



Public Information Meeting

East Strand Street Flooding Assessment

East Strand Street Improvements

Waterfront Parking Expansion Assessment



Presentation Agenda

- **East Strand Street Flooding Assessment**
- **East Strand Street Improvements**
- **Waterfront Parking Expansion Assessment**



Introduction

In 1992, the Local Waterfront Revitalization Program (LWRP) was approved, and a collaborative study called the "Waterfront Development Implementation Plan" was developed by the city.

The primary goal, as stated in the plan was:

"The Kingston Waterfront will be an attractive, active, walkable, culturally vibrant district with strong linkages to the rest of the City of Kingston..."

East Strand Street Flooding Assessment

GOALS OF THIS STUDY

- **Assess types of flooding at East Strand Street.**
- **Assess the effects of Sea Level Rise on flooding.**
- **Provide potential solutions to mitigate flooding.**

Additional Goal after Study was initiated:

- **Coordinate with Water Front Task Force**

Data Collection

Data was collected from the following sources:

- Mapping from the City of Kingston, Ulster County, and the relevant utility providers
- Flooding and rainfall records from the City of Kingston Wastewater Treatment Plant (WWTP) and surrounding weather stations
- Historic records from United States Geological Survey (USGS) and National Oceanic and Atmospheric Administration (NOAA) water level gauges
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Study data
- Topographic survey and field reconnaissance
- Mapping and Utility Information
- Field Assessment and Maintenance Requirements
- Field Survey
- Land Use Inventory

Data Collection

Elevations of Infrastructure at East Strand Street

Object Type	Location	Elevation (feet)
Catch Basin	In front of WWTP	2.9
Catch Basin	At Tompkins Street	3.7
Catch Basin	At Sycamore Street	3.9
Catch Basin	At Gill Street	5.9
Catch Basin	Between Sycamore and Gill Streets	3.1
Parking Area	Riverview Missionary Baptist Church	3.8 (approx)
Adjacent Road	At Railroad Crossing	4.8
Adjacent Road	Cornell Building / WWTP	5.5 (approx)
Adjacent Road	Steel House Restaurant	5.5 (approx)
Bulkhead Elevation	Average Range, East Strand Street	5.0-6.0 (approx)



Here is a view down The Strand, looking toward the Trolley Museum at about 2:30 pm on Tuesday, after the storm swept through the area. This is just an aftermath; the flooding was *much* more than this.

Data Collection

Elevations of Flood Prone Buildings on East Strand Street

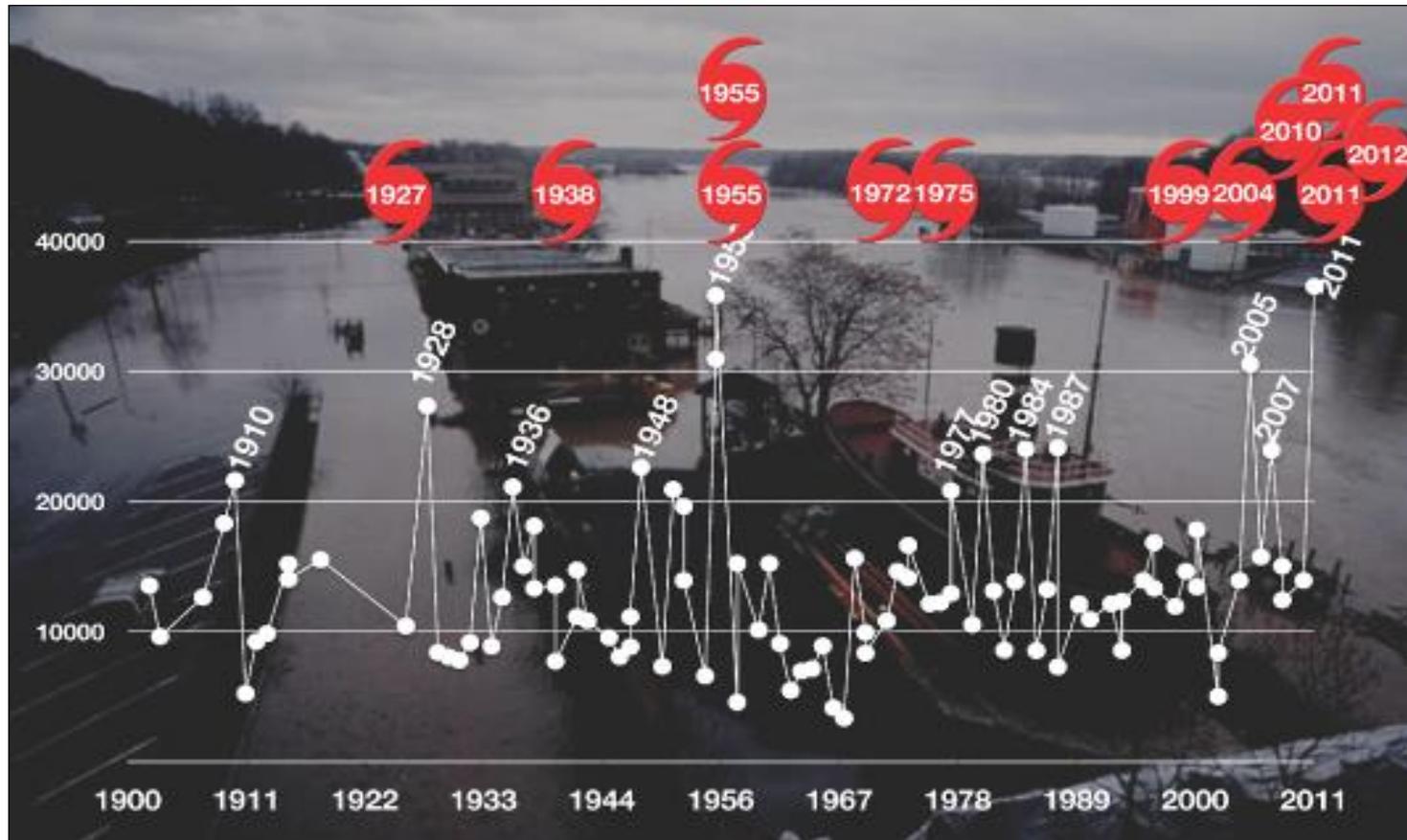
Current Building Use	Building Type	First Floor Elevation (feet)
City of Kingston WWTP	2-Story Brick	9.1 ¹
Trolley Museum	Timber	6.0 (approx) ²
Steel House Restaurant	Brick	6.1 ¹
Cornell Building	Brick	6.1 ¹
Garage	Metal	4.8 ¹
Garage	Brick	7.0 ¹
3-Story Building	Timber	4.6 ¹
New Central Baptist Church	Brick	5.3 ¹
Riverview Baptist Church	Timber	5.0 (approx) ²
Warehouse	Metal	5.4 ¹
Commercial Structure	Brick	9.9 ¹
Millens Recycling	Brick	15.9 ¹

Here is the watermark showing the overnight high-water level at the entrance to the Maritime Museum.



Watermark on the fence next to Rosita's Restaurant.

Historic Tropical Storms



Note:

Source: Scenic Hudson, 2012

Vertical axis represents discharge in cubic feet per second.

Horizontal axis represents year.

Recent Tropical Storms

Two recent tropical weather systems caused flooding at the East Strand waterfront.

- **August 28, 2011: Tropical Storm Irene**
 - Heavy rains, 6.7% ACE (15-yr) WSEL

- **October 30, 2012: Hurricane Sandy**
 - High winds and storm surge, 0.5% ACE (200-yr) WSEL.

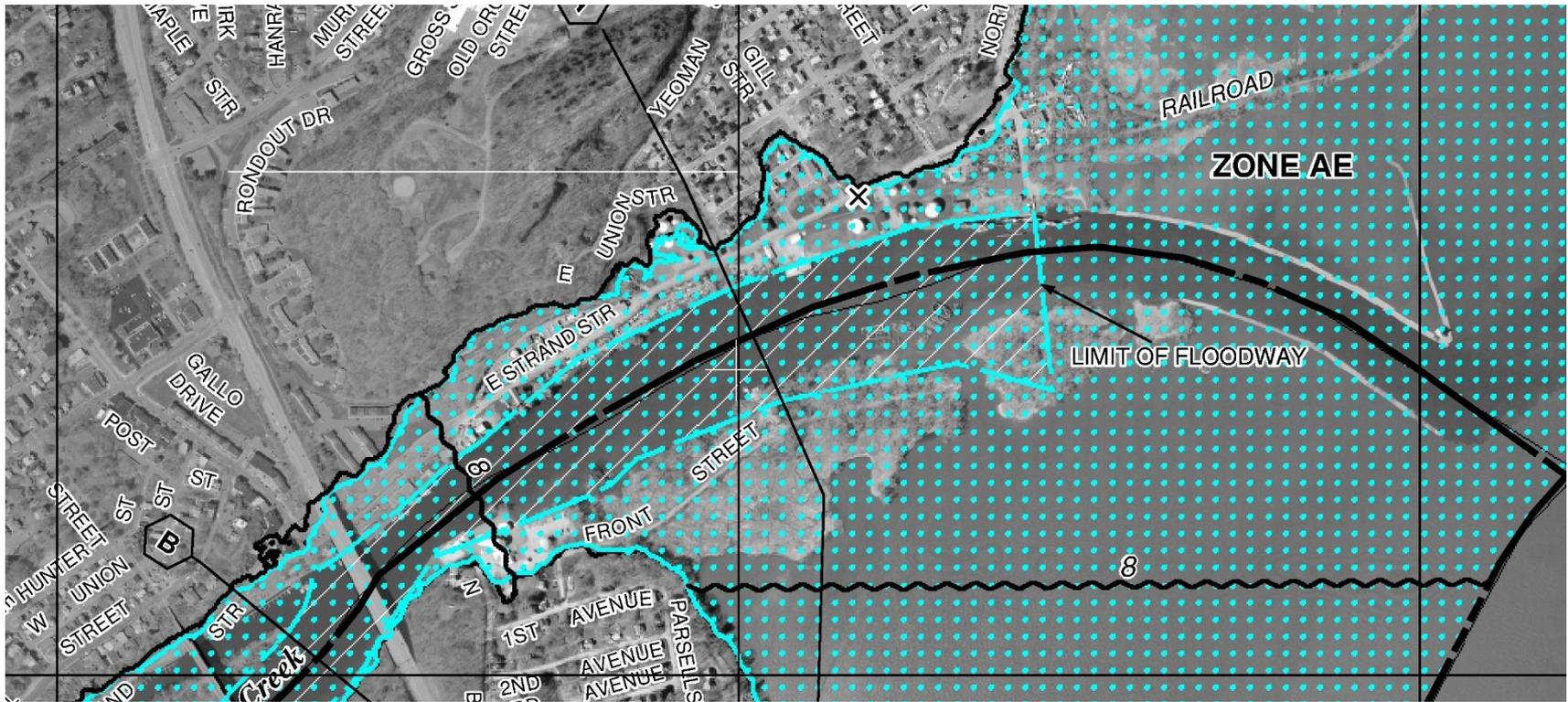
Recent Tropical Storms

Flooding Summary for Recent Tropical Weather Events

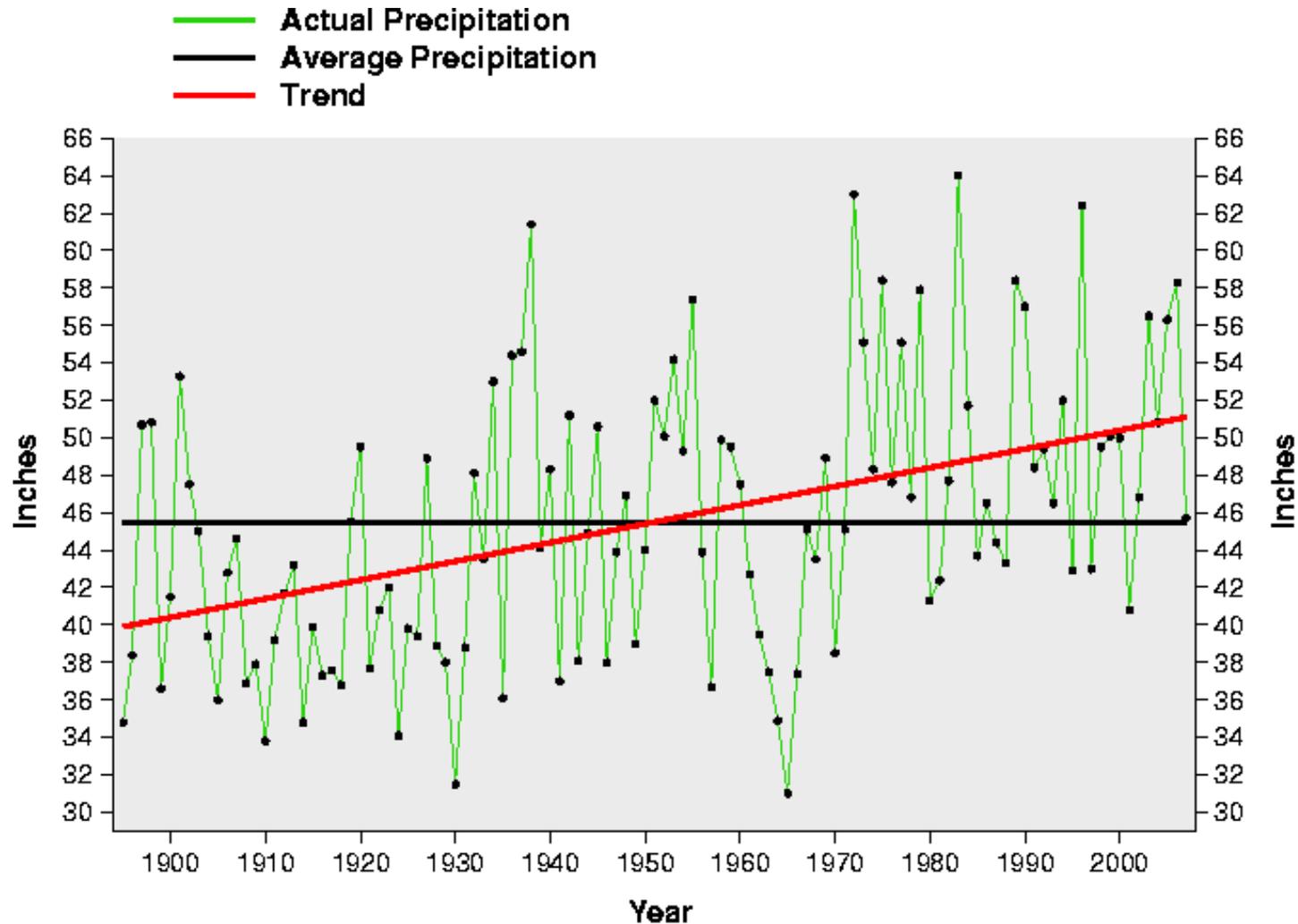
Storm Event	Date	24-hr Precip. Kingston (inches)	WSEL Hudson River, Poughkeepsie	Discharge Rondout Creek	Water Elevation East Strand, Kingston
Tropical Storm Irene	Aug. 28, 2011	6.5 (38-yr)	7.15 ft (45-yr)	36,500 cfs (110-yr)	6.2 ft (15-yr)
Hurricane Sandy	Oct. 30, 2012	0.1 (n/a)	8.73 ft (220-yr)	1,500 cfs (n/a)	9.3 ft (200-yr)



FEMA Flood Mapping



Regional Rainfall Statistics

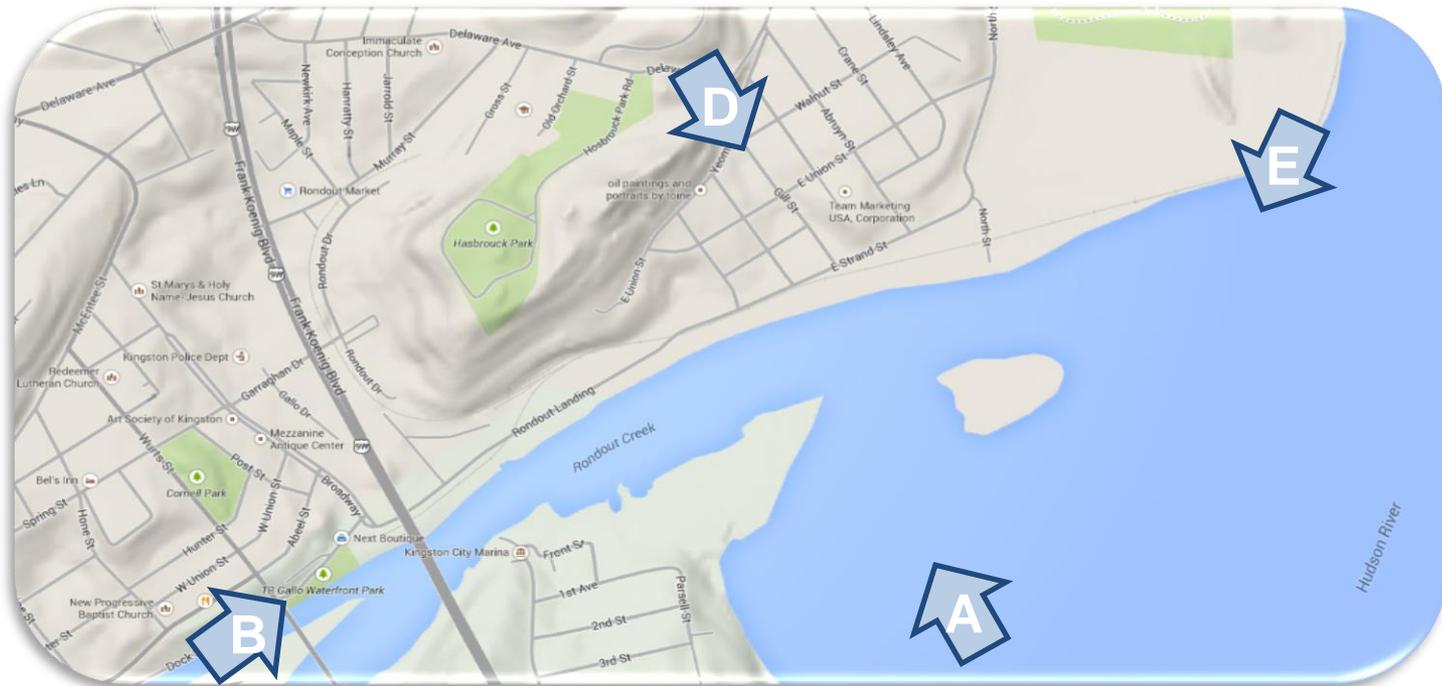


Source: NOAA, National Climatological Data Center

Analysis – Types of Flooding

Types of flooding at the Rondout Waterfront:

- A. Tidal influence in the Hudson from Long Island Sound
- B. Riverine flooding from peak flows in the Rondout Creek
- C. Riverine flooding from peak flows in the Hudson River
- D. Upland Stormwater runoff



Analysis – Magnitude of Flooding

The flooding can be characterized into two magnitudes:

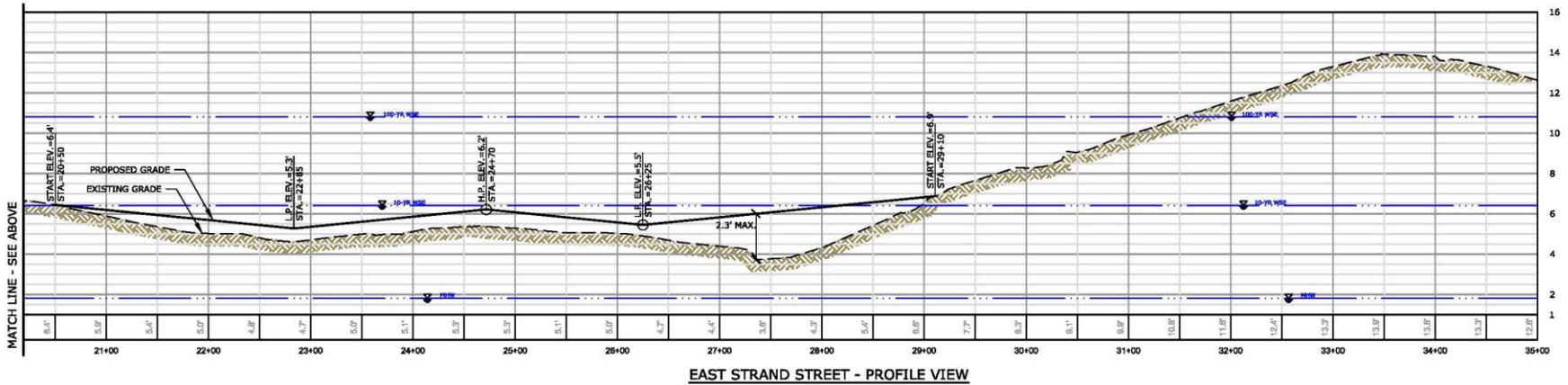
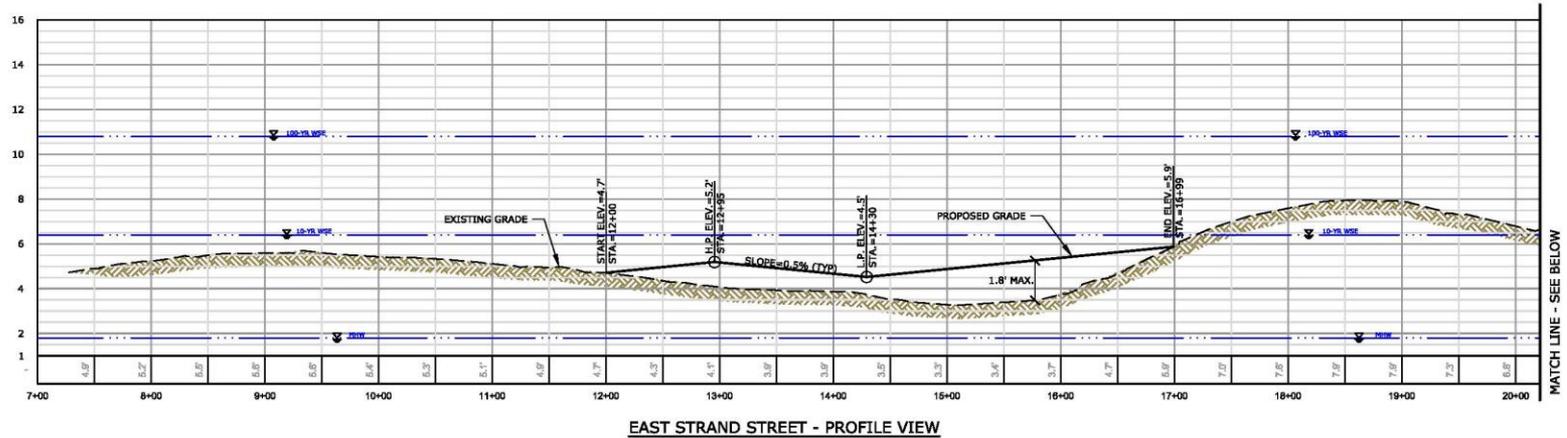
- **Frequent nuisance roadway flooding below elevation 6.0 feet.**
- **Severe flooding above elevation 6.0 feet, which is (FEMA 10% annual chance of recurrence).**

Analysis – Tidal Influence

- **The Hudson River is tidally influenced as far upstream as Albany; therefore, freshwater discharge analysis alone is not sufficient for determining flood stages.**
- **These tidal fluctuations have a significant impact on the water surface elevations in Kingston, especially at the low-lying regions near East Strand Street.**
- **To determine the extent of this impact, available tidal data was compiled, assessed, and compared with the adjacent ground elevations in East Strand Street.**

Analysis

ROADWAY ELEVATION



Analysis

SEA LEVEL RISE

- The task force first met on December 6, 2012 with the guidance of Scenic Hudson, the New York Department of Environmental Conservation (NYDEC) Hudson River Estuary Program, and the New York Department of State (NYDOS). They chose to assess the waterfront for the following SLR values

Kingston Tidal Waterfront Flooding Task Force – Selected SLR Values

SLR Scenario	2060 Predicted Increase in Sea Level (inches/feet)	2100 Predicted Increase in Sea Level (inches/feet)
SLR (Low Prediction)	20" (1.67')	33" (2.75')
SLR – Rapid Ice Melt (High Prediction)	36" (3.00')	68" (5.67')

Analysis – Stormwater Runoff

- Existing conditions hydraulic analysis was performed of the drainage systems found in the 3,000 linear feet of East Strand Street.
- Rational Method and Manning's Equation were the two most prominent algorithms used to determine the capacity of existing pipes.
- Existing systems found to be inadequate in inlet capacity, pipe capacity, and structural condition/maintenance.

Analysis

Summary of Potential Flood Mitigation Alternatives

Alternative	Tidal/ Riverine	Stormwater	Frequent Flood Events	Extreme Flood Events
Local Protective Measures	x		x	x
Drainage Improvements	x	x	x	
Roadway Elevation	x	x	x	
Shoreline Modification	x		x	
Flood Barriers and Levees	x		x	x

Note:

- Frequent flood events are less than the current 10% ACE frequency, or below elevation 6.0 feet.
- Extreme flood events are greater than the 10% ACE frequency, or higher than elevation 6.0 feet.

Analysis

LOCAL PROTECTIVE MEASURES

This class of individual flood protection measures can be applied to independent properties or areas to minimize the vulnerability of that property to flood hazards. These measures can include but are not limited to:

- **Filling and raising of individual properties**
- **Raising whole buildings or internal mechanicals**
- **Flood proofing buildings at grade**
- **Raising or flood proofing public utilities**
- **Backflow prevention on drains and sewers**

Analysis

DRAINAGE IMPROVEMENTS

Rebuild the existing drainage systems to ensure:

- **Proper inlet and pipe capacity**
- **Add tide gates at the discharge**
- **Disconnecting the uphill drainage systems from those that serve East Strand and allowing them to discharge separately**
- **Hydraulic modeling indicates the installation of a properly designed storm drainage system combined with the reconstruction of the roadway to a higher elevation (described next) may reduce or eliminate flooding up to a tidal elevation of 6.4 feet.**

SHORELINE MODIFICATION

- **Average elevation of the shoreline from the WWTP to the eastern end of East Strand Street ranges from elevation 5.0 to 6.0 ft.**
- **Localized areas that dip below elevation 5.0**
- **Ensuring that the waterfront and bulkheads maintain a minimum elevation of 6.4 feet.**
- **May involve fortifying areas along West Strand and out to Kingston Point Park as well.**
- **There may be lower-lying elevations behind a berm that would require the installation of a large area for detention, or a storm water pumping station to prevent storm water flooding when the tidal events become too high for drainage to discharge.**

Analysis

FLOOD BARRIER OR LEVEE

- Earthen levees and structural floodwalls of concrete, steel sheeting, or timber can form a barrier that separates rising waters in Rondout Creek from the East Strand waterfront.



Analysis

FLOOD BARRIER OR LEVEE

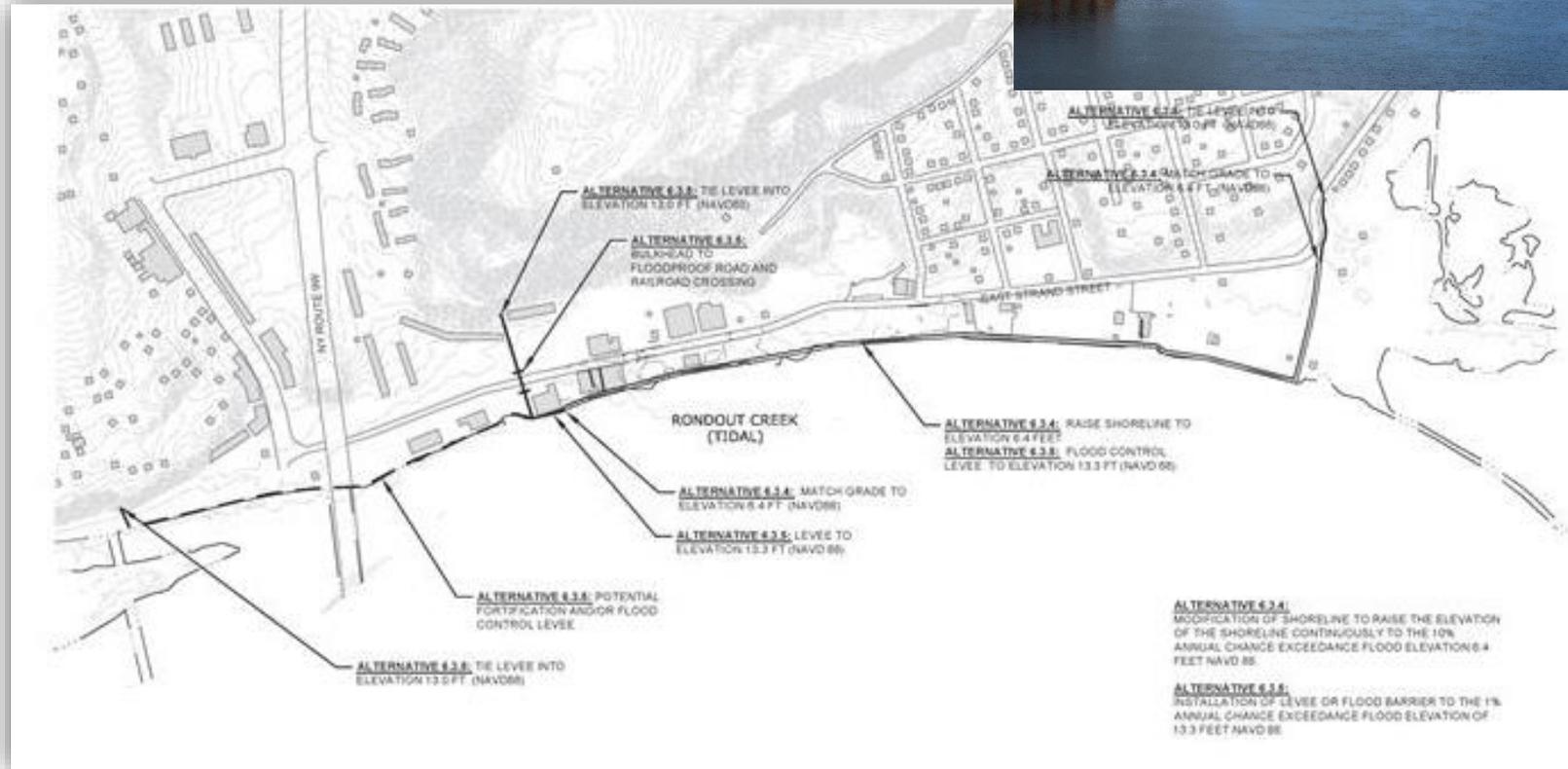
Issues to Consider:

- **Maintenance and FEMA Flood Insurance Certification.**
- **Space (A 10-foot high levee with a 12-foot wide crest and 2:1 side slopes would require a total of 52 feet wide.)**
- **Must connect to high ground**
- **Access to the waterfront**
- **Interior drainage**
- **Dangerous if overtopped**



Study Results

FLOOD BARRIER OR LEVEE



Study Results

NUISANCE FLOODING MITIGATION

- Fortification and proper conveyance of storm water can mitigate the effects of frequent floods at East Strand Street. The recommended approaches to addressing flooding below elevation 6.0 feet:
- **Alternative 6.3.2: Drainage Improvements**
 - Reconstruct the drainage systems and outfalls that drain East Strand and the uphill roadways in Ponckhockie;
 - Disconnecting the uphill drainage systems;
 - Installing backflow prevention devices at the drainage system outlets.
- **Alternative 6.3.3: Raise East Strand Street**
 - Above the influence of unusually high tidal cycles. This may involve raising the lowest points of the road by up to two feet.
- **Alternative 6.3.4: Shoreline Modification**
 - Modify development plans to include the filling of waterfront areas up to elevation 6.0 feet, ensuring that no low points below this elevation occur at the eastern or western ends of the roadway.

Study Results

SEVERE FLOODING MITIGATION

- Possible relocation of the East Strand roadway itself. Additionally, building codes and zoning regulations should account for the effects of sea level rise (SLR) and should prevent the permitting of water-intolerant development in flood prone areas.
- The recommended relocation and accommodation approaches to addressing flooding above elevation 6.0 feet are:
- Revise zoning regulations to control land use and development of the waterfront area, promoting water-dependent use and public open space creation.
- Relocate Waste Water Treatment Plant.
- Investigate relocation of East Strand Street to higher ground.
- Revise building codes to require flood-resilient development, accounting for SLR, of any newly constructed buildings or infrastructure in the East Strand waterfront district based upon their elevation and vulnerability to flooding.

East Strand Street Improvements



East Strand Street Improvements

Goals of Project

- **Expansion of Existing Streetscape and Waterfront Improvements**
- **Improve Pedestrian Friendly Linkages**
- **Cyclist Accommodations**
- **Coordinate with other projects**
 - **Flooding Assessment**
 - **Parking Expansion**
- **Streetscape improvements incorporating historical elements**
- **Accessibility Improvements**

Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



Existing Conditions



East Strand Street Improvements

Streetscape Improvements Options

- Option A
- Option B

Material Palettes

- Sidewalks
- Amenity Strips
- Curbing
- Crosswalks
- Accent Areas

Site Furnishing Palettes

- Lighting
- Wayfinding & Historical Signage
 - Benches
 - Trash Receptacles
 - Bike Racks

East Strand Streetscape – Option A

- **Maintain north side curbline**
- **Reduce roadway to 24' wide**
- **Install 5' sidewalks throughout project area whenever possible**
- **Install 3' paved amenity strip wherever sidewalks are adjacent to the road**
- **Install 4' sidewalk on south side of railroad tracks**
- **Maintain existing roadway improvements adjacent to railroad crossing**
- **Relocate 3 utility poles on south side of road**
- **Create unified landscape and site amenity treatments**

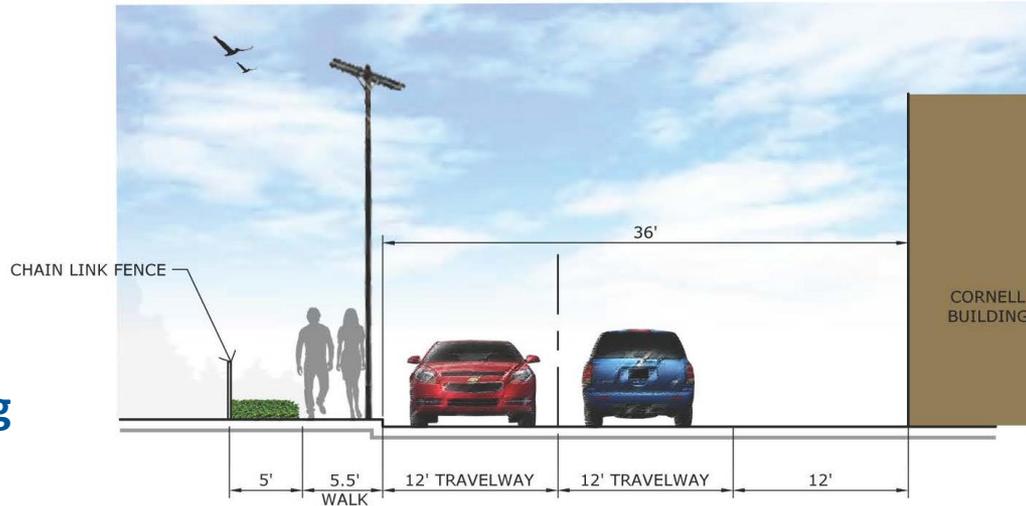
East Strand Streetscape – Option A



East Strand Streetscape – Option A

Looking East near Cornell Building

Existing



Proposed



East Strand Streetscape – Option A

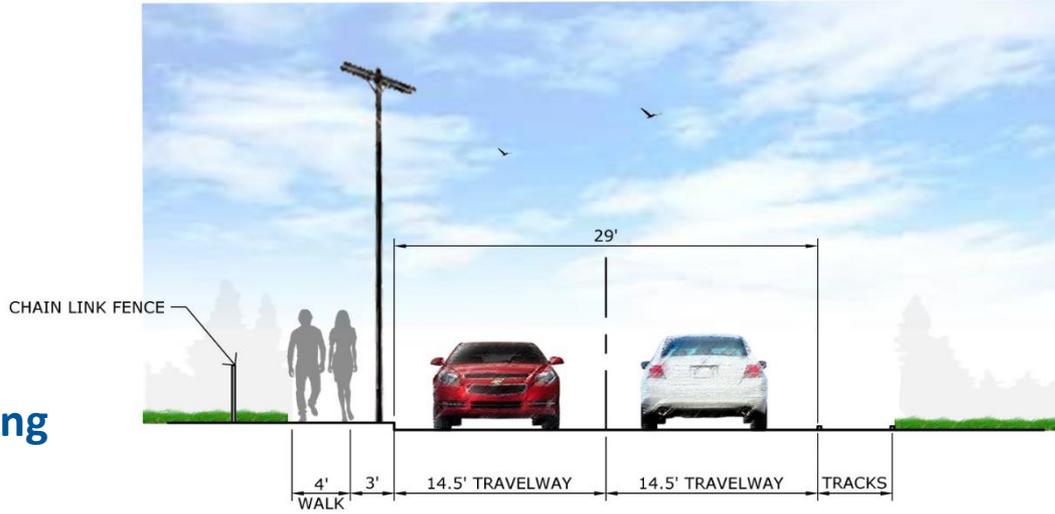


East Strand Streetscape – Option A

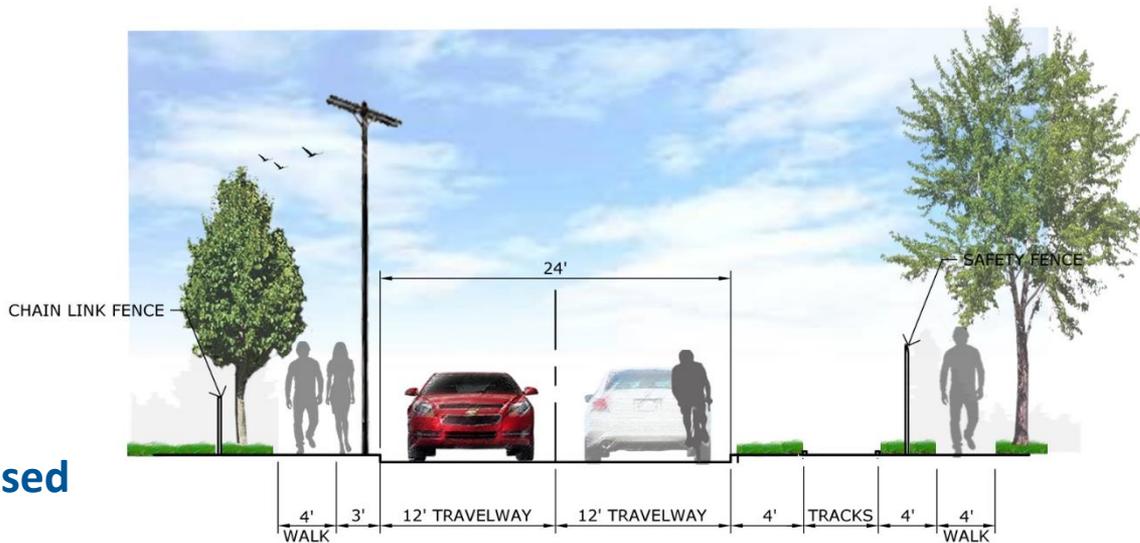
Looking East near Tompkins Street



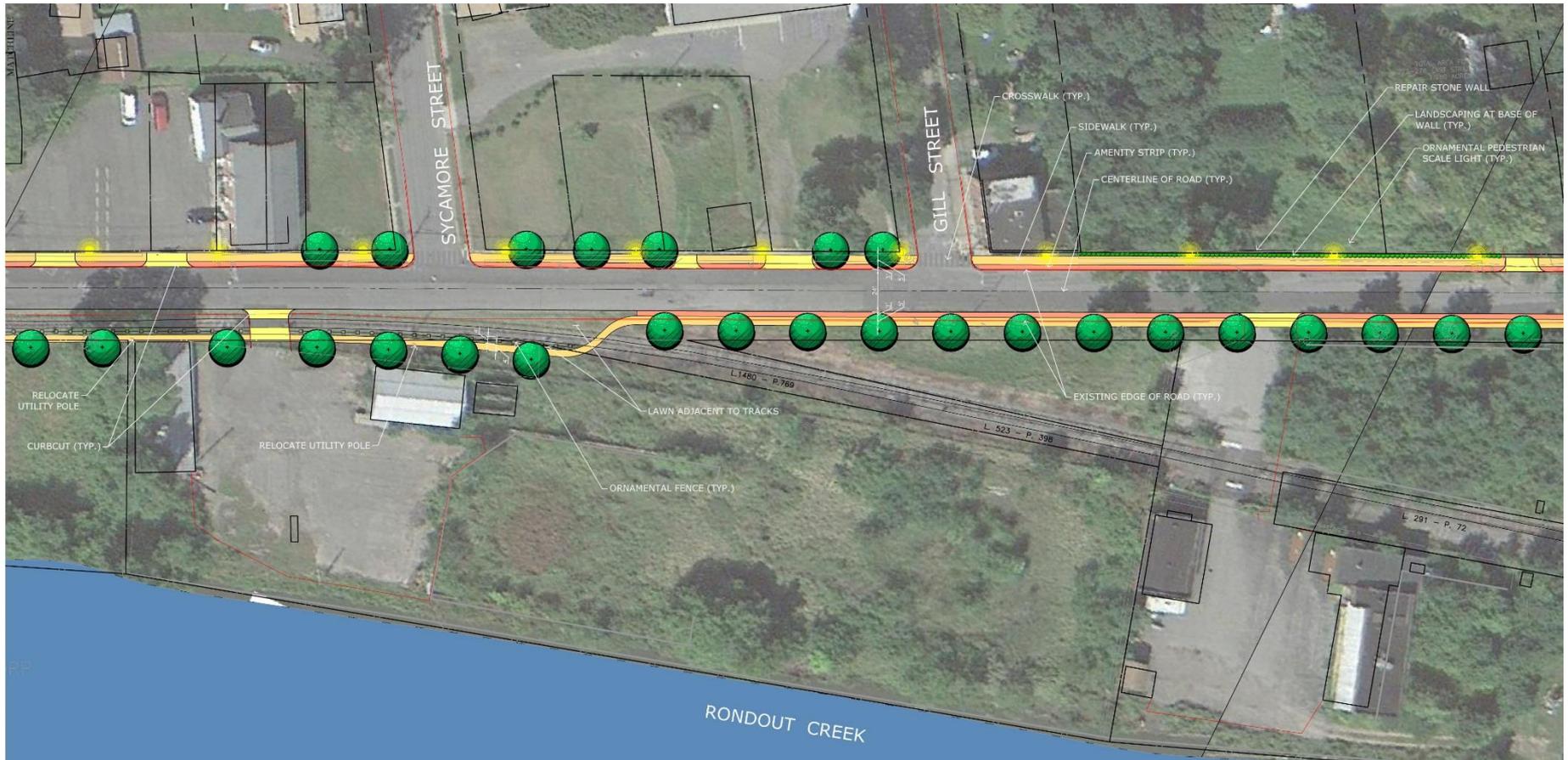
Existing



Proposed



East Strand Streetscape – Option A



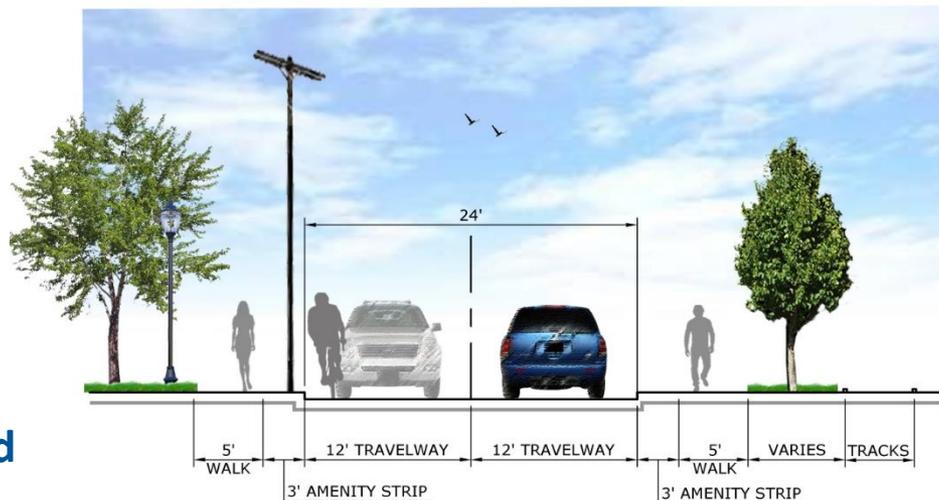
East Strand Streetscape – Option A

Looking East near Gill Street

Existing



Proposed



East Strand Streetscape – Option A



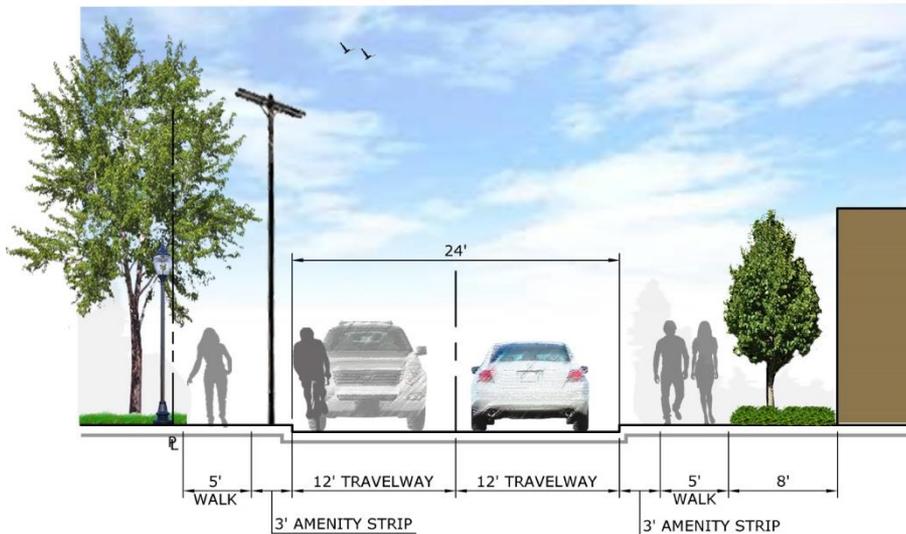
East Strand Streetscape – Option A

Looking East near Abruyn Street

Existing



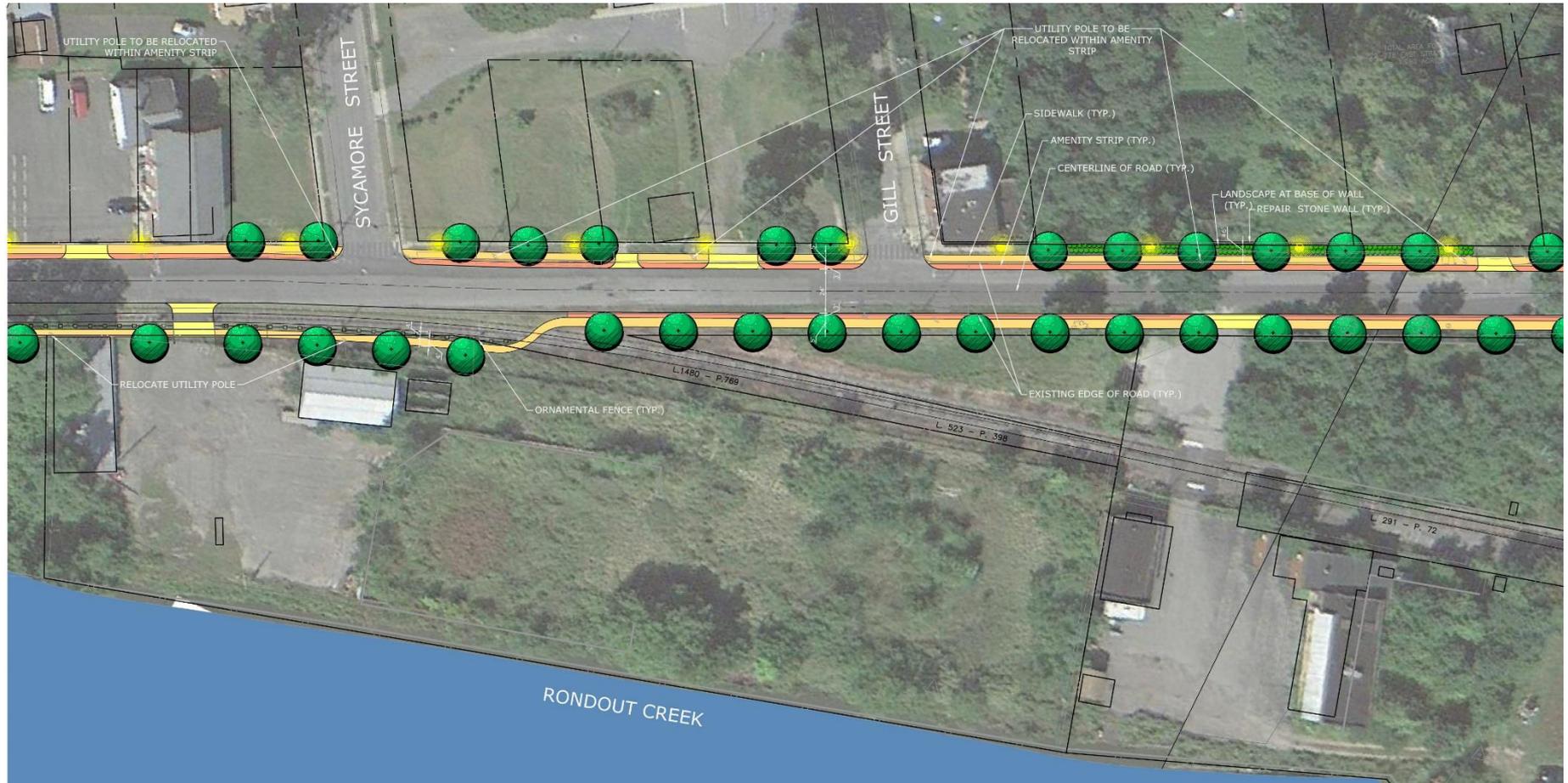
Proposed



East Strand Streetscape – Option B

- **Maintain north side of road curb line up until Sycamore Street (same as Option A)**
- **At Sycamore Street modify both sides of the road's curb line**
- **From Gill St. to Abruyn St. develop an enhanced sidewalk system**
- **Add additional street trees**
- **Relocate approximately 11 utility poles on north side of street**
- **Create unified landscape and site amenity treatments**

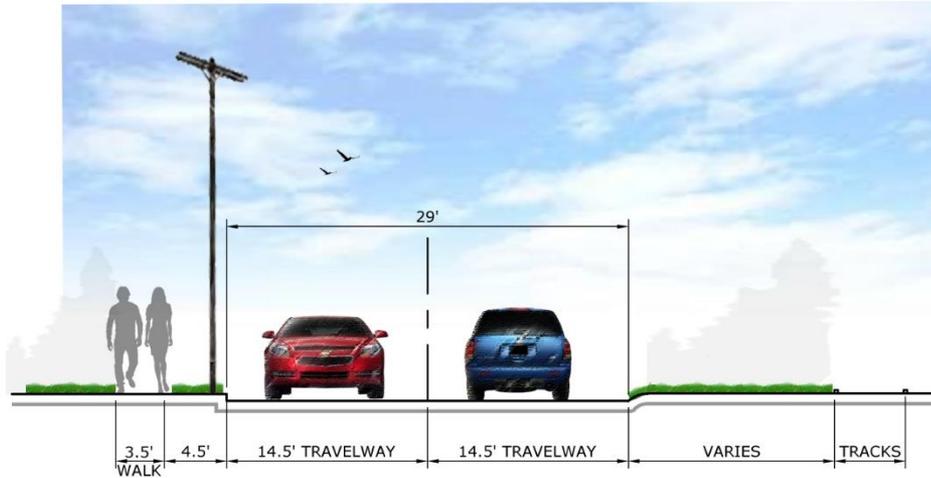
East Strand Streetscape – Option B



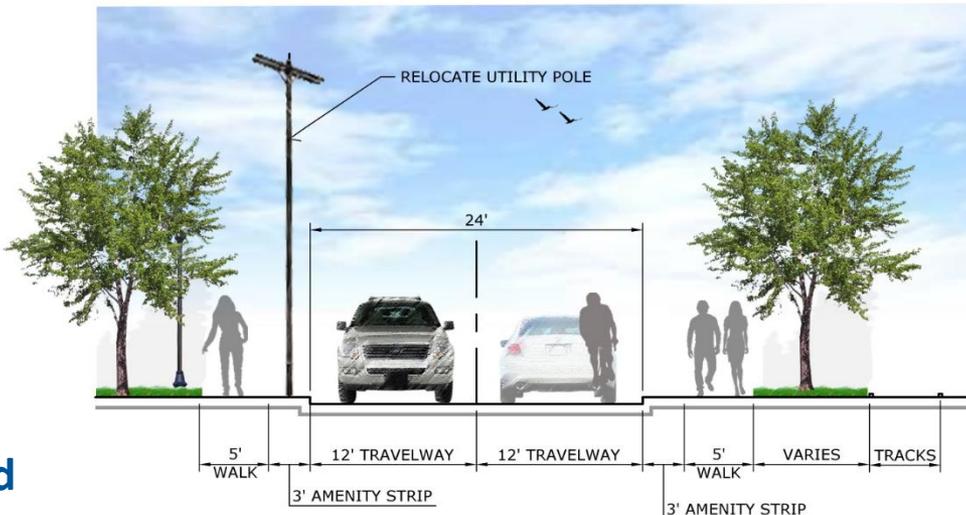
East Strand Streetscape – Option B

Looking East near Gill Street

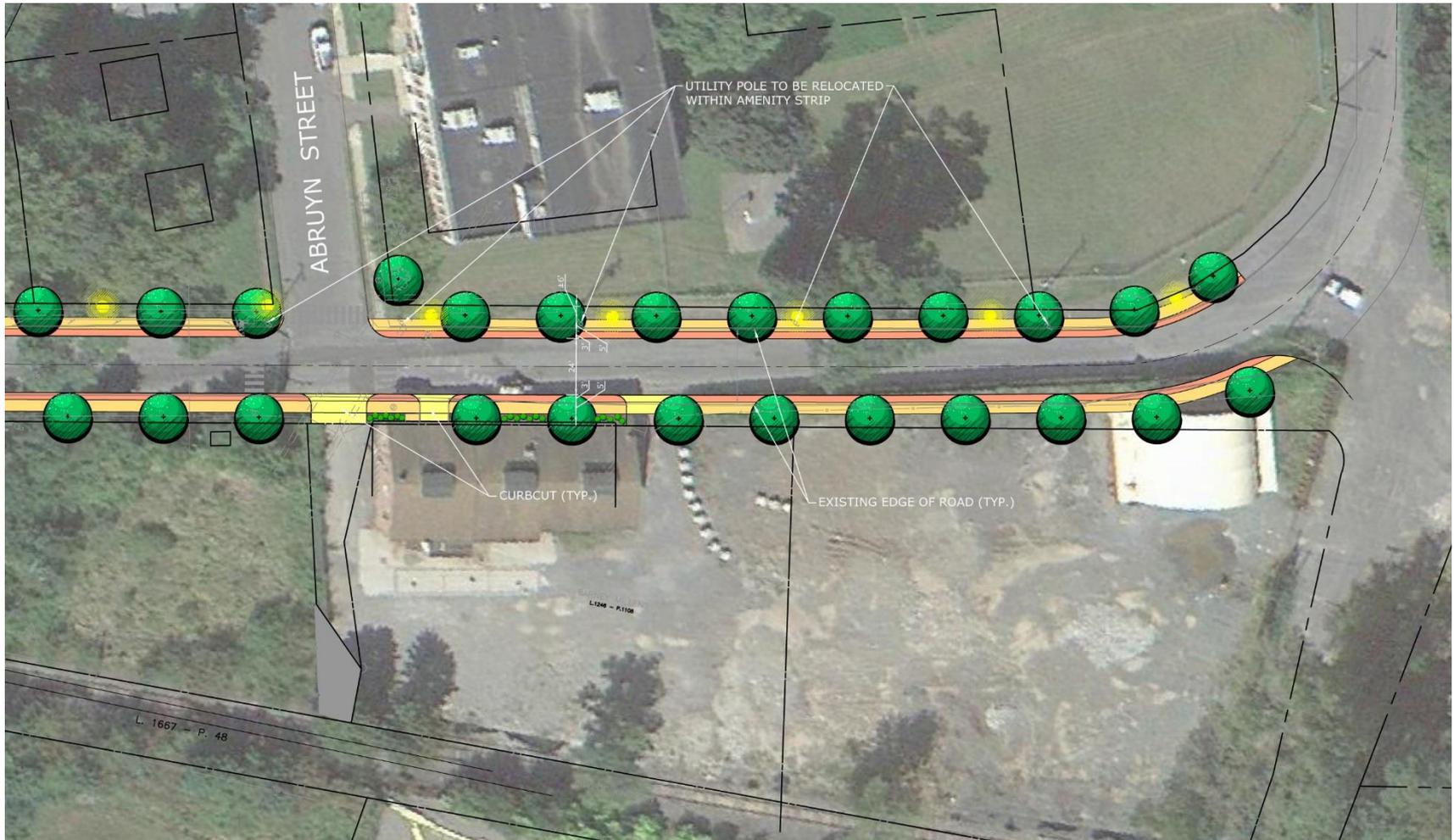
Existing



Proposed



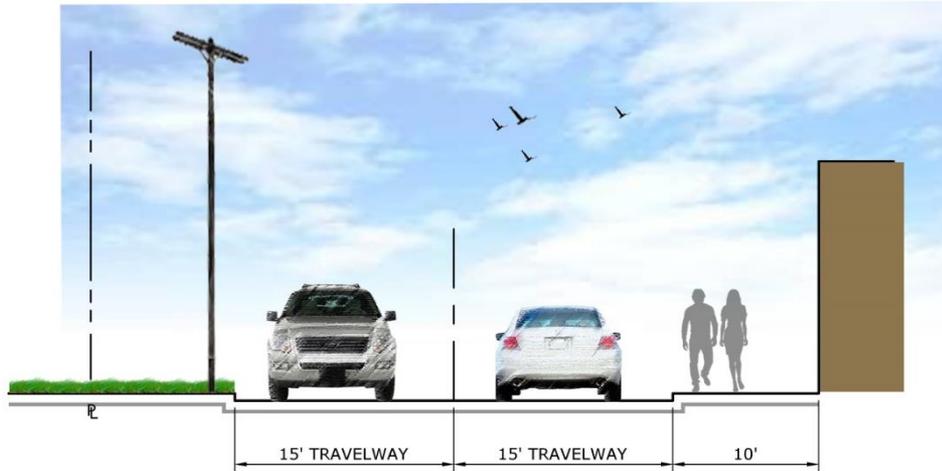
East Strand Streetscape – Option B



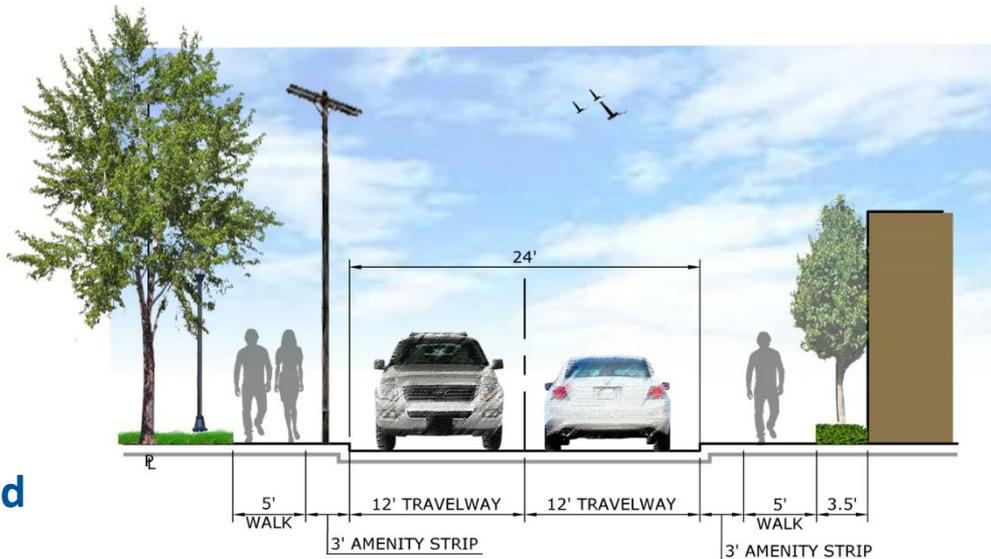
East Strand Streetscape – Option B

Looking East near Abruyn Street

Existing



Proposed



Streetscape Materials

- **Durable & Flood Resistant**
- **Ease of Maintenance**
- **Cost Effective**
- **Aesthetic**

Materials Palette – Paving & Curbing

Concrete & Concrete Pavers

Recommended for:

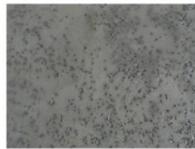
- Sidewalks
- Amenity Strips
- Crosswalks
- Accent Areas
- Intersection Treatments
- Curbing



WASHED/EXPOSED FINISH



WASHED/EXPOSED WITH
POLISHED FINISH



ROCK SALT FINISH



COLORED & STAMPED



COLORED



CONCRETE CURB & GUTTER



STANDARD PAVER



TUMBLED PAVER



PERMEABLE PAVER



Materials Palette – Paving

Brick

Recommended for:

- Sidewalks
- Amenity Strips
- Accent Areas
- Crosswalks



SQUARE EDGE PAVERS



TUMBLED PAVERS



BEVELED EDGE PAVERS



PERMEABLE PAVERS

Materials Palette – Paving & Curbing

Granite

Recommended for:

- Sidewalks
- Amenity Strips
- Accent Areas
- Crosswalks
- Curbing
- Walls
- Signage



CUT PAVERS



TUMBLED PAVERS



PAVER SETTS



SLABS AT DRIVEWAY APRON



CURBING

Materials Palette – Paving

Bluestone

Recommended for:

- Sidewalks
- Amenity Strips
- Accent Areas
- Walls
- Signage



NATURAL CLEFT - FULL
COLOR



THERMAL - BLUE SELECT



TUMBLED PAVERS - FULL
COLOR



Materials Palette – Paving

Quartzite

Recommended for:

- Sidewalks
- Amenity Strips
- Accent Areas



BLEECKER STREET PARK - NYC

Materials Palette – Paving

Imprinted Asphalt

Recommended for:

- Intersections
- Crosswalks
- Median



Materials Palette – Paving

Signature Treatments

Recommended for:

- Accent Areas
- Wayfinding
- Art
- Historic Marker
- Business Entrance



SPECIALTY PAVER



CONCRETE IMPRINTS



STONE ETCHING



RIVER STONE PAVING



STEEL SET IN COLORED
CONCRETE

Materials Palette – Site Furniture

Seating



Traditional



Modern



Transitional

Materials Palette – Site Furniture

Trash Receptacles

Traditional



Modern



As shown by One, Two, 143, 1554



Transitional



Materials Palette – Site Furniture

Bike Racks

Traditional



Modern



Transitional



Waterfront Parking Expansion Assessment



Site Locations



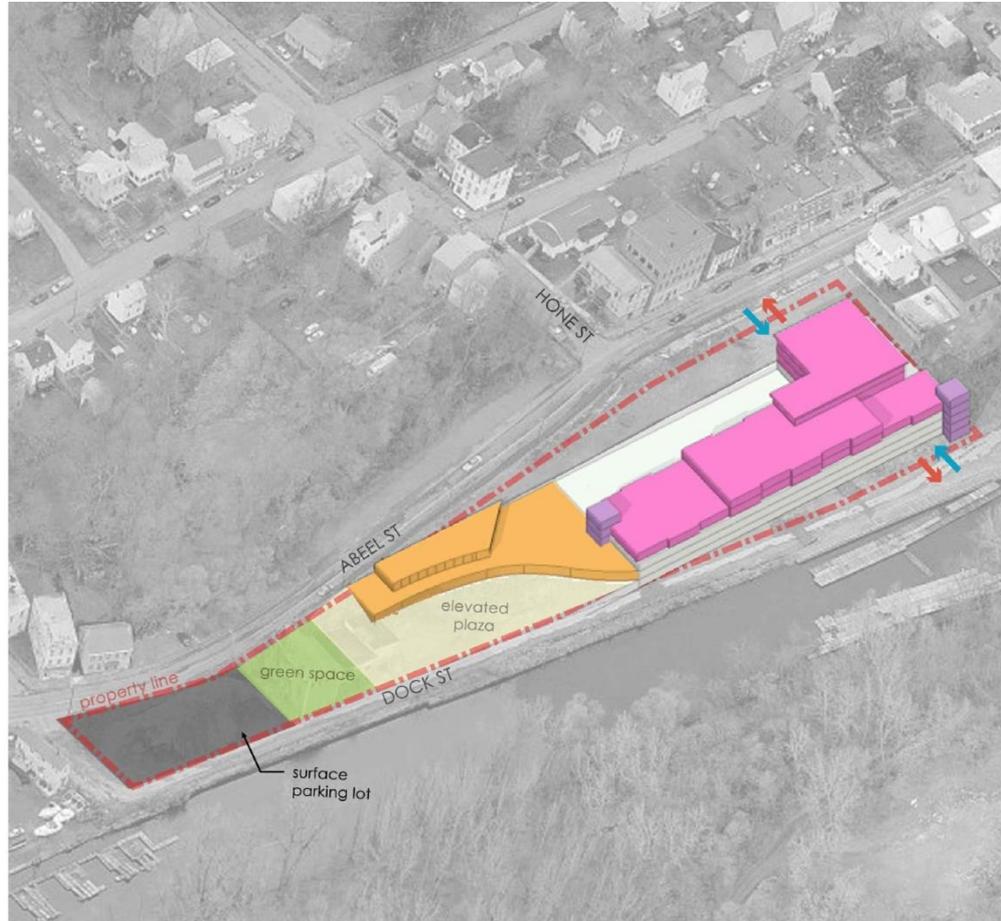
COURTHOUSE SITE

GARRAGHAN SITE

DOCK STREET SITE

MILLEN'S SCRAP SITE

Dock Street Site



 **MASSING DIAGRAM**
N.T.S.

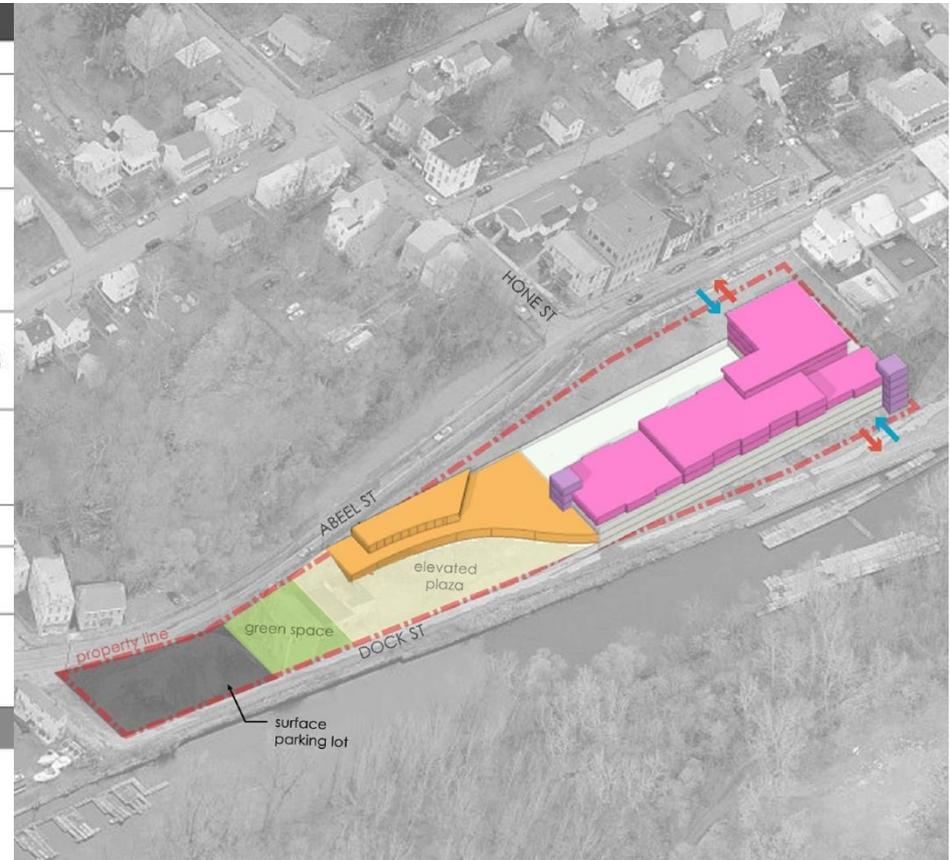
Dock Street Site

CONSIDERATIONS

	ADVANTAGES	CHALLENGES
1.	+ OPPORTUNITY FOR MIXED USE	- SITE PRIVATELY OWNED
2.	+ ALL ZONING REQUIREMENTS CAN BE MET	- EXCAVATION COSTS
3.	+ CLOSE PROXIMITY TO CURRENT WATERFRONT AMENITIES	- OPENNESS A CONCERN; GARAGE LIKELY TO NEED MECHANICAL VENTILATION AND SPRINKLER SYSTEM
4.	+ CURRENT INTEREST IN DEVELOPING SITE; COSTS MAY BE MITIGATED IN FINANCIAL PARTNERING	- ADDITIONAL GARAGE PARKING BEYOND HOTEL REQUIREMENT (180) IS ONLY 140
5.	+ PROPERTY OWNER HAS DESIRE TO MOVE FORWARD WITH DEVELOPMENT OF PROPERTY NEAR END OF 2013	- EARTH RETENTION
6.	-	- FLOODING
7.	-	- STRUCTURAL COORDINATION WITH ABOVE USE
8.	-	- CURRENT LITIGATION MAY IMPEDE FINANCIAL OR CONSTRUCTION PROGRESS
APPROXIMATE CAR COUNT		320 (3 TIERS)

SITE RECOMMENDATION

The dock street site is a suitable location for a parking structure in terms of proximity to the waterfront and zoning. Since there are currently plans to develop this site for a hotel, the two would pair well together if the parking structure is located at grade along dock street to elevate the hotel above flood levels. The downside to this site is that of the four in this study it will also most likely be the most costly to build on. Major cost additives to consider are excavation of rock, earth retention, structural coordination with above hotel, and potential for a mechanically ventilated and sprinklered garage.



Garraghan Site



 **MASSING DIAGRAM**
N.T.S.

Garraghan Site

CONSIDERATIONS

ADVANTAGES

CHALLENGES

- | | | |
|----|---|--|
| 1. | + EFFICIENT PARKING | - SITE PRIVATELY OWNED |
| 2. | + MIXED USE AND PUBLIC SPACES CAN BE WELL ACCOMMODATED | - HIGH VISUAL IMPACT FOR MOTORISTS TRAVELING ON HIGHWAY 9W |
| 3. | + INTEREST IN DEVELOPING SITE FOR PUBLIC USE (IE. AMPHITHEATER) | - EXISTING REAR PARKING FOR RESIDENTS WILL LIKELY NEED RELOCATION |
| 4. | + LOCATED AT CENTER OF REDEVELOPMENT DISTRICT | - GARAGE LOCATION UPHILL MAY MAKE WALK BACK TO GARAGE FROM THE WATERFRONT LESS DESIRABLE |
| 5. | + INCREASE IN FOOT TRAFFIC THROUGH BROADWAY RETAIL CORRIDOR | |

APPROXIMATE CAR COUNT

660 (110 PER 6 TIERS)

SITE RECOMMENDATION

The Garraghan site provides the most flexibility for optimizing parking as well as the potential for integrating a mixture of residential and retail with the parking structure - complimenting the surrounding context. The largest design challenge for the site is the connection between the existing residential buildings and the garage.



Millen's Scrap Site



 **MASSING DIAGRAM**
N.T.S.

Millen's Scrap Site

CONSIDERATIONS	
ADVANTAGES	CHALLENGES
1. + ANCHOR AT END OF WATERFRONT REDEVELOPMENT MAY SPUR MORE GROWTH	- SITE SUSCEPTIBLE TO MAJOR FLOODING
2. + POTENTIAL TO TIE INTO TROLLEY BY CREATING A WAITING PLATFORM	- ZONING RESTRICTIVE / NOT CONDUCTIVE FOR PARKING STRUCTURE; VARIANCES / REZONING REQUIRED
3. + UTILIZATION OF A RECLAIMED SITE	- SITE SHAPE CREATES A LONG CHAMFERED CORNER FOR THE GARAGE WHICH AFFECTS EFFICIENCY
4. + POTENTIAL FOR MIXED USE	- REMOTE SITE LOCATION CREATES UNATTRACTIVE LOCATION FOR CURRENT DOWNTOWN WATERFRONT PARKING NEEDS
5. -	- SITE PRIVATELY OWNED (OFFERED TO CITY, ACCEPTANCE PENDING BORING RESULTS)
6. -	- SUPERFUND COAL PROPERTY TO SOUTH
APPROXIMATE CAR COUNT	450 (150 PER 3 TIERS)

SITE RECOMMENDATION

Pending the boring results, this particular site may be an attractive alternative for a future mixed use project where parking is supplemental to the primary use. A two level parking structure at grade supporting mixed uses above would be recommended in order to lift the primary use above flood levels. Because this site is at the edge of the waterfront redevelopment plan, it serves as an anchor point. A trolley waiting platform at this location would help unify this site with the rest of the waterfront amenities.



Courthouse Site



 **MASSING DIAGRAM**
N.T.S.

Courthouse Site

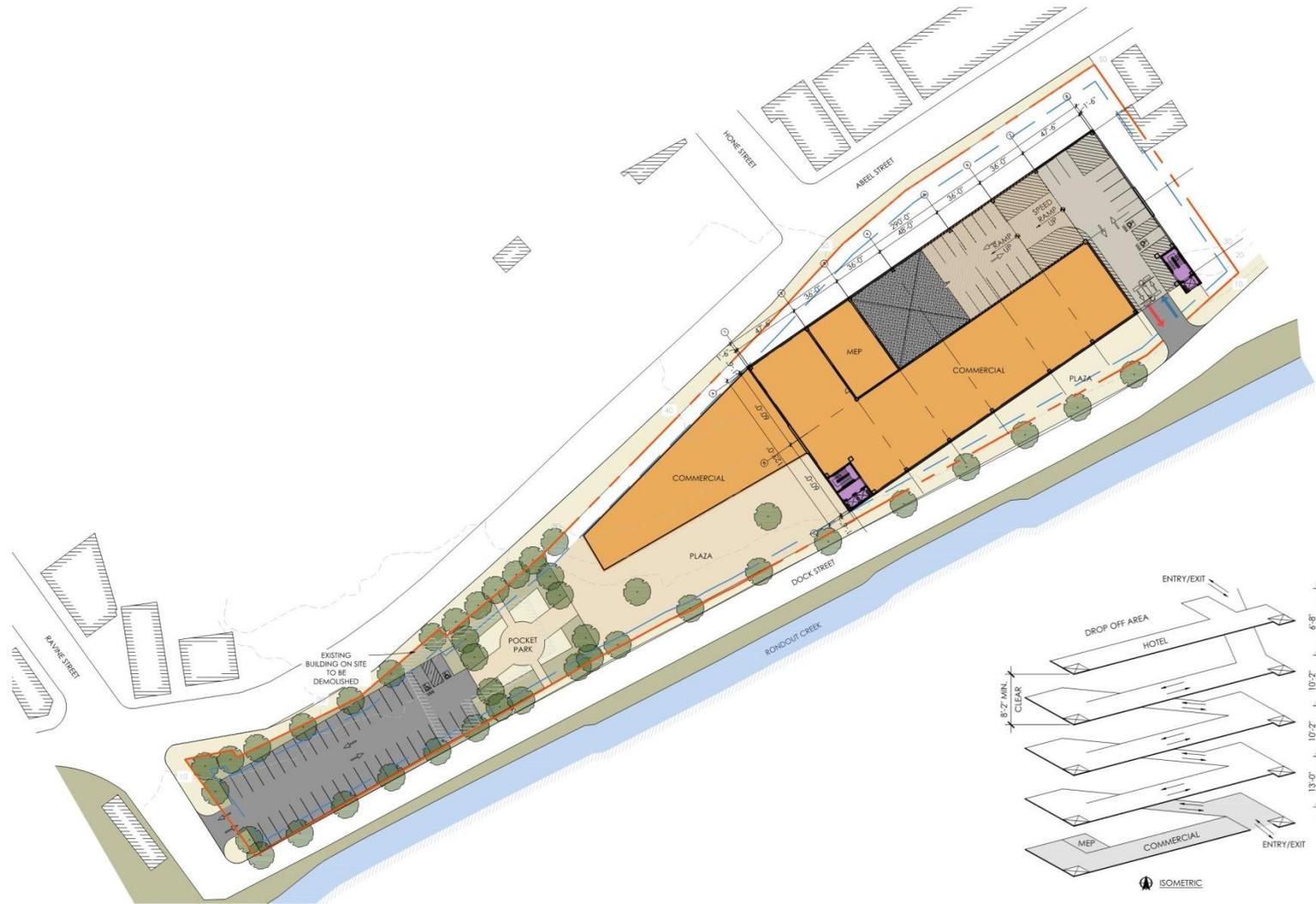
CONSIDERATIONS	
ADVANTAGES	CHALLENGES
1. + SITE OWNED BY CITY	- SITE LOCATION BEHIND COURTHOUSE IS DISCONNECTED FROM STREET AND WILL NEED TO BE CLEARLY SIGNED TO POINT OUT THE GARAGE AND DEFINE IT'S USE FOR THE PUBLIC
2. + NESTING GARAGE INTO SITE ALLOWS FLOOR LEVELS TO BE MAXIMIZED WHILE STILL MAINTAINING THE SCALE OF THE NEIGHBORHOOD	- RESTRICTIVE ZONING; VARIANCES / REZONING REQUIRED
3. + SITE NOT PERCEIVED AS A HIGH RISK FOR FLOODING	- COST OF EXCAVATION
4. -	- INCREASED PEDESTRIAN FOOT- TRAFFIC AT THE INTERSECTION OF BROADWAY AND GARRAGHAN DR A SAFETY CONCERN
5. -	- SITE NOT OPTIMAL FOR MIXED USE
6. -	- GARAGE VISUAL IMPACT FOR RESIDENTS TO NORTH A CONCERN
APPROXIMATE CAR COUNT	660 (110 PER 6 TIERS)

SITE RECOMMENDATION

The two most attractive components of the courthouse site are that it is owned by the city and can accommodate an efficient parking structure. It's siting behind the courthouse minimizes its visual impact which is positive for maintaining the scale of the existing context but negative in identifying a place to park. A parking structure in this location would fulfill the parking needs but would lack the character for creating useable public and mixed use spaces. In order for the project to maintain the essence of the waterfront redevelopment plan, these spaces should be integral.



Dock Street Site



Dock Street Site



CAR TABULATION				
TIER	STANDARD	ACCESSIBLE	VAN ACCESSIBLE	TOTAL
TOP	85	2	0	87
3RD	115	2	0	117
2ND	115	2	0	117
GROUND	22	0	2	24
TOTAL	337	6	2	345

TYPICAL STALL: 8'-6" x 18'-0" @ 90 DEGREES

312 SF PER SPACE

40 ADDITIONAL SPACES PROVIDED ON SURFACE LOT TO S.W.

15 ADDITIONAL SPACES PROVIDED IN FRONT OF HOTEL LOBBY

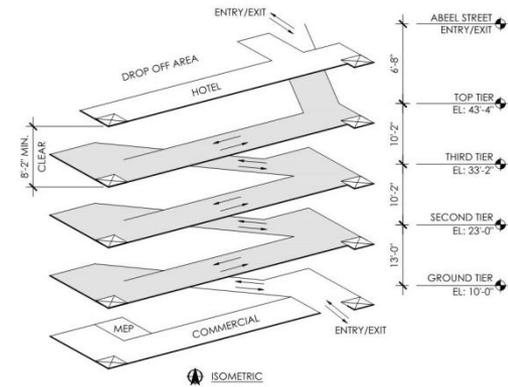
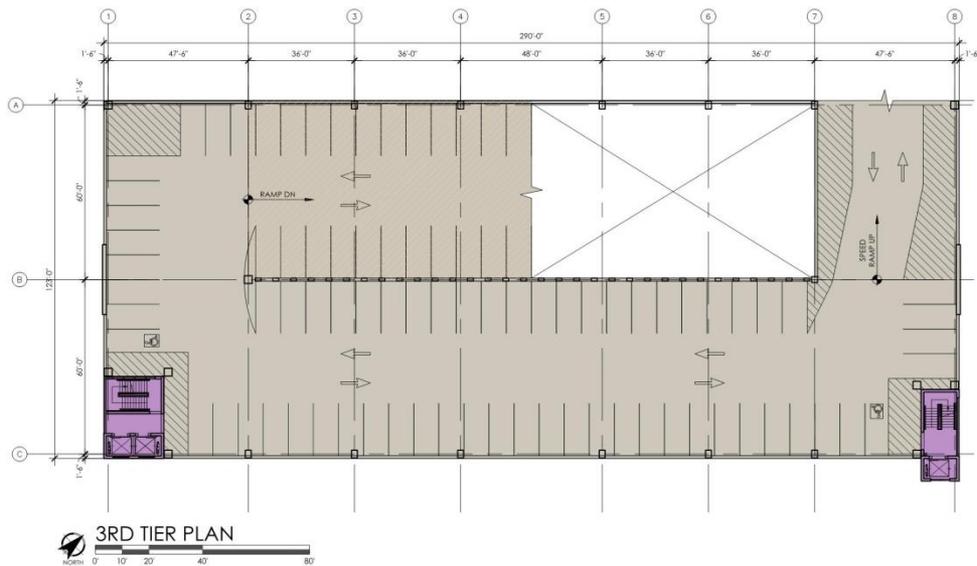
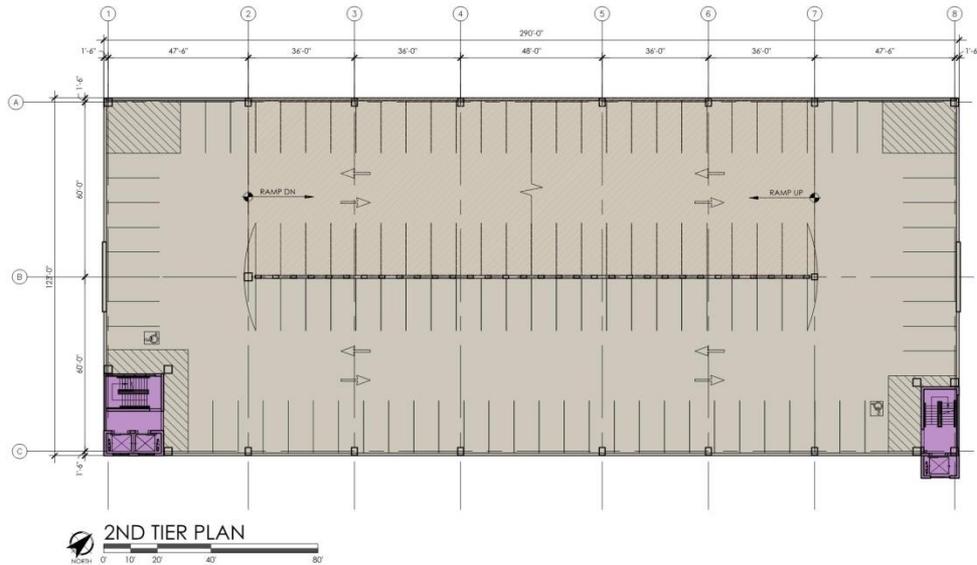
BUILDING AREA TAB			
TIER	PARKING	COMMERCIAL	TOTAL
TOP	29,900 SF	0 SF	29,900 SF
3RD	35,800 SF	0 SF	35,800 SF
2ND	35,800 SF	0 SF	35,800 SF
GROUND	12,000 SF	18,000 SF	30,000 SF
TOTAL	113,500 SF	18,000 SF	131,500 SF

COMMERCIAL:

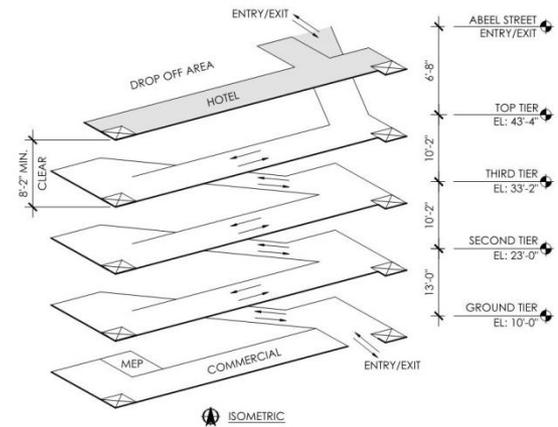
SF IN TABULATION REFERS TO AREA ON THE GROUND TIER UNDER THE GARAGE

SF OUTSIDE OF GARAGE TOTALS +/- 8,300 SF

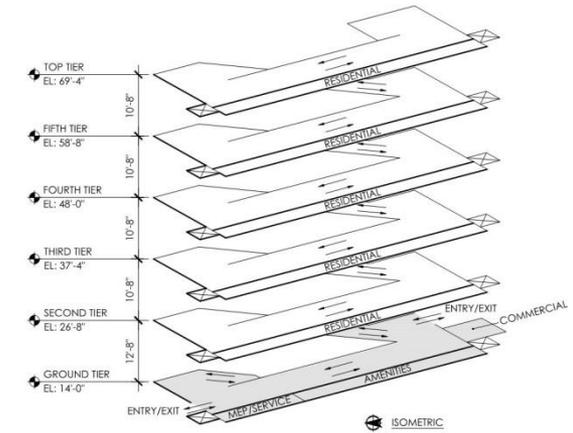
Dock Street Site



Dock Street Site



Garraghan Site



Garraghan Site



CAR TABULATION				
TIER	STANDARD	ACCESSIBLE	VAN ACCESSIBLE	TOTAL
TOP	112	2	0	114
5TH	131	2	0	133
4TH	131	2	0	133
3RD	131	2	0	133
2ND	131	2	0	133
GROUND	95	2	3	100
TOTAL	731	12	3	746

TYPICAL STALL: 8'-6" x 18'-0" @ 90 DEGREES

RELOCATED SURFACE PARKING: +/- 80 SPACES

304 SF PER SPACE

BUILDING AREA TAB					
TIER	PARKING	RESIDENTIAL	COMMERCIAL	AMENITIES	TOTAL
TOP	35,500 SF	11,500 SF	0 SF	0 SF	47,000 SF
5TH	39,800 SF	11,500 SF	0 SF	0 SF	51,300 SF
4TH	39,800 SF	11,500 SF	0 SF	0 SF	51,300 SF
3RD	39,800 SF	11,500 SF	0 SF	0 SF	51,300 SF
2ND	39,800 SF	11,500 SF	0 SF	0 SF	51,300 SF
GROUND	36,100 SF	0 SF	3,200 SF	11,500 SF	50,800 SF
TOTAL	230,800 SF	57,500 SF	3,200 SF	11,500 SF	303,000 SF

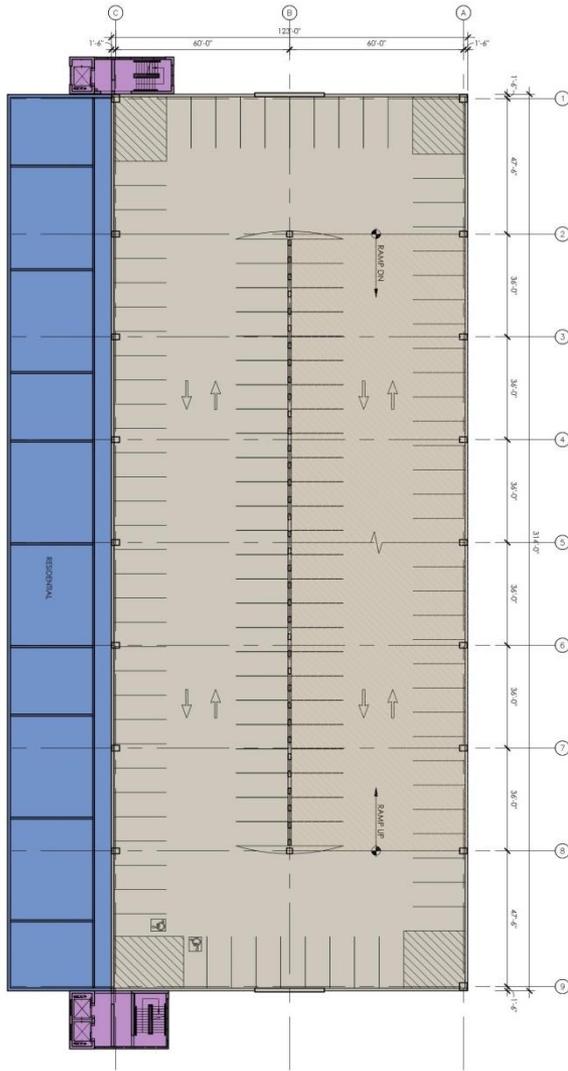
RESIDENTIAL:

(4) 1-BED UNITS (24'-0" X 30'-0") PER LEVEL; (20) UNITS

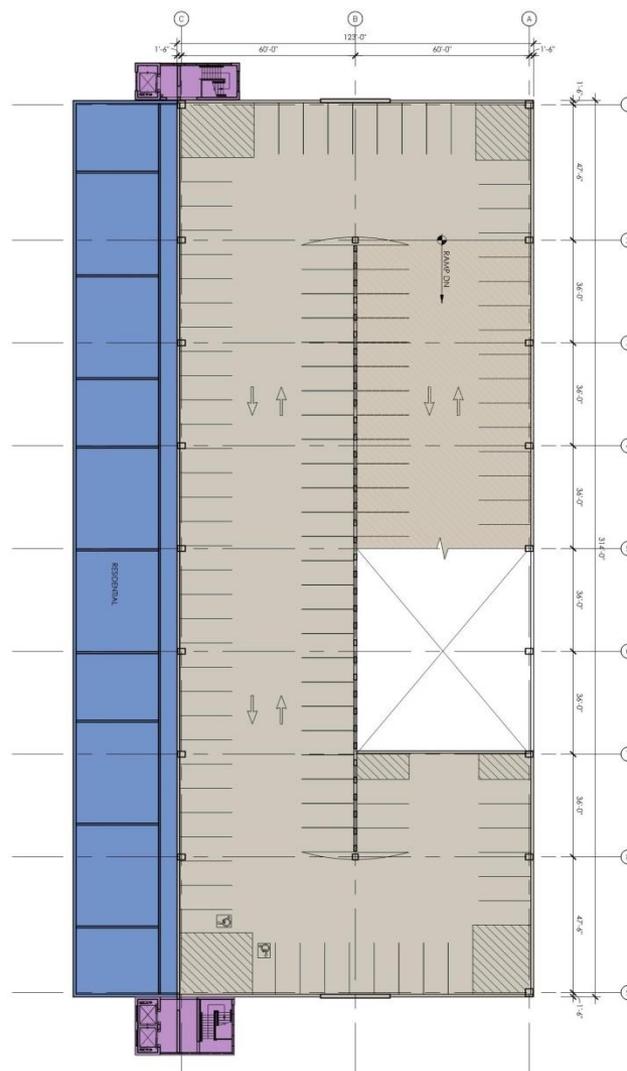
(6) 2-BED UNITS (36'-0" X 30'-0") PER LEVEL; (30) UNITS

(50) UNITS

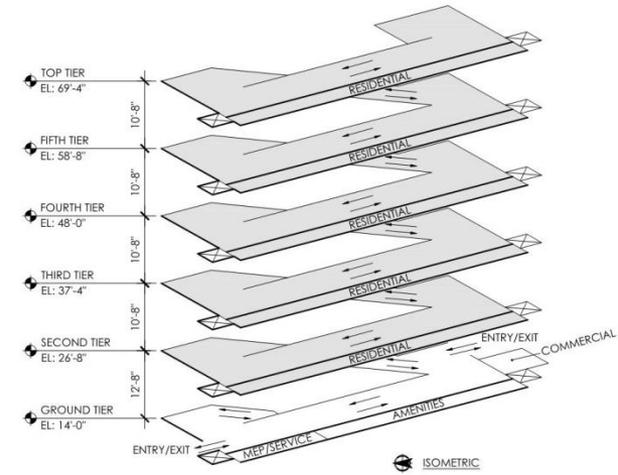
Garraghan Site



TYPICAL TIER PLAN



TOP TIER PLAN



Questions & Comments

