



216 River Street
Haverhill, MA

**Riverbank Stabilization Project, 216 River Street,
Haverhill, Massachusetts**

PRESENTED TO CITY OF HAVERHILL CONSERVATION COMMISSION

Geosyntec
consultants

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November 18, 2021



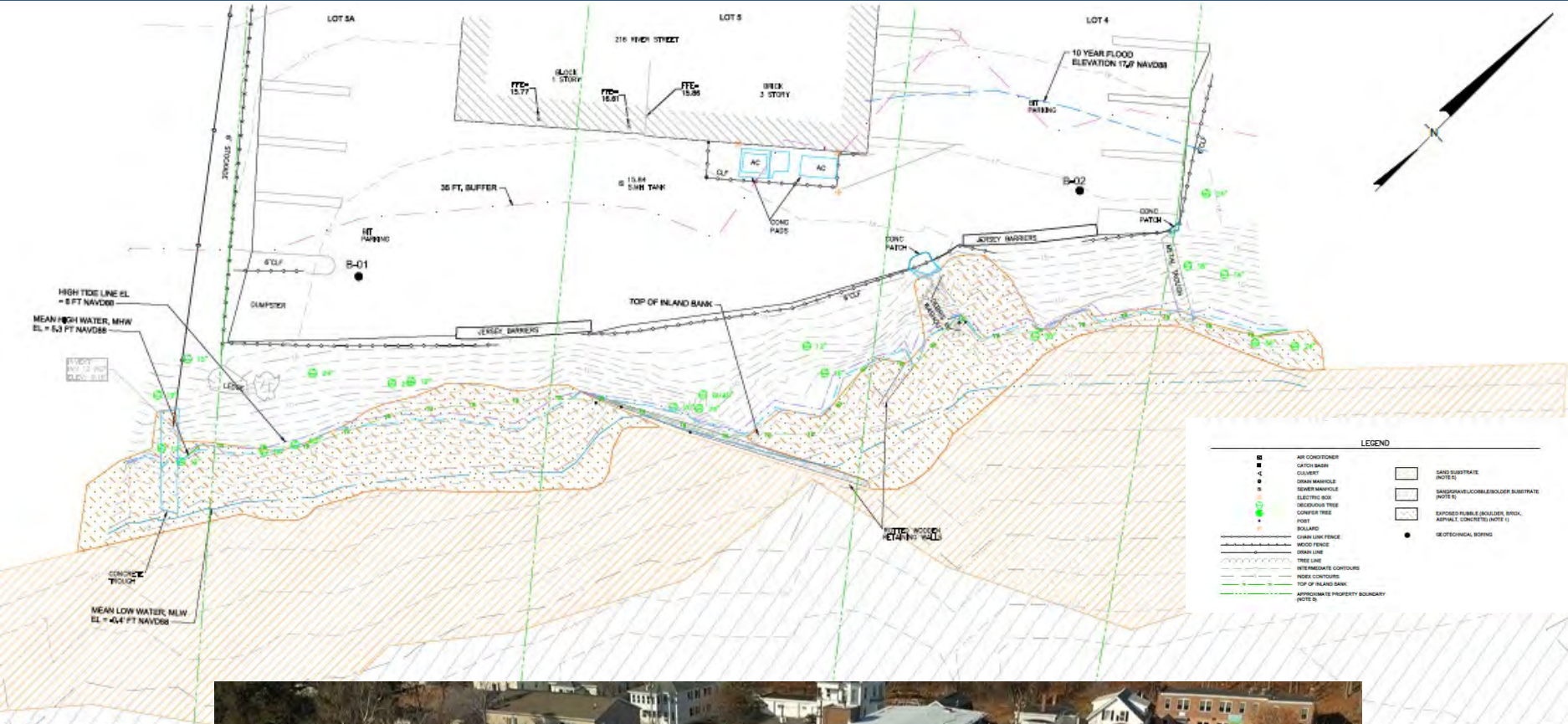
PROJECT PURPOSE

- Primary purpose of this project is to mitigate current erosion and to stabilize an eroded section of the north bank of the Merrimack River at the Site.
- The bank is severely eroded due to scour likely caused by ice and high flows during storm conditions and exacerbated by recent barge traffic associated with the Comeau Bridge construction project.
- The bank at 216 includes a wood structure similar to a bulkhead that has become undermined and has degraded (shown below).



- Wetland resources were delineated by Rimmer Environmental Consulting (REC) on July 21, 2020
- A topographic survey and bathymetric survey of the Site was performed in August 2020
- The project area is entirely within Bordering Land Subject to Flooding (310 CMR 10.57(2)(a)) based on FEMA Flood Insurance Rate Map (FIRM) for Essex County, Massachusetts (Map number 25009C0089G, revised July 19, 2018)
- Portions of the Site lie within mapped Priority Habitat and Estimated Habitat of Rare Wetlands Wildlife, as determined by reference to mapping by the Mass. Division of Fisheries and Wildlife – Natural Heritage and Endangered Species Program (NHESP)
- On June 18 and 22, 2020, SWCA conducted thalweg and substrate surveys of the section of the River associated with the bank restoration at the Site to identify critical habitat in the River
- Two geotechnical borings were performed on July 21 and July 22, 2020

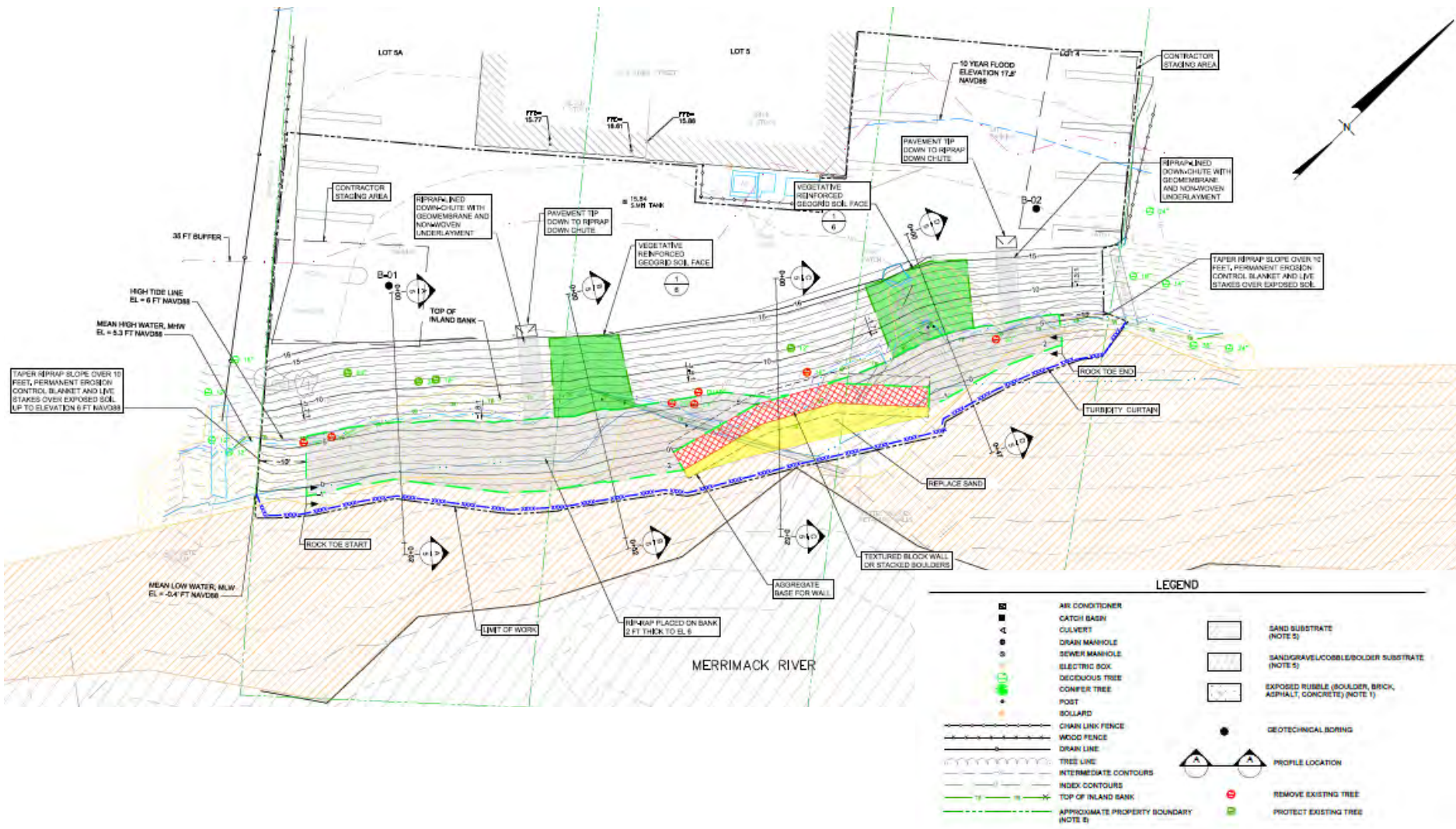
EXISTING CONDITIONS



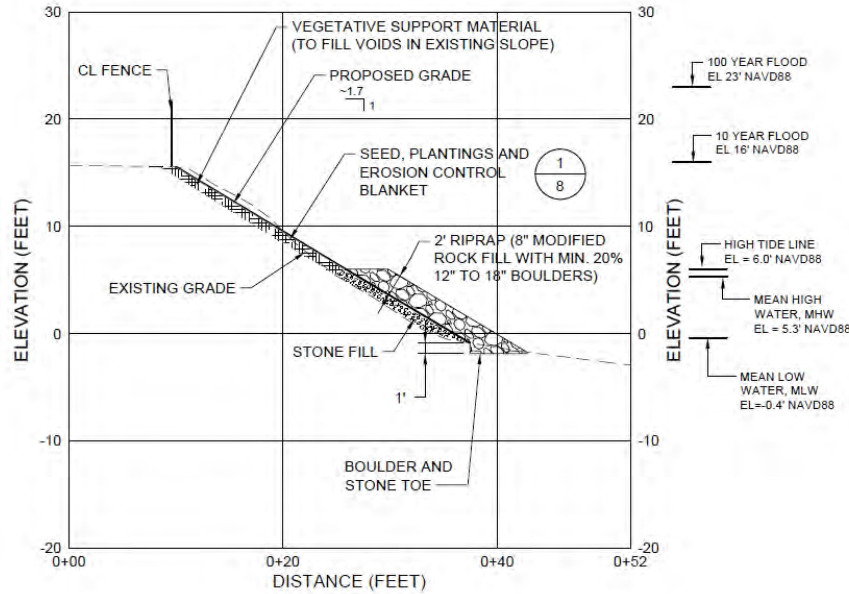
- Rock and boulder toe along the length of the Site
- Mixed gradation riprap armor from the rock/boulder toe up to the approximate high tide line elevation (6 ft NAVD88)
- A vertical block or boulder wall component in the vicinity of the existing wood retaining structure
- Slope nourishment including vegetative support material in areas that have locally sloughed, temporary erosion control blanket and seed, shrub and tree plantings
- Vegetated reinforced soil slopes using a combination of geogrid reinforcement and erosion control blanket and brush layering in two significantly eroded areas of the slope that require fill
- Tree plantings to replace in-kind and in-place the trees that require removal for the bank restoration project
- Riprap lined down chutes to control stormwater runoff from the existing parking lot



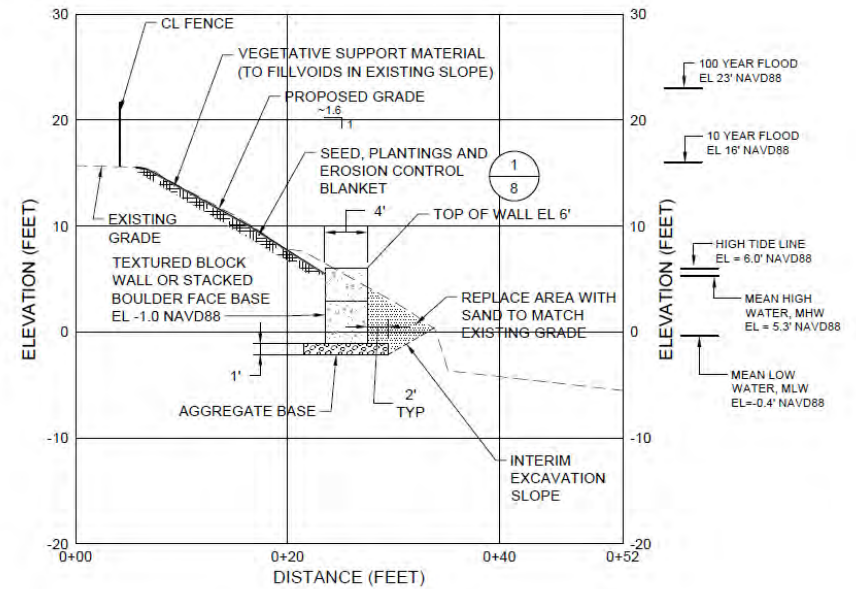
PROPOSED CONDITIONS



PROPOSED CONDITIONS



A
5 PROFILE
SCALE: 1"=10'



C
5 PROFILE
SCALE: 1"=10'