



**South Salem Neighborhood Association
Canal Street Flood Mitigation Project
Phase II**

January 19, 2016, 7:00 p.m.

**Enterprise Center Conference Room
State University, Central Campus**

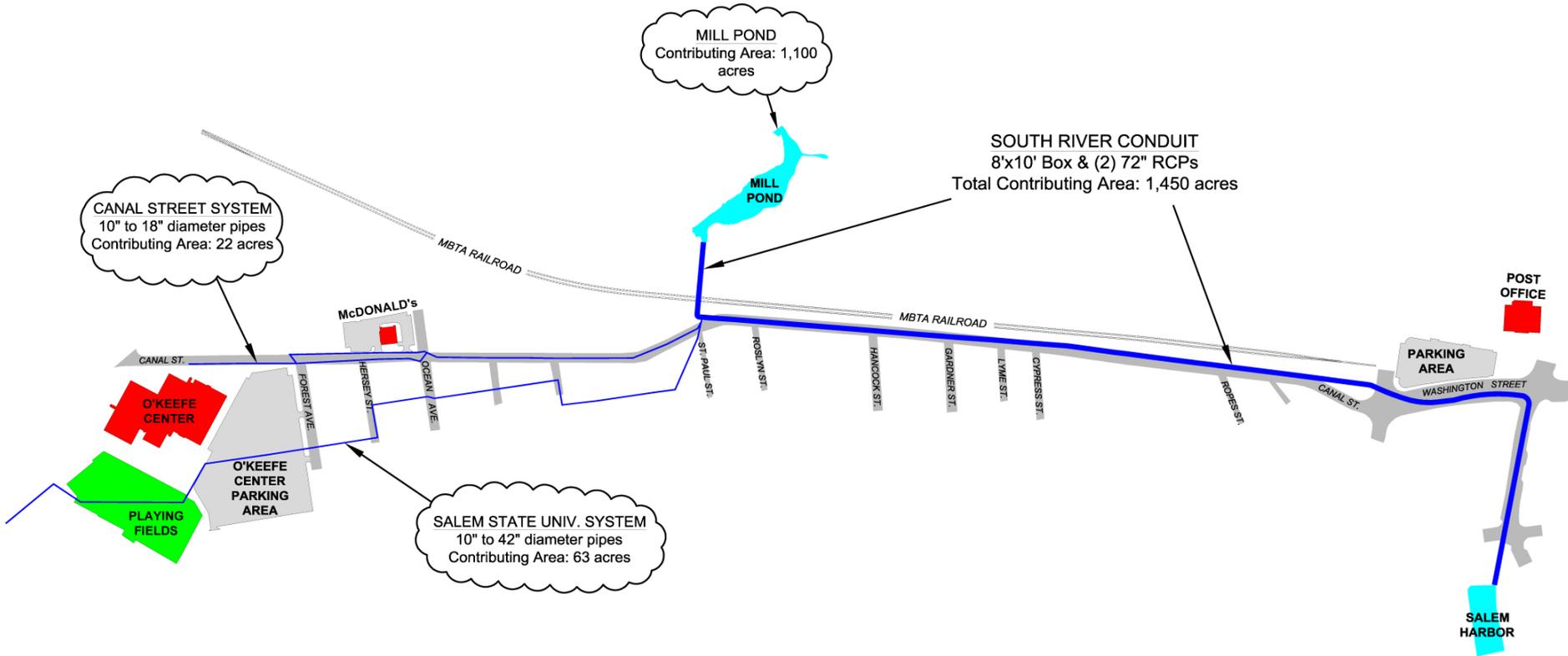
Agenda

- Introductions
- Community Relations / Communications
- Scope of Work
- Schedule/Sequence of Construction
- Construction Preview
- Questions and Answers

Community Relations/ Communications

- 2-week Construction look ahead
 - Need email addresses to distribute
- Continuation of Special Needs
 - Need Form filled out
- Helpful hints during Construction
- Engineering Department Website

Overview – Existing Infrastructure



History of Flooding

- Key Elevations for Existing Conditions
 - 14.1 100 year flood predicted
 - 13.1 10 year flood predicted
 - 9.2 Salem Harbor High Tide
 - » **8.9** *Canal Street @ McDonalds*
 - » **8.0** *O'Keefe Parking Lot*
 - 4.6 Salem Harbor Mean Tide
 - 0.0 Salem Harbor Low Tide

History of Flooding

- Flooding is heavily influenced by tidal conditions; peak flow rates in South River coincide with high tide
- Canal Street drainage systems insufficient to handle storm flows
- 23.2 acres/31 buildings impacted in 10 year event
- 30.8 acres/50 buildings impacted in 100 year event





McDonald's
WAKE UP WITH
DOLLAR MENU AT BR

eE surprise

McDonald's

Canal Street Flood Mitigation / Roadway Improvement Project

- **Project 1 – Phase I Flood Mitigation Project**
 - Comprehensive Utility Improvements in Canal St
- **Project 2 – Canal Street Roadway Improvements**
- **Project 3 – Phase II Flood Mitigation Project**
 - Drainage Improvements, Flood Storage, Harbor Outlet Improvements - Canal Street / SSU Area

Canal Street Flood Mitigation / Roadway Improvement Project

- Project 1 – Phase I Flood Mitigation Project
 - Comprehensive Utility Improvements in Canal St
 - substantially complete 2/1/14
 - Repaired and rehabilitated Sewer, Water and South River Conduit based on assessment of utilities by W&C and City.
 - Constructed the portion of the Canal Street Flood Mitigation proposed storm drain system in Canal Street (~2,100') in anticipation of upcoming Phase 3.
 - No significant drain capacity increases.

Canal Street Flood Mitigation / Roadway Improvement Project

- Project 2 – Canal Street Roadway Improvements
 - Reconstruct roadway from Mills Street to Loring Ave
 - Include reconstructing intersections at either end of Canal
 - Address settlement at McDonalds
 - New pedestrian access improvements
 - Sidewalks
 - Crosswalks
 - lighting
 - Construction paid for by MassDOT
 - Start of Construction tbd, preparing for Spring 2016
 - 24 months to complete

Canal Street Flood Mitigation / Roadway Improvement Project

- Project 3 – Phase II Flood Mitigation Project
 - Drainage Improvements, Flood Storage, Harbor Outlet Improvements - Canal Street / SSU Area
 - Provide 100-year flood protection for over 30 acres and more than 50 existing buildings
 - Upper Watershed - more-effectively direct water to existing South River Conduit.
 - Lower Watershed - construct remaining portion of Canal Street Flood Mitigation Improvements:
 - Remainder of lower gravity system
 - 4.0 million gallon subsurface storage on O’Keefe Parking Lot
 - Pump station, and force main to outfall at Salem Harbor in Forest River Park
 - Construction planned to start Summer 2016
 - 24 month construction period



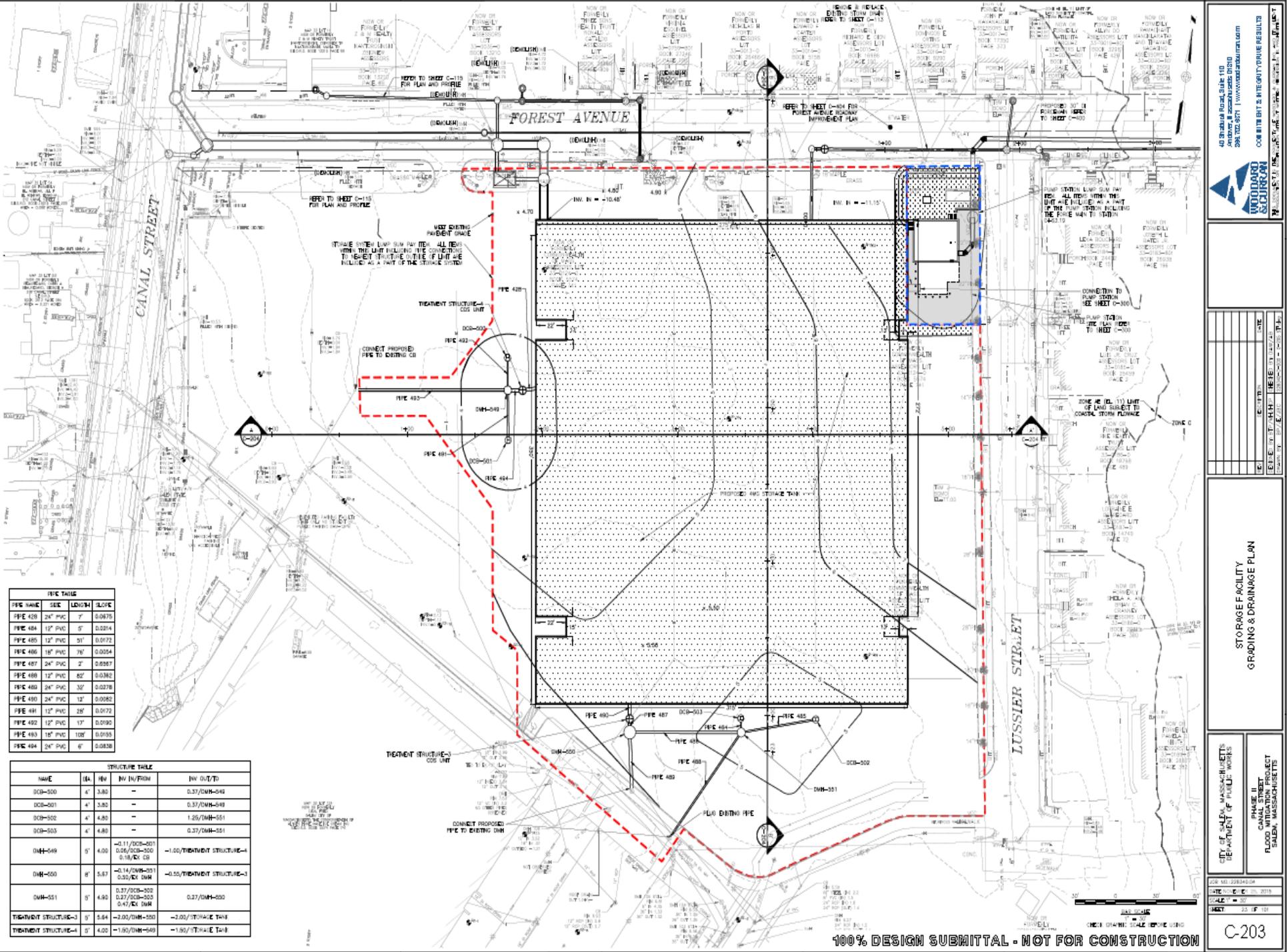
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OVERVIEW OF FLOOD MITIGATION IMPROVEMENTS

CITY OF SALEM, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS
 CANAL STREET DRAINAGE
 SALEM, MASSACHUSETTS

JOB NO. 224494.02
 DATE 11/2020
 SHEET 1 OF 2

FIGURE 4



PIPE TABLE			
PIPE NAME	SIZE	LEN/SH	SLOPE
PPE 428	24" PVC	7'	0.0675
PPE 434	12" PVC	9'	0.0214
PPE 435	12" PVC	31'	0.0172
PPE 436	18" PVC	76'	0.0054
PPE 437	24" PVC	2'	0.0587
PPE 438	12" PVC	82'	0.0382
PPE 439	24" PVC	32'	0.0378
PPE 440	24" PVC	12'	0.0682
PPE 441	12" PVC	28'	0.0172
PPE 442	12" PVC	17'	0.0190
PPE 443	18" PVC	108'	0.0193
PPE 444	24" PVC	6'	0.0838

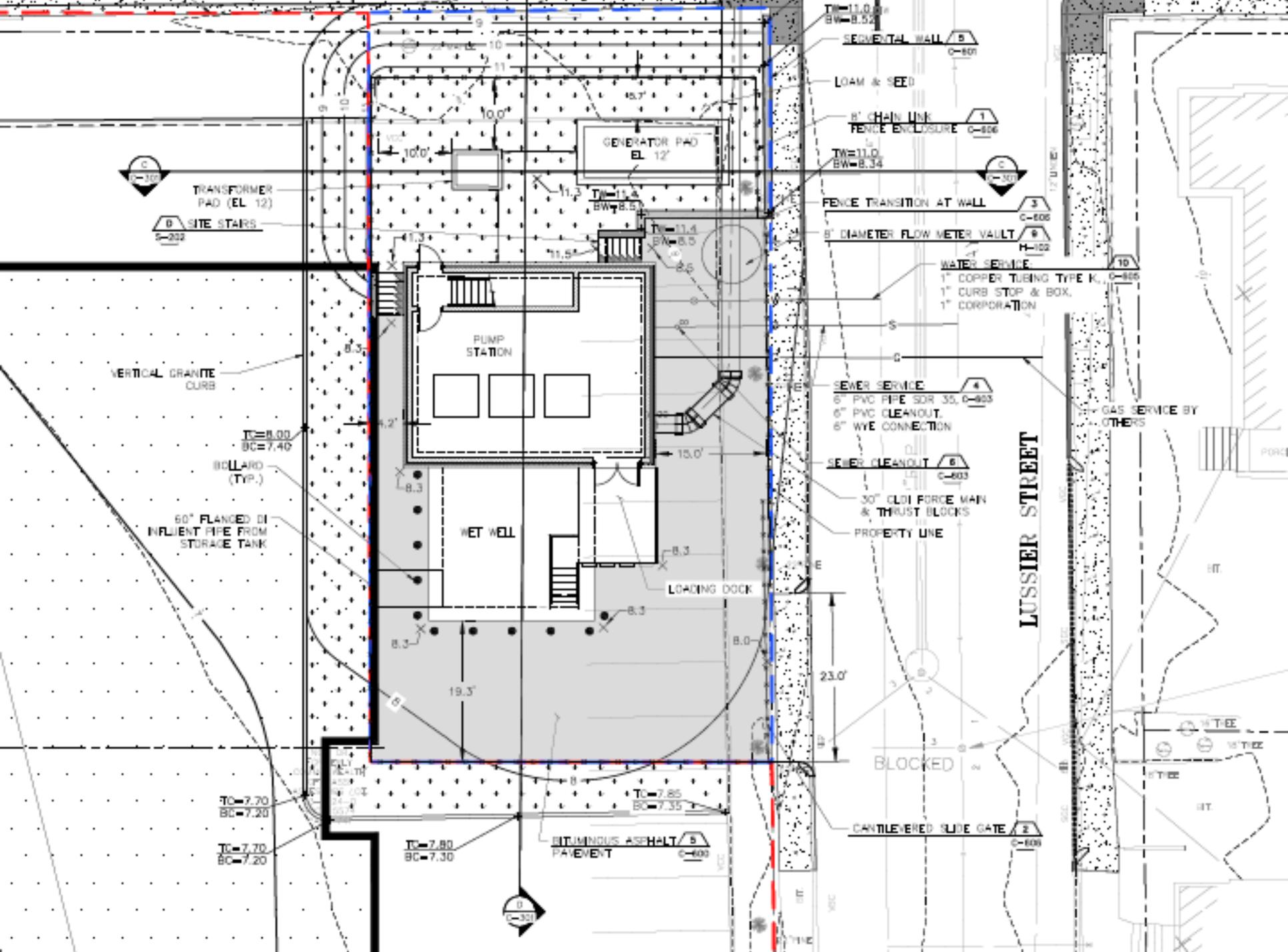
STRUCTURE TABLE				
NAME	IN	HW	IN IN/FOOT	IN OUT/TO
DCB-500	4'	3.80	-	0.37/DWM-549
DCB-501	4'	3.80	-	0.37/DWM-549
DCB-502	4'	4.80	-	1.26/DWM-551
DCB-503	4'	4.80	-	0.37/DWM-551
DWM-549	5'	4.00	-0.11/DCB-500 0.06/DCB-500 0.16/DCB-501	-1.00/TREATMENT STRUCTURE-4
DWM-550	6'	5.67	-0.14/DWM-551 0.00/DCB-500	-0.55/TREATMENT STRUCTURE-3
DWM-551	5'	4.80	0.37/DCB-502 0.37/DCB-503 0.47/DCB-504	0.37/DWM-550
TREATMENT STRUCTURE-3	5'	5.64	-2.00/DWM-550	-2.00/STORAGE TANK
TREATMENT STRUCTURE-4	5'	4.02	-1.80/DWM-549	-1.80/STORAGE TANK

DATE	BY	CHK	DATE	BY

STORAGE FACILITY
 GRADING & DRAINAGE PLAN

CITY OF SALEM, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS

PHASE II
 CANAL STREET
 FLOODING SUBJECT
 SALEM, MASSACHUSETTS



TRANSFORMER PAD (EL. 12)

SITE STAIRS
S-202

GENERATOR PAD
EL. 12'

PUMP STATION

WET WELL

LOADING DOCK

SEGMENTAL WALL 5
C-601

LOAM & SEED

8" CHAIN LINK
FENCE ENCLOSURE C-606

TW=11.0
BW=8.34

FENCE TRANSITION AT WALL 3
C-606

8" DIAMETER FLOW METER VAULT 9
T-102

WATER SERVICE
1" COPPER TUBING TYPE K, C-605
1" CURB STOP & BOX,
1" CORPORATION

SEWER SERVICE 4
6" PVC PIPE SDR 35, C-603
6" PVC CLEANOUT,
6" WYE CONNECTION

SEWER CLEANOUT 6
C-603

30" CDI FORCE MAIN & THRUST BLOCKS

PROPERTY LINE

GAS SERVICE BY OTHERS

LUSSIER STREET

60" FLANGED DI
INFLUENT PIPE FROM
STORAGE TANK

TC=8.00
BC=7.40

BOLLARD
(TYP.)

TC=7.70
BC=7.20

TC=7.70
BC=7.20

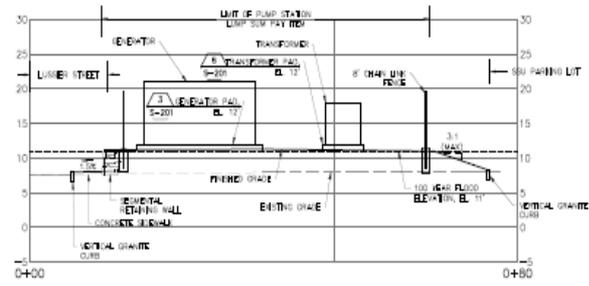
TC=7.80
BC=7.30

BITUMINOUS ASPHALT 5
PAVEMENT C-600

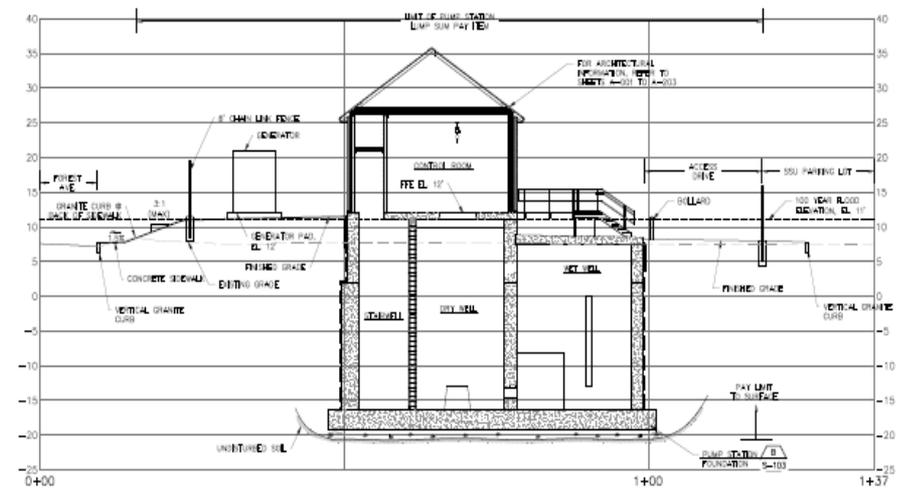
TC=7.85
BC=7.35

CANTILEVERED SLIDE GATE 2
C-606

BLOCKED



HORIZONTAL SCALE 1" = 10'
 VERTICAL SCALE 1" = 2'
SECTION SECTION C-C-C
 -30-



HORIZONTAL SCALE 1" = 10'
 VERTICAL SCALE 1" = 2'
SECTION D-D-D
 -30-



100% DESIGN SUBMITTAL - NOT FOR CONSTRUCTION

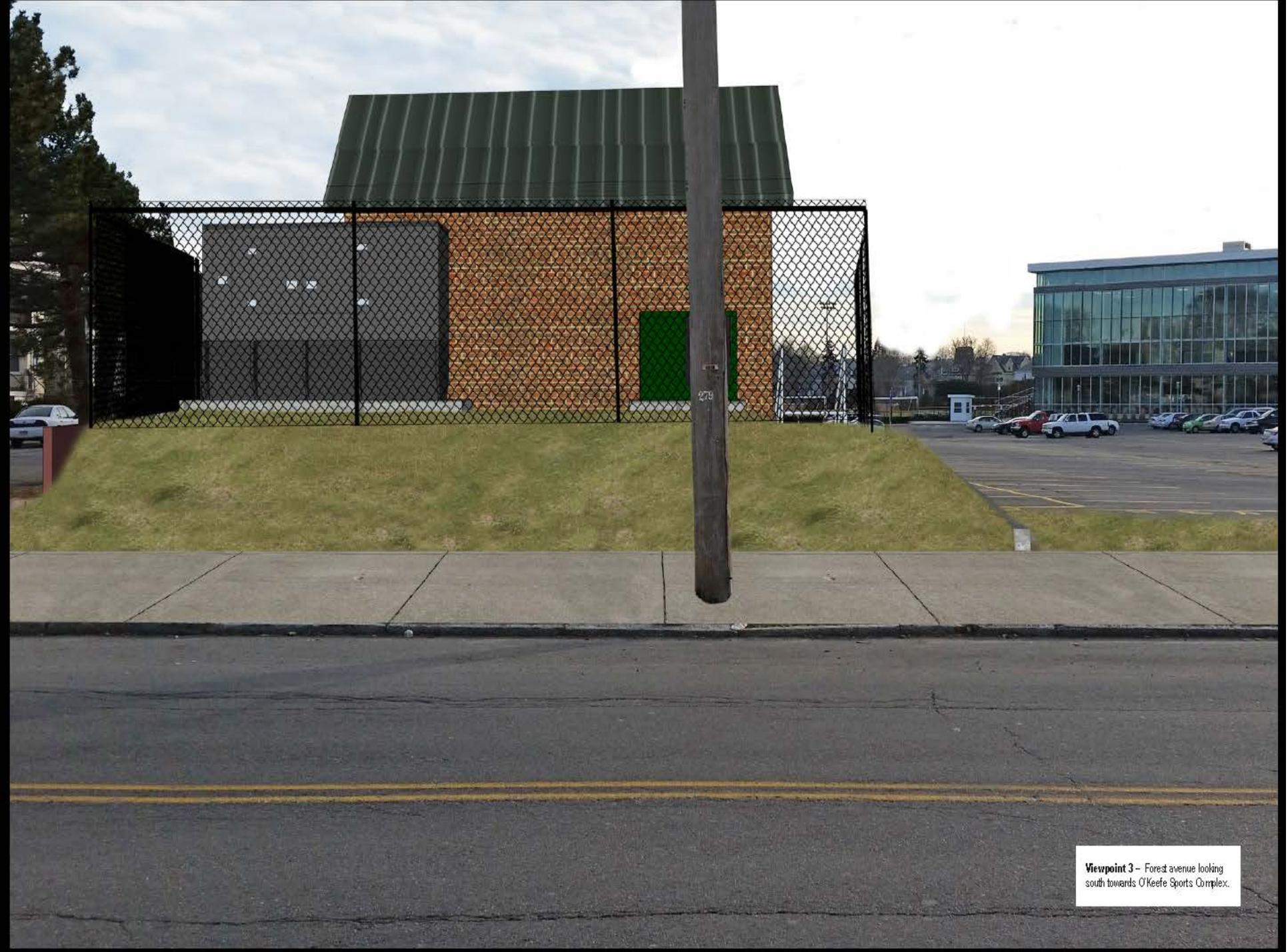
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PUMP STATION SECTIONS

CITY OF SALEM, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS

PHASE II
 CANAL STREET
 SALEM, MASSACHUSETTS

FOR NO. 2224-01M
 DATE: 08/26/2015
 SCALE: AS SHOWN
 SHEET: 28 OF 113



Viewpoint 3 – Forest avenue looking south towards O’Keefe Sports Complex.



Viewpoint 2 – Lussier street looking northwest towards Forest avenue.



Viewpoint 4 - From southeast looking north across the fence line.



2204 SHEET 11
 FOREST RIVER PARK RENDERING
 DATE: JANUARY 2016
 SCALE: 1" = 20'
 SHEET: 1 OF 1
 CITY OF SALEM, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS
 PROJECT: FLOOD MITIGATION PROJECT
 PHASE: CANAL BENCH
 SALEM, MASSACHUSETTS
 CHECKED BY: [blank] DATE: [blank]
 DESIGNED BY: [blank] DATE: [blank]
 DRAWN BY: [blank] DATE: [blank]

PROPOSED GRASS SWALE

RE-LOCATED EXISTING BASKETBALL COURT

PROPOSED DOUGOUT (TYP.)

PROPOSED BATTING CAGE

RELOCATED PIONEER VILLAGE ENTRANCE

PROPOSED BOARDWALK

PROPOSED WETLAND REPLICATION (SEE SHEET C-509 FOR DETAILS)

EXISTING POND

PROPOSED CULVERT OUTFALL

LIMIT OF WORK (TYP.)

PROPOSED BENCH (TYP.)

PROPOSED SELECTIVE CLEARING

PROPOSED BIO-RETENTION AREA

PROPOSED PAVEMENT RESURFACING

FIELD LIGHTING (TYP.)

40 Shattuck Road, Suite 116
 Andover, Massachusetts 01915
 (978) 682-1417 | www.woodardscurran.com
WOODARD SCURRAN
 COMMITMENT & INTEGRITY DRIVE RESULTS

**FOREST RIVER PARK
RENDERING**

CITY OF SALEM, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS
 PROJECT: FLOOD MITIGATION PROJECT
 PHASE: CANAL BENCH
 SALEM, MASSACHUSETTS

JOB NO: 2204-004
 DATE: JANUARY 2016
 SCALE: 1" = 20'
 SHEET: 1 OF 1

RENDER

DESIGN INTENT - NOT FOR CONSTRUCTION

Canal Street Flood Mitigation Improvement Project

- Associated Work
 - Sewer, Water and Drain upgrades
 - Surface Enhancements
 - Curb to Curb re-paving
 - New Sidewalks, Crosswalks, handi-cap ramps as needed
 - Bicycle Accommodations
 - Canal Street to Forrest River park
 - » Forest Avenue and Clifton Streets

Canal Street Flood Mitigation Improvement Project

- Schedule/Sequence of Construction
 - To be Determined when Contract is Awarded
 - Neighborhood Meeting will be held
 - To present construction team members
 - Identify who to contact with issues
 - Present Construction Schedule prepared by the Contractor

Canal Street Flood Mitigation Improvement Project

- Construction Preview
 - More than 50% of the work will occur on O’keefe Parking Lot
 - Major Civil Construction Project
 - Large Equipment
 - Dirty. Noisy, Dusty
 - Traffic Impacts
 - Work days, hours
 - Access to businesses and residents will be impacted
 - Staging Area

Canal Street Flood Mitigation Improvement Project

- Thank you for attending
- Questions and Answers