TYBEE ISLAND DUNE RESTORATION 2019

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PRESENTED BY:

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SCOPE AND IMPACT AREA

Proposed Phase 2 Project Sites

Area 1 - Chatham Ave to 19th Street

Area 2 - Center St to Eastgate and Anchor Park

Area 3 - Gulick St

Total Area: 317,000 SF (7.3 ACRES)

Volume of Sand approx: 50,000 Cubic Yards

HURRICANE DAMAGE

2ND STREET FOLLOWING HURRICANE IRMA

STORM SURGE BREACHING UNSTABILIZED DUNES

CENTER STREET FOLLWING HURRICANE IRMA

HURRICANE IRMA STORM SURGE

HURRICANE IRMA STORM SURGE

3RD STREET DUNE STORM SURGE DEGREADATION

PROPOSAL FOR IMPROVED SHORELINE PROTECTION - PHASE II

City of Tybee Island ("City") was granted Permit #460 in March of last year for Phase 1 of dune restoration, covering dune build from Pier to 19th Street, including a subsurface stabilized dune at 19th Street to accommodate emergency and Department of Public Works vehicles. We built the 19th Street dune April 2018 and updated the Committee at their November 2018 meeting. The City completed construction of the dunes from the Pier to 19th Street in March of this year and updated Committee at their August meeting. The City is working on landscaping and Strand Promenade elements of Permit #460.

The City is now applying for a Permit for Phase 2 of our dune restoration project. We would begin after the US Army Corps of Engineers (USACE) beach re-nourishment planned to be completed by February 2020. We will construct dunes in three areas:

- Area 1 - South from Chatham Ave to 19th Street, an area where we have experienced severe beach erosion due to storms.
- Area 2 -Mid-Island from approximately south of Center Street to the Eastgate crossover, an area where dunes do not accrete naturally due to long shore current flows.
- Area 3 – Gulick Street where there is an at-grade vehicle access point.

We will add subsurface stabilization at two access points for emergency and DPW vehicles only: at 3rd Street (Mid-island) and Gulick Street (North island), both of which are currently at-grade vehicle access points. They will be subsurface stabilized similar to 19th Street. We will close two at-grade access points: Center Street and 2nd Street and will plant native, drought tolerant dune vegetation on the dunes.

We will build pedestrian crossovers at public streets (ie. Center, 3rd, 2nd). We will also build public crossovers to accommodate private streets and traditional access points where multi-family hotels and condominiums have had direct at-grade access to the beach. We do this to encourage private crossovers in response to new dune at south and mid-Island, especially where several residents and visitors are expected to use them (hotels, condos, private streets). We will adhere to DNR specifications and discourage pedestrian pathways on dunes where foot traffic is expected to be great.

We will install associated landscaping and landward improvements to provide easier access between public crossovers and encourage use and lower incentive to build private crossovers. These impovements include:

- Pedestrian access at "The Turn" from 1st Street to Butler Ave which is the Commercial Gateway to the city but has no direct access to and from the beach
- Enhance the small green space (the "Anchor")
- Install new trash receptacles and renovate existing trash receptacles at public street crossovers

The size of the proposed impact area is approximately 317,000 square feet or 7.3 acres. Approximately 95% of the total project will remain naturally vegetated and topographic condition.

EXISTING CONDITIONS, SCOPE, IMPACT AREA - AREA I

Area 1

Chatham Ave to 19th Street

Total Area: 72,000 SF (1.7 ACRES)

Volume of Sand approx: 12,000 Cubic Yards

EXISTING CONDITIONS, SCOPE, IMPACT AREA - AREA 2

Area 2

Center Street to Eastgate

Total Area: 240,000 SF (5.6 ACRES)
Dune: 216,000 SF (5 ACRES)
Anchor: 21,000 SF (0.5 ACRES)
3rd Street: 4,300 SF (0.1 ACRES)

Volume of Sand approx: 36,000 Cubic Yards

EXISTING CONDITIONS, SCOPE, IMPACT AREA - AREA 3

Area 3

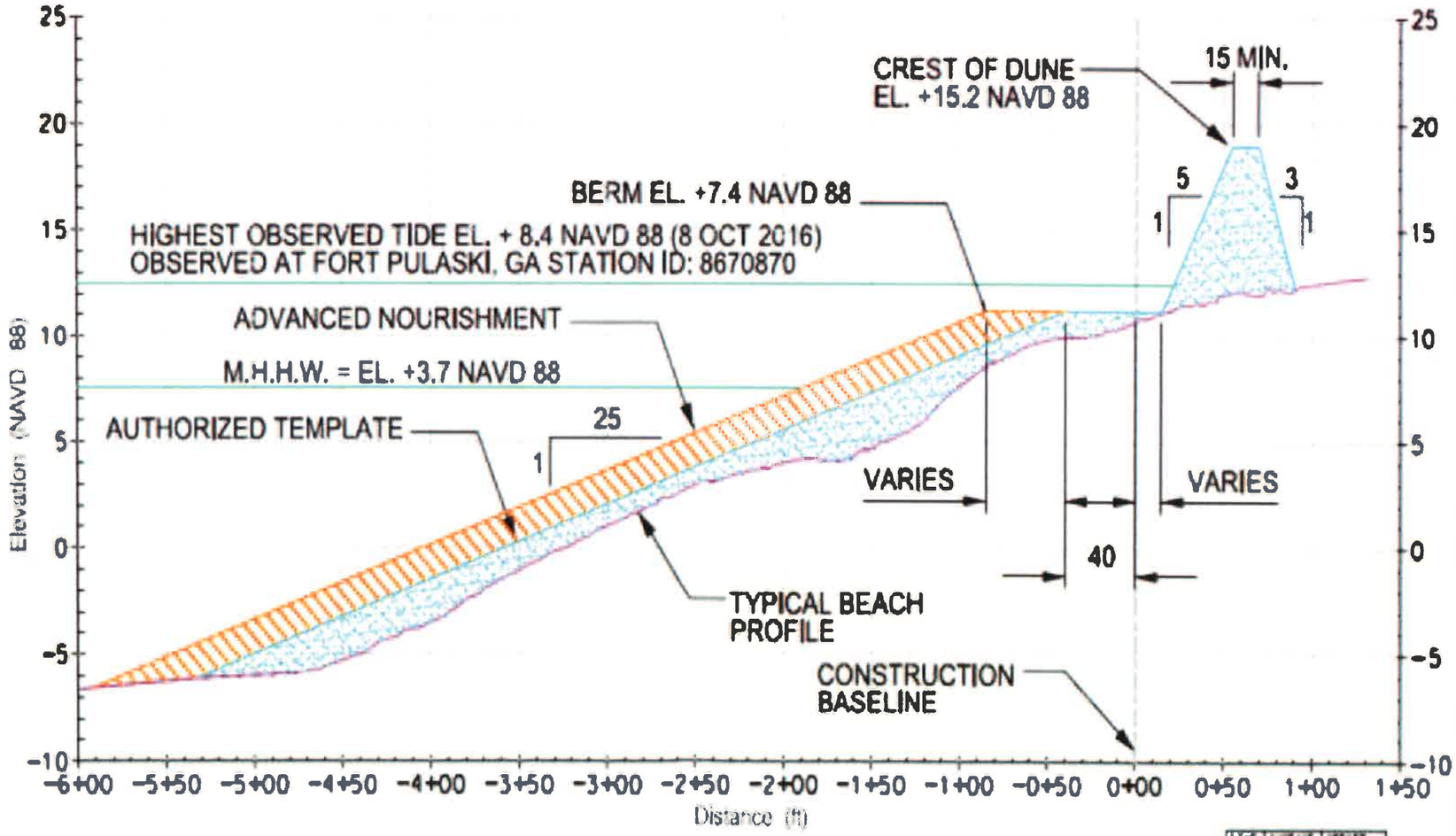
Gulick Street

Total Area: 4,500 SF (0.1 ACRES)

Volume of Sand approx: 675 Cubic Yards

DUNE CONSTRUCTION

BEACH PROFILE



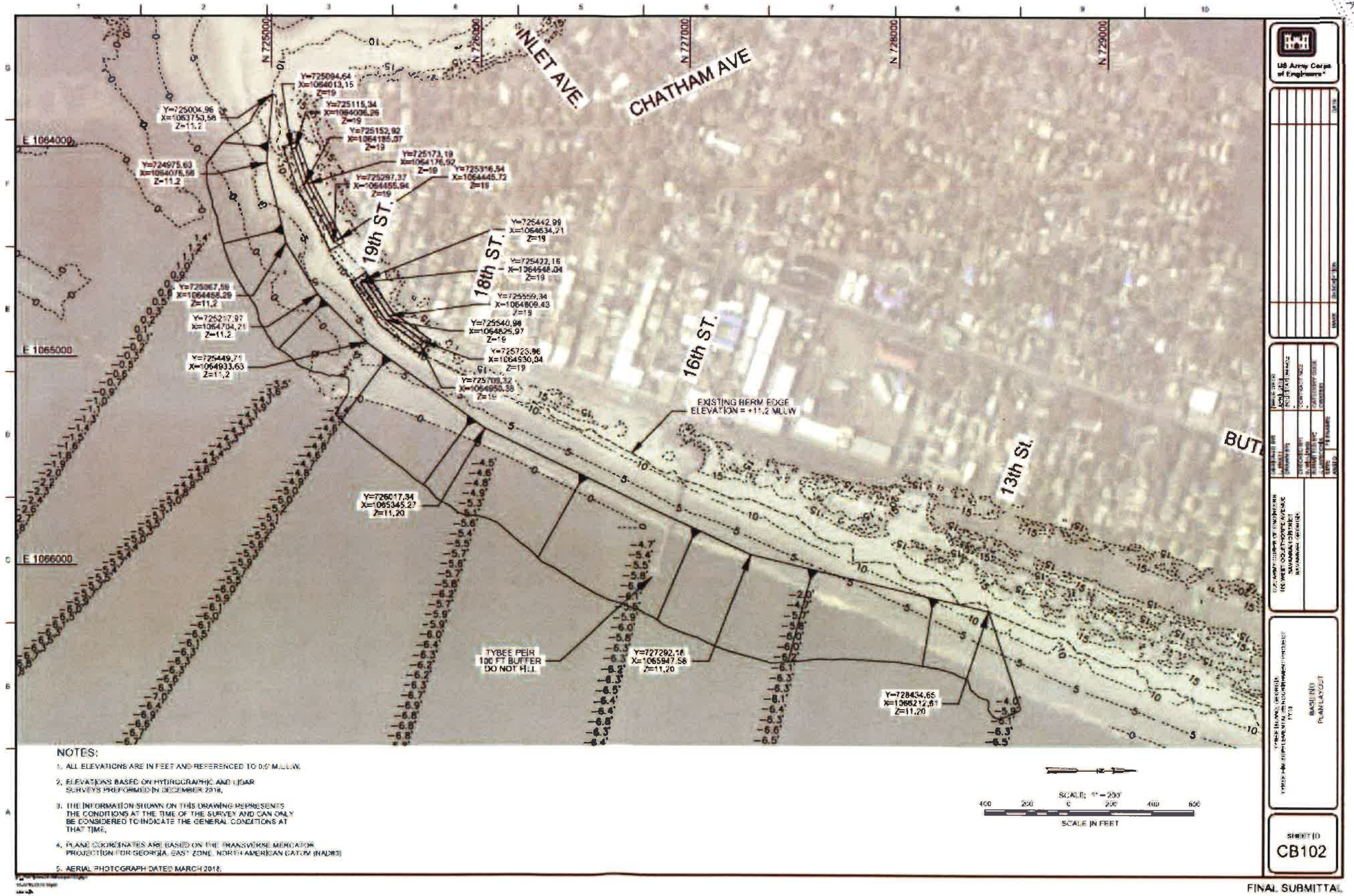
MODIFIED TEMPLATE

US Army Corps of Engineers

U.S.ARMY

TYBEE ISLAND DUNE RESTORATION 2019

DUNE CONSTRUCTION - AREA 1



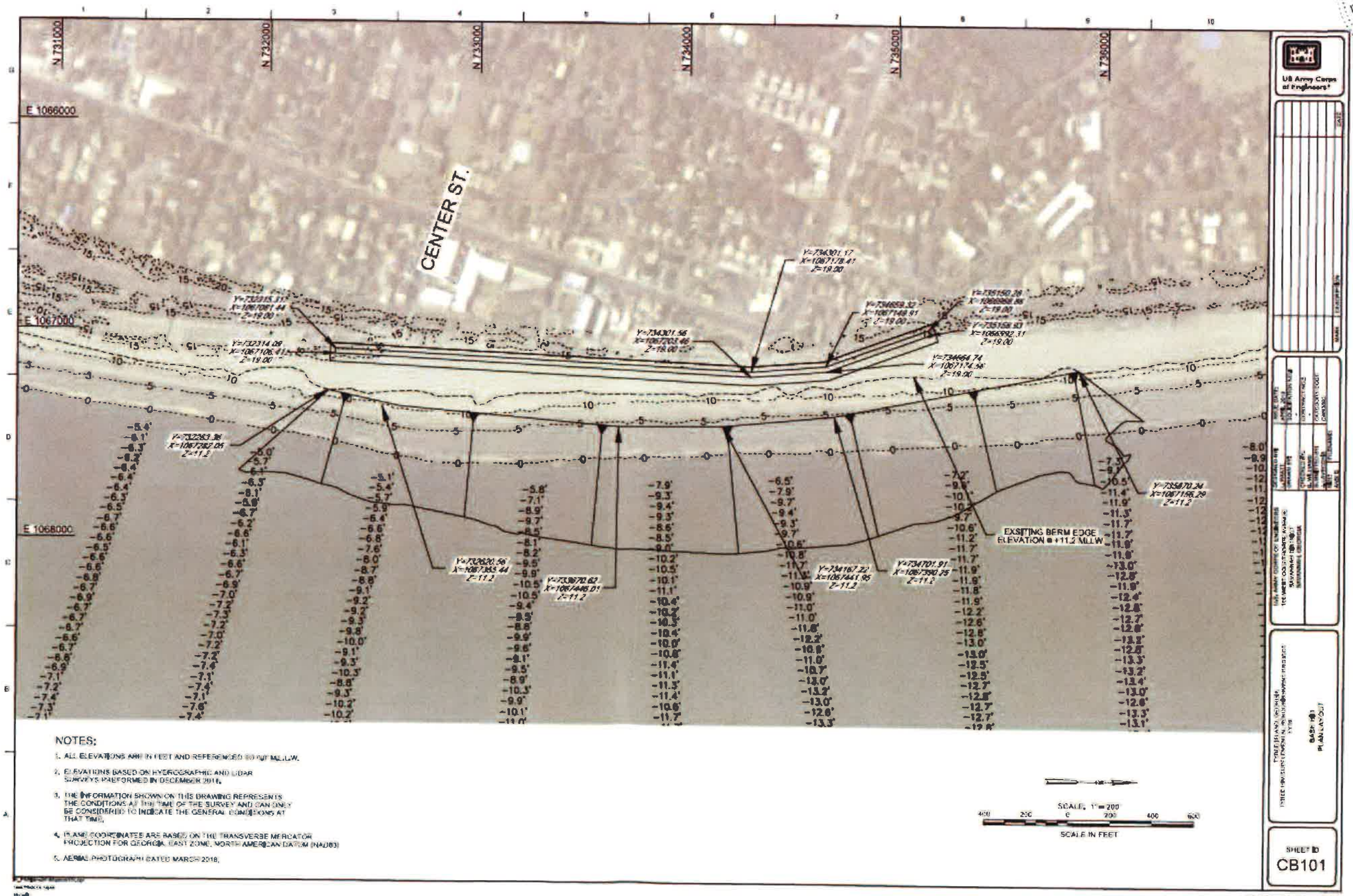
NOTES:

1. ALL ELEVATIONS ARE IN FEET AND REFERENCED TO 0.0' M.L.L.W.
2. ELEVATIONS BASED ON HYDROGRAPHIC AND LIDAR SURVEYS PREFORMED IN DECEMBER 2018.
3. THE INFORMATION SHOWN ON THIS DRAWING REPRESENTS THE CONDITIONS AT THE TIME OF THE SURVEY AND CAN ONLY BE CONSIDERED TO INDICATE THE GENERAL CONDITIONS AT THAT TIME.
4. PLANE COORDINATES ARE BASED ON THE TRANSVERSE MERCATOR PROJECTION FOR GEORGIA, EAST ZONE, NORTH AMERICAN DATUM (NAD83)
5. AERIAL PHOTOGRAPH DATED MARCH 2018.

FINAL SUBMITTAL

TYBEE ISLAND DUNE RESTORATION 2019

DUNE CONSTRUCTION - AREA 2



NOTES:

1. ALL ELEVATIONS ARE IN FEET AND REFERENCED TO NAVD MLLW.
2. ELEVATIONS BASED ON HYDROGRAPHIC AND LIDAR SURVEYS PERFORMED IN DECEMBER 2018.
3. THE INFORMATION SHOWN ON THIS DRAWING REPRESENTS THE CONDITIONS AT THE TIME OF THE SURVEY AND CAN ONLY BE CONSIDERED TO INDICATE THE GENERAL CONDITIONS AT THAT TIME.
4. PLANE COORDINATES ARE BASED ON THE TRANSVERSE MERCATOR PROJECTION FOR GEORGIA, EAST ZONE, NORTH AMERICAN DATUM (NAD83)
5. AERIAL PHOTOGRAPH DATED MARCH 2018.

BASE MAP
PLAN LAYOUT

SHEET ID
CB101

FINAL SUBMITTAL

STATE OF SOUTH CAROLINA
THOMAS ANGELL ASLA
LANDSCAPE ARCH

TYBEE ISLAND DUNE RESTORATION 2019

DESIGN SOLUTION - VEHICULAR ACCESS 19th STREET

At the two points we intend to use a system similar to the one we used for our 19th Street dune under SPA Permit #460, April 2018 (Pictured). Rubber Tire loaders will access the beach from pavement and pour beach quality sand into geotextile bags, geocubes or geotubes, preferably trapezoidal shaped to better withstand surge pressure. A vibratory smooth drum roller will compact the crossover dune. At 3rd street, to accommodate vehicular access, geofrabric will be installed over the entire access, followed by a geogrid. The geogrid will then be filled and covered with an additional 6" of sand, with that 6" of sand extending throughout the entire crossover. The entire crossover will then have a final pass of vibratory compaction followed by native dune plantings to stabilize the remainder of the dune.

COMPLETED SPA PERMIT #460 - 19TH STREET DUNE CROSSOVER


SPA PERMIT #460 - 19TH STREET DUNE CROSSOVER CONSTRUCTION

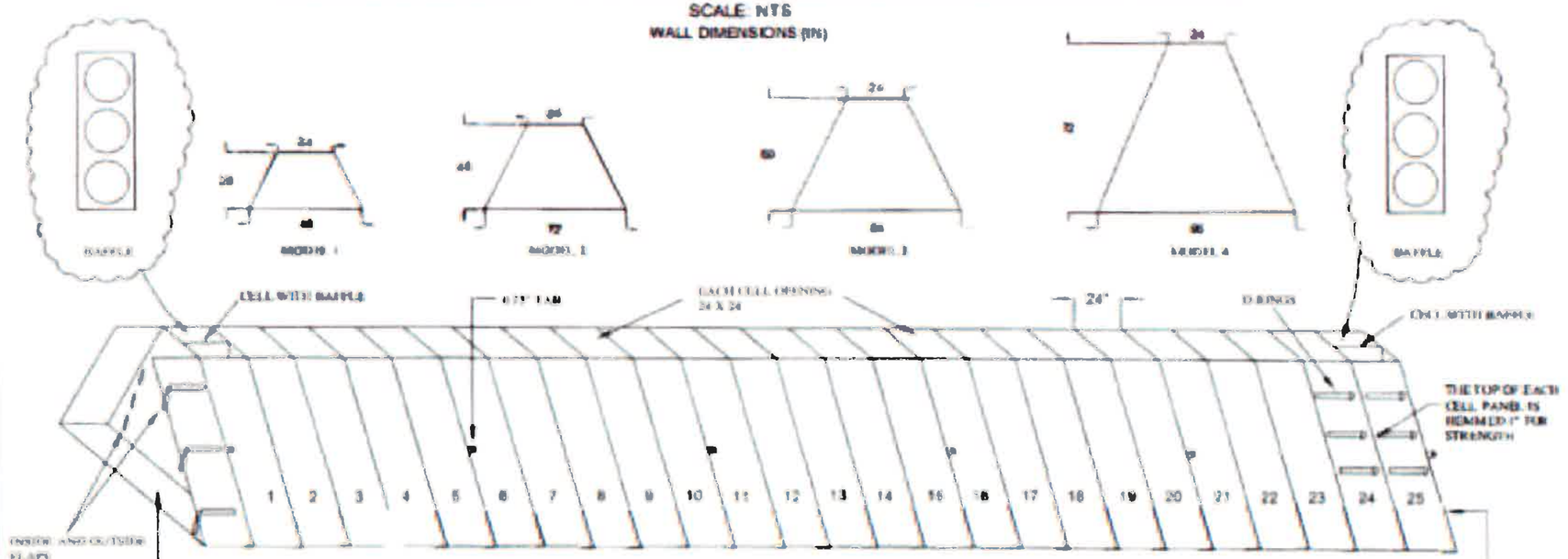
SPA PERMIT #460 - STABILIZED 19TH STREET DUNE CROSSOVER

DESIGN SOLUTION - VEHICULAR ACCESS - 3rd STREET AND GULICK STREET

GRS POLYPROPYLENE WOVEN FABRIC BAG SEGMENT

SCALE: NTS

WALL DIMENSIONS (IN)



NOTES:
1. CELL NO. 1 AND CELL NO. 25 HAVE BAFFLES. ONLY 2 CELLS WITH BAFFLES IN 50' BAG.
2. CELL NO. 1 AND CELL NO. 25 FIXED WITH 4 - 4 INCH TIES ON SIDES (COMING INSIDE) AND 3 ON BOTTOM.
3. THERE IS ONE OPEN CELL ON BOTH ENDS WITH 4 - 4 INCH TIES ON THE SIDES ONLY.
4. 50' LONG BAG IS MADE BY SEWING 25 CELLS ONE TO THE NEXT.

PHYSICAL CHARACTERISTICS OF GRS UNITS			
MODEL	HEIGHT	BOTTOM WIDTH	TOP OPENING
1	24"	48"	24"
2	36"	60"	24"
3	48"	72"	24"
4	72"	84"	24"

GENERAL PRODUCT NOTES:

1) GRS GUTTER BAG UNITS ARE AVAILABLE IN 50' SECTIONS. EACH SECTION INTERLOCKS WITH THE ADJOINING SECTION BY UTILIZATION OF MALE/FEMALE CONNECTIONS TIGHTLY SECURED BY NYLON STRAPS AND D-RINGS.

2) THE BAGS DEPICTED HEREIN ARE CONSTRUCTED WITH WOVEN POLYPROPYLENE FABRIC AND FILLED WITH WASHED AGGREGATE. 3" AGGREGATE IS RECOMMENDED, BUT DEPENDING ON APPLICATION BAGS MAY BE FILLED WITH #57 AGGREGATE UP TO 3" AGGREGATE.

3) EACH 50' SECTION INCLUDES 25 - 2' WIDE INTERLOCKING CELLS AND 1 - 2' FEMALE CONNECTION

4) TENSILE STRENGTH AND PUNCTURE STRENGTH CONFORM TO ASTM D1682 AND ASTM D751

PRECISION

GRS GUARDIAN RETENTION SYSTEMS

A-3

GRS PRODUCT DETAILS

SUMMARY

APPROXIMATE PROJECT LIMIT: +/- 317,000 SF (≈7.3 ACRES)

APPROXIMATE AREA 1: +/- 72,000 SF (≈1.7 ACRES)

APPROXIMATE AREA 2: +/- 240,000 SF (≈5.6 ACRES)

APPROXIMATE AREA 3: +/- 4,500 SF (≈0.1 ACRES)

DUNE RESTORATION & MAINTENANCE:

AREA 1: 72,000 SF @ 8' HEIGHT = +/-12,000 CUYDS OF SAND

AREA 2: 216,000 SF @ 8' HEIGHT = +/- 36,000 CUYDS OF SAND

AREA 3: 4,500 SF @ 8' HEIGHT = +/- 675 CUYDS OF SAND

EQUIPMENT:

- BULLDOZERS
- DUMP TRUCKS
- BACKHOE LOADER
- SKID-STEER LOADER
- CEMENT TRUCKS (CROSSOVER)
- HAND SHOVELS
- RUBBER TIRE LOADERS
- VIBRATORY SMOOTH DRUM ROLLER