IMPROVING RESILIENCE
at Loyola University Medical Center

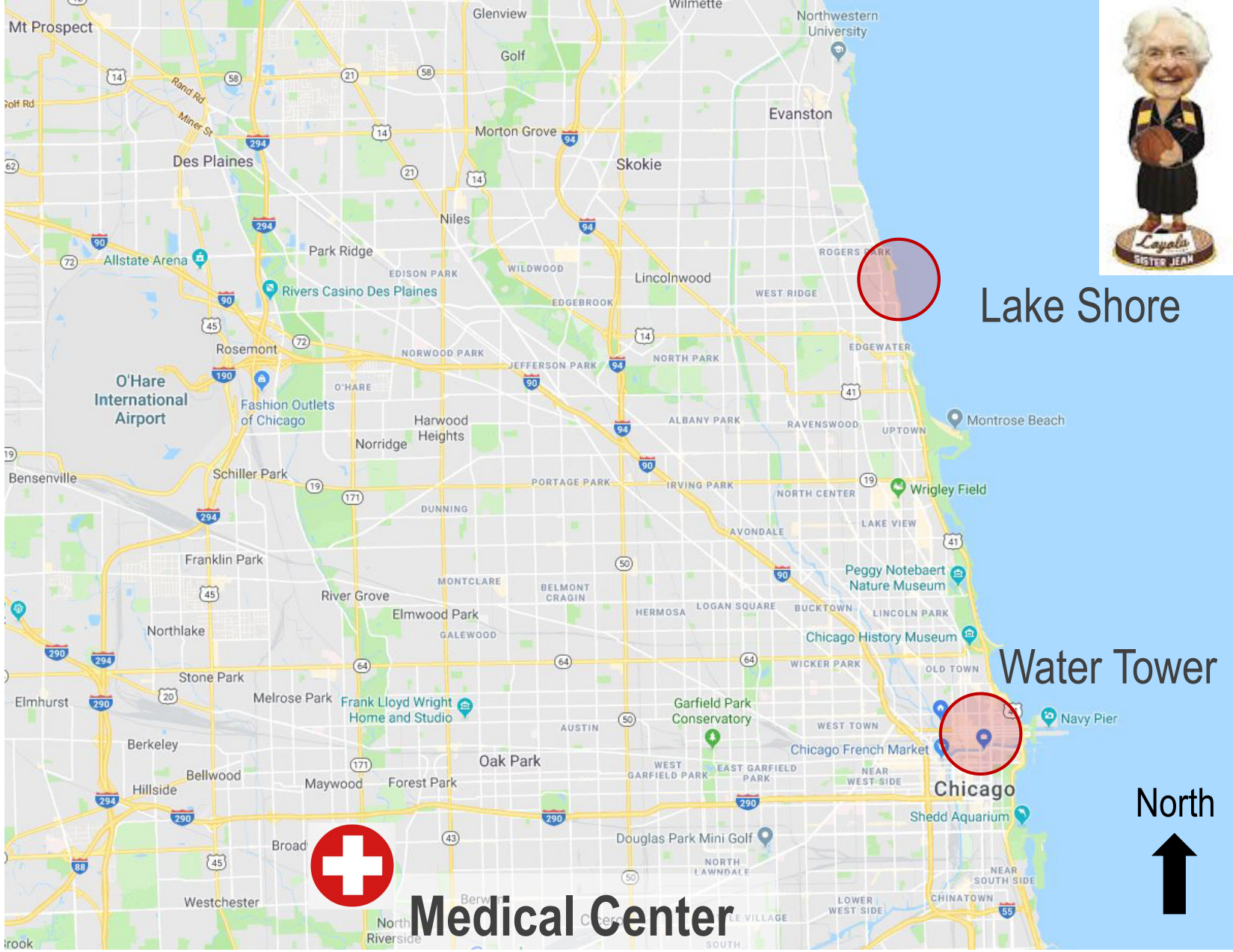
LOYOLA UNIVERSITY CHICAGO

SMITHGROUP

LOYOLA UNIVERSITY CHICAGO

Medical Center

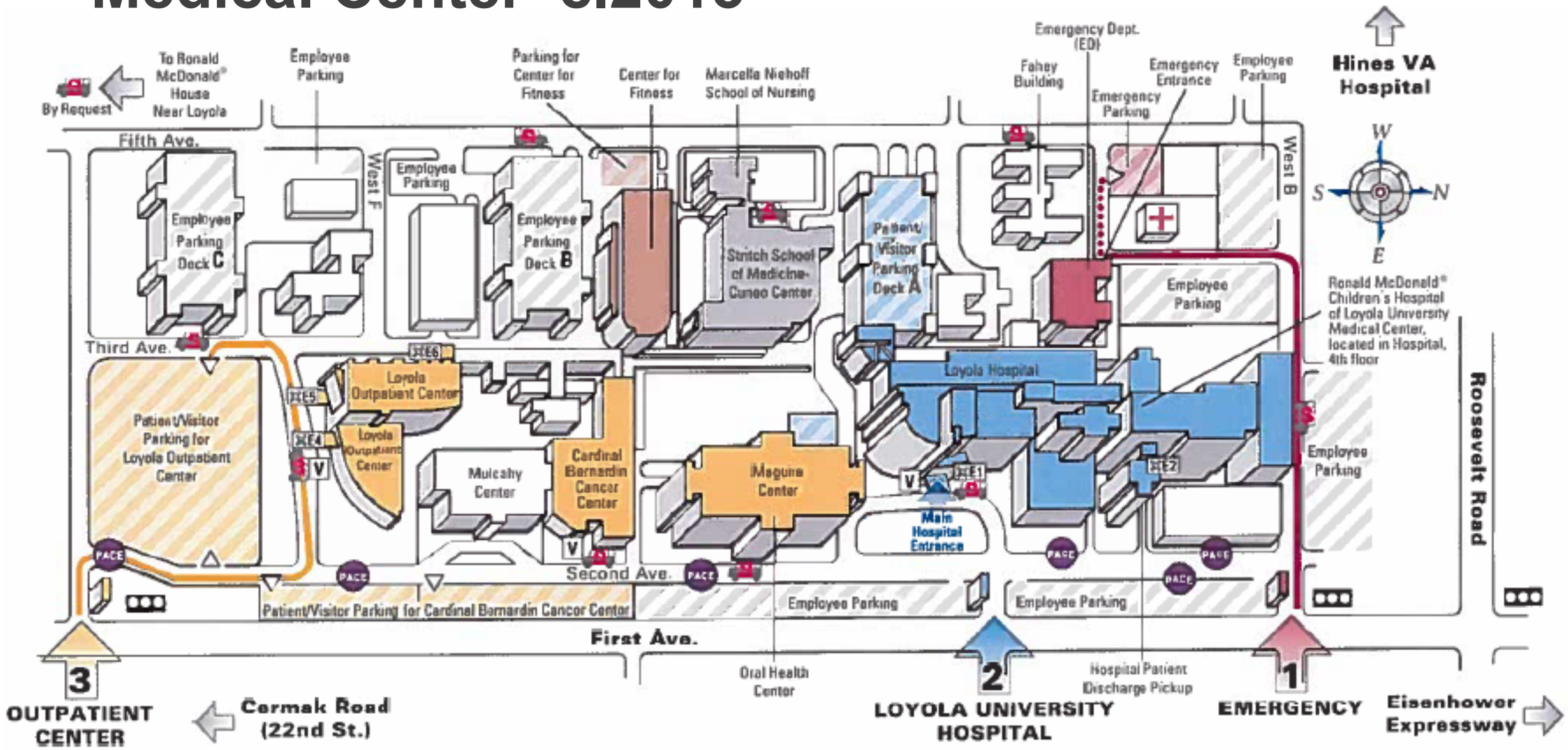
- Level One Trauma Center
- 50,000 ER visits and 8,000 surgeries annually
- Originally Part of Edward J. Hines VA Hospital
- Lower Des Plaines River Watershed



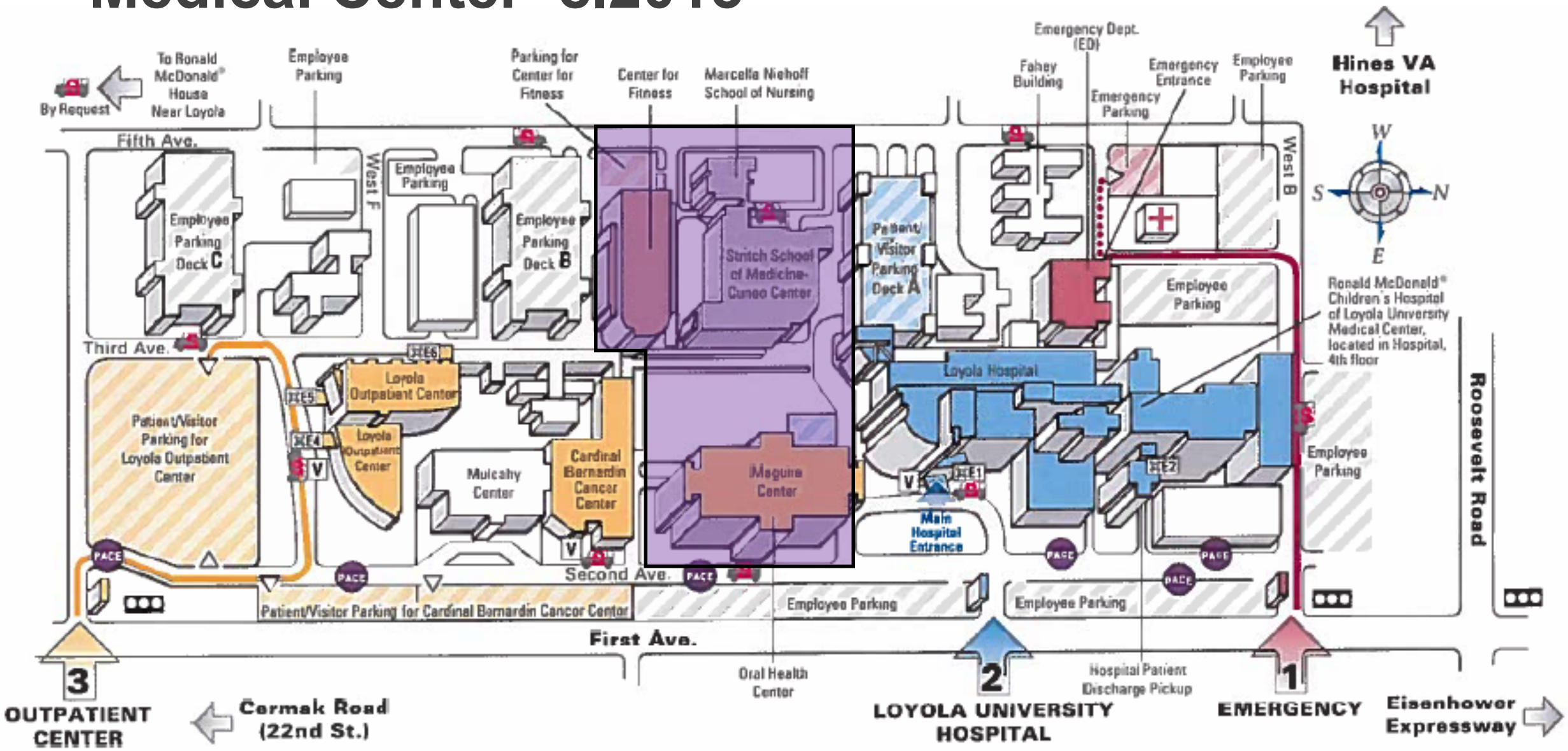
LOYOLA UNIVERSITY CHICAGO

LOYOLA UNIVERSITY HEALTH SYSTEM

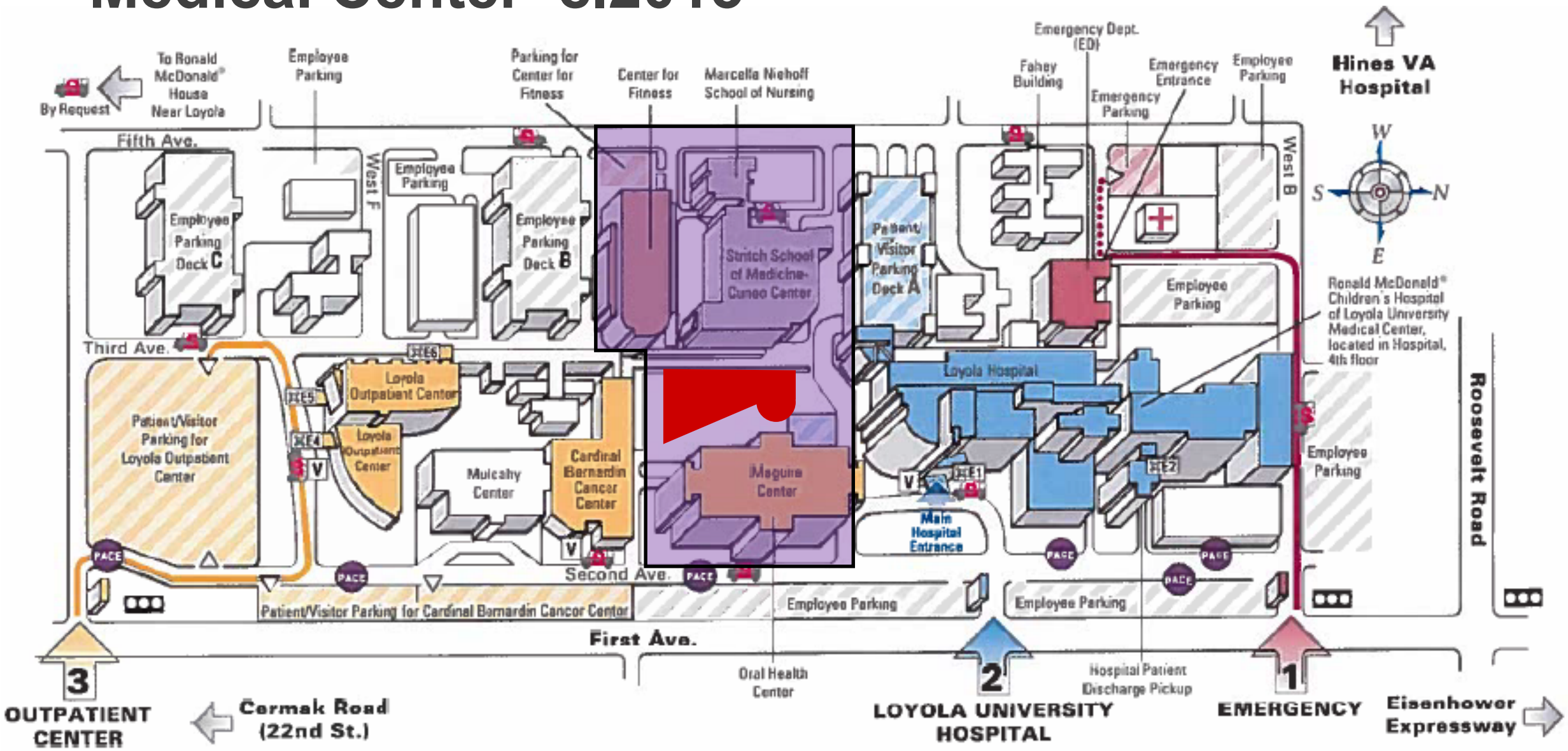
Medical Center c.2013



Medical Center c.2013



Medical Center c.2013

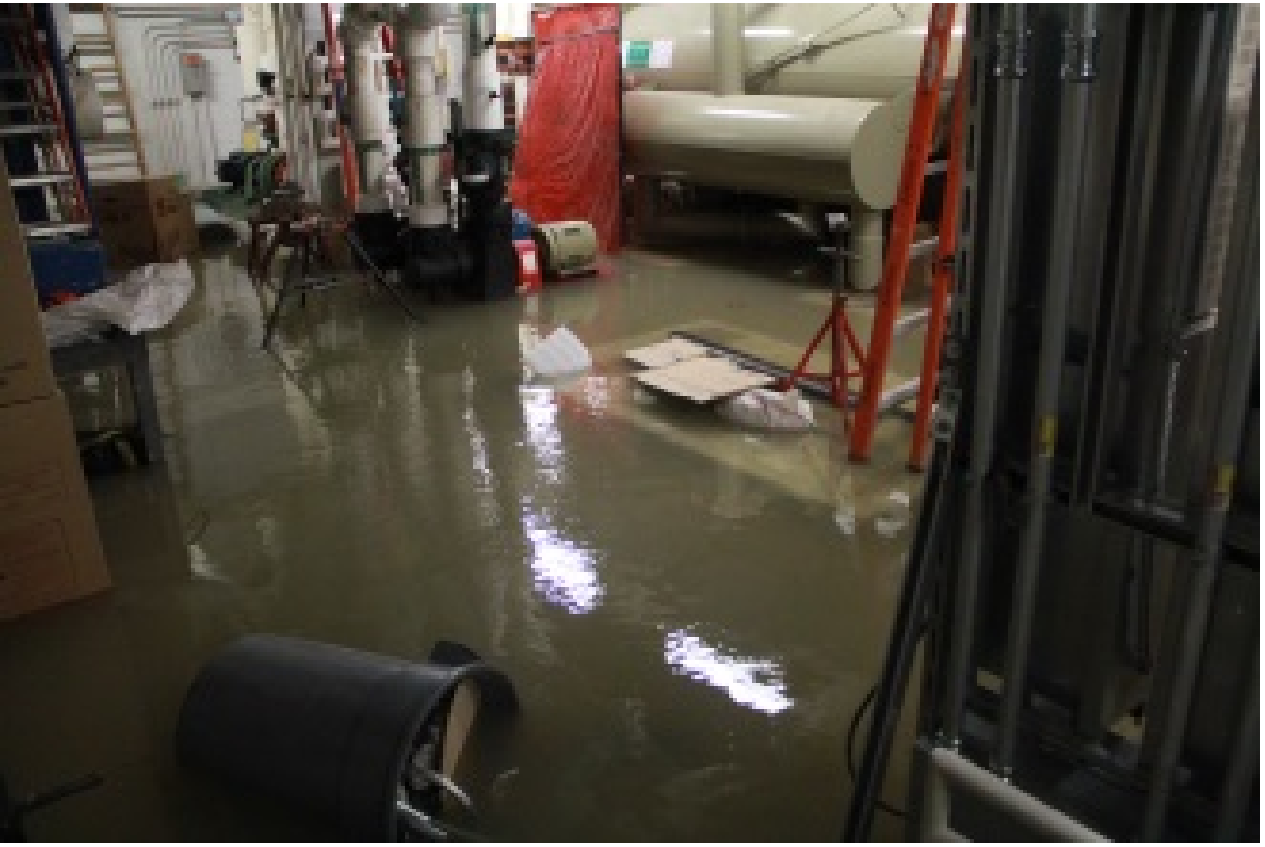


CTRE / Center for Translational Research and Education

courtesy of SCB

April 2013 Flooding

Cancer Center Mechanical Room



Radiology Patient Care

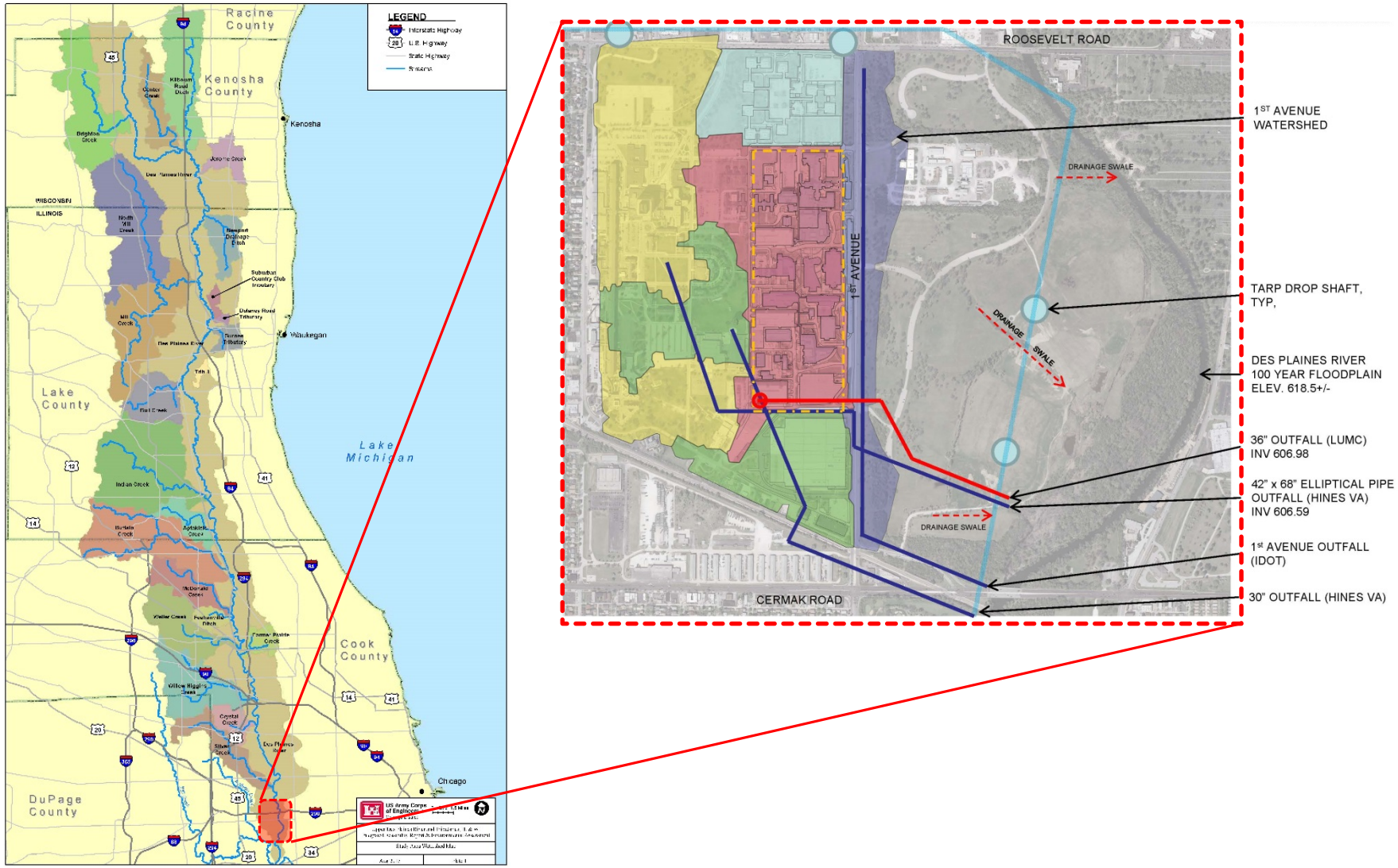
photos courtesy of LUC

April 2013 Flooding

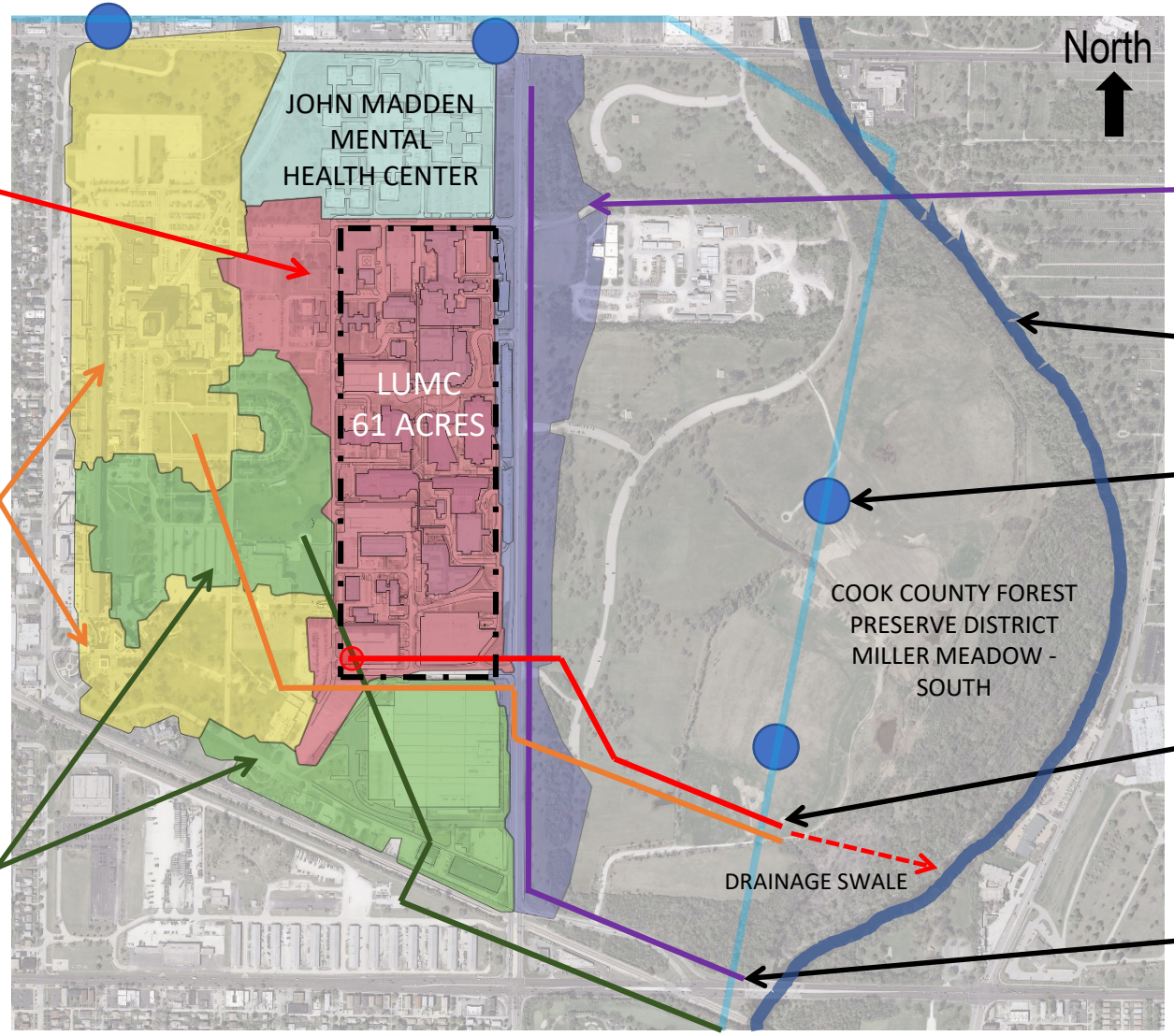
First Avenue - Medical Center Access

photos courtesy of LUC

Flood Study Area



Local Watersheds



LUMC WATERSHED 90 ACRES

HINES VA HOSPITAL 42” x 68” ELLIPTICAL PIPE OUTFALL WATERSHED

HINES VA HOSPITAL 30” OUTFALL WATERSHED

1ST AVENUE WATERSHED

DES PLAINES RIVER 100 YEAR FLOODPLAIN ELEV. 618.5+/-

TARP DROP SHAFT, TYP,

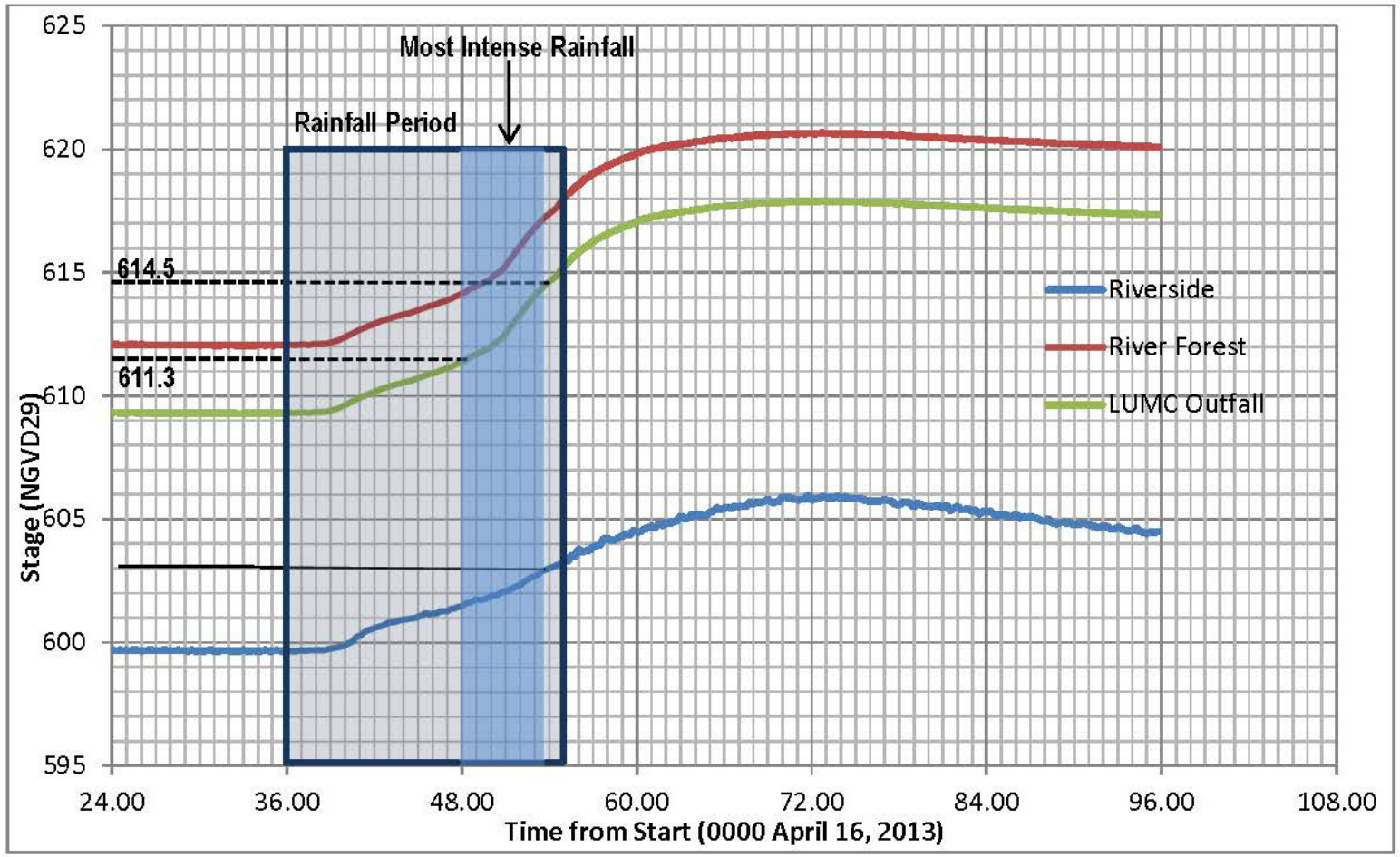
36” OUTFALL (LUMC) INV 606.98

1st AVENUE OUTFALL (IDOT)

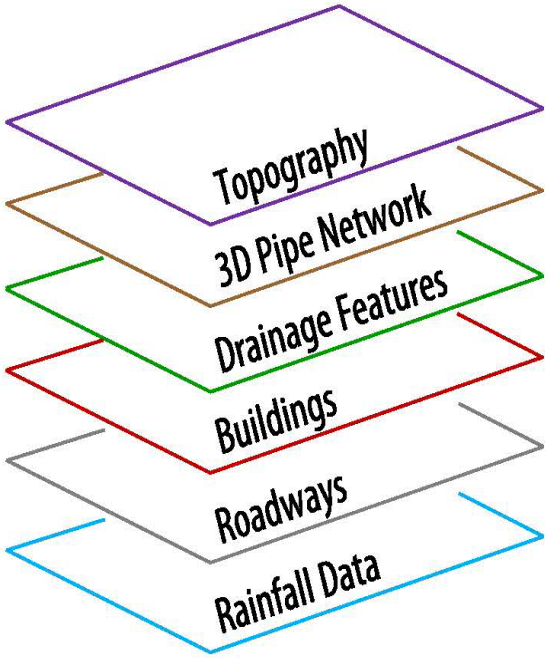
Des Plaines River Tailwater

Des Plaines River elevation during April 2013 storm event
Highest crest ever recorded at Riverside Gauge

April 16 -19, 2013,

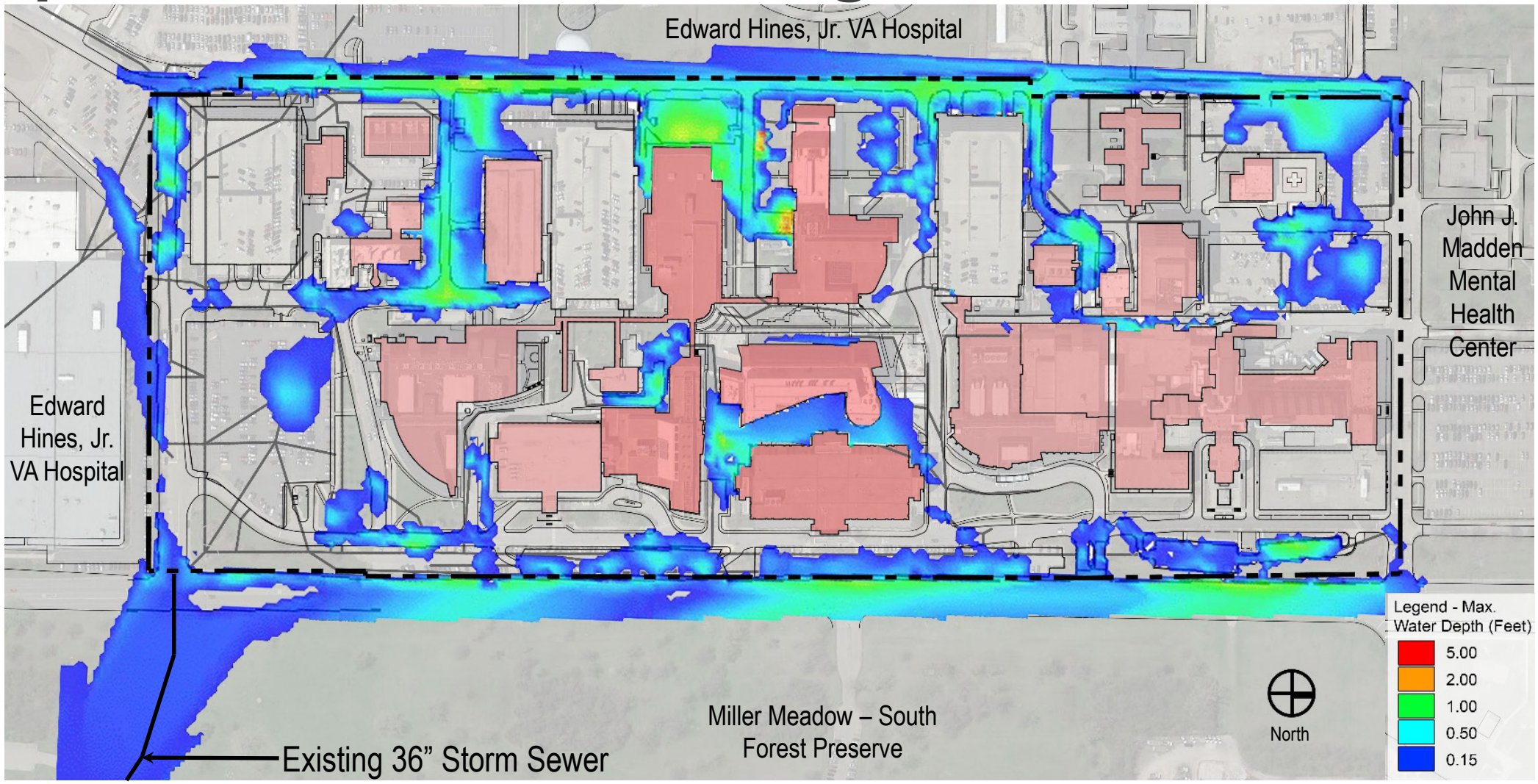


Stormwater Modeling



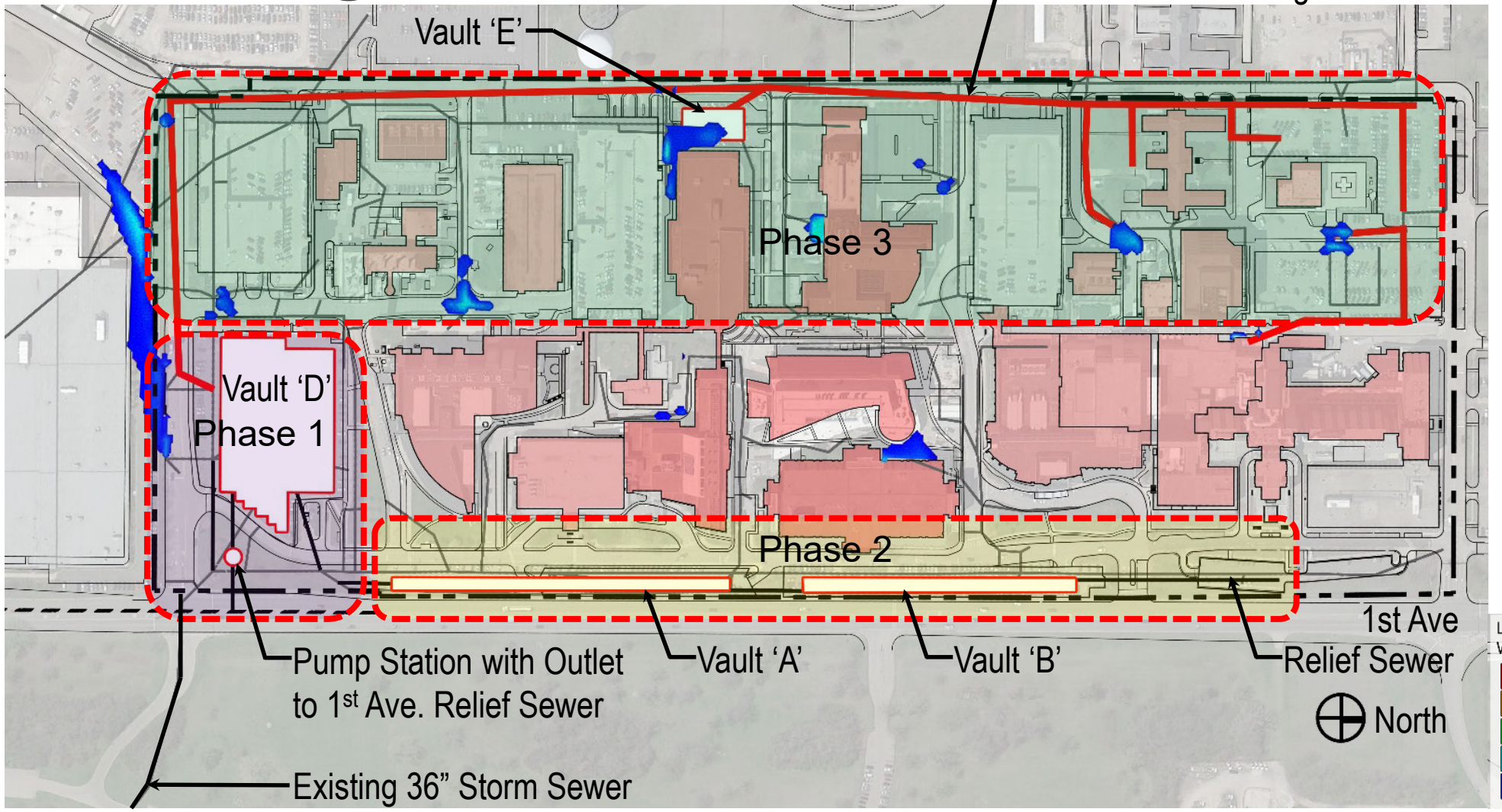
April 2013 Storm Simulation

April 2013 Storm Modeling



5.55 inches of rainfall over 48 hours
XP-SWMM analysis

Flood Mitigation Plan

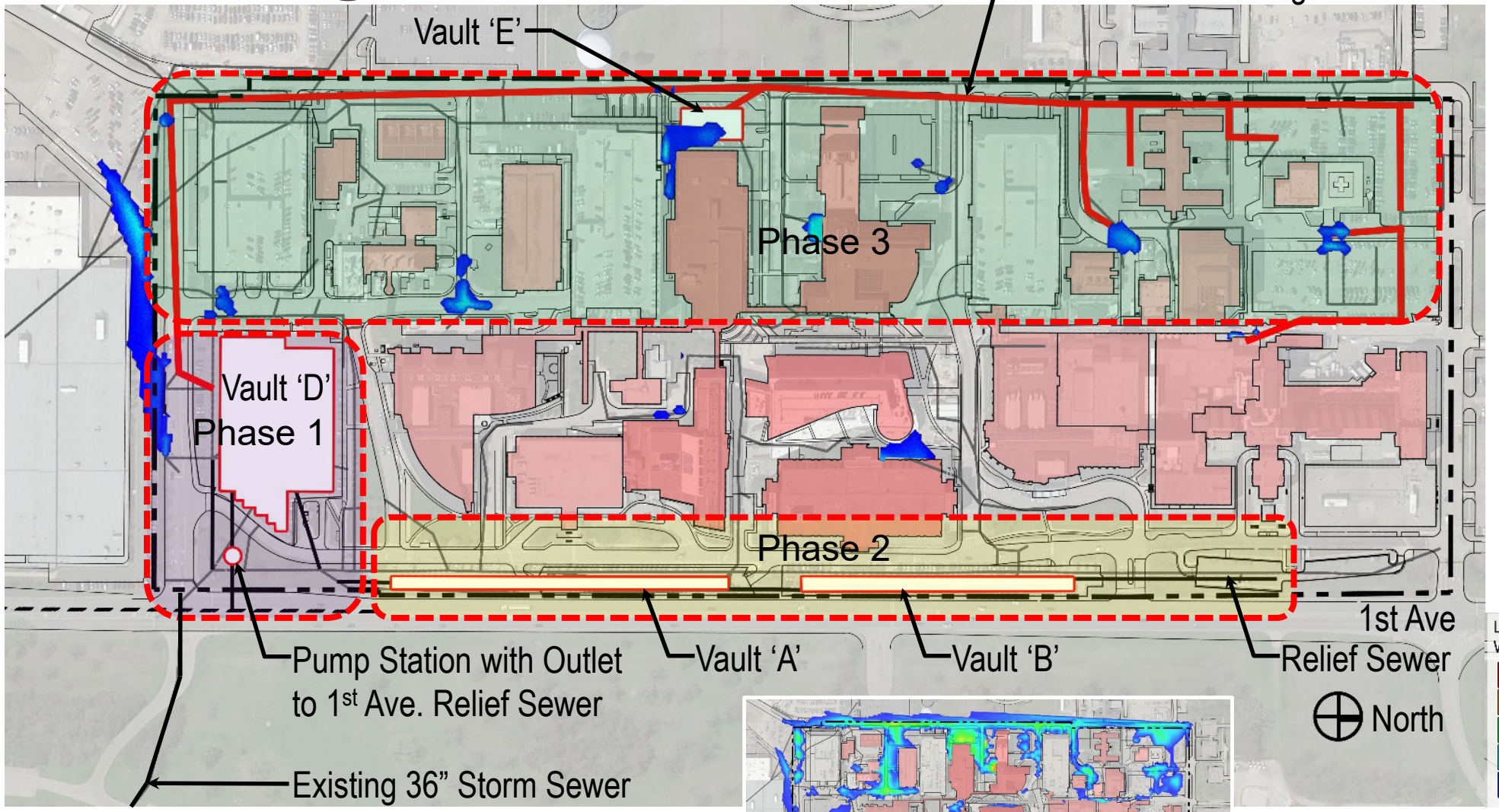


Detention Storage

Ph 1:	5.9 ac-ft
Ph 2:	2.7 ac-ft
Ph 3:	0.3 ac-ft
Total:	8.9 ac-ft

50 Year Storm
SWMM Analysis

Flood Mitigation Plan



Detention Storage

Ph 1:	5.9 ac-ft
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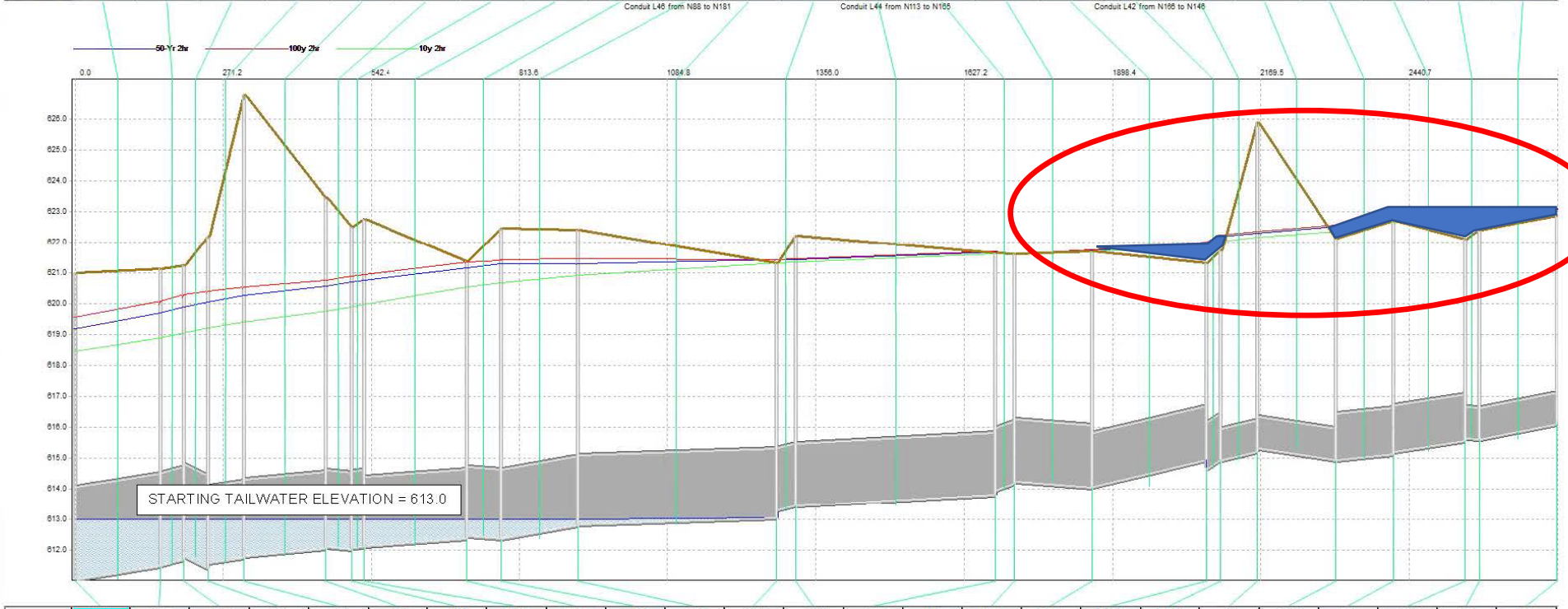
Total:	8.9 ac-ft

50 Year Storm
SWMM Analysis

Trunk Sewer | Existing Profile

Pipes

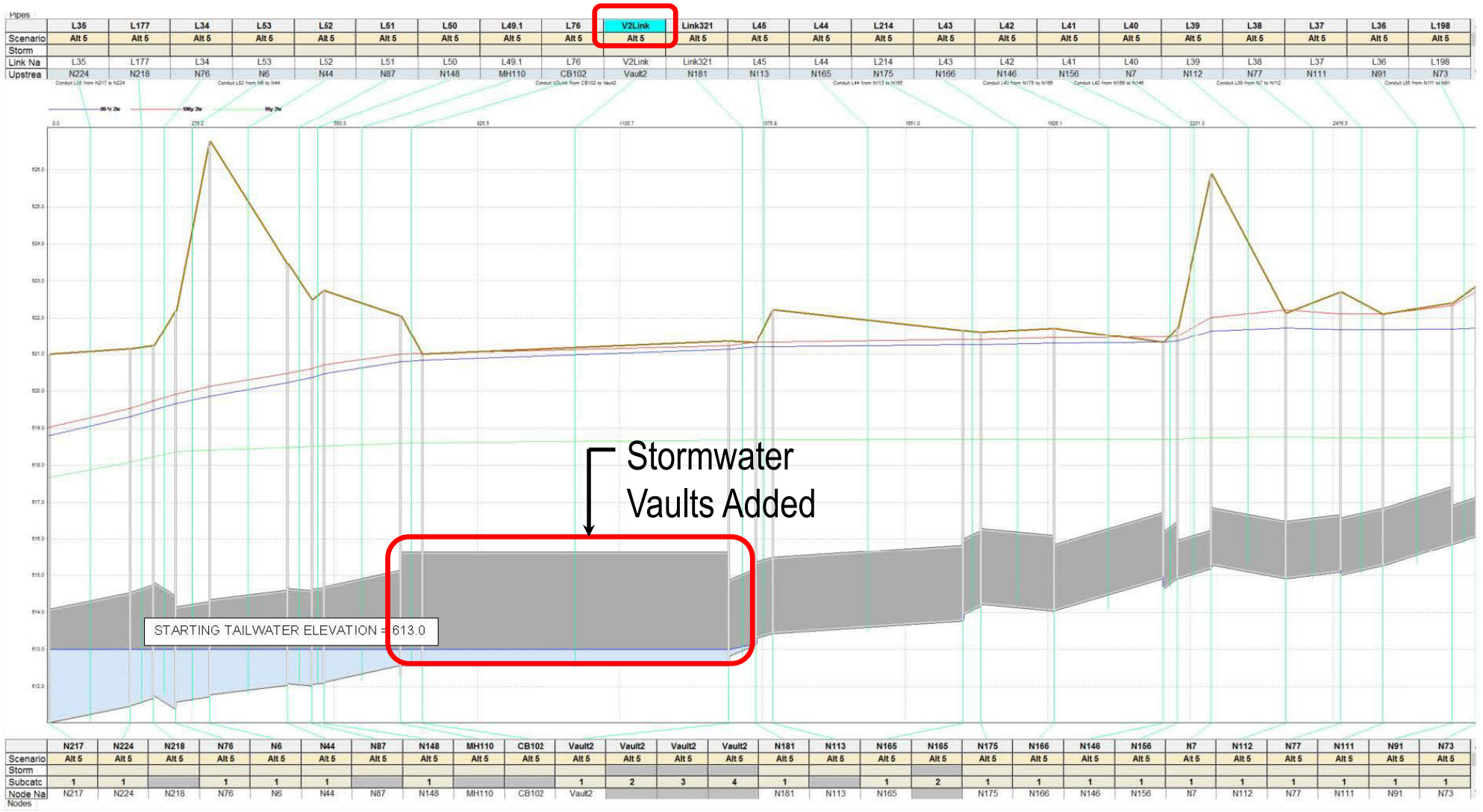
	L35	L177	L34	L53	L52	L51	L50	L49	L48	L47	L46	L45	L44	L214	L43	L42	L41	L40	L39	L38	L37	L36	L198
Scenario	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail
Storm																							
Link Name	L35	L177	L34	L53	L52	L51	L50	L49	L48	L47	L46	L45	L44	L214	L43	L42	L41	L40	L39	L38	L37	L36	L198
Upstream No	N224	N218	N76	N6	N44	N87	N148	N228	N164	N88	N181	N113	N165	N175	N166	N146	N156	N7	N112	N77	N111	N91	N73
Upstream Inv	611.500	611.720	611.420	611.760	612.060	612.050	612.120	612.400	612.380	612.810	613.060	613.460	613.810	614.200	614.070	614.940	614.940	615.220	614.950	615.130	615.570	615.620	616.100
Downstream	N217	N224	N218	N76	N6	N44	N87	N148	N228	N164	N88	N181	N113	N165	N175	N166	N146	N156	N7	N112	N77	N111	N91



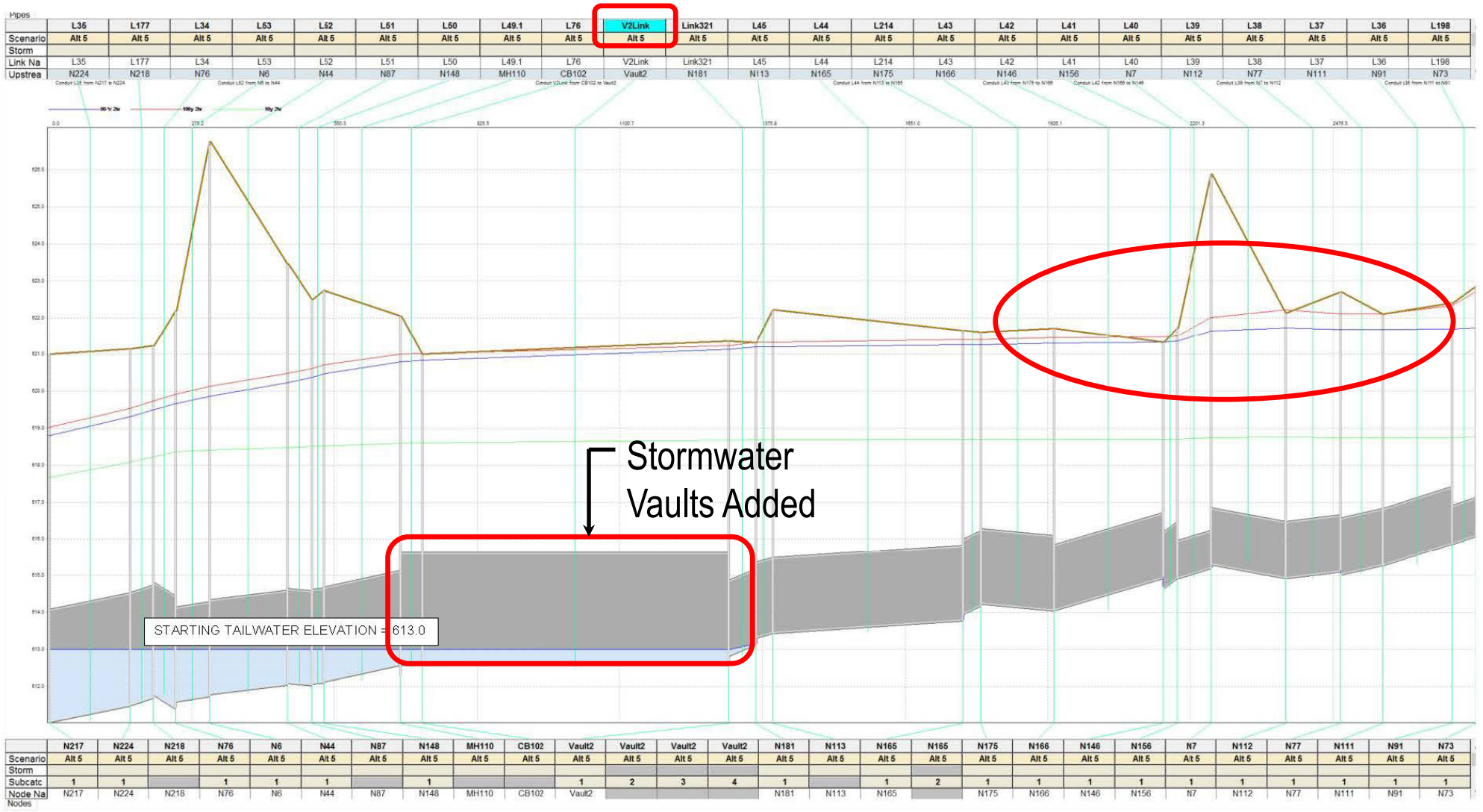
Surface Ponding

	N217	N224	N218	N76	N6	N44	N87	N148	N228	N164	N88	N181	N113	N165	N165	N175	N166	N146	N156	N7	N112	N77	N111	N91	N73
Scenario	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail	Base Tail
Storm																									
Subcatchme	1	1		1	1	1		1	1	1	1	1		1	2	1	1	1	1	1	1	1	1	1	1
Node Name	N217	N224	N218	N76	N6	N44	N87	N148	N228	N164	N88	N181	N113	N165		N175	N166	N146	N156	N7	N112	N77	N111	N91	N73
Ground Eleva	621.000	621.145	621.236	622.195	626.768	623.457	622.501	622.744	621.362	622.451	622.389	621.310	622.214	621.654		621.613	621.706	621.333	621.732	625.890	622.130	622.703	622.103	622.403	622.850
Invert Elevati	611.070	611.500	611.720	611.420	611.760	612.060	612.050	612.120	612.400	612.380	612.810	613.060	613.460	613.810		614.200	614.070	614.680	614.940	615.220	614.950	615.130	615.570	615.620	616.100

Trunk Sewer | Proposed Profile



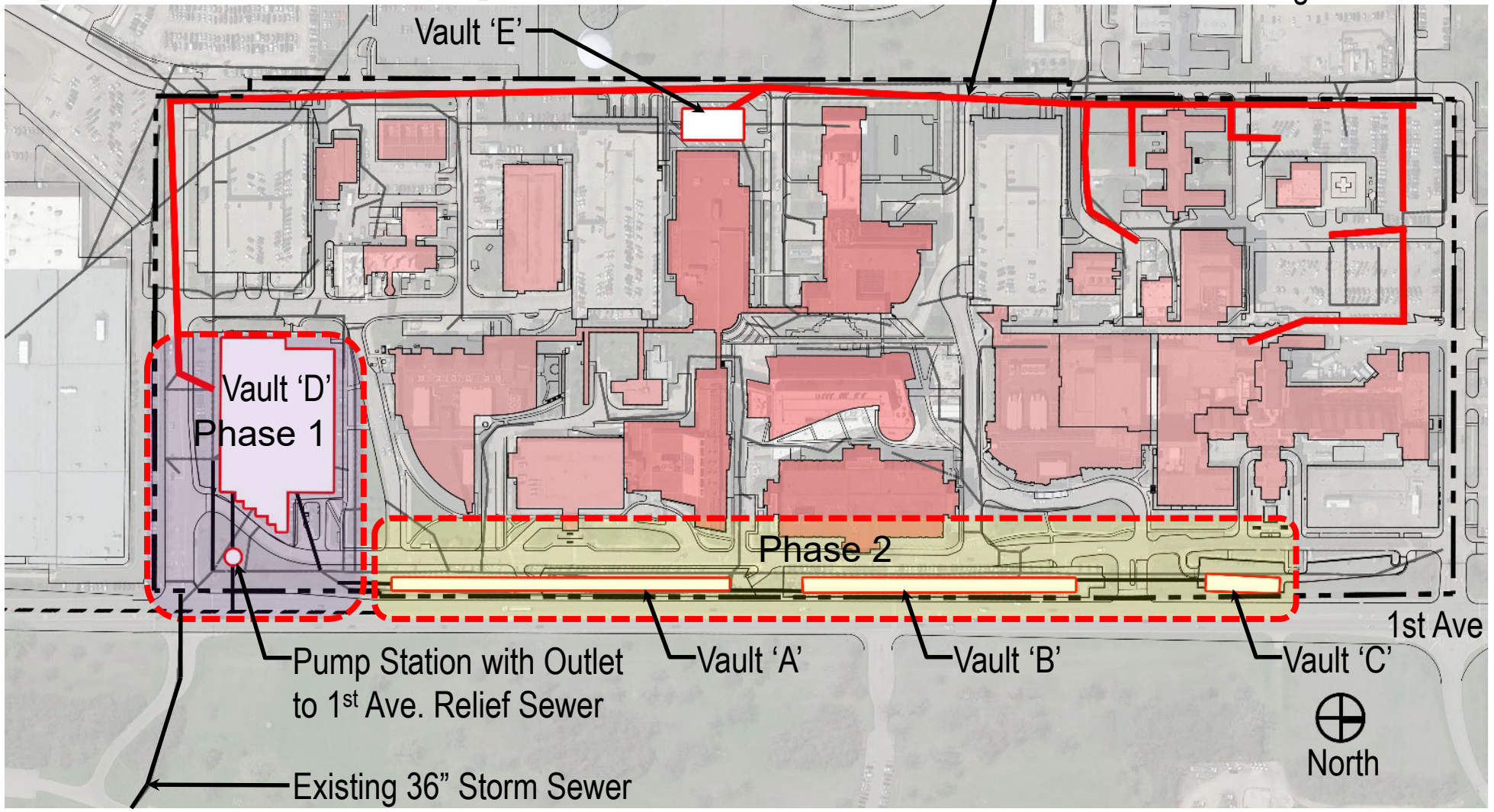
Trunk Sewer | Proposed Profile



Surface Ponding Eliminated

Scope of Work	Estimated Cost
Storage	$14,850,000
Conveyance	$8,650,000
TOTAL	**$23,500,000**

April 2015 Proposal

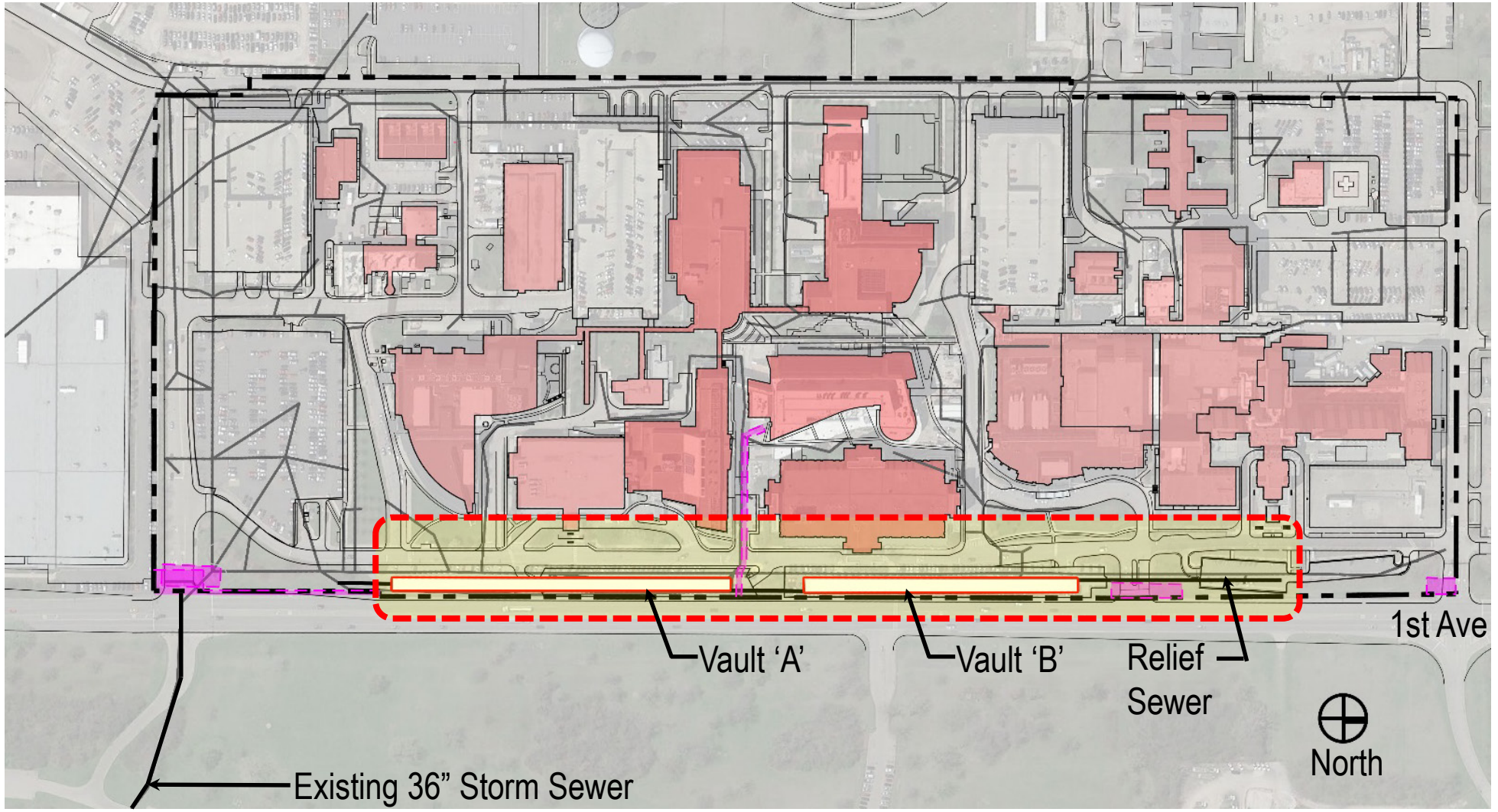


Funding Proposal:
$15.9 million

Phase 1:
Vault D and
Pump Station
$9.65 million

Phase 2:
Vaults A, B & C
$6.25 million

Revised Proposal

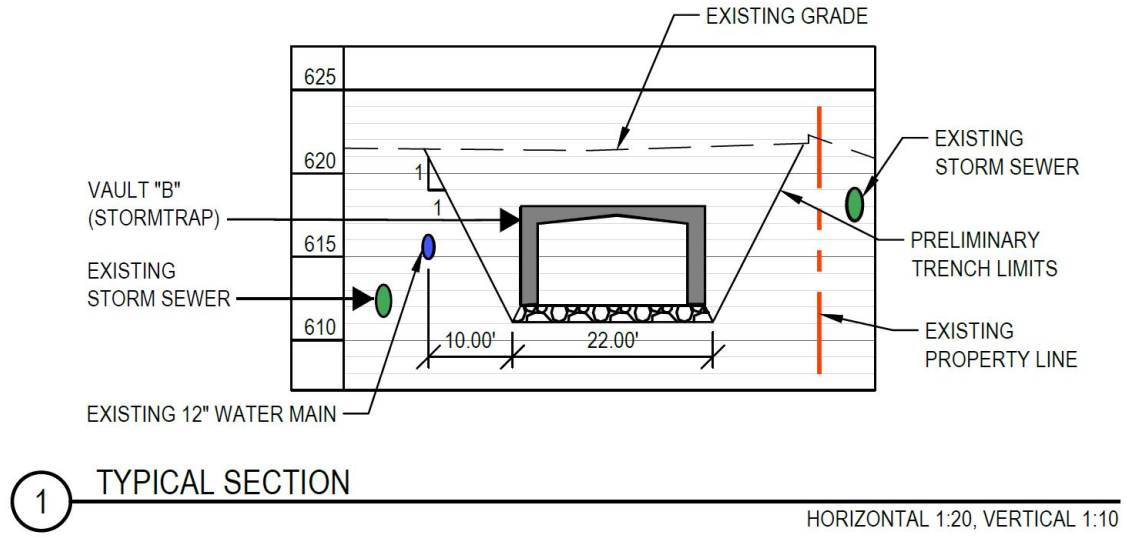


Revised Proposal:
$6.6 million

Scope of Work:
Vaults A and B
and **Relief Sewer**
at First Avenue
Entries
3.0 ac-ft total

Easements
IDOT Traffic
Signals
Nicor Gas Service
MWRD Temporary
Access

Phase 1 Final Engineering

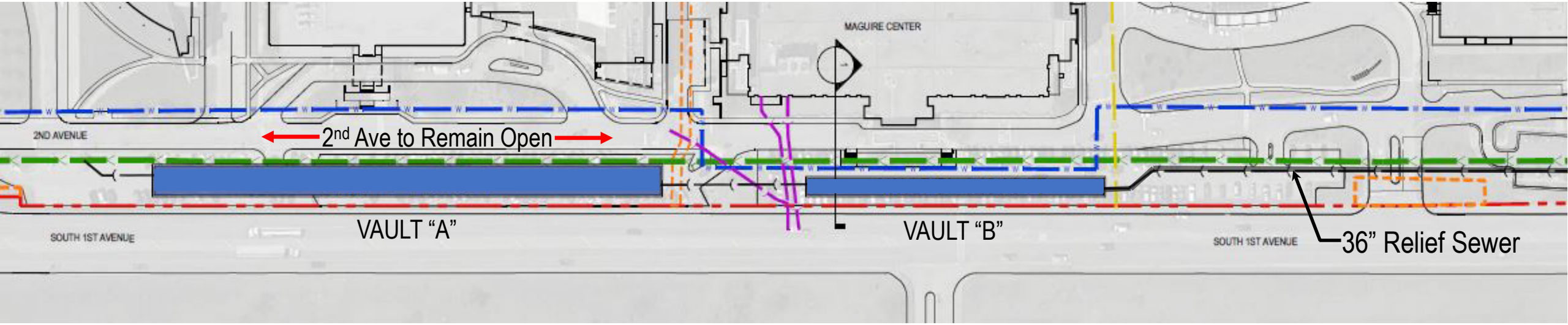


1 TYPICAL SECTION

HORIZONTAL 1:20, VERTICAL 1:10

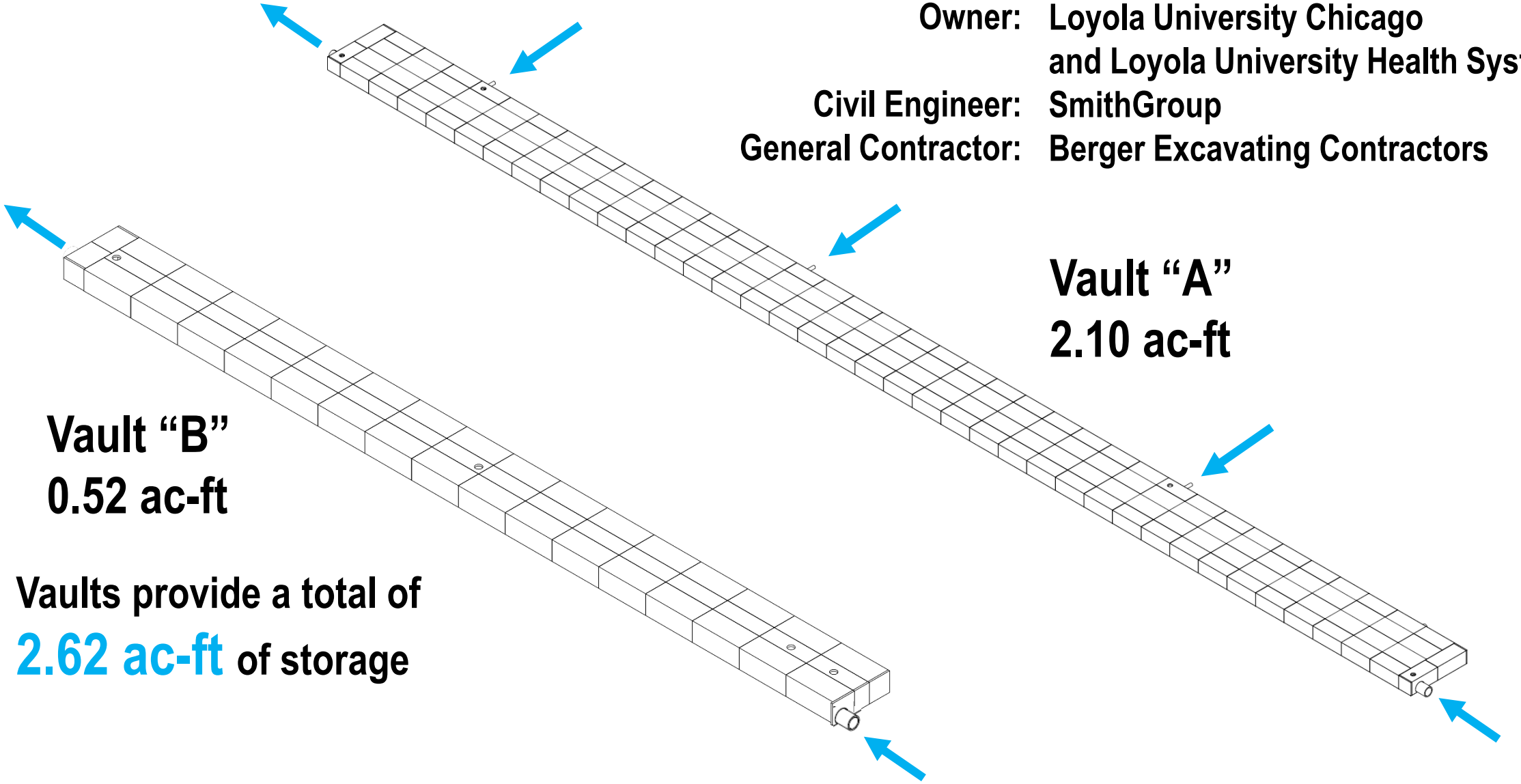
LEGEND

- UNDERGROUND STORMWATER VAULT
- PROPERTY LINE
- EXISTING EASEMENT
- EXISTING STORM SEWER TRUNK LINE
- W — EXISTING WATER MAIN
- EXISTING SANITARY SEWER
- G — EXISTING GAS MAIN
- PROPOSED STORM SEWER



Phase 1 Vaults

Owner: Loyola University Chicago and Loyola University Health System
Civil Engineer: SmithGroup
General Contractor: Berger Excavating Contractors



Vault "A"
2.10 ac-ft

Vault "B"
0.52 ac-ft

Vaults provide a total of
2.62 ac-ft of storage

Existing Parking Lots

View of South Parking Lot

Phase 1 Construction

Stakeholders

Loyola University Chicago

Loyola University Health System

Trinity Health

Endorsements

Six Cook County Commissioners

Members of Illinois General Assembly

Four Members of U.S. House of Representatives

Both U.S. Senators from Illinois

Collaborators

Cook County Bureau of Economic Development

Cook County Department of Homeland Security

Cook County Department of Transportation and Highways

Edward J. Hines VA Hospital

Forest Preserve District of Cook County

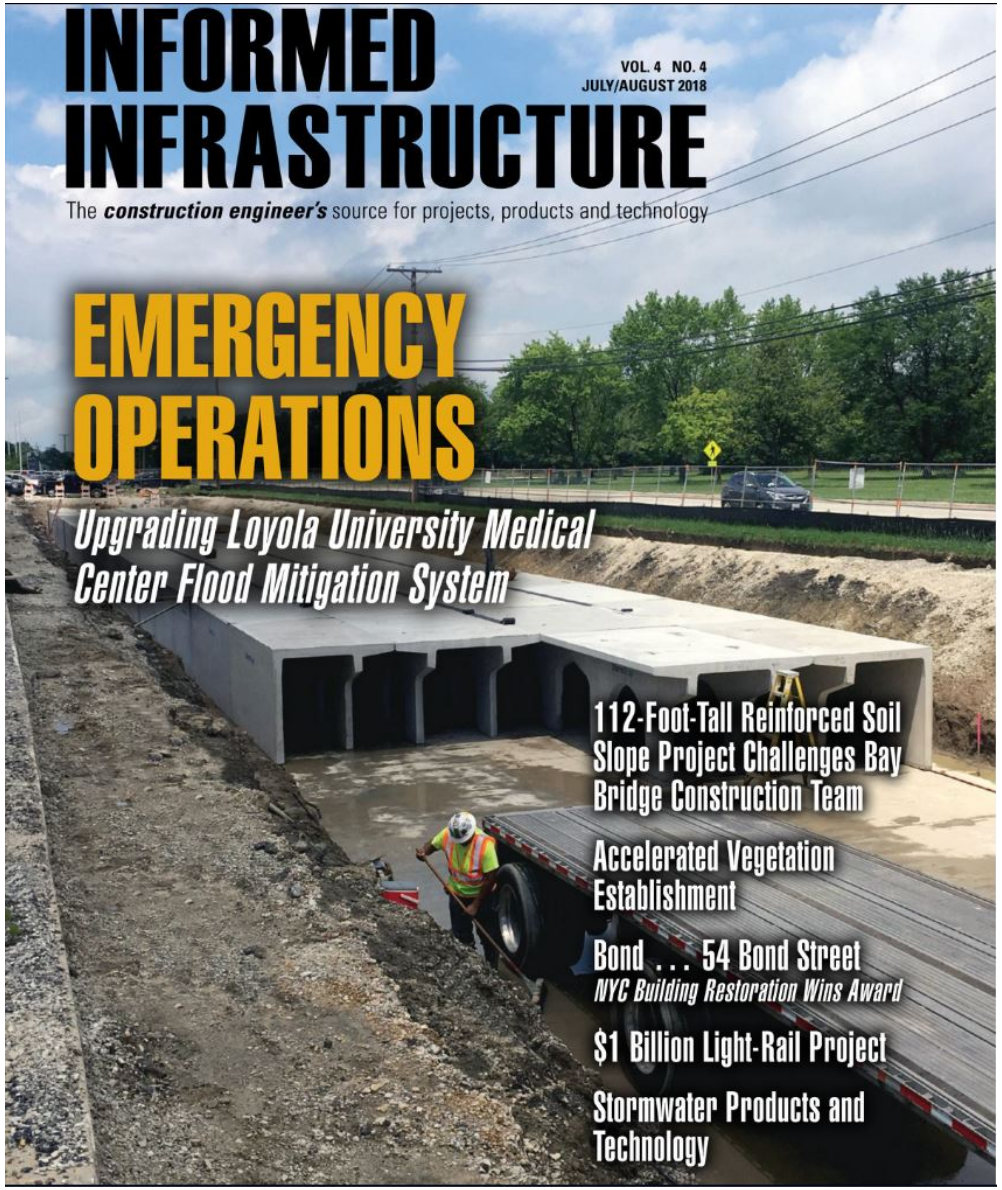
Illinois Department of Transportation

John H. Madden Mental Health Center

Metropolitan Water Reclamation District

Proviso Township

Village of Maywood



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bill.wood@smithgroup.com

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