Final
12/11/18

- E:\E-18\18-1134E\Admin\Meetings\18.12.11 Public Presentation\Final

EMPORIA
City of Emporia

DOWNTOWN SANITARY SEWER COLLECTION SYSTEM REHABILITATION PROJECT

BG CONSULTANTS
ENGINEERS · ARCHITECTS · SURVEYORS

18-1134E

12/11/18

DOWNTOWN SANITARY SEWER COLLECTION SYSTEM REHABILITATION PROJECT

PROJECT TEAM

Lane Massey, Asst. City Manager

Jim Ubert, P.E. City Engineer

Frank Abart, Public Works Director

Casey Woods, Emporia Main Street

Jeanine McKenna, Chamber of Commerce

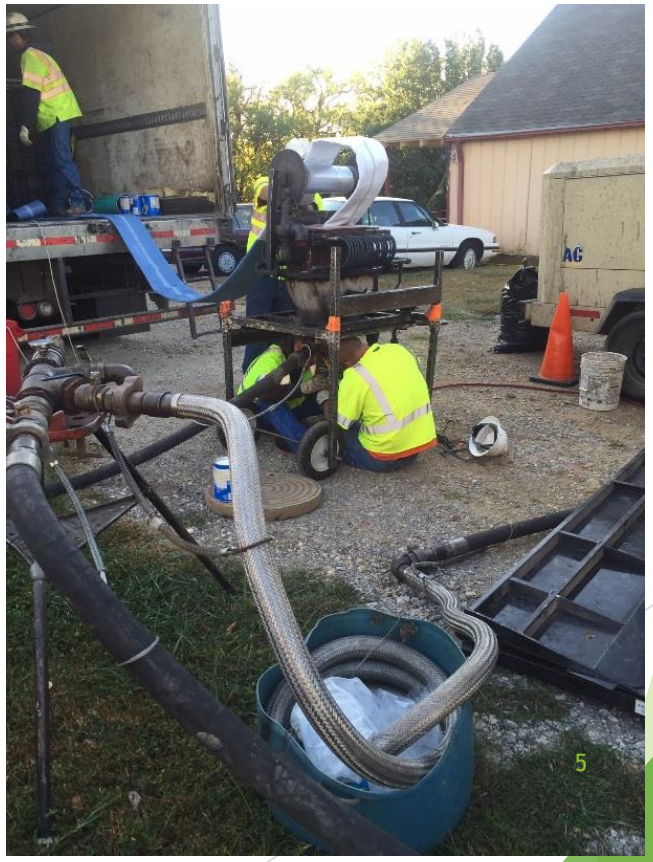
BG CONSULTANTS
ENGINEERS · ARCHITECTS · SURVEYORS

PRESENTATION OUTLINE

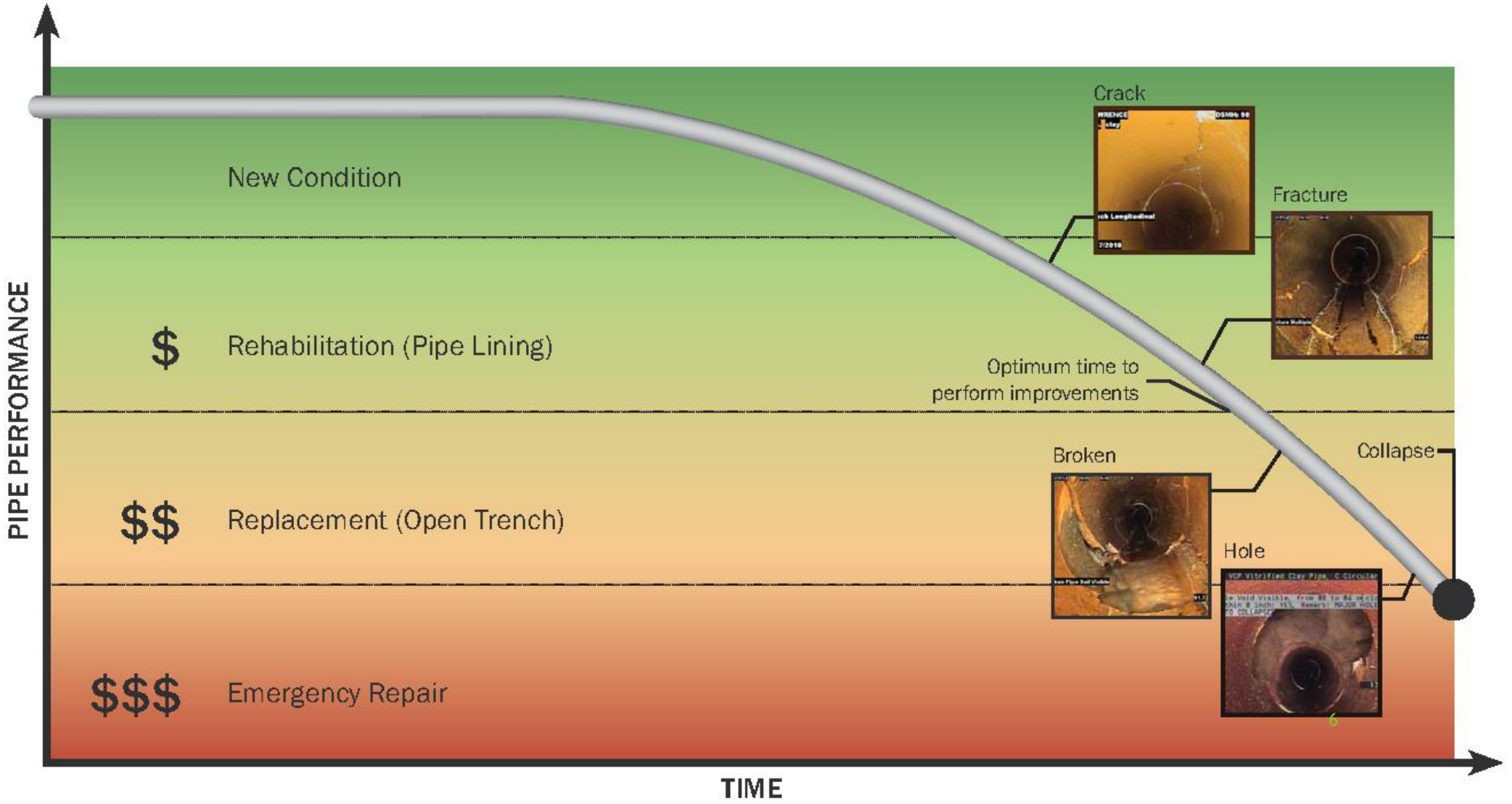
- Background
- CCTV Inspection
- Recommended Improvements
- Construction Impact Discussion
- Questions

PROJECT BACKGROUND

- GRAVITY SANITARY SEWER COLLECTION SYSTEM
  - VITRIFIED CLAY PIPE (VCP)
  - IN SERVICE SINCE 1920'S
  - SIZE IN SYSTEM 8" TO 42"



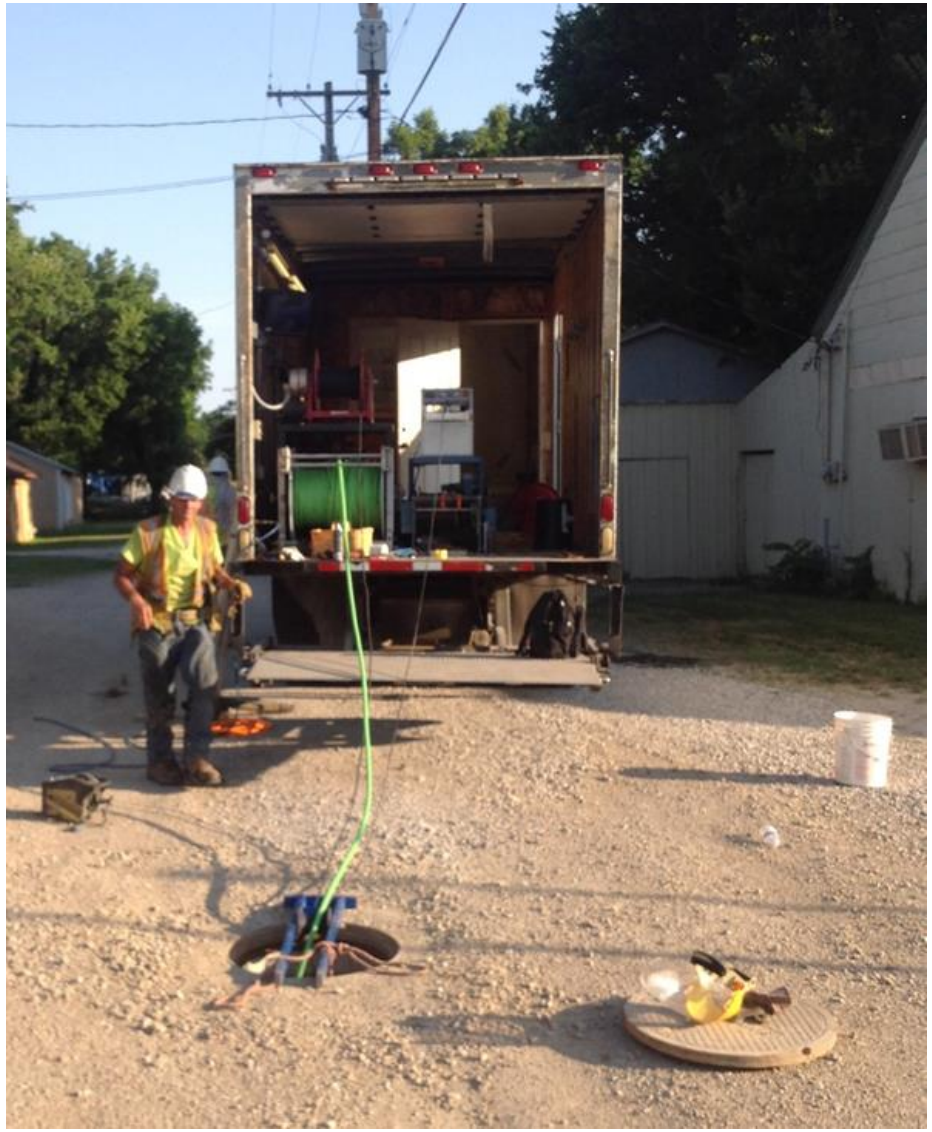
Service Life of a Sewer Pipe



PROJECT BACKGROUND

- PRIORITY 1 CIPP PROJECT
  - DOWNTOWN AREA – PIPE SIZE 10” - 12” - 15”
  - ESTIMATED TOTAL PROJECT COST OF $1,435,000
  - GRANT APPLICATION – CDBG AWARD OF $700,000
  - NO CCTV INSPECTION

CCTV EVALUATION



City of Emporia, KS

CCTV Inspection 2018

Project No. :	18-1134E
Engineer :	STJ
Drafter :	BJH
Date:	04/04/18

Exhibit No. A

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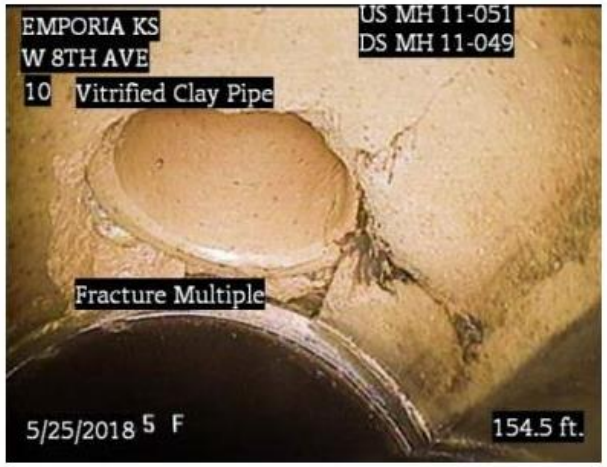
CCTV EVALUATION - EMPORIA

- CONDITION OF COLLECTION SYSTEM
  - DEFECTS IN PIPE (CRACK/BROKEN VCP)
  - SERVICE TAP ISSUES
  - INFLOW & INFILTRATION (I & I)

CCTV EVALUATION

CCTV EVALUATION

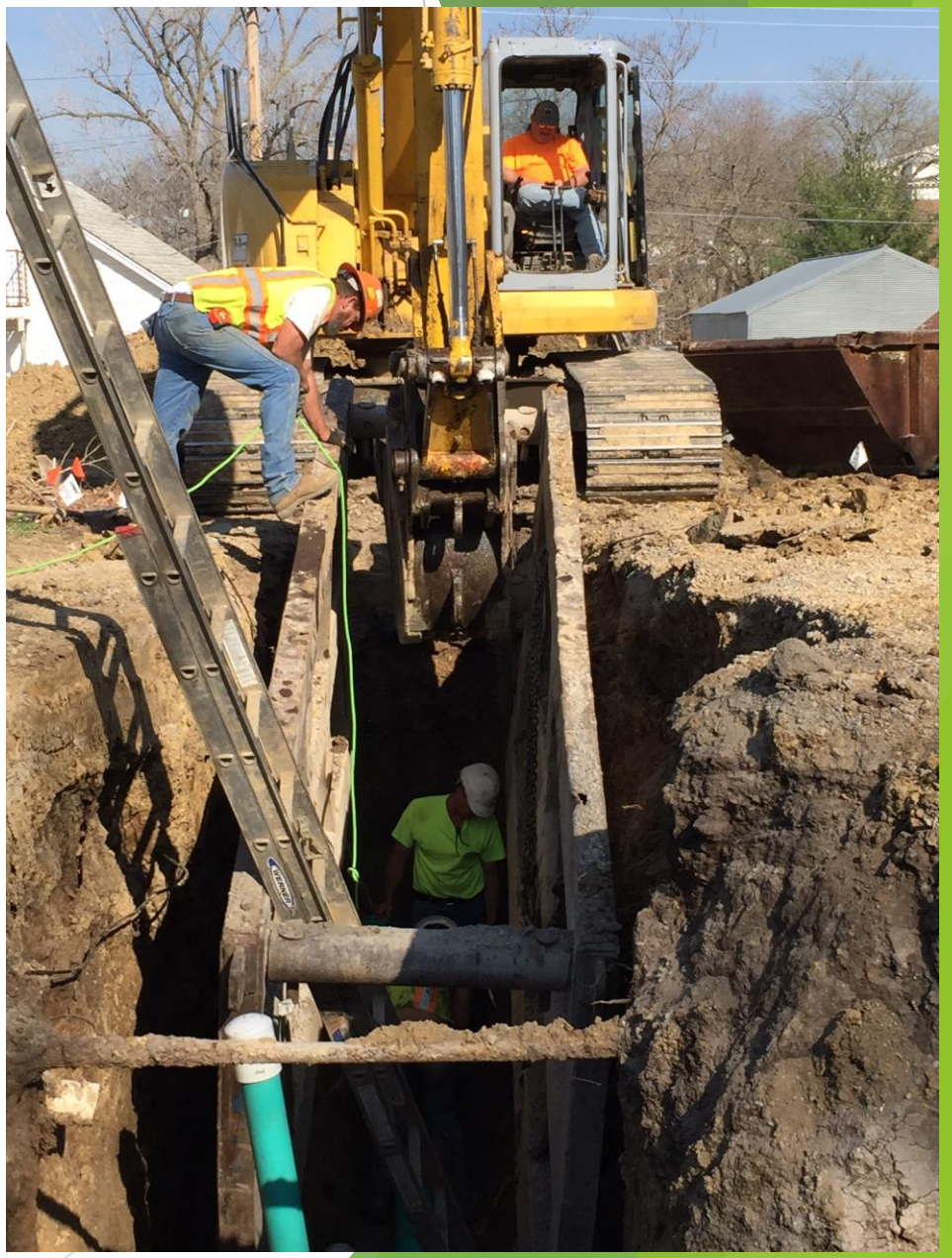


PROJECT – COLLECTION SYSTEM EVALUATION

- PROJECT OPTIONS - CCTV INSPECTION DATA REVIEW
  - Original Project (Priority 1 Only)
    - 15,700 LF of CIPP
  - Current Project (Priority 1, 2 & B)
    - 25,350 LF of CIPP

Rehabilitation/Replacement Methods

- Open Trench Construction
- CIPP or Fold & Form PVC Liner
- Service Tap Rehab Methods
- Manhole Rehab



Replacement Methods (Open Trench)

- A short section of clay sewer main is replaced with PVC sewer main. Couplings on either side.
- Must be done on bad sections of clay pipe to properly install the Sewer Main Liner

Sewer Main Rehabilitation Methods (CIPP or Fold and Form)

Cast In Place Pipe (CIPP)

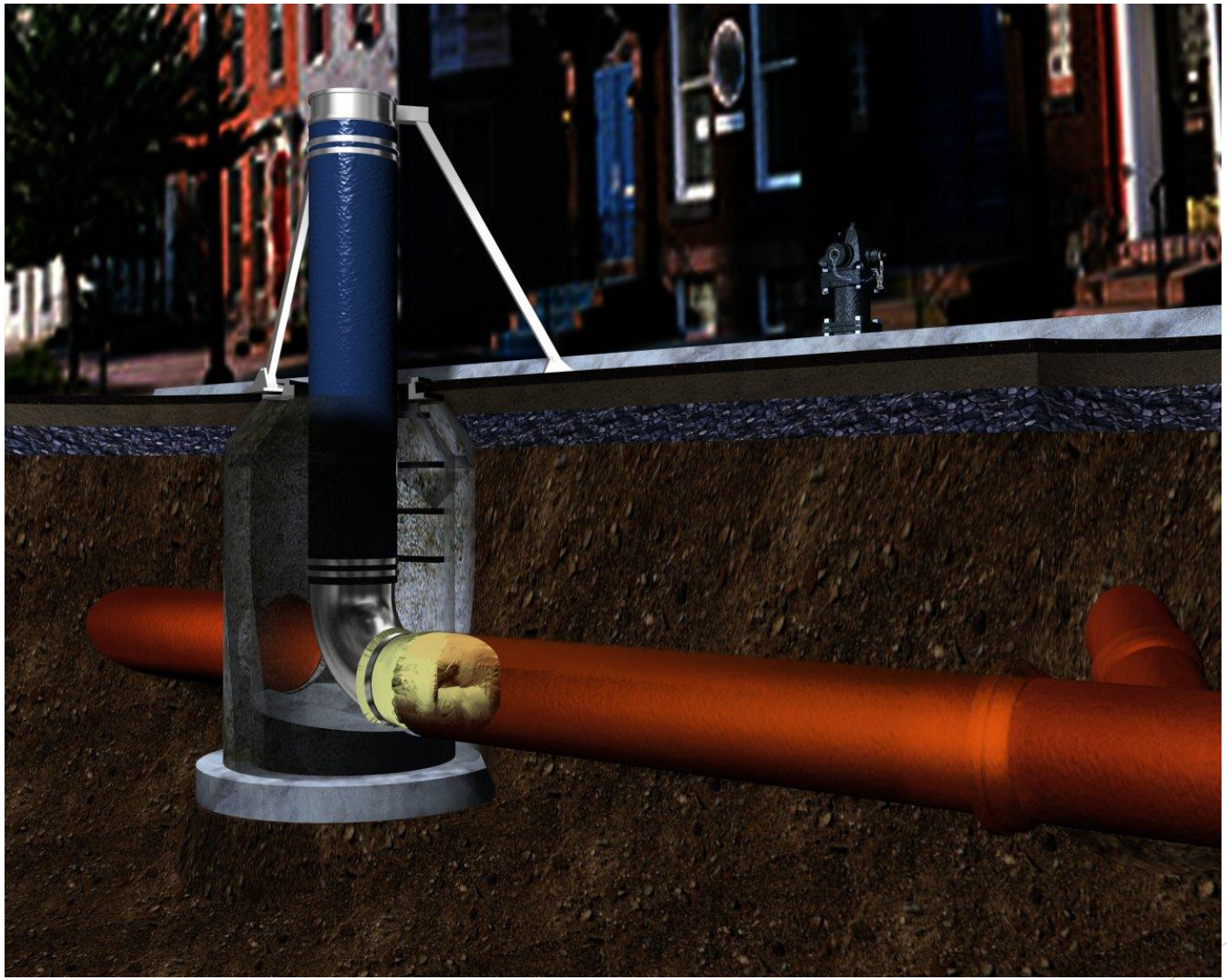
- Inverted Resin Filled Fiberglass Liner

Fold & Form:

- Pulled in PVC pipe

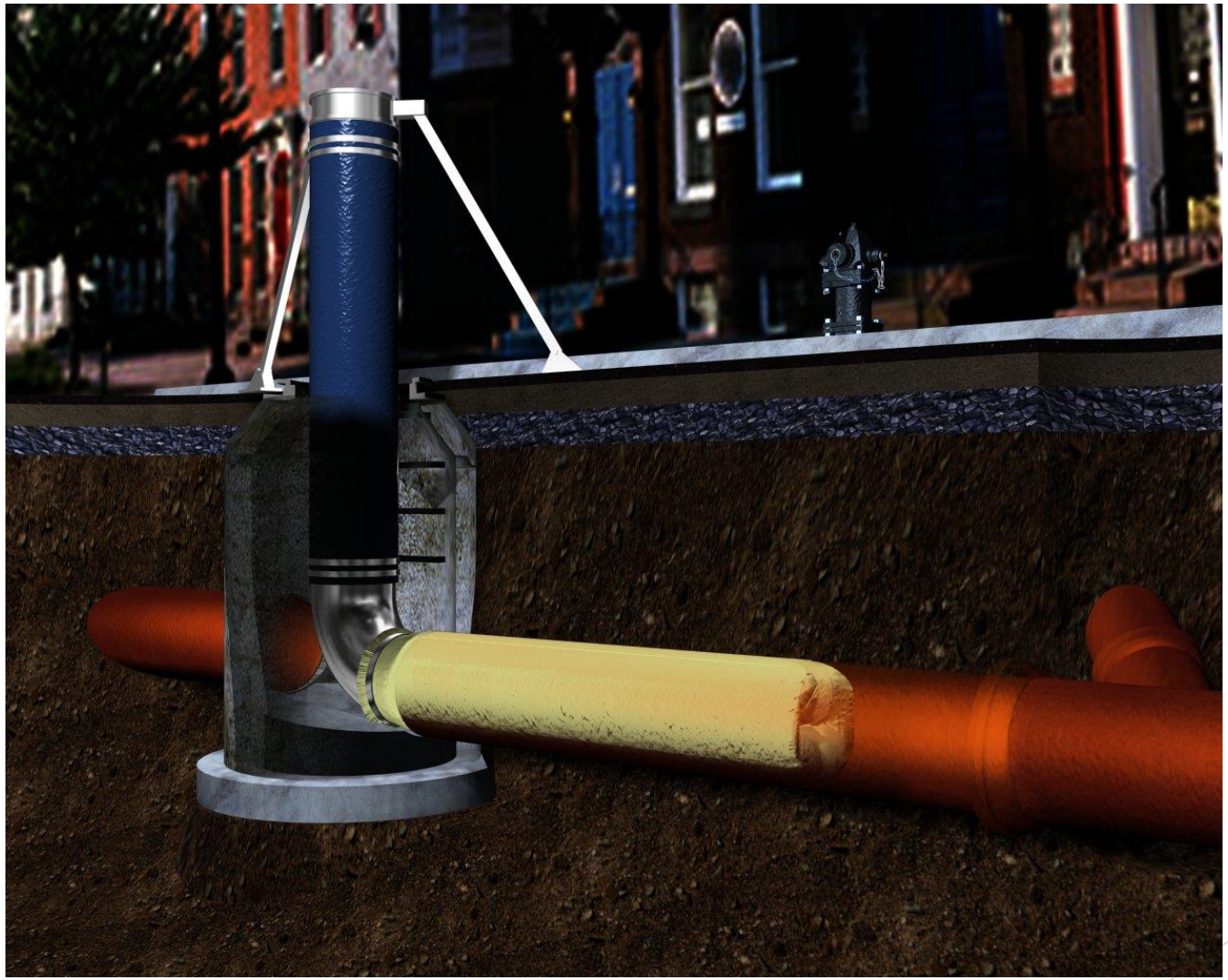
Insituform Technologies, Aegion Corp.

CURED IN PLACE PIPE (CIPP)



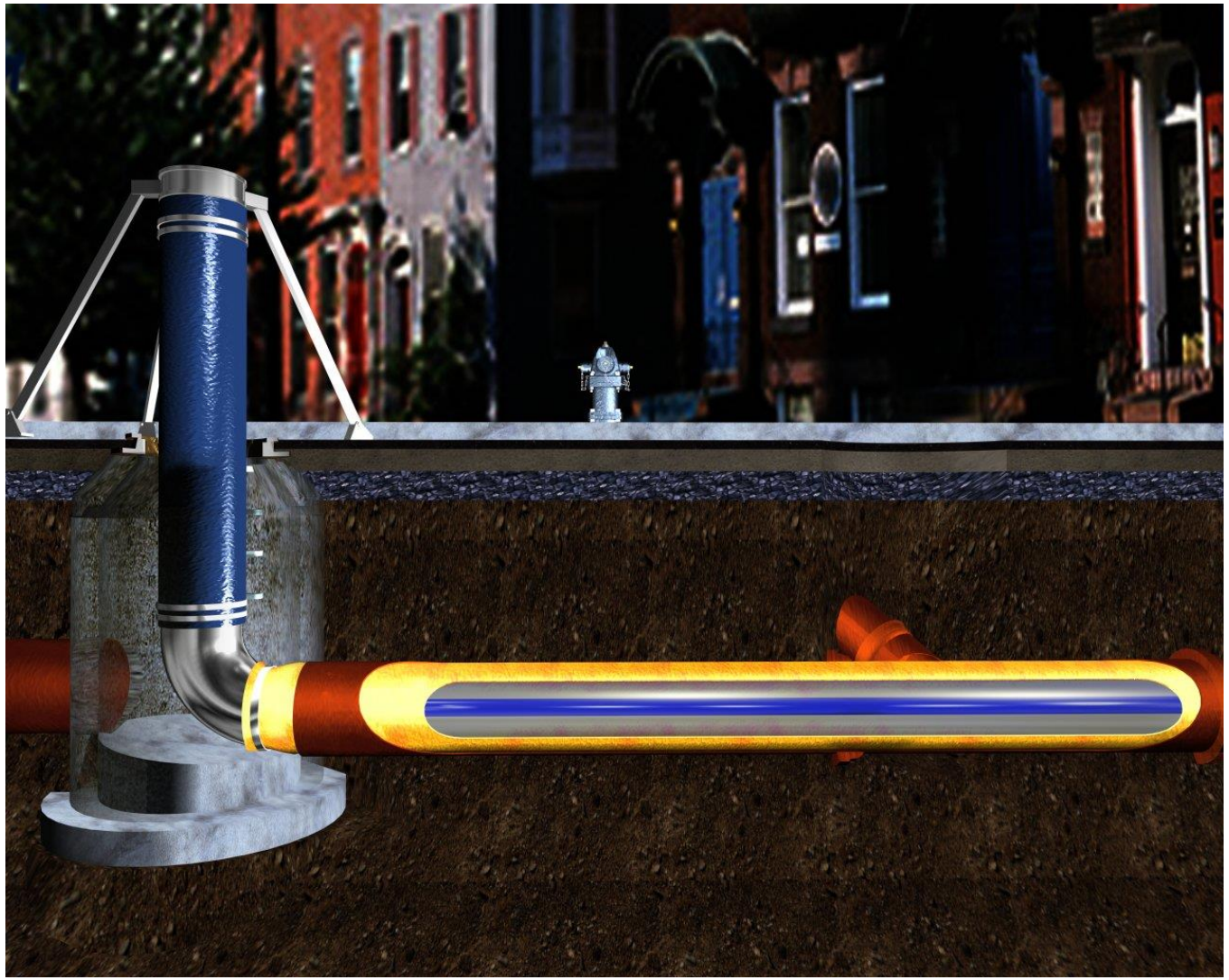
Insituform Technologies, Aegion Corp.

CURED IN PLACE PIPE (CIPP)



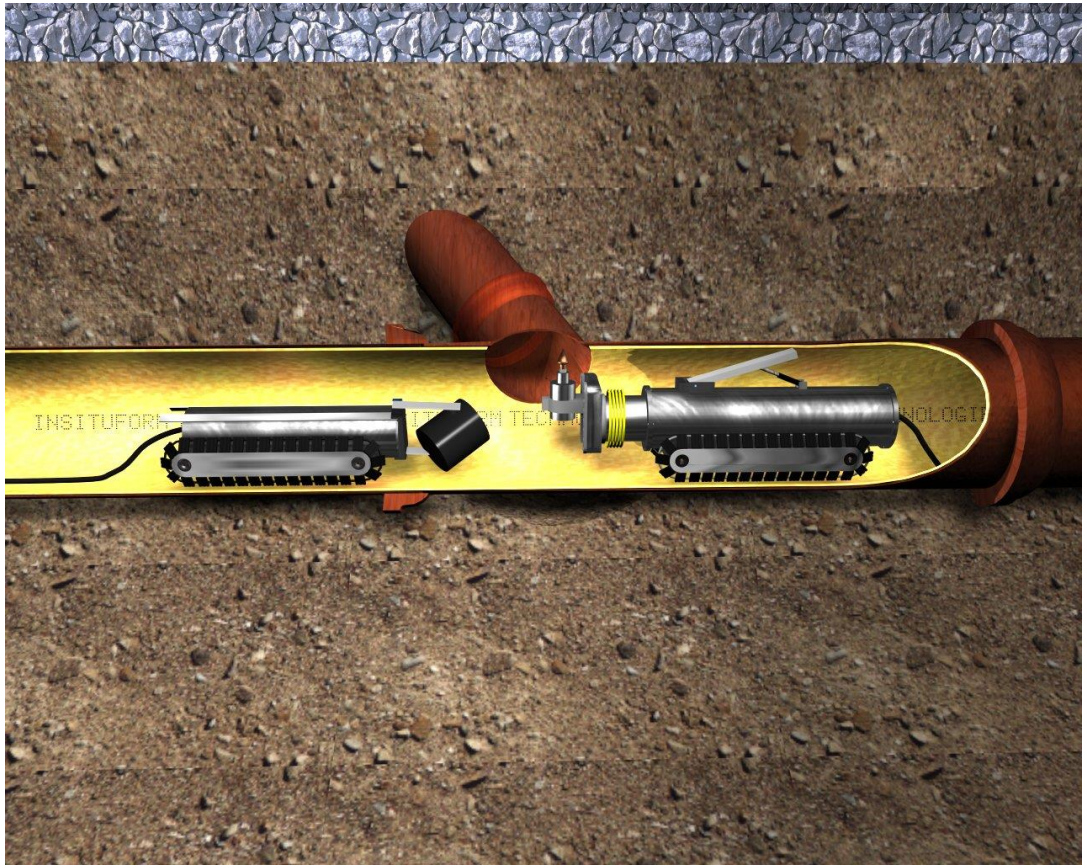
Insituform Technologies, Aegion Corp.

CURED IN PLACE PIPE (CIPP)



Insituform Technologies, Aegion Corp.

CURED IN PLACE PIPE (CIPP)



Insituform Technologies, Aegion Corp.

Rehabilitation Methods (Service Taps)

Service Taps Repair:

- Cut out method from inside the pipe
  - CIPP and Fold and Form PVC
- Open trench methods
  - Attach directly to the liner
  - Saddle tap and stainless steel bands

Rehabilitation Methods (Manhole Linings)

Manhole Rehabilitation:

- Design Thickness per ASTM 1216
- Structurally restores old brick manholes
- Eliminates Inflow and Infiltration

Tasks & Schedule:

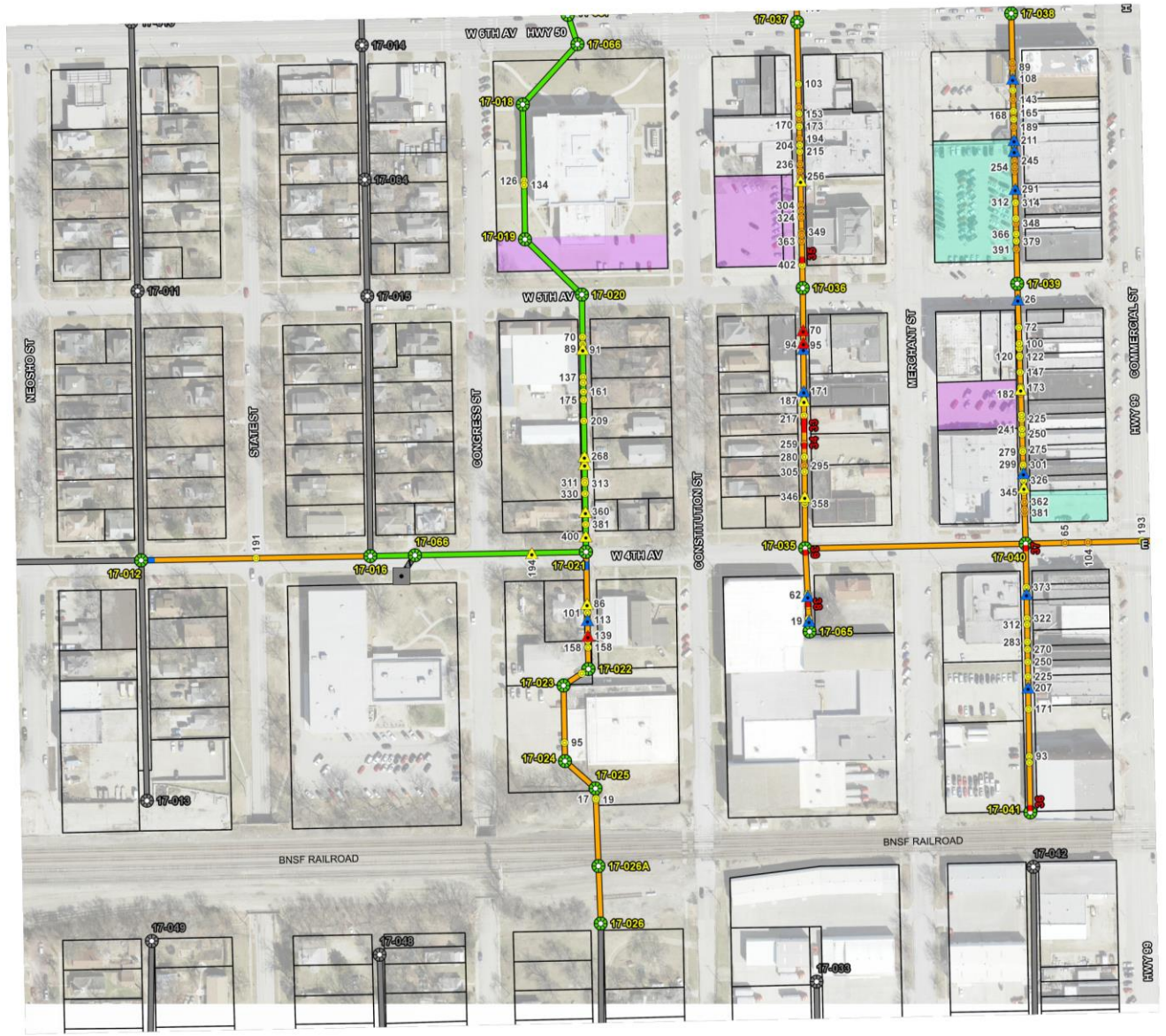
* Project Planning	2017
* CDBG Award (grant)	1/22/18
* Project Design	2018
* Advertise to Bid	1/7/19
* Start of Construction	4/1/19
* Completion of Construction	7/1/20

City of Emporia, KS

CCTV Inspection 2018

Exhibit No.	A
Project No. :	18-1134E
Engineer :	STJ
Drafter :	BJH
Date:	04/04/18

BG CONSULTANTS
ENGINEERS · ARCHITECTS · SURVEYORS



SHEET INDEX
NOT TO SCALE

PIPE LINING SCHEDULE

PS #	MAIN DIAMETER (IN)	UPSTREAM MH#	DOWNSTREAM MH #	LENGTH OF LINER (LF)	TAP STATUS EVALUATION	ISOLATED SERVICE TAP	POINT REPAIR	PIPE SUMMARY SHEET
17-012-17-016	12	17-012	17-016	380.3	X			C3.10
17-021-17-022	12	17-021	17-022	194.2	X	X		C3.11
17-022-17-023	12	17-022	17-023	49.3	X			C3.11
17-023-17-024	12	17-023	17-024	125.4	X			C3.11
17-024-17-025	12	17-024	17-025	67.6				C3.11
17-025-17-026	12	17-025	17-026	224.1	X			C3.12
17-035-17-040	10	17-035	17-040	365.9				C3.12
17-036-17-035	10	17-036	17-035	431.5		X	X	C3.12
17-037-17-036	10	17-037	17-036	441.0			X	C3.12
17-038-17-039	10	17-038	17-039	448.3		X		C3.13
17-039-17-040	10	17-039	17-040	430.9		X		C3.13
17-041-17-040	10	17-041	17-040	445.5		X	X	C3.13
17-065-17-035	8	17-065	17-035	138.2	X	X	X	C3.14

HEAVY TUBERCULATION REMOVAL SCHEDULE

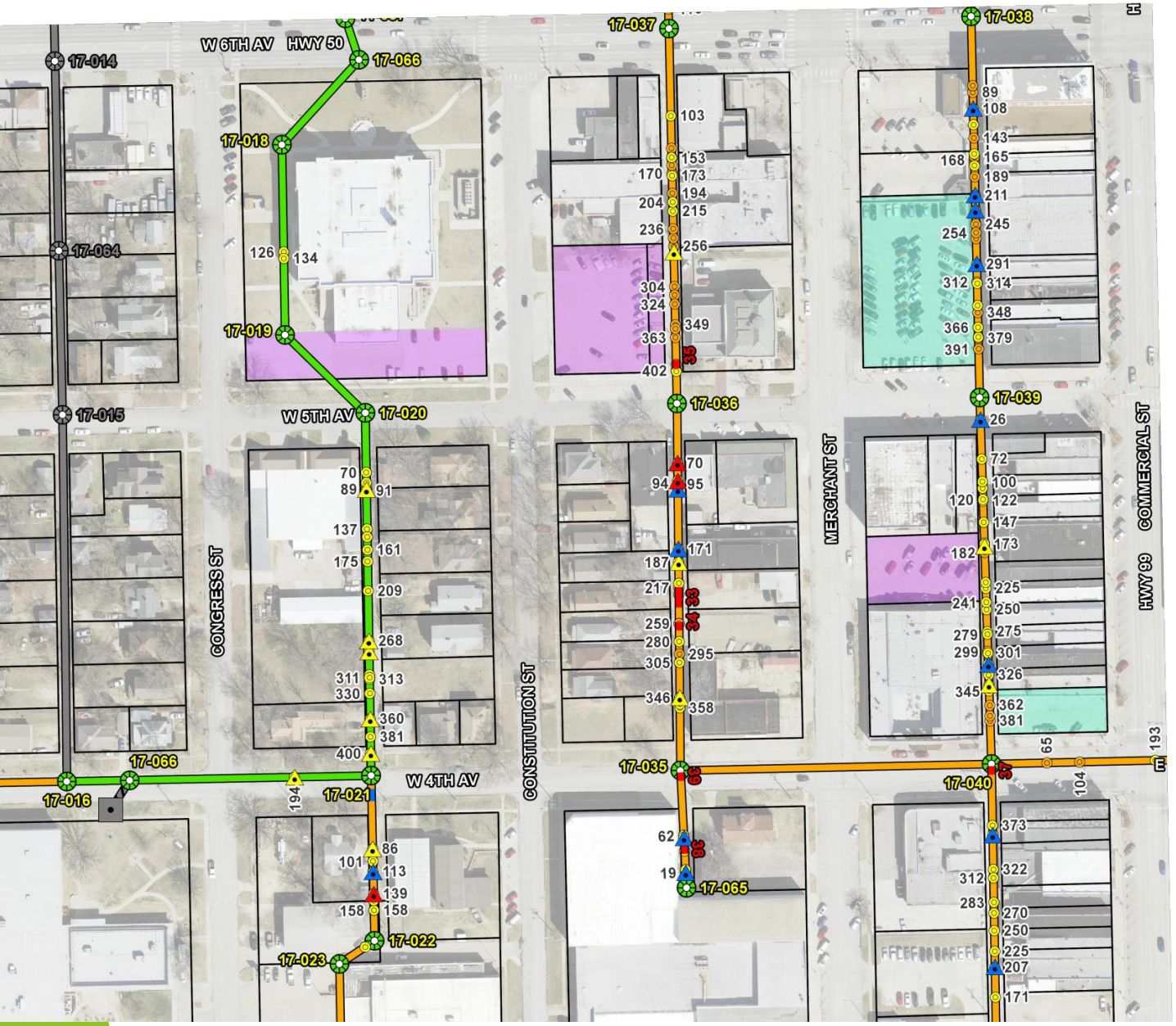
PS #	MAIN DIAMETER (IN)	UPSTREAM MH #	DOWNSTREAM MH #	DISTANCE START (FT)	DISTANCE END (FT)	LENGTH OF PIPE (LF)	PIPE SUMMARY SHEET
17-012-17-016	12	17-012	17-016	5	23	18.0	C3.10
17-021-17-022	12	17-021	17-022	15	30	15.0	C3.11

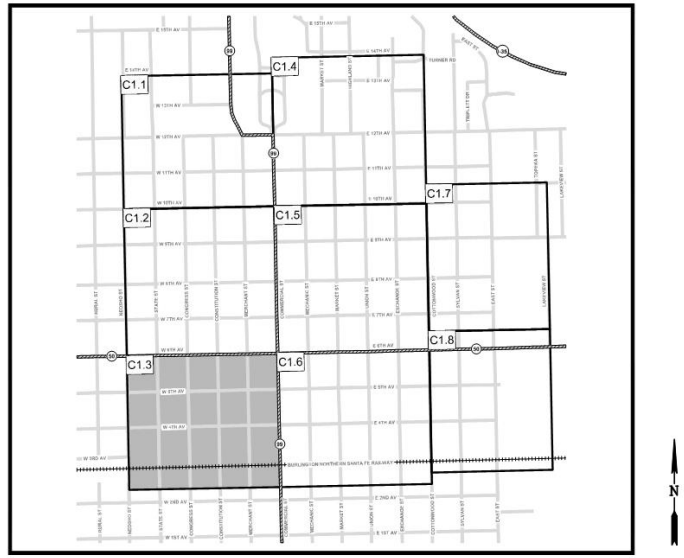
N

100' 0' 100' 200'

LEGEND

- REHAB MANHOLE
- EXISTING MANHOLE (PROJECT LOCATION)
- EXISTING MANHOLE
- SERVICE TAP REPAIR 1 ISOLATED - AFTER LINING
- SERVICE TAP REPAIR 1 ISOLATED - BEFORE LINING
- SERVICE TAP REPAIR ALTERNATE
- SERVICE TAP INACTIVE
- SERVICE TAP ACTIVE / UNKNOWN
- PRE CONSTRUCTION CCTV INSPECTION
- HEAVY TUBERCULATION REMOVAL
- PIPE LINER
- POINT REPAIR
- EXISTING GRAVITY MAIN (PROJECT LOCATION)
- EXISTING GRAVITY MAIN
- EXISTING FORCE MAIN
- PRIVATE PARKING
- PUBLIC PARKING
- PARCEL LINE





SHEET INDEX

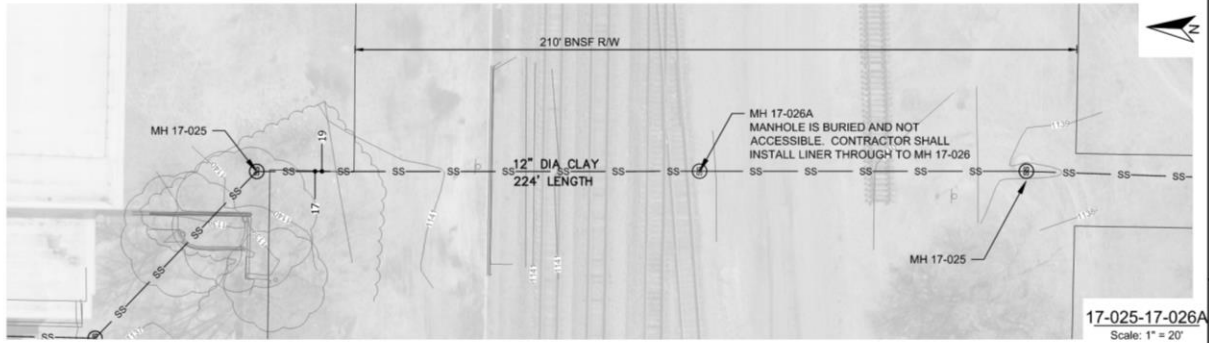
NOT TO SCALE

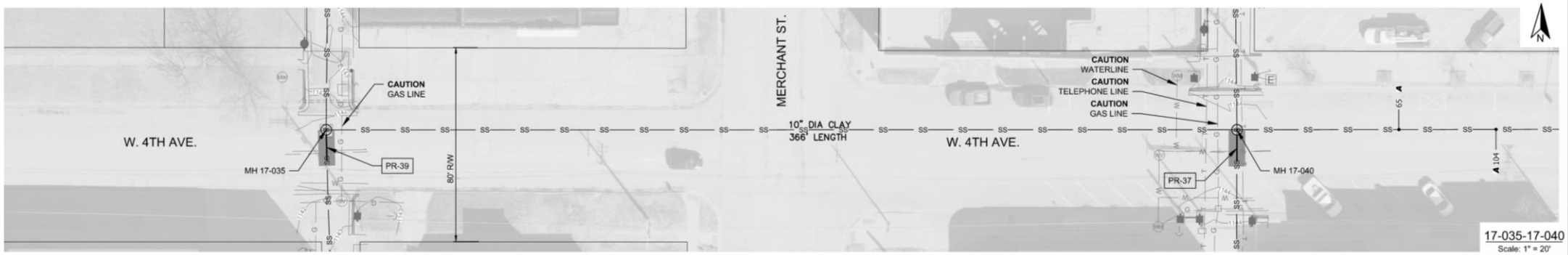
PIPE LINING SCHEDULE

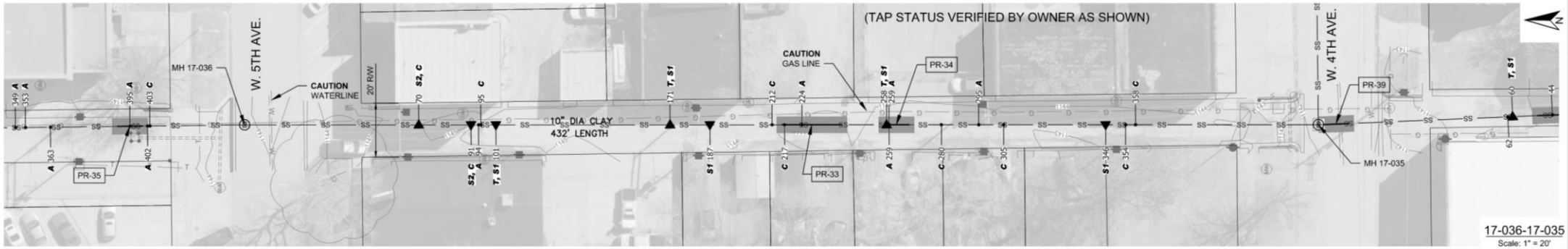
PS #	MAIN DIAMETER (IN)	UPSTREAM MH#	DOWNSTREAM MH #	LENGTH OF LINER (LF)	TAP STATUS EVALUATION	ISOLATED SERVICE TAP	POINT REPAIR	PIPE SUMMARY SHEET
17-012-17-016	12	17-012	17-016	380.3	X			C3.10
17-021-17-022	12	17-021	17-022	194.2	X	X		C3.11
17-022-17-023	12	17-022	17-023	49.3	X			C3.11
17-023-17-024	12	17-023	17-024	125.4	X			C3.11
17-024-17-025	12	17-024	17-025	67.6				C3.11
17-025-17-026	12	17-025	17-026	224.1	X			C3.12
17-035-17-040	10	17-035	17-040	365.9				C3.12
17-036-17-035	10	17-036	17-035	431.5		X	X	C3.12
17-037-17-036	10	17-037	17-036	441.0			X	C3.12
17-038-17-039	10	17-038	17-039	448.3		X		C3.13
17-039-17-040	10	17-039	17-040	430.9		X		C3.13
17-041-17-040	10	17-041	17-040	445.5		X	X	C3.13
17-065-17-035	8	17-065	17-035	138.2	X	X	X	C3.14

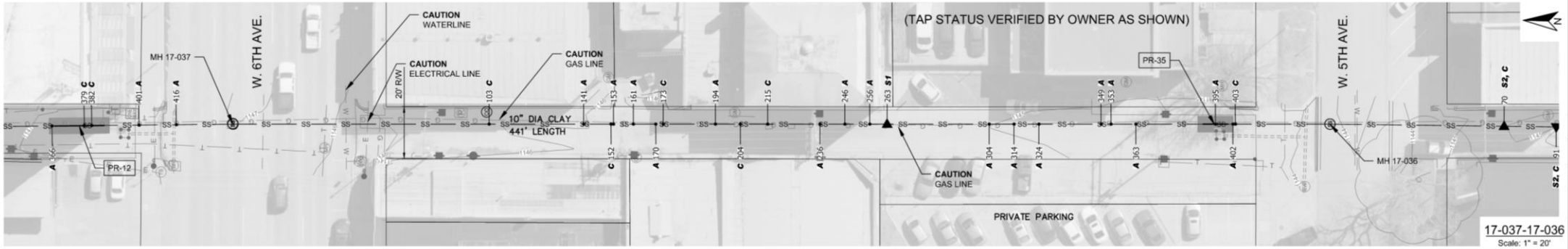
HEAVY TUBERCULATION REMOVAL SCHEDULE

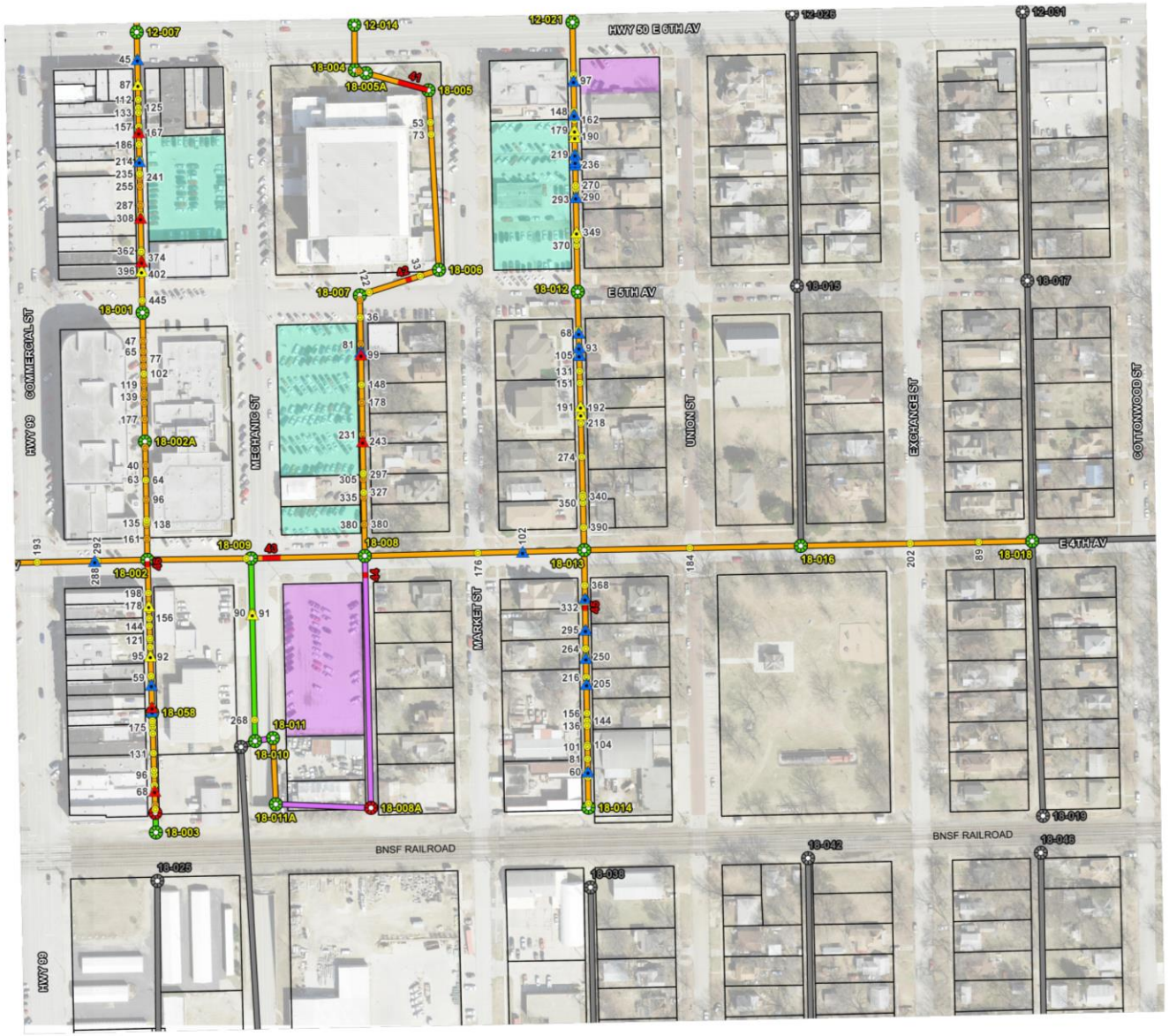
PS #	MAIN DIAMETER (IN)	UPSTREAM MH #	DOWNSTREAM MH #	DISTANCE START (FT)	DISTANCE END (FT)	LENGTH OF PIPE (LF)	PIPE SUMMARY SHEET
17-012-17-016	12	17-012	17-016	5	23	18.0	C3.10
17-021-17-022	12	17-021	17-022	15	30	15.0	C3.11


210' BNSF R/W
MH 17-025
12" DIA CLAY
224' LENGTH
MH 17-026A
MANHOLE IS BURIED AND NOT ACCESSIBLE. CONTRACTOR SHALL INSTALL LINER THROUGH TO MH 17-026
MH 17-025
17-025-17-026A
Scale: 1" = 20'


W. 4TH AVE.
CAUTION
GAS LINE
MH 17-035
PR-39
80' R/W
MERCHANT ST.
10" DIA CLAY
366' LENGTH
W. 4TH AVE.
CAUTION
WATERLINE
CAUTION
TELEPHONE LINE
CAUTION
GAS LINE
PR-37
MH 17-040
17-035-17-040
Scale: 1" = 20'


(TAP STATUS VERIFIED BY OWNER AS SHOWN)
MH 17-036
W. 5TH AVE.
CAUTION
WATERLINE
20' R/W
10" DIA CLAY
432' LENGTH
CAUTION
GAS LINE
PR-34
PR-35
PR-33
W. 4TH AVE.
PR-39
MH 17-035
17-036-17-035
Scale: 1" = 20'


(TAP STATUS VERIFIED BY OWNER AS SHOWN)
MH 17-037
W. 6TH AVE.
CAUTION
WATERLINE
CAUTION
ELECTRICAL LINE
20' R/W
CAUTION
GAS LINE
10" DIA CLAY
441' LENGTH
PR-12
CAUTION
GAS LINE
PR-35
W. 5TH AVE.
MH 17-036
PRIVATE PARKING
17-037-17-036
Scale: 1" = 20'



SHEET INDEX
NOT TO SCALE

PIPE LINING SCHEDULE

PS #	MAIN DIAMETER (IN)	UPSTREAM MH#	DOWNSTREAM MH #	LENGTH OF LINER (LF)	TAP STATUS EVALUATION	ISOLATED SERVICE TAP	POINT REPAIR	PIPE SUMMARY SHEET
12-007-18-001	10	12-007	18-001	465.0		X		C3.6
12-014-18-004	8	12-014	18-004	75.1				C3.7
12-021-18-012	8	12-021	18-012	446.9	X	X		C3.8
17-040-18-002	15	17-040	18-002	375.4		X		C3.13
18-001-18-002A	10	18-001	18-002A	213.7				C3.14
18-002-18-009	15	18-002	18-009	171.9				C3.14
18-002A-18-002	10	18-002A	18-002	195.8				C3.14
18-003-18-058	8	18-003	18-058	198.8		X	X	C3.14
18-004-18-005A	12	18-004	18-005A	19.5				C3.14
18-005-18-006	12	18-005	18-006	298.2				C3.15
18-005A-18-005	12	18-005A	18-005	107.5			X	C3.15
18-006-18-007	12	18-006	18-007	138.0			X	C3.15
18-007-18-008	8	18-007	18-008	431.8		X		C3.15
18-008-18-009	12	18-008	18-009	188.8			X	C3.15
18-008A-18-008	8	18-008A	18-008	417.9			X	C3.16
18-008A-18-011A	8	18-008A	18-011A	158.0				C3.16
18-011-18-010	8	18-011	18-010	30.4				C3.16
18-011A-18-011	8	18-011A	18-011	109.8				C3.16
18-012-18-013	8	18-012	18-013	428.0	X	X		C3.17
18-013-18-008	12	18-013	18-008	363.6	X	X		C3.17
18-014-18-013	8	18-014	18-013	426.9	X	X	X	C3.17
18-016-18-013	12	18-016	18-013	359.3	X			C3.17
18-018-18-016	12	18-018	18-016	383.7	X			C3.18
18-058-18-002	8	18-058	18-002	253.3		X	X	C3.18

PRE CONSTRUCTION CCTV SCHEDULE

PS #	MAIN DIAMETER (IN)	UPSTREAM MH#	DOWNSTREAM MH #	LENGTH OF LINER (LF)	ISOLATED SERVICE TAP	POINT REPAIR	PIPE SUMMARY SHEET
18-008A-18-008	8	18-008A	18-008	417.9		X	C3.16
18-008A-18-011A	8	18-008A	18-011A	158.0			C3.16
18-011-18-010	8	18-011	18-010	30.4			C3.16

MANHOLE SCHEDULE

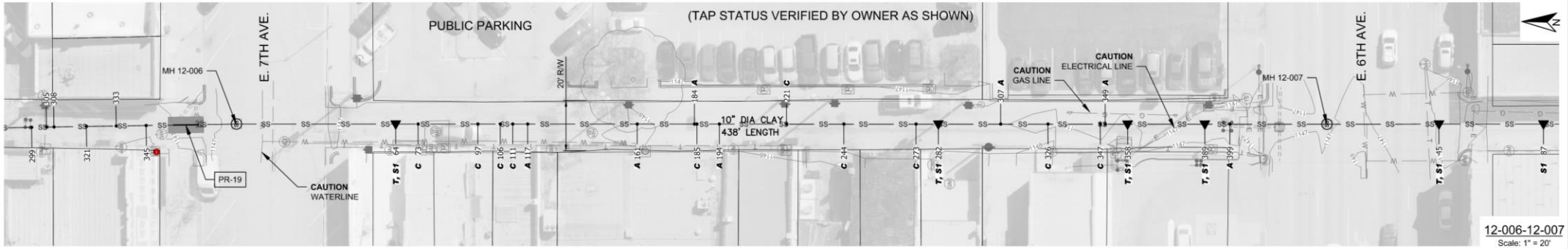
MH #	DESCRIPTION	DIAMETER (IN)	RIM ELEV.	INVERT IN	INVERT OUT
18-008A	PROPOSED	48	1141.14	1129.22	1129.12

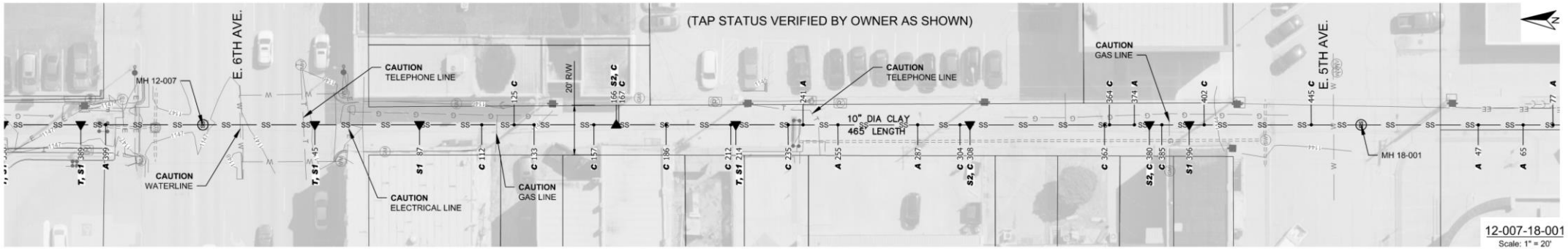
N

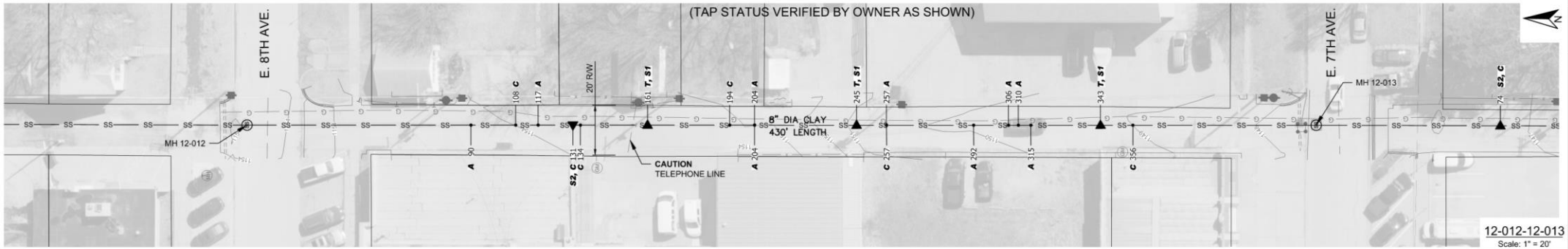
100' 0' 100' 200'

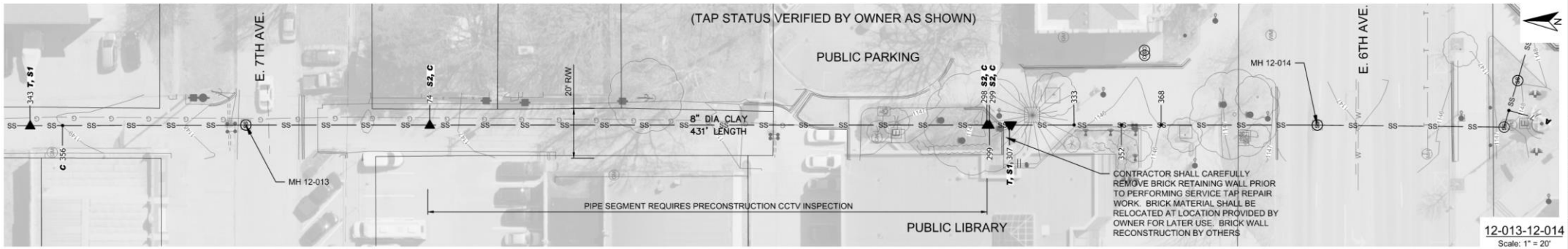
LEGEND

- REHAB MANHOLE
- EXISTING MANHOLE (PROJECT LOCATION)
- EXISTING MANHOLE
- SERVICE TAP REPAIR 1 ISOLATED - AFTER LINING
- SERVICE TAP REPAIR 1 ISOLATED - BEFORE LINING
- SERVICE TAP REPAIR ALTERNATE
- SERVICE TAP INACTIVE
- SERVICE TAP ACTIVE / UNKNOWN
- PRE CONSTRUCTION CCTV INSPECTION
- HEAVY TUBERCULATION REMOVAL
- PIPE LINER
- POINT REPAIR
- EXISTING GRAVITY MAIN (PROJECT LOCATION)
- EXISTING GRAVITY MAIN
- EXISTING FORCE MAIN
- PRIVATE PARKING
- PUBLIC PARKING
- PARCEL LINE

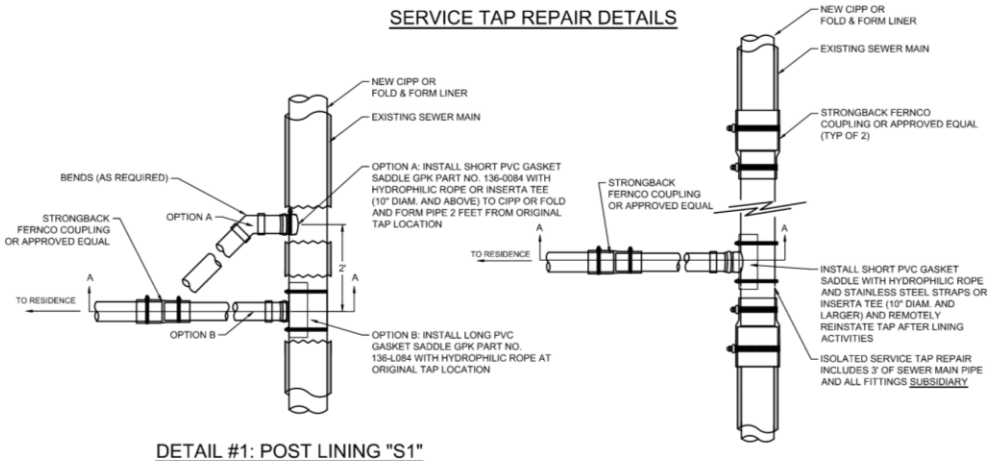

PUBLIC PARKING
(TAP STATUS VERIFIED BY OWNER AS SHOWN)
E. 7TH AVE.
E. 6TH AVE.
MH 12-006
MH 12-007
PR-19
20' R/W
10" DIA CLAY
438' LENGTH
CAUTION
GAS LINE
CAUTION
ELECTRICAL LINE
CAUTION
WATERLINE
12-006-12-007
Scale: 1" = 20'


(TAP STATUS VERIFIED BY OWNER AS SHOWN)
E. 6TH AVE.
E. 5TH AVE.
MH 12-007
MH 18-001
CAUTION
TELEPHONE LINE
CAUTION
GAS LINE
CAUTION
WATERLINE
CAUTION
ELECTRICAL LINE
20' R/W
10" DIA CLAY
465' LENGTH
12-007-18-001
Scale: 1" = 20'


(TAP STATUS VERIFIED BY OWNER AS SHOWN)
E. 8TH AVE.
E. 7TH AVE.
MH 12-012
MH 12-013
20' R/W
8" DIA CLAY
430' LENGTH
CAUTION
TELEPHONE LINE
12-012-12-013
Scale: 1" = 20'


(TAP STATUS VERIFIED BY OWNER AS SHOWN)
PUBLIC PARKING
E. 7TH AVE.
E. 6TH AVE.
MH 12-013
MH 12-014
20' R/W
8" DIA CLAY
431' LENGTH
PIPE SEGMENT REQUIRES PRECONSTRUCTION CCTV INSPECTION
PUBLIC LIBRARY
CONTRACTOR SHALL CAREFULLY REMOVE BRICK RETAINING WALL PRIOR TO PERFORMING SERVICE TAP REPAIR WORK. BRICK MATERIAL SHALL BE RELOCATED AT LOCATION PROVIDED BY OWNER FOR LATER USE. BRICK WALL RECONSTRUCTION BY OTHERS
12-013-12-014
Scale: 1" = 20'

SERVICE TAP REPAIR DETAILS

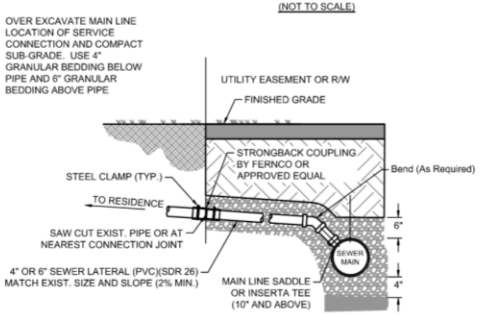


DETAIL #1: POST LINING "S1" ISOLATED TAP REPAIR (PREFERRED METHOD)

(NOT TO SCALE)

DETAIL #2: PRE-LINING "S2" ISOLATED OR IN-LINE TAP REPAIR

(NOT TO SCALE)

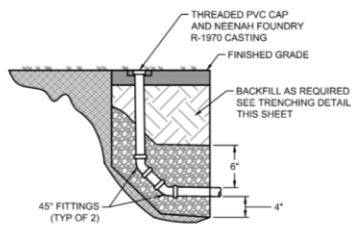


SECTION A-A (WITH OR WITHOUT CIPP/FOLD & FORM LINER)

(NOT TO SCALE)

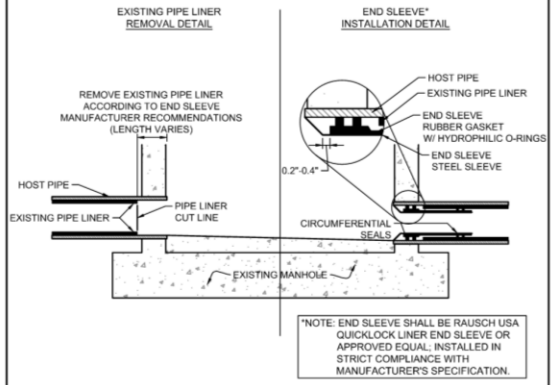
NOTES:

1. "ISOLATED SERVICE TAP" REPAIRS (DESIGNATED AS "S1" IN THE DRAWINGS) SHALL BE PERFORMED POST CIPP OR PVC FOLD AND FORM LINING ACTIVITIES WHENEVER POSSIBLE (SEE DETAIL 1). ISOLATED SERVICE TAP REPAIRS (DESIGNATED AS "S2" IN THE DRAWINGS) SHALL BE PERFORMED BEFORE LINING ACTIVITIES (SEE DETAIL 2) AND ARE ONLY PERMITTED WHEN THE DEFECTIVE SERVICE TAP PROHIBITS THE PROPER INSTALLATION OF THE LINER OR IF THE TAP IS CONSIDERED AN "IN-LINE TAP" REPAIR (PERFORM WITHIN THE LIMITS OF A POINT REPAIR).
2. INTRUDING SERVICE TAP REPAIRS (DESIGNATED AS "T" IN THE DRAWINGS) SHALL BE TRIMMED PRIOR TO LINING ACTIVITIES AND ARE PAID AS EACH.
3. THE CIPP OR FOLD & FORM LINER MAY DEFORM DURING INSTALLATION WHEN CONFORMING TO THE HOST PIPE AT THE TAP LOCATION. MAKING A NEW WATER TIGHT POST SERVICE TAP CONNECTION AS SHOWN IN DETAIL NO. 1 MAY BE DONE BY EITHER OPTION AS DESCRIBED BELOW:
   - 3.1. OPTION A: RELOCATE TAP CONNECTION POINT 2' AWAY FROM ORIGINAL TAP CONNECTION POINT , BREAK AWAY CLAY SEWER MAIN, AND INSTALL A SHORT PVC GASKETED SADDLE TAP GPK PART NO. 136-0084 WITH HYDROPHILIC ROPE AND STAINLESS STEEL STRAPS OR INSERTA TEE (10" DIAM. PIPE AND LARGER ONLY) DIRECTLY TO CIPP OR FOLD & FORM LINER.
   - 3.2. OPTION B: MAINTAIN EXISTING TAP CONNECTION LOCATION AND INSTALL A LONG PVC GASKETED SADDLE GPK PART NO. 136-L084 WITH HYDROPHILIC ROPE AND TWO STAINLESS STEEL BANDS DIRECTLY TO THE DEFORMED CIPP OF FOLD & FORM LINER.
4. ONLY ACTIVE SERVICE TAPS SHALL BE RE-INSTATED AFTER SEWER MAIN LINING.
5. FLOWABLE FILL PAY LIMITS:
   FF = 5'x8'x(D'-2.17)/27 (CUBIC YARDS)
6. DEPTH (IN FEET) SHALL BE MEASURED FROM THE SEWER MAIN PIPE INVERT TO GROUND SURFACE.
7. 4" AND 6" SEWER SERVICE PIPE SHALL BE PAID SEPARATELY BASED ON ACTUAL FOOTAGE INSTALLED/MEASURED IN THE FIELD.



SEWER CLEANOUT DETAIL

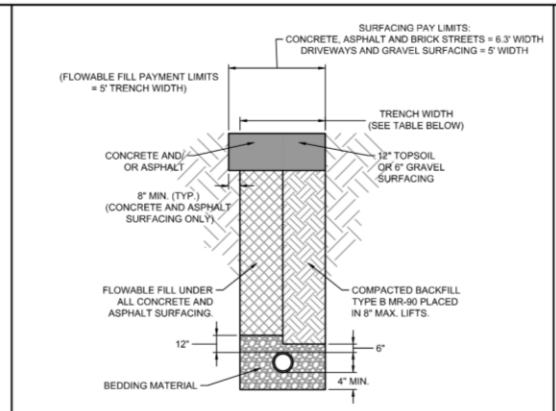
(NOT TO SCALE)



*NOTE: END SLEEVE SHALL BE RAUSCH USA QUICKLOCK LINER END SLEEVE OR APPROVED EQUAL; INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURER'S SPECIFICATION.

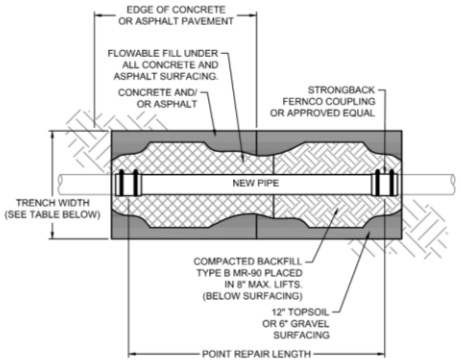
END SLEEVE DETAIL

(NOT TO SCALE)



TRENCHING DETAIL #1

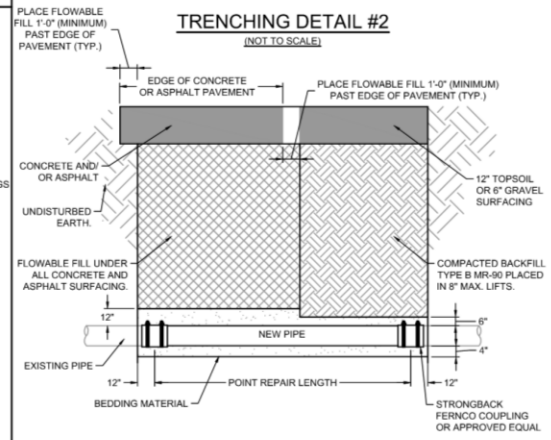
(NOT TO SCALE)



MINIMUM TRENCH WIDTH			
PIPE SIZE	TRENCH WIDTH	PIPE SIZE	TRENCH WIDTH
4	18	12	30
6	18	15	30
8	24	18	32
10	26		

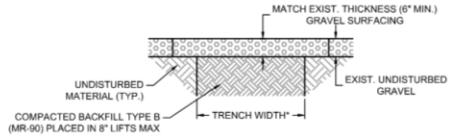
TRENCHING DETAIL #2

(NOT TO SCALE)



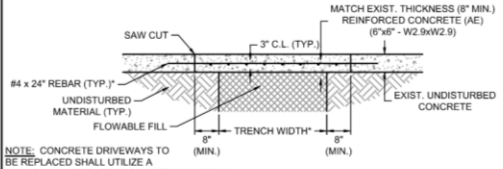
TRENCHING DETAIL #3

(NOT TO SCALE)



GRAVEL SURFACING

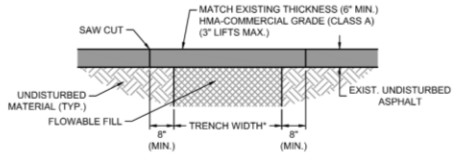
(NOT TO SCALE)



NOTE: CONCRETE DRIVEWAYS TO BE REPLACED SHALL UTILIZE A HIGH-EARLY STRENGTH CONCRETE MIX DESIGN.

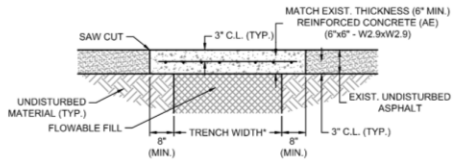
CONCRETE STREET OR DRIVEWAY PAVEMENT PATCHING

(NOT TO SCALE)



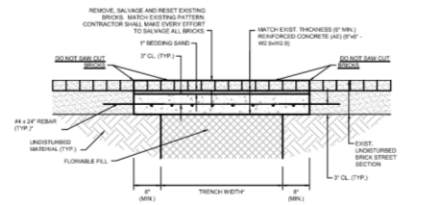
ASPHALT DRIVEWAY PAVEMENT PATCHING

(NOT TO SCALE)



ASPHALT STREET PAVEMENT PATCHING

(NOT TO SCALE)



BRICK STREET PAVEMENT PATCHING

(NOT TO SCALE)

CONSTRUCTION CONSIDERATIONS

- THERE IS NO CONVENIENT CONSTRUCTION PROJECT
- OPEN COMMUNICATION AND PROBLEM SOLVING IS A MUST FOR EVERYONE AFFECTED
- THERE WILL BE REGULAR CONSTRUCTION PROGRESS MEETINGS

CONSTRUCTION DISCUSSION ITEMS

- THREE MOST IMPACTFUL ITEMS
  - RESTRICTED ALLEY USAGE & ACCESS
  - PARKING RESTRICTIONS
  - RESTRICTED WATER USAGE

CONSTRUCTION CONSIDERATIONS

- ACCESS IN ALLEYS WILL BE RESTRICTED DURING CONSTRUCTION
- ANTICIPATE THAT CONTRACTOR WILL SHUT DOWN AT LEAST ½ OF THE ALLEY, IF NOT MORE

CONSTRUCTION CONSIDERATIONS

- REAR DOOR BUSINESS ACCESS WILL BE LIMITED AT TIMES – WE APOLOGIZE IN ADVANCE FOR THE INCONVENIENCE
- RESTRICTIONS FOR ALLEY SIDE DELIVERIES DURING CONSTRUCTION - BUSINESSES WILL NEED TO MAKE OTHER ARRANGEMENTS

CONSTRUCTION CONSIDERATIONS

- CONTRACTOR WILL MINIMIZE OPEN DIGS
- EACH REPAIR/DIG WILL TAKE 2 TO 5 DAYS

  BEFORE OPENED BACK UP WITH TEMPORARY

  SURFACING

CONSTRUCTION CONSIDERATIONS

- CONTRACTOR WILL BE IN ALLEYS FOUR (4) TIMES FOR CONSTRUCTION
  - DIG FOR POINT REPAIRS
  - LINING OF THE PIPE
  - DIG FOR SERVICE TAP REPAIRS
  - FINAL SURFACING - CONCRETE PAVEMENT

CONSTRUCTION CONSIDERATIONS

- PARKING LOTS
  - ACCESS AND PARKING WILL BE RESTRICTED DURING CONSTRUCTION
  - CONTRACTOR WILL USE TRAFFIC BARRIERS AND SIGNAGE
  - PRIVATE LOTS WILL HAVE BARRIERS AT ALLEY

CONSTRUCTION CONSIDERATIONS

- PARKING LOTS cont.
  - PRIVATE LOT CONFIGURATION AND USAGE WILL BE OWNERS RESPONSIBILITY
  - PUBLIC LOTS WILL BE SHUT DOWN DURING CONSTRUCTION

CONSTRUCTION CONSIDERATIONS

- WATER USAGE
  - CONSTRUCTION WILL REQUIRE LIMITED USE OF WATER FOR SIX (6) HOURS AT SPECIFIC TIMES
  - OWNERS WILL BE NOTIFIED PRIOR TO CONSTRUCTION

CONSTRUCTION CONSIDERATIONS

- **DO NOT DISCHARGE** TO THE SANITARY SEWER – LIMIT WATER USE FOR SIX (6) HOURS
  - NO COOKING
  - NO CLEANING
  - NO RESTROOM USE
  - NO POTABLE WATER USE

CONSTRUCTION CONSIDERATIONS

- AREAS WITH RESTAURANTS, HAIR SALONS, & DENTISTS
  - NIGHT TIME LINING/CIPP (12 AM to 6 AM)
  - IDENTIFIED ON MAP

CONSTRUCTION CONSIDERATIONS

- SOLID WASTE/TRASH COLLECTION WILL BE COORDINATED DURING CONSTRUCTION BY CITY AND CONTRACTOR
- TRASH BINS MAY BE TEMPORARILY RELOCATED DURING CONSTRUCTION

CONSTRUCTION CONSIDERATIONS

- CONSTRUCTION ANTICIPATED TO BE 15 MONTHS
- RESTRICTING CONTRACTOR TO THREE BLOCKS OF ACTIVE CONSTRUCTION AT A TIME
- NO PARALLEL ALLEY CONSTRUCTION

CONSTRUCTION CONSIDERATIONS

- PROJECT SAFETY
  - **PROTECT YOURSELF – STAY OUT OF WORK ZONES**
  - AVOID AREAS OF CONSTRUCTION – DANGEROUS AREAS
    - HEAVY EQUIPMENT
    - TRIP HAZARDS
    - OPEN EXCAVATION

POSITIVE PROJECT ASPECTS

- DYE TESTING
  - 482 TOTAL SERVICE TAPS
  - 267 ACTIVE TAPS
  - REMOVED 215 SERVICE TAP REPAIRS
    - SAVED APPROX. $540,000 PROJECT COSTS

POSITIVE PROJECT ASPECTS

- COST EFFECTIVE CONSTRUCTION
- TECHNOLOGY ALLOWS CIPP CONSTRUCTION
  - CIPP CONSTRUCTION EST. $3 M
  - PIPE BURSTING EST. $6 M
  - OPEN TRENCH CONSTRUCTION EST. $8 M

POSITIVE PROJECT ASPECTS

- ALLEY CONSTRUCTION NOT STREET FRONTAGE
- EXISTING INFRASTRUCTURE IS OVER 90 YEARS OLD
- ACCOMMODATIONS FOR DIRTY KANZA ACTIVITIES

QUESTIONS OR COMMENTS