

CNA
 CONSULTING ENGINEERS
 612-379-8805

I hereby certify that this plan 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.
 Signature: *Robert K. Nelson* Printed Name: **ROBERT NELSON**
 Date: 2/14/17 License No. 188568

DESIGNED: BKN DRAWN: KDW CHECKED: BOW
 TITLE: STORM SEWER REPAIRS
 PHASE 1 TUNNEL REPAIRS - 2017
 TUNNEL REPAIR AREA 1
 BUSH STREET STORM TUNNEL PLAN AND PROFILE (21+00 TO 28+00)
 Sheet No. 4 of 13 Sheets



CITY COUNCIL AGENDA REPORT

TO: Honorable Mayor and City Council Members

FROM: Bob Stark – Deputy Director Public Works - Utilities

Agenda Item No.: 9-C

Meeting Date: April 10, 2017

ACTION REQUESTED: Motion to Authorize Staff to Advertise for Bids for the Phase 1 Storm Water Tunnel Repairs.

ATTACHMENTS: Drawings 4 and 5 of 13 showing the location of project.

BACKGROUND: Sections of the City's storm water tunnels have deteriorated and need rehabilitation to ensure they can function reliably into the future. This first phase includes replacing the top on 13 sections of the tunnel that were rated as the highest priority. This work is included in the 2017 Capital Improvement Program. Staff is requesting authorization to advertise for bidders for this work.

Council had previously authorized staff to advertise this work, but the project was delayed to minimize traffic impacts beyond those associated with the Highway 61 Reconstruction Project.

DISCUSSION: These tunnels were constructed using a wide variety of configurations, and were originally intended to convey both storm water and sewage to the river. Some are more than 100 years old. Numerous modifications were incorporated in the 1980's and 90's as part of the sewer separation project. Public Works crews also repair segments of the tunnels every year; however the extent of the modifications and repairs does not address long term structural concerns.

Public Works coordinated with CNA Consulting Engineers, Inc. (CNA) to conduct a comprehensive assessment of the City's storm water tunnels in 2013. CNA is an engineering firm in the Twin Cities that specializes in tunnel construction and rehabilitation. This assessment resulted in each segment of the tunnels being rated as critical, poor, fair or good. This was previously discussed with the Council, and Council

concluded with the staff recommendation to include a multi-year phased tunnel rehabilitation program in the Capital Improvement Program. This project represents the first phase, and would address the areas that were identified as “critical”.

CNA prepared plans and specifications for this first phase. This work is along 5th Street between Bush Street and East Avenue; along East Avenue between 5th and 7th Streets; and along 7th Street between East Avenue and Central Avenue. The tunnel in this location is fairly shallow, and the repair consists of removing and replacing the top of the tunnel using open trench excavation. The new top will be constructed from cast-in-place or precast reinforced concrete. The estimated cost is \$325,000-\$375,000. The work would be completed this spring and early summer.

Staff is requesting authorization to advertise for bidders for the phase 1 project.

ONGOING OPERATING & MAINTENANCE COSTS: This project will not have a direct impact on operating and maintenance costs, but is necessary to maintain the integrity of the tunnels.

FUNDING SOURCE(S): This project was included in the storm water utility CIP program.

ALTERNATIVES: Options available include the following:

1. Authorize Staff to Advertise for Bids for the Phase 1 Tunnel Rehabilitation Project.
2. Not Authorize Staff to Advertise for Bids and provide direction to staff as to how to proceed.

RECOMMENDATION: Public Works recommends that the Council authorize staff to complete bidding documents and advertise for the Phase 1 Tunnel Rehabilitation Project. Public Works will return to the Council for authorization to award the construction contract.