



February 14, 2023

City of Stamford  
888 Washington Boulevard  
Stamford, CT 06901

Attention: Ms. Susan Kiskien, Coordinator of Inspections & Plan Review  
Engineering Department

Reference: 68-70 Seaview Avenue  
ZB App. No. 222-23 & 222-24  
Supplemental Flood Study

Dear Ms. Kiskien:

RACE Coastal Engineering, Inc. (RACE) is providing specialty consulting services related to coastal analysis and flood zone matters to the Applicant, Seaview House LLC, on the above referenced project which seeks to convert the existing commercial building into residential use.

The site is located on the Federal Emergency Management Agency's (FEMA) effective Flood Insurance Rate Map (FIRM) No. 09001C0517G dated July 8, 2013. The datum for the FIRM is the North American Vertical Datum of 1988 (NAVD88). The FIRM shows the property to be a Zone VE with a base flood elevation (BFE) of El. +15' for approximately 10' to 30' +/- beyond the face of the seawall before it transitions into a Zone AE with a BFE of El. +14'.

Per Section 15.B.3.b of the Stamford Zoning Regulations, "special flood hazard areas are determined utilizing the base flood elevations (BFE) provided on the flood profiles in the Flood Insurance Study (FIS) for a community. BFEs provided on a Flood Insurance Rate Map (FIRM) are only approximate (rounded up or down) and should be verified with the BFEs published in the FIS for a specific location."

RACE prepared a site-specific coastal analysis, utilizing the data in the FIS, and prepared a report for the Applicant dated April 25, 2022, which has been provided to the City in support of the referenced application. RACE's analysis consisted of 1-D numerical wave modeling of wave crest elevations, wave runup, overtopping and inundation for storms including the "500-year" (0.2%-annual chance occurrence) through the "1-year" (expected annually) return frequency event. The purpose of this analysis was to determine when flood elevations would exceed the level where emergency vehicles could safely access the site, and if/how much the existing road would need to be raised such that emergency vehicles could access the site during the "100-year" (1%-annual chance occurrence) event. The analysis demonstrated that the existing road with low point at El. +9.5' would be inundated with 2.5 feet of water for about 3.1 hours during the base flood event. The water level would be greater than 15 inches (indicated to be the maximum water depth for

emergency vehicle access) for about 2.2 hours. The Applicant subsequently engaged Harbor Engineering to perform a peer review of RACE's report and the backup calculations, and they agreed with the conclusion RACE had reached.

Since that initial report and meeting with the City on December 20, 2022, the Project Team re-evaluated the proposed site plan to adjust and regrade Seaview Avenue to even higher elevations to minimize flood depth on the road during the base flood. These plan revisions are depicted on the drawing "Roadway Plan and Profile," prepared for Seaview House, LLC by D'Andrea Surveying & Engineering, PC and dated January 10, 2023.

During a meeting with the Project Team and City representatives on January 26, 2023 to review above referenced plan, RACE was requested to revise our flood study taking into account the increased elevations of the road and address the following questions:

- 1) Depth of water on the road,
- 2) Time that the road would be inundated, and
- 3) Reduction in the spatial distance of inundation on the road from existing to proposed.

As described in our April 2022 report, RACE determined a site-specific total water level, defined as stillwater level plus wave setup<sup>1</sup>, of +12.0' NAVD 88. The proposed road improvements will result in a new low point elevation of +12.3'. As such, there will be no standing water or inundation depth on the road for any period of time as shown in Figure 1 below.

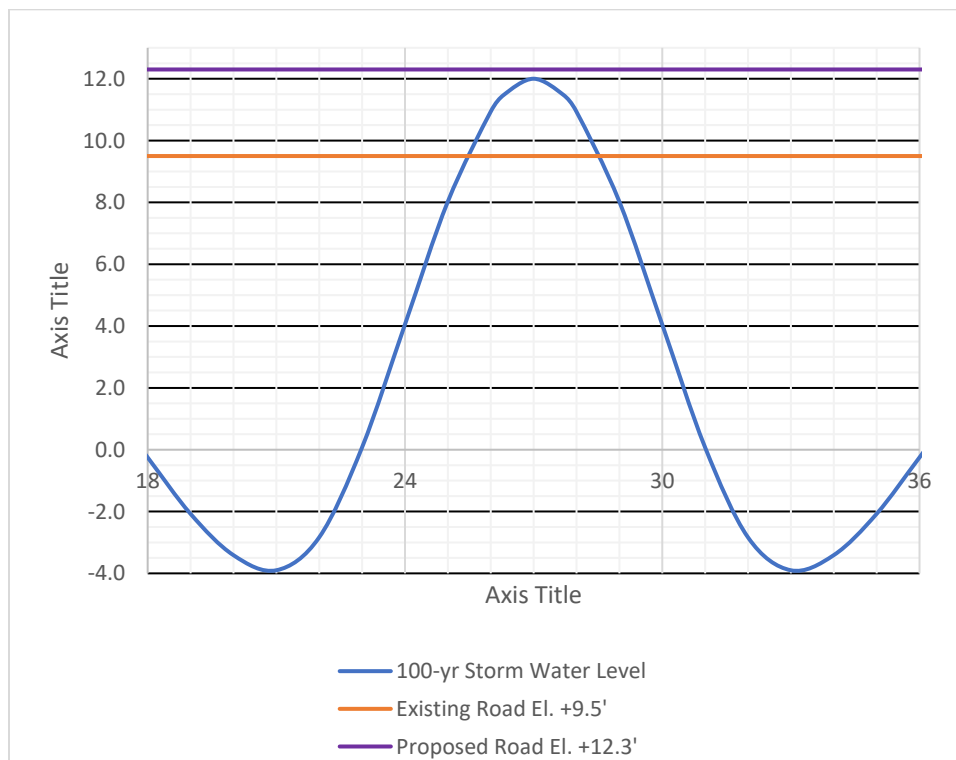


Figure 1: Time series for 100-year storm total water levels

<sup>1</sup> Wave setup is the super elevation of the mean water level at the shoreline due to wave breaking in the surf zone.



Although there will be no standing water on the road, the road may be subject to the effects of wave runup and overtopping across the slope leading up to it during the base flood event. RACE performed wave runup and overtopping analyses across a transect starting from the shoreline at the yacht club site through/over the road as shown in the attached site plans. RACE performed the runup and overtopping analysis on the existing and proposed conditions and annotated the plans to depict the difference between inundation (standing water depth) and runup and overtopping zones (splash). The drawings are provided as an attachment to this report. The overtopping rate associated with the site-specific wave height at the road (1.3' calculated previously) was determined to be 0.08 cfs/ft (7.8 l/s/m) in accordance with methods provided in the *EurOtop Manual*<sup>2</sup>. This reference also provides guidance as to the impacts of the overtopping rate relative to safety of pedestrians and vehicles. The figure below excerpted from the manual indicates, for our wave height and overtopping rate combination, we are well below the threshold for when vehicle access should be limited, i.e., the overtopping is tolerable.

Hazard type and reason	Mean discharge q (l/s per m)	Max volume V <sub>max</sub> (l per m)
People at structures with possible violent overtopping, mostly vertical structures	No access for any predicted overtopping	No access for any predicted overtopping
People at seawall / dike crest. Clear view of the sea.		
H <sub>m0</sub> = 3 m	0.3	600
H <sub>m0</sub> = 2 m	1	600
H <sub>m0</sub> = 1 m	10-20	600
H <sub>m0</sub> < 0.5 m	No limit	No limit
Cars on seawall / dike crest, or railway close behind crest		
H <sub>m0</sub> = 3 m	<5	2000
H <sub>m0</sub> = 2 m	10-20	2000
H <sub>m0</sub> = 1 m	<75	2000
Highways and roads, fast traffic	Close before debris in spray becomes dangerous	Close before debris in spray becomes dangerous

Figure 2: Table 3.3 from *EurOtop Manual*: "Limits for overtopping for people and vehicles"

<sup>2</sup> EurOtop, 2016. Manual on wave overtopping of sea defences and related structures. An overtopping manual largely based on European research, but for worldwide application. Van der Meer, J.W., Allsop, N.W.H., Bruce, T., De Rouck, J., Kortenhaus, A., Pullen, T., Schüttrumpf, H., Troch, P. and Zanuttigh, B., [www.overtopping-manual.com](http://www.overtopping-manual.com).



Figure 3 below shows the time frame during the base flood storm event during which overtopping can be expected and includes the threshold limits described above. Measurable overtopping can be expected for an approximate 3-hour duration but at a tolerable limit for vehicles.

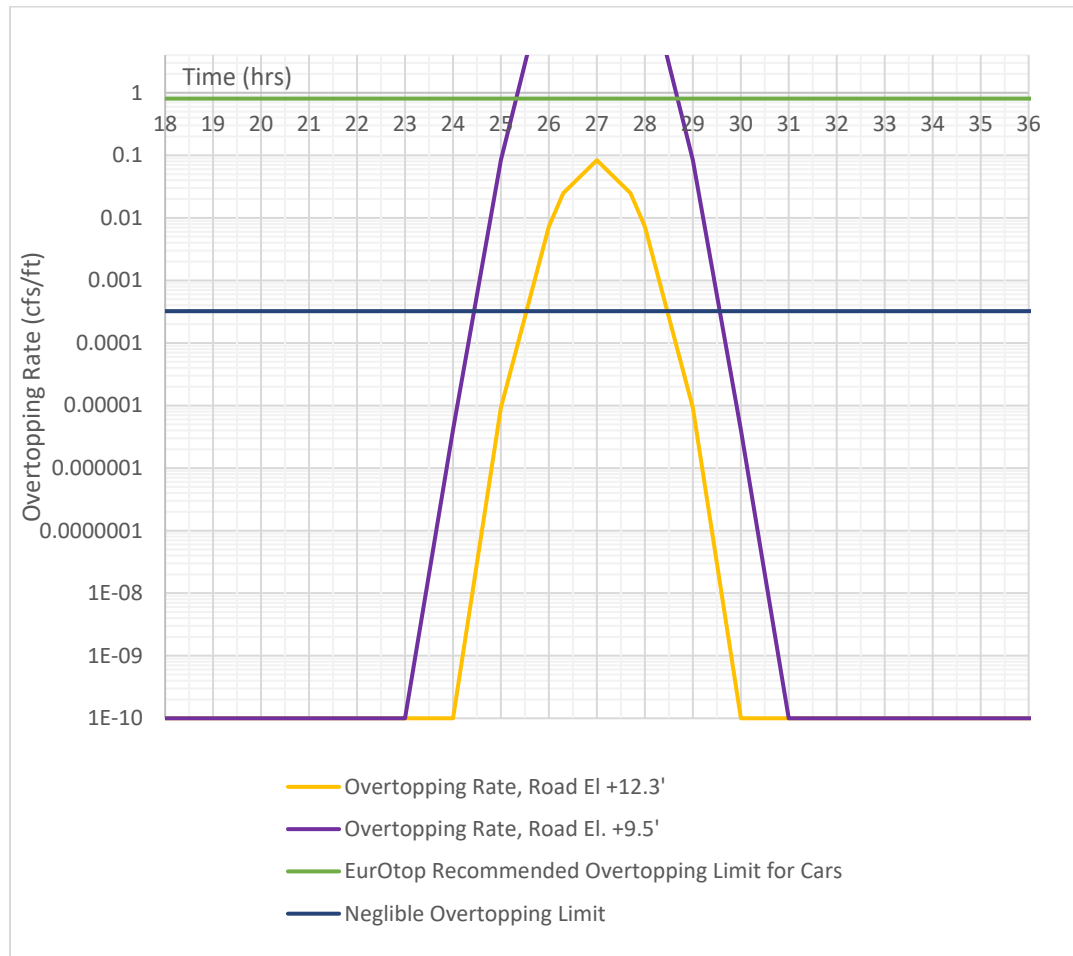


Figure 3: Overtopping Rates vs. Time

Lastly, please see attached drawings to address the question regarding reduction in the spatial distance of inundation on the road from existing to proposed elevations. Raising the low point in the road to elevation +12.3' NAVD 88 decreases the length of road subject to inundation by approximately 270 feet or 16,744 square feet across the site.



Based on the analyses we have performed; it is the professional opinion of RACE that the proposed project which includes elevating Seaview Avenue to a minimum elevation of +12.3' provides safe access to the proposed residential development during the 100-year base flood.

Please do not hesitate to contact me at 203-377-0663 if you have any questions about the information outlined in this report.

Very truly yours,

**RACE COASTAL ENGINEERING**



Azure Dee Sleicher, PE  
Vice President - Coastal Engineering

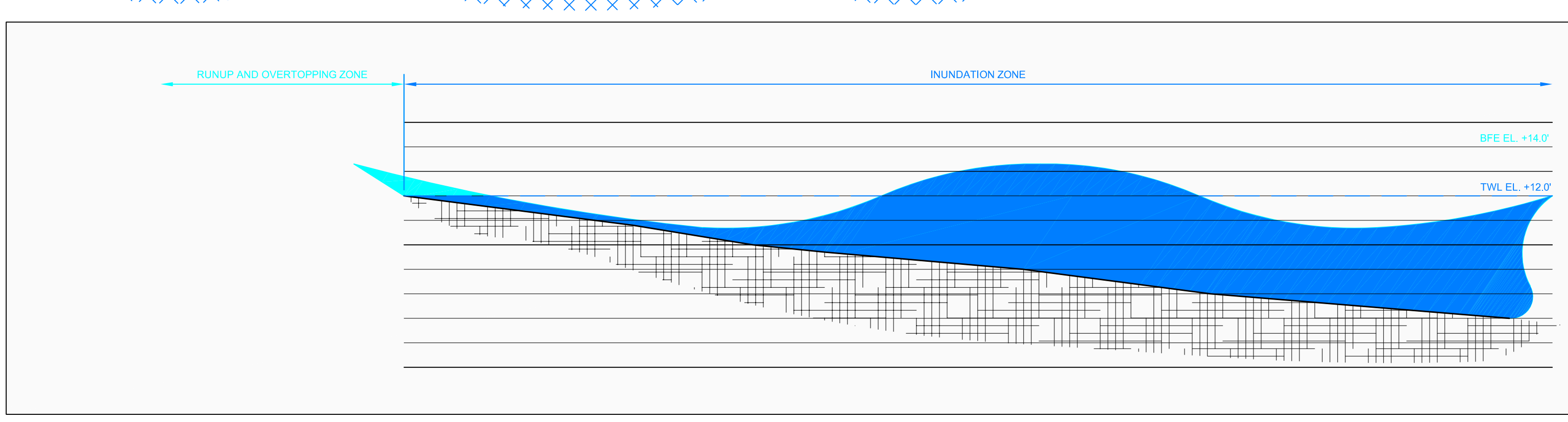
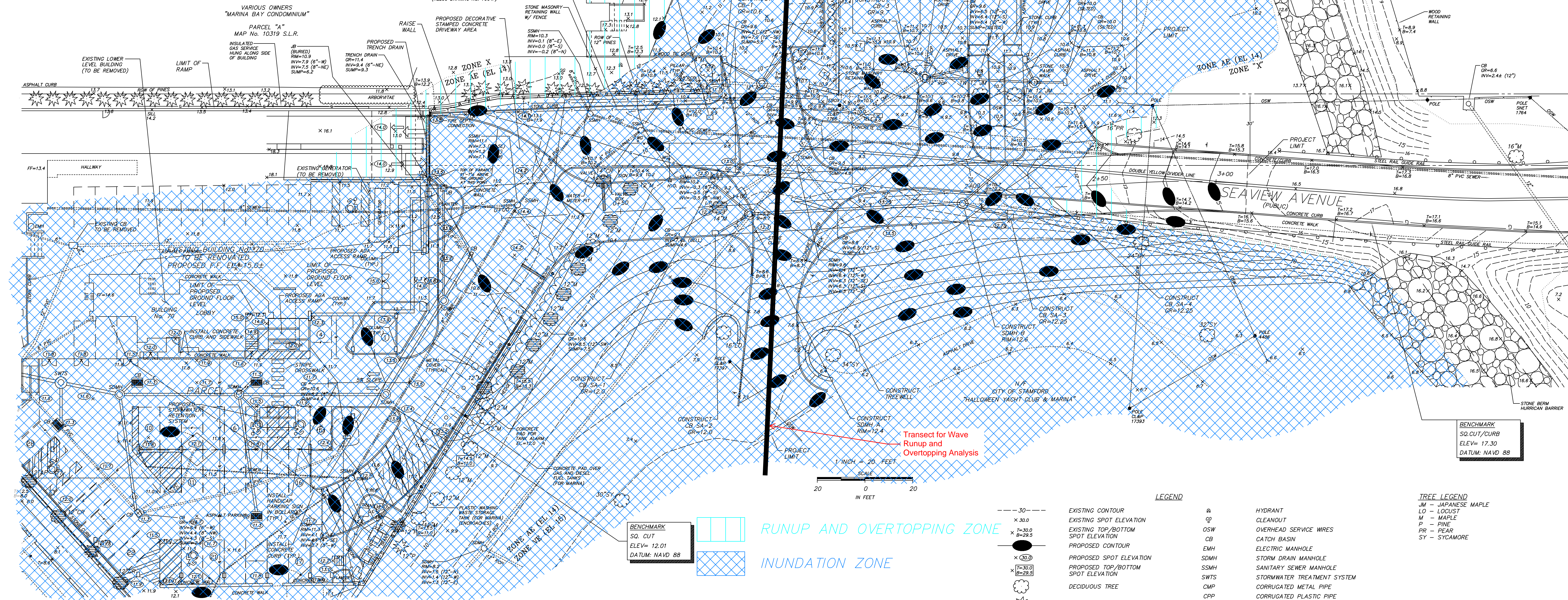
Enclosures: Inundation / Overtopping Graphics – 2 sheets



GENERAL NOTES:

- The purpose of this plan is to depict the site grading and improvements proposed along Seaview Avenue. Refer to Sheets 1 and 2 of 7 for proposed on-site grading and improvements.
- Boundary information, existing features, and topography were taken from a survey entitled "Topographic Survey Depicting 68-70 Seaview Avenue in Stamford, Connecticut, Prepared for Seaview House, LLC" dated May 20, 2022, as prepared by D'Andrea Surveying & Engineering, P.C.
- The subject property lies within a Flood Hazard Zone "X", "AE(EL. 14)", and "VE (EL. 15)", as depicted on FIRM Community Panel 0901005176, published by FEMA, effective date July 8, 2013.
- Elevations shown are based on the North American Vertical Datum of 1988 (NAVD 88). The contractor shall coordinate the transfer of a control benchmark into the working area, after site preparation is complete, by a licensed surveyor.
- The information given on this plan in respect to the location of subsurface structures and utilities indicates only that the structures and utilities exist and no responsibility is assumed by the engineer for the accuracy of the locations shown. Utility information is not guaranteed complete or accurate.
- In accordance with Connecticut Public Act 87-71 and Connecticut General Statutes Sections 16-343 through 16-359, the owner or the contractor shall be required to verify the depth and location of all utilities prior to commencing construction, and shall contact "Call Before You Dig, Inc." at 1-800-922-4455, 48 hours prior to commencing construction for mark out of underground utilities.
- This site is served by the City of Stamford sanitary sewer system.
- This site is served by the Aquarion Water Company, natural gas, and underground electric and telecom services.
- The contractor shall be responsible for securing all required permits from the City of Stamford for completion of the project.
- All construction shall comply with applicable sections of the State of Connecticut, Local, and International Building Codes, and those criteria shall take precedent over these plans. Refer to Sheets 5 and 6 of 7 for construction notes and details.
- Upon completion of construction and prior to the issuance of a Certificate of Occupancy, an "As-Built" map and certification letter shall be prepared by a professional engineer and land surveyor and submitted to the Engineering Bureau for review and approval for the purpose of confirming that construction was completed substantially in compliance with the approved plans as amended from time to time.
- Refer to Sheet 5 of 7 for City of Stamford Standard Notes.
- All utility relocations and installations shall be coordinated with each respective utility company prior to construction. Coordinate all utility installation and connection specifications with each respective utility company.

- A "Street Opening Permit" must be obtained prior to any construction activity in the City of Stamford right-of-way. All construction within the right-of-way shall be coordinated with the City of Stamford Engineering Bureau.
- The Contractor shall be responsible for coordinating and maintaining traffic flow along Seaview Avenue to the adjoining properties throughout the project.
- All work proposed on adjoining properties must be scheduled and coordinated with the owner of that property prior to the start of construction.
- All sanitary sewer manhole covers set below the base flood elevation of 14.0' shall have watertight bolted down covers.
- All storm drain manhole covers set below the base flood elevation of 14.0' shall have bolted down covers.
- All off-site improvements shall meet City of Stamford standards and shall be paid for by the Developer.
- The final location of the flood depth gauge shall be approved by the City of Stamford Emergency Operations Center. A video camera feed of the flood depth gauge shall also be installed and coordinated with the City Emergency Operations Center.
- Seaview Avenue to remain open to residents throughout construction with access to all adjoining driveways also to remain open unless prior notice has been given and approval by the Ownership of the property has been granted for temporary closure.
- All equipment and construction material associated with the proposed Seaview Avenue improvements shall be stored and stockpiled on the subject property when not in use within appropriate erosion control methods.
- Existing catch basins within the project area shall be protected with erosion control measures such as haybales or silt socks until they have been removed. New catch basins or modified existing catch basins shall have silt socks installed in them after they are constructed. The silt socks shall be maintained and cleaned, as necessary, by the Contractor until final site stabilization of uphill disturbed areas has been achieved.
- Refer to Sheet 4 of 7 for additional sedimentation and erosion control notes and details.



SCALES: 1"=20' HORIZONTAL  
1"=4' VERTICAL

MARKUP SHOWING  
RUNUP/OVERTOPPING &  
INUNDATION ZONES ON  
EXISTING ROAD/SITE

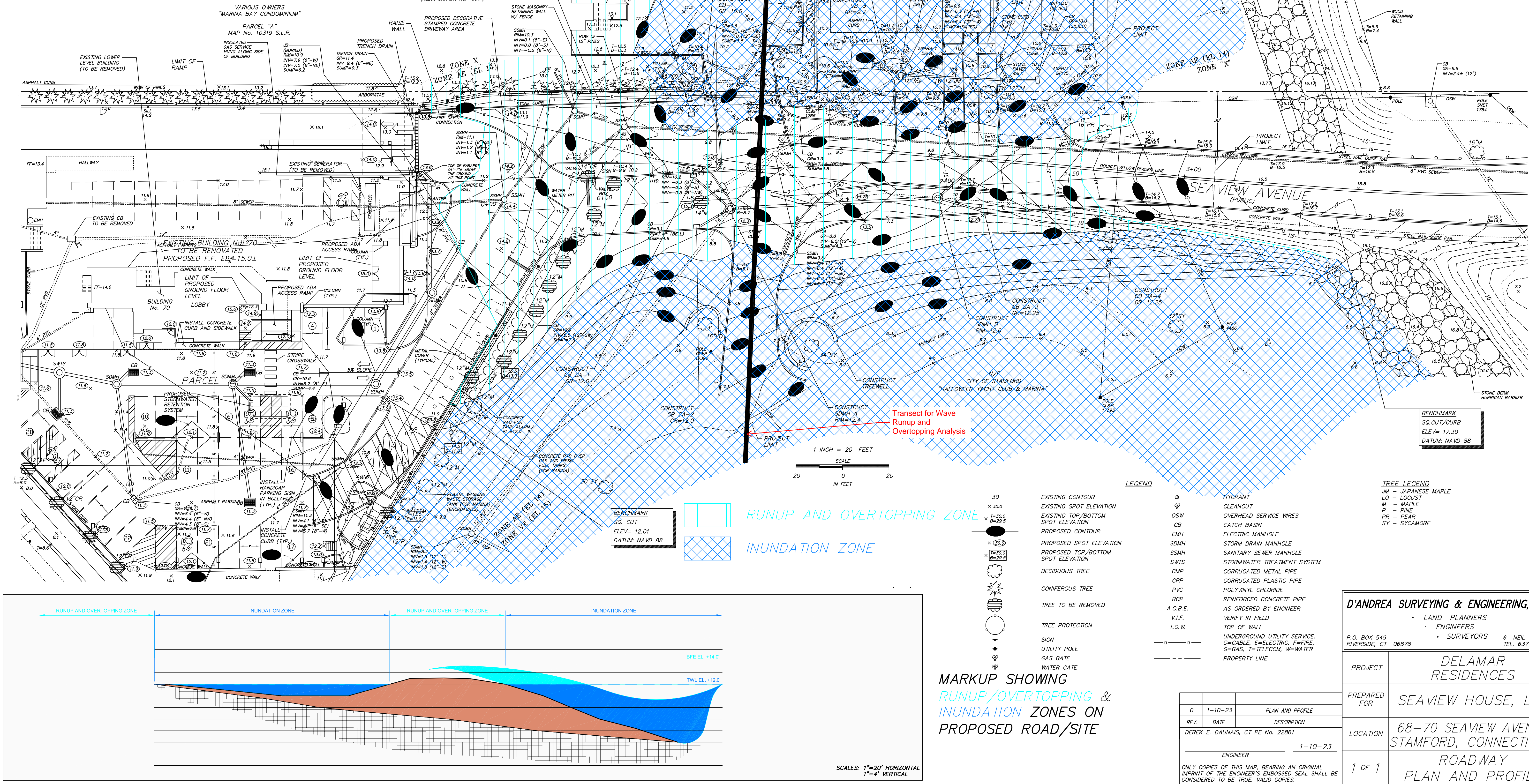
0	1-10-23	PLAN AND PROFILE
REV.	DATE	DESCRIPTION
DEREK E. DAUNAIS, CT PE No. 22861		
ENGINEER	1-10-23	
ONLY COPIES OF THIS MAP, BEARING AN ORIGINAL IMPRINT OF THE ENGINEER'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE TRUE, VALID COPIES.		

D'ANDREA SURVEYING & ENGINEERING, P.C.	
• LAND PLANNERS • ENGINEERS • SURVEYORS	
P.O. BOX 549 RIVERSIDE, CT 06878	6 NEIL LANE TEL. 637-1779
PROJECT	DELAMAR RESIDENCES
PREPARED FOR	SEAVIEW HOUSE, LLC
LOCATION	68-70 SEAVIEW AVENUE STAMFORD, CONNECTICUT
1 of 1	ROADWAY PLAN AND PROFILE

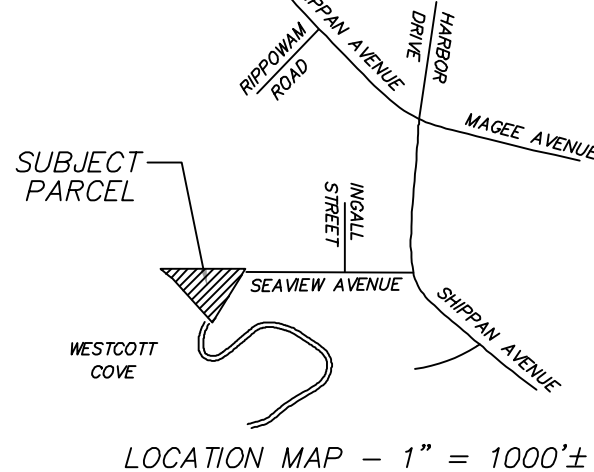
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BLOCK No. 150



D'ANDREA SURVEYING & ENGINEERING, P.C.

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 ENGINEERS  
 SURVEYORS

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