Director of
Planning and Inspections
MEREDITH GUNS

Building Inspector
MARTY SHAW
CHARLES THUMAN

Code Enforcement Officer
JORDAN BLYTHE

THE TOWN OF KILL DEVIL HILLS
NORTH CAROLINA

Assistant Director of
Planning and Inspections
CAMERON RAY

Senior Planner
RYAN LANG

Zoning Administrator
DONNA ELLIOTT

PLANNING DEPARTMENT

February 15, 2022

Memorandum

To: Planning Board

From: Ryan Lang, Senior Planner

Subject: **SITE PLAN REVIEW**— 902 S Va Dare Trail -- Proposed Ocean Breeze Townhomes -- Proposed 6 multifamily buildings with 31 residential units and 88 total bedrooms, community pool, Corrigan Street improvements on behalf of the developer, and associated site improvements.

Enclosed is a site plan review submittal by Mike Robinson, PE for the proposed construction of 6 multifamily buildings with 31 residential units and 88 total bedrooms, community pool and associated site improvements in the Commercial Zone. The proposed plan includes the improvement of Corrigan Street as a Town Right-of-Way. The proposed multifamily development is a permitted use in the Commercial Zone (C) *Multi Family Dwellings.* Attached you will find the commercial site plan application, proposed site plan, proposed architectural plans and applicant's response to Staff's Technical Review 2 comments.

The applicant has addressed most of staffs initial technical review comments; however, the following conditions remain to be addressed:

Planning

1. Sheet 4: Add construction detail for proposed 7' stucco fence.
2. Commercial Building Exterior: The proposed residential building plans do not meet the requirements of Chapter 153.186 Commercial Building Exterior *Roof Standards.* All buildings shall have a roof or roof façade per 153.186(C). Roof Facades shall meet the following condition: Wall elevations on buildings greater than 30 feet in height must be concealed behind a roof façade for a minimum of 25% of the entire wall elevation.

Public Services

Solid Waste

Provide heavy duty permeable pavement specifications that will handle biweekly traffic from Town commercial refuse vehicles or provide heavy duty concrete service drive from the S. Memorial Boulevard entrance through the dumpster site area.

Streets

All street improvements shall be reviewed and approved by Public Services and Town Engineer prior to construction.

Water System

a. Plan revisions note the requirement for the Architect to provide the meter sizing form for each unit and the pool site to verify that that the proposed 5/8x3/4 services area adequately sized. Once this the sizing forms are provided, public services will provide requirements regarding the meter sizes for the units and provide anticipated water fees.
b. For fire protection service for the fire sprinkler systems shall be provided via a dedicated fire line with a RPZ located at the property line.

Wastewater

A copy of the willingness to serve from KDHWWTP is required before plan approval and a copy of the fast track application and Town encroachment agreement will need to be provided prior to issuance of a building permit. Applicant has acknowledged all of these requirements.

Staff recommends that the Planning Board forward the plan to the Board of Commissioners with a favorable recommendation after the above listed conditions have been addressed.

January 31, 2022

Memorandum Response 01-31-22

From: Michael Robinson, P.E., P.L.S.

To: Ryan Lang, Senior Planner

Subject: **SITE PLAN TECHNICAL REVIEW 1 Revised**— 902 S Va Dare Trail: Proposed Ocean Breeze Townhomes

Staff has reviewed the plans and documentation for the above referenced proposed project and offers the following comments:

Planning—Ryan Lang (252-449-5315)

Sheet 1A/1B:

1. Clarify number of units in Building No. 5. **Text Corrected. Building 5 has 4 units**
2. Proposed development requires State Stormwater Permit, include in *Notes.* **Added.**
3. Plantings of Trees and Shrubs cannot encroach on neighboring property. Consider moving the proposed 6' Fence setback from 3' to 5'. Fence moved to 5' off property line

Sheet 4:

1. Add detail for proposed 7' fence. **This was included with the building plans from Beth**
2. Add compliant Handicap Parking Signage. **Detail added to Sheet 4**

Sheet 5:

1. Provide breakdown of Tree and Shrub counts per property line to include "required/provided". The minimum number of trees required is noted. **Additional planting may be added but the minimum will be met. See notes on Sheet 5 (lower left)**
2. Revise Contractor Entrance detail, 50' deep and "Wrightsville Ave". **Done**

Commercial Building Exterior **New building plans have been submitted for review**

1. The building plans submitted do not provide the necessary specifications to ensure compliance with Chapter 153.186, including the Pool House. Items to be noted on building plans include:
   a. Materials being used for siding.
   b. Roof Pitch with a minimum of 4 in 12
   c. Roof Overhang with a minimum of 10 inches
   d. Roof Heights, all shall be a minimum of 6' measured from the top plate to the ridge.

Town Engineer --- Peter Burkhimer, PE (757-478-5970)

1. Generally, and except for the stormwater discussion in comment #2 below, Town Engineer offers no further comments on the plans and finds them acceptable.
2. The basic concept of piping the S Memorial Boulevard ditch within the extent of the project and under Corrigan Street, and installing a sock drain and swale along the south side of Corrigan Street, is sound. A conference call or in-person meeting with Town Engineer and Public Services leadership is suggested regarding our comments below.
    a. We have developed an overall profile for the entirety of South Memorial Boulevard, including this section. Numerous prior improvements along the way have complied, within typical construction tolerances. We recommend downstream invert of 2.05 just north of the Corrigan crossing, sloping up at 0.02% to an upstream invert of 2.11 at the south end, as opposed to the "Invert 1.20 flat" noted on the plans. We recognize that this will make maintaining 1' of cover over the 42" pipe a little challenging; see below. **42" culvert inverts revised on sheet 3 and detail sheet 4**
    b. We recommend that a continuous run of 12" sock drain be laid in common trench with the 42" line, probably on the west side of it. Its invert should be a few inches above that of the 42" line. We should discuss end treatment. Please see Public Services' comments about end treatments other than the flared end sections.. The sock drain will improve the functionality of the on-site, infiltration-based stormwater management system. **Parallel perforated pipe added to sheet 3 and detail sheet 4**
    c. The invert of 3.30 noted for the 12" sock drain in Corrigan Street actually works perfectly for a radial "Inserta-Tee" into the 42" line with its invert at 2.05. Rather than completely flat, we suggest the 12" sock drain have a slope of 0.02% to 0.05%, with its upstream invert at 3.39 to 3.45. This will provide a slight positive slope while maintaining nearly maximum groundwater elevation management. **Inverts adjusted**
    d. Adjust the position of DI #1 slightly further east (with care for the existing FH) and leave a southward-looking stub of 12" solid-wall HDPE into the Virginia Dare Trail RW, ending with a plugged bell end. This would be for future extension by others. **Done, see sheet 32**
    e. Regarding the S Memorial Boulevard typical section on Sheet 4, we recommend shifting the swale to 5' west of the CL of the 42" pipe and more or less above the parallel sock drain. This will help with cover. We like the idea of it being generally 1' below the east EOP of S Memorial, but it is probably better to set grades. Also, the vertical alignment of the entry road off S Memorial may need to be "humped" *(heh-heh-you said humped-Beevis)* a little to get 1' of cover from finished pavement at the edges down to top outside of the pipe. That will send a little runoff down to the EP, where it can be directed to the flumes. **The swale bottom was shifted west as shown on sheet 3 and detail sheet 4**
    f. Make the "Gravel Construction Entrance" detail on Sheet 5 generic, or change the street name to " S Memorial Boulevard." **Done**
    g. The Stormwater Management calculations on Sheet 5 show a generous margin vs. our requirement to manage a 4.3" rain volume, especially given the conservative use of a porosity of 0.2. However, the sock drain will be important to maintain the water table elevation low enough for a good standoff from the bottom of the on-site basins...especially since the groundwater-lowering effects of the existing open ditch

otherwise would be lost, and the effects of the shallower new sock drain in Corrigan will be fainter on the more southerly portions of the site. **Noted**

Public Services —Derek Dail (252-480-4085)

Streets

1. Add a drop inlet on the north side of E. Corrigan Street at NC 12 like the one on the south side of the street and connect to the drainage system. **Added as noted, see sheet 3**

2. Public Services is in general support of the proposed piping of the portion of the S. Memorial Blvd. ditch and concurs with the Town Engineer, Pete Burkhimer's expressed need for the sock drain in parallel with 42" culvert. This smaller diameter sock in parallel has successfully been implemented on recent Town Project, specifically in the US 158 sidewalk project at the Dare Centre. Public Services will need a mid-block access structure for maintenance and a downstream outlet structure with stubbed out 42" HP pipe to accept a future pipe planned to be installed to the north with a Town drainage replacement project. Details of the sock pipe and structures will be worked out with the in-person meeting with the Project Engineer, Town Engineer, and Public Services as mentioned in the Town Engineer comments. **Agreed. The drainage engineering will need some fine tuning with coordination with Town Staff and Pete.**
3. Public services recommend connecting the proposed E. Memorial Blvd. swale to the E. Corrigan Street swale to allow stormwater to flow into the drop inlet in E. Corrigan Street near the intersection. Done. **See Sheet 3**
4. Need to add 25 mph speed/no parking signs on E. Corrigan Street. **Added to sheet 1**
5. Provide a swale along the west side of NC 12 along the eastern property lines. **Done**
6. Provide thermoplastic crosswalk striping in the pedestrian/bike lane at E. Corrigan Street and NC 12. **Added to sheet 1**
7. Please revise the drop inlet detail to reflect the current project. **Detail modified – Sheet 4**
8. All street and drainage improvements in the Town right of ways will have to be constructed, inspected and tested in accordance with the Town's Technical Specifications which include but are not limited to subsurface geotechnical work, road base & density testing, asphalt paving and core sampling, and drainage work. **Note added to sheet 4**

Water System

1. The swimming pool amenity water service will require a RPZ installed downstream of the water service and is to be located at the water service and near the property line. **RPZ added. See Sheet 2 and detail sheet 6. Size will be determined after the water test is completed.**
2. The pool amenity does not appear to be provided with a water service. **Added**
3. The Architect needs to provide the water meter sizing form for each of the unit models and the pool amenity to determine if the 5/8x3/4 service is adequately sized for the units. Normally a four or five bedroom unit would only require a 5/8x3/4 service, but these units are all provided

with full baths in each suite and several amenity fixtures that may require higher demand and larger services. **Note added to Sheet 2**

Wastewater

1. Show wastewater force main in the Corrigan St. right-of-way. Notes call for connections but no pipe is shown. **It was on a no-plot layer for some reason..Fixed**
2. A copy of the Willingness to Serve from KDHWWTP needs to be provided. **Noted**
3. A Copy of the NCDEQ Wastewater Extension (Fast Track) permit will need to be provided prior to issuance of a building permit. **See notes, bottom right of sheet 1**
4. KDHWWTP will need to provide the Town's encroachment agreement for the wastewater infrastructure in the E. Corrigan St. Right-of-Way. **See notes, bottom right of sheet 1**
5. Extend the 5 foot deep requirement for the sewer force main across E. Corrigan Street up to the existing forcemain to accommodate a possible future water main along the north side of E. Corrigan Street. **Done**

Fire Marshal --- John Risoldi (252-449-5227)

1. I addition to my first comments on Review 1
2. Fire Hydrants shall be added to the site to make water for fire suppression more assessable **I added a hydrant just south of the West entrance off South Memorial. There is another hydrant in the south west quadrant of the South Memorial/Corrigan Intersection and another hydrant is the south west quadrant of the Va. Dare Trail/Corrigan Intersection**
3. When the building plans are submitted. The proper fire separations shall be reviewed for fire code compliance **Noted**

Town of Kill Devil Hills Planning and Inspections
Commercial Site Plan Review Application*

OCEAN BREEZE - TOWNHOMES REVISED 01-18-22

Applicant

Name: Ocean Breeze Developers, LLc
Address: 2606 Meadowlark Hills Ct.
Spring TX 77389
Phone: 720 - 939 - 3321
Fax:
Cell:

Property Owner

Name: same as applicant
Address:
Phone:
Fax:
Cell:

Property Location

Address: 902 S. Va. Dare Trail
Lot, Block: 1A, Blk. 9, Sect. 1
Subdivision: Kill Devil Hills
Pin#: 9883 08 98 2774

Zoning District: ☒Commercial ☐LI-1 ☐LI-2 ☐OIR

Total Lot Size: 86,250 Sq. Ft.

Disturbed Area: 110,000 Sq. Ft. INCLUDING CORRIGAN STREET

Contractor

Company Name: TO BE DETERMINED
Name:
Address:
License Number:
Phone:
Cell:
Fax:

Town Privilege License Number:

Construction Information

Type of Construction:

☐Assembly ☐Business ☐Educational ☐Factory/Industrial ☐High Hazard
☐Institutional ☐Mercantile ☒Residential ☐Storage ☐Utility/Misc.
☐New Construction ☐Addition ☐Repair/Replace ☐Remodel ☐Other:

Square Footage Proposed:

Interior Space: 49,399 Sq. Ft. Covered Deck(s): 8,226 Sq. Ft. Storage: N/A Sq. Ft.
Garage: N/A Sq. Ft. # of Bedrooms: 90 # of Open Deck(s): 1 PER BLDG
Proposed Square Footage: 43,738 + Existing Square Footage: 0 = 43,738 Total Sq. Ft.*
% Impervious Coverage: 42.4 + % Pervious Coverage: 8.3 = 50.7 Total % Coverage
# of Parking Spaces: *Existing:* 0 *Proposed:* *Total:*
Septic Tank Permit #: KDHWWTP Construction Type: FRAME (PILINGS
Estimated Construction Cost (including labor and materials):

Flood Information

Flood Zone: ☐ VE ☐ AE ☒ X Base Flood Elevation: RFPE = 8'
Proposed First Floor Elevation: 8.0* Sq. Ft Below Base Flood Elevation: N/A

** ADJUSTED FOR PAVERS

**This form is designed as a guide for Commercial Site Plan Review. Additional plans and information will be required prior to building permits.*

Project Description

MULTIFAMILY RESIDENTIAL WITH 6 MULTI-FAMILY BUILDINGS, 31 RESIDENTIAL UNITS WITH 88 TOTAL BEDROOMS. COMMUNITY POOL WITH ONE DECKING

Required Site Plan Information Checklist:

- ☐ Permit Application (Completed)
- ☐ Site Plan Including the following
  - Submittal Requirements:
    - ☒ Vicinity Map
    - 5 ☒ ~~25~~ Copies of Site Plan & Building Plan Elevations – Front, Side, and Rear
    - ☐ Tentative Health Department Approval N/A
    - ☐ Site Plan Development Review Fee Paid in Full NEED AMOUNT
  - Existing Conditions:
    - ☒ Boundary of Entire Lot
    - ☒ Width and Location of Existing Right of Ways
    - ☒ Nature, Purpose, Locations, and Size of Existing Easements
    - ☒ Iron Pins and Concrete Monuments
    - ☒ Scale (1" = 50" Minimum)
    - ☒ North Arrow
    - ☒ Streets Including Width of Pavement
    - ☒ All Underground Utilities, Gas/Propane Below or Above Grade
    - ☒ Dare Co. Register of Deeds Map Book/Subdivision Ref.
    - ☒ Street Address
    - ☒ Present Recorded Owner, Developer, Engineer contacts
    - ☒ Adjacent Property Owners, Adj. Use & Zone
    - ☐ Corp. of Engineers Report / Wetland Study N/A
    - ☒ NFIP Flood Zone (ref: Elevation Datum (NAVD 1988))
    - ☐ Minimum, Lot Size Indicated N/A
  - Proposed Improvements:
    - ☒ Zoning Use Compliance/Setbacks labeled
    - ☒ Landscaping Plan / Buffers / Screening (per section 153.073)
    - ☐ Lighting Plan - photometric showing point output (section 153.074) N/A
    - ☐ Sedimentation & Erosion Control Plan including details PENDING
    - ☐ Disturbed Areas delineated & areas calculated PENDING
    - ☐ Location of Sidewalks on the Croatan Highway and Curbs N/A
    - ☒ Location of Sewer Facilities and Drain field
    - ☒ Proposed Building Type, # of Floors and dimensions, floor area ratio, Height
    - ☒ Existing and Finished Grades of Entire Site
    - ☐ Storm Water Management Plan including calculations PENDING
    - ☒ Total Units and Density per Acre (Multi-Family) or floor area ratio (in OIR)
    - ☒ Lot Size and Lot Coverage Calculation
    - ☒ Utility Plan indicating location & sizes of proposed improvements
    - ☐ Water Service Sizing Checklist PENDING
    - ☒ Layout, Size and Number of Parking Spaces including handicap w/ setbacks (Each Space Numbered)
    - ☒ Fire Lane and Driveways
    - ☐ Loading Zone (Commercial Sites) N/A
    - ☐ Mail Delivery Cluster Sites (Multi-Family)

- ☑ Proposed First Floor Elevation
- ☑ Dumpster Pad Location
- ☑ Proposed Sign Location
- ☒ Sight triangle shown
- ☑ Commercial Building Plans showing architectural compliance
- ☐ Plans to N.C.D.O.T. (if required) PENDING
- ☑ NC Engineer/Land Surveyor Seal on Site Plan

*** The items listed in the Site Plan portion of the above checklist represent information that must be indicated on any site plan submitted for review by the Kill Devil Hills Planning Department, Planning Board, and Board of Commissioners. All of the above required documents shall be submitted on or before the 3rd Tuesday of each month. Upon completion of review, the Planning Board shall transmit its recommendations to the Board of Commissioners. The Board of Commissioners shall review site plans on the second Monday of each month.

Signature of Applicant: _____ (Date) 10-19-21
REVISED 01-18-22

Town of Kill Devil Hills Planning and Inspections
Commercial Site Plan Review Application*

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Subdivision: Kill Devil Hills
Pin#: 9883 08 98 2774

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Total Lot Size: 86,250 Sq. Ft.
Disturbed Area: 110,000 Sq. Ft. INCLUDING CORRIGAN STREET

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Name:
Phone:
Address:
Cell:
Fax:
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Construction Information

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☐Institutional ☐Mercantile ☒Residential ☐Storage ☐Utility/Misc.
☐New Construction ☐Addition ☐Repair/Replace ☐Remodel ☐Other:

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Garage: N/A Sq. Ft. # of Bedrooms: 90 # of Open Deck(s): 1 PER BLDG
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    - ☒ Iron Pins and Concrete Monuments
    - ☒ Scale (1" = 50" Minimum)
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    - ☐ Lighting Plan - photometric showing point output (section 153.074) N/A
    - ☐ Sedimentation & Erosion Control Plan including details PENDING
    - ☐ Disturbed Areas delineated & areas calculated PENDING
    - ☐ Location of Sidewalks on the Croatan Highway and Curbs N/A
    - ☒ Location of Sewer Facilities and Drain field
    - ☒ Proposed Building Type, # of Floors and dimensions, floor area ratio, Height
    - ☒ Existing and Finished Grades of Entire Site
    - ☐ Storm Water Management Plan including calculations PENDING
    - ☒ Total Units and Density per Acre (Multi-Family) or floor area ratio (in OIR)
    - ☒ Lot Size and Lot Coverage Calculation
    - ☒ Utility Plan indicating location & sizes of proposed improvements
    - ☐ Water Service Sizing Checklist PENDING
    - ☒ Layout, Size and Number of Parking Spaces including handicap w/ setbacks (Each Space Numbered)
    - ☒ Fire Lane and Driveways
    - ☐ Loading Zone (Commercial Sites) N/A
    - ☐ Mail Delivery Cluster Sites (Multi-Family)

- [x] Proposed First Floor Elevation
- [x] Dumpster Pad Location
- [x] Proposed Sign Location
- [x] Sight triangle shown
- [x] Commercial Building Plans showing architectural compliance
- [ ] Plans to N.C.D.O.T. (if required) PENDING
- [x] NC Engineer/Land Surveyor Seal on Site Plan

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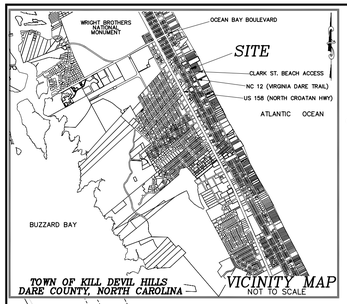
Signature of Applicant: _____ (Date) 10-19-21
REVISED 01-18-22



P.C. 1, SL. 356

BUILDING ONE, TWO AND THREE
PROPOSED 4 UNIT MULTI-FAMILY BUILDING
TWO STORY FRAME ON PILINGS
OVER GROUND LEVEL PARKING
4 UNITS WITH TWO BEDROOMS EACH

BUILDING FOUR
PROPOSED 5 UNIT MULTI-FAMILY BUILDING
THREE STORY FRAME ON PILINGS
OVER GROUND LEVEL PARKING
2 UNITS WITH FOUR BEDROOMS EACH
3 UNITS WITH THREE BEDROOMS EACH

SUBJECT PARCEL
OCEAN VIEW BAPTIST CHURCH
902 SOUTH VIRGINIA DARE TRAIL
KILL DEVIL HILLS, NC 27948
LOTS 1A , BLOCK 9, SECTION 1
KILL DEVIL HILLS, SECTION 1
P.C. 1, SL. 256
D.B. 1023 PG. 0516
PIN 9883 08 98 2774
AREA = 86,250 sq.ft. (1.98 ac.)

BUFFER LANDSCAPING WITHOUT FENCE
10' Buffer with Ornamental landscaping:
Install at least one tree for each 30 linear feet of landscape area and one shrub for each 10 linear feet of landscape area.
Ornamental landscaping need not be evenly spaced, but rather dispersed throughout the landscape area to create a natural appearance. In all cases where a fence is constructed, the required landscaped area shall be located between the fence and property line.
Submit Species for Town approval prior to ordering or installing landscape buffer plants.
See Sheet 5 for additional requirements and information

BUFFER LANDSCAPING WITH FENCE
10' Buffer with Ornamental landscaping:
Install at least one tree for each 10 linear feet of landscape area and one shrub for each 10 linear feet of landscape area.
Ornamental landscaping need not be evenly spaced, but rather dispersed throughout the landscape area to create a natural appearance. In all cases where a fence is constructed, the required landscaped area shall be located between the fence and property line.
Submit Species for Town approval prior to ordering or installing landscape buffer plants.
See Sheet 5 for additional requirements and information

BUILDING SIX
PROPOSED 5 UNIT MULTI-FAMILY BUILDING
THREE STORY FRAME ON PILINGS
OVER GROUND LEVEL PARKING
2 UNITS WITH FOUR BEDROOMS EACH
3 UNITS WITH THREE BEDROOMS EACH

BUILDING FIVE
PROPOSED 4 UNIT MULTI-FAMILY BUILDING
THREE STORY FRAME ON PILINGS
GROUND LEVEL PARKING
1 UNIT WITH FOUR BEDROOMS
2 UNITS WITH THREE BEDROOMS EACH
1 UNIT WITH FIVE BEDROOMS

ADJOINER
MARK T. FRANZESE
23 KOHLER FARM RD
SHELTON, CT 06484
LOT 9A, BLOCK 9, SECTION 1
KILL DEVIL HILLS, SECTION 1
304 CLARK STREET
P.C. 6 SL. 313
D.B. 1288 PG. 2277

ADJOINER
BRUCE L. KERR TRUST
11337 Aegean Ter
Woodbridge, VA 22192
LOT 7, BLOCK 9, SECTION 1
KILL DEVIL HILLS, SECTION 1
912 SOUTH VIRGINIA DARE TRAIL
M.B. 1 PG. 175
D.B. 1749 PG. 0358
PIN 9883 08 98 3577

PRELIMINARY PLAN
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GENERAL NOTES:

APPLICANT/PROPERTY OWNER:
OCEAN BREEZE DEVELOPERS LLC
2606 MEADOWLARK HILLS CT.
SPRING TX 77389

SUBJECT PROPERTY:
LOT 1A, BLOCK 9, SECTION 1, KILL DEVIL HILLS SUBDIVISION
KILL DEVIL HILLS, DARE COUNTY, NC
STREET ADDRESS: 902 S. VA. DARE TRAIL, KILL DEVIL HILLS
RECORDED REFERENCE: P.C. 1 SL. 356, D.B. 2534 PG .33
Parcel: 027620000 PIN: 9883 08 98 2774
LOT AREA : 86,250 sq.ft.

SUBJECT PROPERTY ZONING: C (COMMERCIAL)

BUILDING SETBACKS:
FRONT – 30'
SIDE – 10' (CORNER SIDE – 15')
REAR – 30'

FEMA DATA :

Town of Kill Devil Hills CID 375353 Panel 9883 Suffix J Map Number 3720988300K Effective Date : 6/19/2020
Vertical Datum NAVD 1988
FIRM Zone: X
Flood Zones subject to change by FEMA

Reference Level:
X ZONE – For structures within X Flood Zones, the Reference Level is the bottom of the lowest floor or the bottom of the lowest attendant utility including ductwork, whichever is lower, with only flood resistant materials located below the Reference Level.

Regulatory Flood Protection Elevation (RFPE):
X ZONE – In X Zones west of N.C. 12 the RFPE is 8 feet NAVD 1988 or natural grade elevation if the natural grade is greater than 8 feet NAVD 1988.

ALL ELEVATIONS REFERENCED TO NAVD 1988 VERTICAL DATUM
NO ARMY CORPS OF ENGINEERS "404" JURISDICTIONAL WETLANDS LOCATED ON-SITE.

PROPOSED DEVELOPMENT:

Multifamily Development Consisting of 6 Multi-Family Residential Buildings with a mix of two, three, four and five bedroom units. Each unit includes a ground level entry and under house carport parking.
All units will include Residential 13D fire suppression systems if required by code or the Town Fire Marshall.
Additional Improvements Include:

- 24' wide PICP paver roadway with 18" concrete border
- Community Swimming Pool with Bath House, Gym and Pool Equipment Building
- Sewer service to be provided by KDHWWTP, LLC through existing agreement

Multi–Family Dwellings are an Approved Use in the C Zoning district

Project Density:
Total Lot area 86,250 sq.ft. (1.98 ac.)
Total number of residential units = 30
Unit Density = 15.2 units per acre (Max Density = 18 units per acre)

Development Requirements:
Maximum Lot Coverage = 65%
Maximum Building Height = 50' with no more than four levels of building space.
BUILDING SUMMARY:

BUILDING	2 BR UNITS	3 BR UNITS	4 BR UNITS	5 BR UNITS	TOTAL BEDROOMS
ONE	4				8
TWO	4				8
THREE	4				8
FOUR		3	2		17
FIVE		2	1	1	15
SIX		3	2		17
SEVEN		2	2		17
TOTAL	12	10	7	1	90

TOTAL NUMBER OF PARKING SPACES REQUIRED = 90
TOTAL NUMBER OF PARKING SPACES PROVIDED = 93
ALL SPACES 10'x20' CLEAR

PROPOSED BUILDING COVERAGE:
LOT AREA = 86,250 sq.ft.
Lot coverage calculations using Town of Kill Devil Hills coverage definitions.
Residential Buildings = 29,278 sq.ft.
HVAC stands – 30 at 27 sq.ft. = 810 sq.ft.
Roadway Concrete Border, Curbing and Entrances = 4,047 sq.ft.
Roadway Paver Inserts = 7,178 sq.ft.
(7,1975 sq.ft. x 60% reduction = 7,178 sq.ft.)
(Pavers, Turfstone or Porous Concrete with 7" minimum base)
Community Pool, Conc. Walk and Concrete Decking = 1,542 sq.ft.
Pool Bath House and Pool Equipment Building = 378 sq.ft.
Pool Gazebo = 144 sq.ft.
Dumpster Pad = 224 sq.ft.
Lift Station = 137 sq.ft.
TOTAL COVERAGE = 43,738 sq.ft.
PERCENT LOT COVERAGE = 50.7
MAXIMUM LOT COVERAGE = 65%
MAXIMUM LOT COVERAGE WITHOUT TURFSTONE REDUCTION = 54,535 sq.ft. (63.2%)

PROPOSED WASTEWATER DISPOSAL:
KDHWWTP, LLC WASTEWATER TREATMENT FACILITY
PURCHASED CAPACITY : 14,280 GPD
Reference NCUC Docket W–1160, Sub. X (XX–XX–XX)

Design Flow:
90 bedrooms at 120 gpd/bedroom = 10,800 gpd
plus 30 habitable rooms at 120 gpd/room = 3,600 gpd
Total Design Flow = 14,400 gpd
Reference 15A NCAC 02T .0114 (a)

ALL UTILITIES SHALL BE PLACED UNDERGROUND.

ADDITIONAL DEVELOPMENT REQUIREMENTS:
1. A separate permit will be required for the proposed free–standing sign and any proposed signs on the building or fence. The free standing sign will have 64 sq.ft. maximum.
2. Water test shall be done to determine available water for fire suppression.
3. The porous concrete shall be designed to withstand loads of 100,000 pounds to support weight of the fire apparatus.
4. The townhouses shall be equipped with a 13D fire suppression system due to the accessibility.
5. Additional Permits Required prior to building permit issuance:
   A. A Copy of the NCDEQ Wastewater Extension (Fast Track) permit will need to be provided prior to issuance of a building permit.
   B. State stormwater management permit required.
   C. KDHWWTP will need to provide the Town's encroachment agreement for the wastewater infrastructure in the E. Corrigan St. Right–of–Way.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18994 MICHAEL W. ROBINSON
01-05-22
3154
REGISTERED LAND SURVEYOR MICHAEL W. ROBINSON

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SITE PLAN

REVISIONS

NO.	DATE	DESCRIPTION	BY

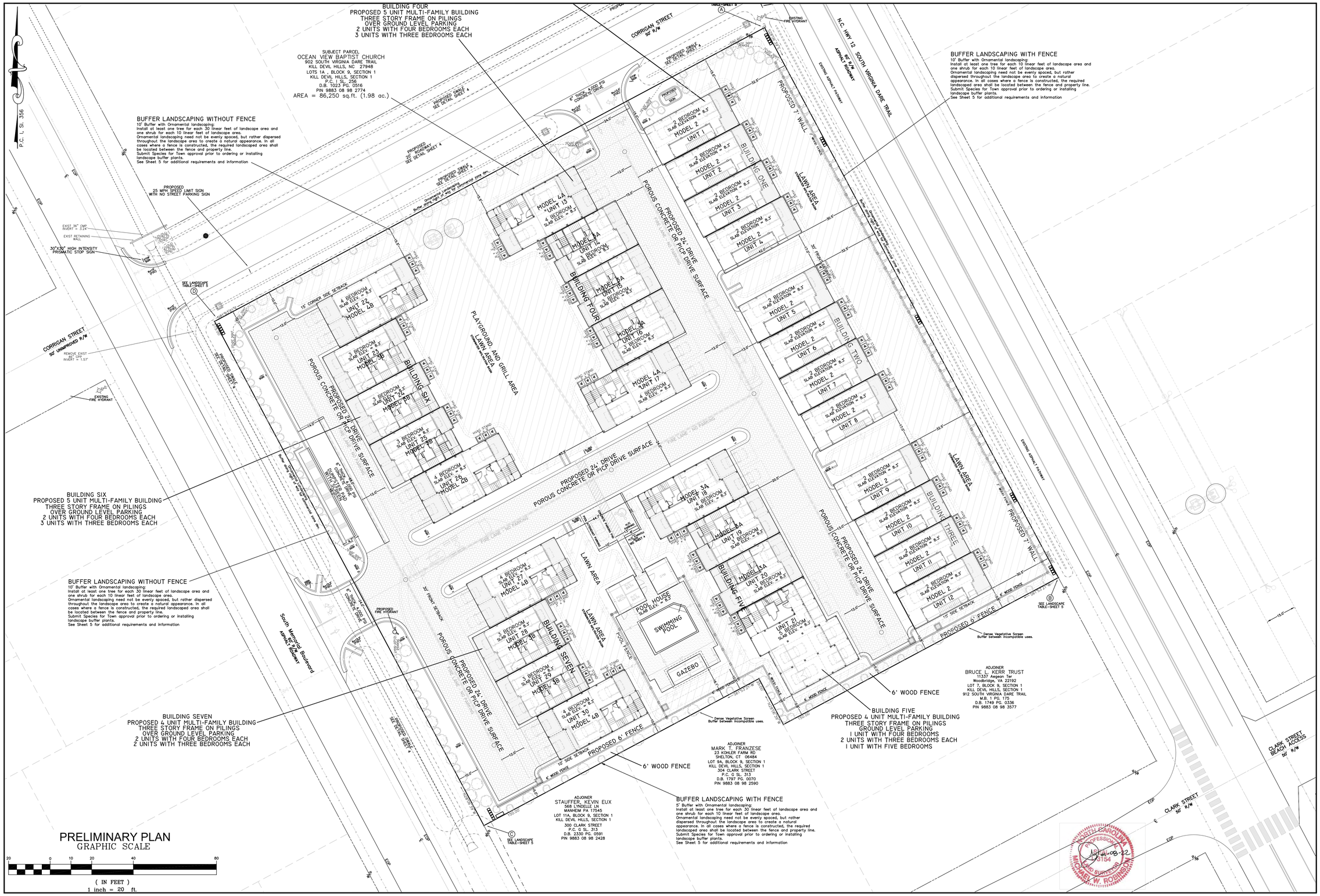
PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL
DARE COUNTY

DATE:	SCALE:
01–31–22	1"=20'
DESIGNED: MWR	DRAWN: MWR

SHEET: 1A OF 10

CAD FILE: ocean view cottages–kdh–base.dwg

PROJECT NO: 051121



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SITE PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS

NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS — DARE COUNTY — NORTH CAROLINA

902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22	SCALE: 1"=20'
DESIGNED: MWR	DRAWN: MWR
SHEET: 1B OF 10	
CAD FILE: ocean view cottages-kdh-base.dwg	
PROJECT NO: 051121	

NORTH CAROLINA PROFESSIONAL SEAL 3154 LAND SURVEYOR MICHAEL W. ROBINSON
Apr-05-22

NOTE REGARDING WATER SERVICE LINE AND METER SIZING

The Architect shall provide provide the water meter sizing form for each of the unit models and the pool amenity to determine if the 5/8x3/4 service is adequately sized for the units. Normally a four or five bedroom unit would only require a 5/8x3/4 service, but these units are all provided with full baths in each suite and several amenity fixtures that may require higher demand and larger services.

P.C. 1, Sl. 356

EXISTING WATER MAIN 16" PVC KILL DEVIL HILLS

PROPOSED DROP INLET 1 TOP OF GRATE = 6.30' INVERT OUT (SOUTH) = 3.45' (12" SOCK DRAIN) SEE DETAIL SHEET 4

TYPICAL WATER SERVICES LINES SIZE TO BE DETERMINED LINES SHOW SPREAD OUT FOR CLARITY INSTALL IN COMMON TRENCH

PROPOSED DROP INLET 2 TOP OF GRATE = 6.30' INVERT IN (NORTH) = 3.30' (12" SOCK DRAIN) INVERT IN (SOUTHEAST) = 3.30' (6 L.F. 12" SOLID WALL HDPE) INVERT OUT (WEST) = 3.30' (12" SOCK DRAIN) SEE DETAIL SHEET 4

108 L.F. – 12" HDPE N-12 SOCK DRAIN THIS LINE MAY BE CURVED HORIZONTALLY AND DIPPED VERTICALLY TO AVOID CONFLICTS WITH EXISTING UTILITIES AND DRAINAGE

PROPOSED MANHOLE 1 RIM ELEVATION = 8.0' INVERT (6") OUT = 5.0' SEE DETAIL SHEET 9

EXISTING 6" SS FORCE MAIN KDHWWTP, LLC (LOCATION APPROXIMATE)

PROPOSED DROP INLET 3 TOP OF GRATE = 6.30' INVERT IN (EAST) = 3.36' (12" SOCK DRAIN) INVERT OUT (WEST) = 3.36' (12" SOCK DRAIN) SEE DETAIL SHEET 4

175 L.F. – 12" HDPE N-12 SOCK DRAIN THIS LINE MAY BE CURVED HORIZONTALLY AND DIPPED VERTICALLY TO AVOID CONFLICTS WITH EXISTING UTILITIES AND DRAINAGE

CORRIGAN STREET 50' R/W

PROPOSED 4" x 6" TAPPING SLEEVE AND 4" GATE VALVE IN BOX 4" DIP TO VALVE VAULT

EXISTING 6" SS FORCE MAIN KDHWWTP, LLC (LOCATION APPROXIMATE)

PROPOSED WASTEWATER LIFT STATION WET WELL TOP ELEVATION = 8.6' INVERT (8") IN = 2.4' SEE DETAIL SHEET

PROPOSED 4" DIP FORCE MAIN INSTALL 5' MIN. DEPTH (TOP OF PIPE) TO ALLOW FOR FUTURE WATER LINE

PROPOSED WASTEWATER LIFT STATION VALVE VAULT TOP ELEVATION = 8.6' SEE DETAIL SHEET

PROPOSED SWALE SEE DETAIL SHEET 4

EXISTING 6" CHECK VALVE IN CONCRETE VAULT RIM ELEV. = 7.04'

EXIST 36" CMP INVERT = 3.24

EXIST RETAINING WALL

INVERT=2.05'

PROPOSED DROP INLET 4 TOP OF GRATE = 6.30' INVERT IN (EAST) = 3.30' (12" SOCK DRAIN) INVERT OUT (WEST) = 3.30' (12" SOCK DRAIN) SEE DETAIL SHEET 4

12 L.F. – 12" HDPE N-12 SOCK DRAIN TIE TO 42" HDP CULVERT USE GASKETED TEE

CORRIGAN STREET 50' UNIMPROVED R/W

REMOVE EXIST. 42" CPP INVERT = 1.57'

EXISTING FIRE HYDRANT

TYPICAL 5/8" WATER SERVICES TO BE INSTALLED WATER SERVICES TO BE INSTALLED BY THE TOWN OF KILL DEVIL HILLS PUBLIC SERVICES 5 TOTAL SERVICES

PROPOSED MANHOLE 6 RIM ELEVATION = 8.0' INVERT (6") OUT = 5.0' SEE DETAIL SHEET 9

330 L.F. – 42" CULVERT WITH FES ADS HP STORM – DUAL WALL PIPE SLOPE = 0.02% SEE DETAIL SHEET 4

330 L.F. – 12" HDPE N-12 SOCK DRAIN INSTALL IN COMMON TRENCH WITH 42" CULVERT INVERT 2' ABOVE INVERT OF 42" CULVERT SEE DETAIL SHEET 4

EXISTING WATER MAIN 6" PVC KILL DEVIL HILLS

INVERT=2.09'

PROPOSED MANHOLE 5 RIM ELEVATION = 8.0' INVERT (6") IN = 3.7' INVERT (6") OUT = 3.6' SEE DETAIL SHEET 9

South Memorial Boulevard ASPHALT ROADWAY

6" C900 DIRECTIONALLY DRILLED MAINTAIN 18" MIN. BELOW BOTTOM OF PROPOSED CULVERT

6"x 6" TAPPING SLEEVE AND VALVE

PROPOSED FIRE HYDRANT ASSY.

PROPOSED 8" SDR 35 GRAVITY SEWER LINE

INFILTRATION BASIN 1 SEE SHEET 5 FOR STORMWATER CALCULATIONS

INFILTRATION BASIN 2 SEE SHEET 5 FOR STORMWATER CALCULATIONS

MH 1 MH 2 MH 3 MH 4 MH 5 MH 6

BUILDING ONE: MODEL 2 UNIT 1, MODEL 2 UNIT 2, MODEL 2 UNIT 3, MODEL 2 UNIT 4

BUILDING TWO: MODEL 2 UNIT 5, MODEL 2 UNIT 6, MODEL 2 UNIT 7, MODEL 2 UNIT 8

BUILDING THREE: MODEL 2 UNIT 9, MODEL 2 UNIT 10, MODEL 2 UNIT 11, MODEL 2 UNIT 12

BUILDING FOUR: MODEL 4A UNIT 13, MODEL 3A UNIT 14, MODEL 3A UNIT 15, MODEL 3A UNIT 16, MODEL 4A UNIT 17

BUILDING FIVE: MODEL 3A UNIT 18, MODEL 3A UNIT 19, MODEL 3A UNIT 20, UNIT 21

BUILDING SIX: UNIT 22 MODEL 4B, UNIT 23 MODEL 3B, UNIT 24 MODEL 3B, UNIT 25 MODEL 3B, UNIT 26 MODEL 4B

BUILDING SEVEN: UNIT 27 MODEL 4B, UNIT 28 MODEL 3B, UNIT 29 MODEL 3B, UNIT 30 MODEL 4B

4" SDR 35 SERVICE AT 1.0% (TYPICAL)

PROPOSED MANHOLE 4 RIM ELEVATION = 8.0' INVERT (6") IN = 2.5' INVERT (6") IN = 2.5' INVERT (4") IN = 2.5' INVERT (8") OUT = 2.4' SEE DETAIL SHEET 9

PROPOSED MANHOLE 2 RIM ELEVATION = 8.0' INVERT (6") IN = 3.7' INVERT (6") = 3.7' INVERT (6") OUT = 3.6' SEE DETAIL SHEET 9

PROPOSED MANHOLE 3 RIM ELEVATION = 8.0' INVERT (6") OUT = 5.0' SEE DETAIL SHEET 9

PROPOSED DROP INLET 7 TOP OF GRATE = 7.50' INVERT OUT (WEST) = 5.90' (8" HDPE)

12 L.F. – 8" HDPE N-12 SOCK DRAIN

PROPOSED CURB INLET 6 TOP OF GRATE = 7.90' INVERT OUT (EAST) = 5.90' (8" HDPE)

PROPOSED DROP INLET 5 TOP OF GRATE = 7.50' INVERT OUT (WEST) = 5.90' (8" HDPE)

INFILTRATION BASIN 2 6' DEEP 4:1 SIDE SLOPES OPEN VOLUME = 10,613 cu.ft. INTERSTITIAL SOIL VOLUME = 5,995 cu.ft.

TYPICAL WATER SERVICES LINES SIZE TO BE DETERMINED LINES SHOW SPREAD OUT FOR CLARITY INSTALL IN COMMON TRENCH

EXISTING 6" SS FORCE MAIN KDHWWTP, LLC (LOCATION APPROXIMATE)

N.C. HWY 12 SOUTH VIRGINIA DARE TRAIL 66' R/W ASPHALT ROADWAY

EXISTING ASPHALT PAVING

PROPOSED SWALE SEE DETAIL SHEET 4

TYPICAL 5/8" WATER SERVICES TO BE INSTALLED WATER SERVICES TO BE INSTALLED BY THE TOWN OF KILL DEVIL HILLS PUBLIC SERVICES 5 TOTAL SERVICES

TYPICAL 5/8" WATER SERVICES TO BE INSTALLED WATER SERVICES TO BE INSTALLED BY THE TOWN OF KILL DEVIL HILLS PUBLIC SERVICES 6 TOTAL SERVICES

EXISTING WATER MAIN 16" PVC KILL DEVIL HILLS

TYPICAL 5/8" WATER SERVICES TO BE INSTALLED WATER SERVICES TO BE INSTALLED BY THE TOWN OF KILL DEVIL HILLS PUBLIC SERVICES 4 TOTAL SERVICES

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TYPICAL 5/8" WATER SERVICES TO BE INSTALLED WATER SERVICES TO BE INSTALLED BY THE TOWN OF KILL DEVIL HILLS PUBLIC SERVICES 4 TOTAL SERVICES

EXISTING WATER MAIN 16" PVC KILL DEVIL HILLS

PRELIMINARY PLAN
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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UTILITY PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS NORTH CAROLINA
DARE COUNTY
902 SOUTH VIRGINIA DARE TRAIL

DATE:	SCALE:
01-31-22	1"=20'
DESIGNED: MWR	DRAWN: MWR

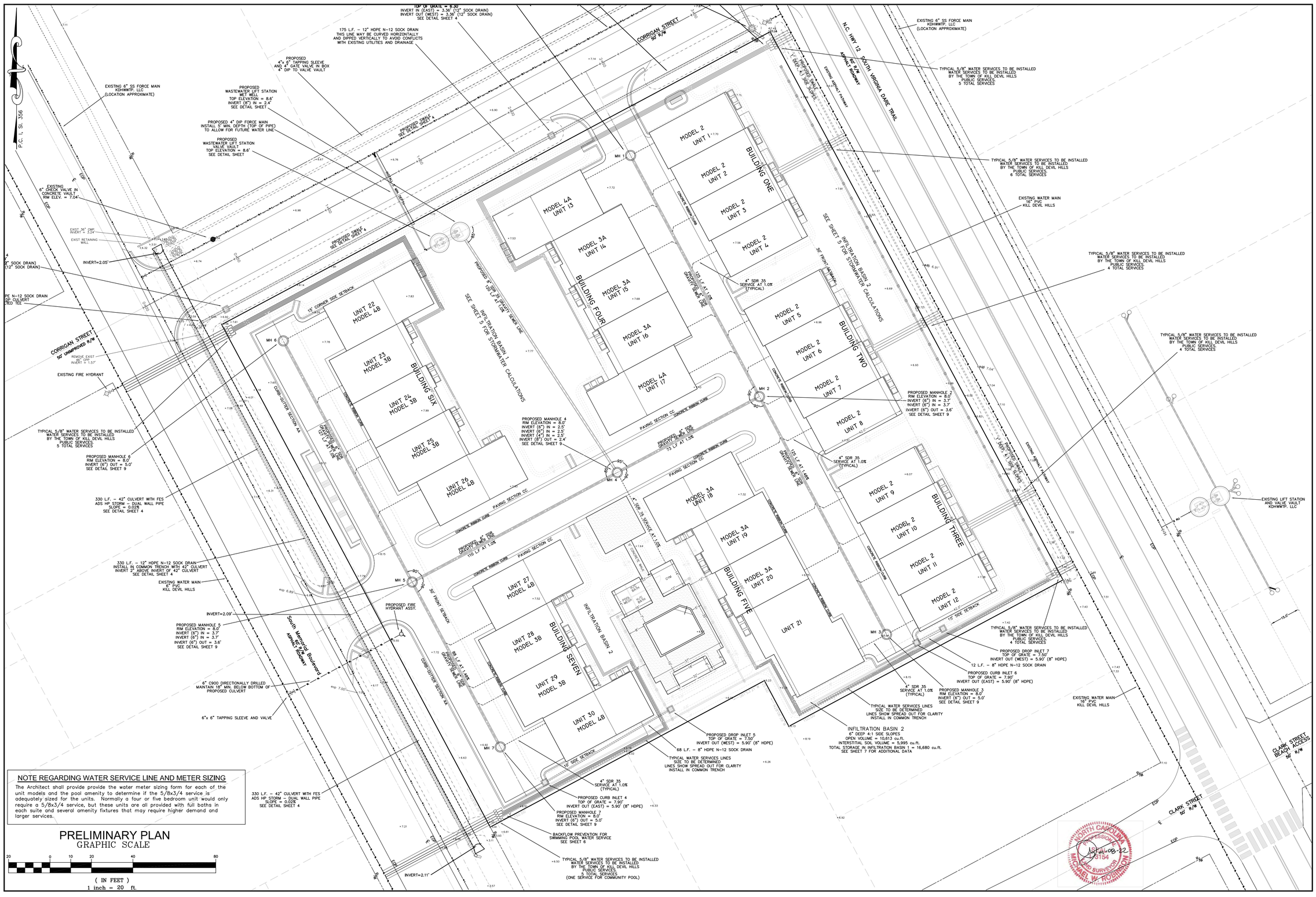
SHEET: 2A OF 10

CAD FILE: ocean view cottages-kdh-base.dwg

PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SEAL L-3754 LAND SURVEYOR MICHAEL W. ROBINSON

EXISTING WATER MAIN 16" PVC KILL DEVIL HILLS



NOTE REGARDING WATER SERVICE LINE AND METER SIZING

The Architect shall provide provide the water meter sizing form for each of the unit models and the pool amenity to determine if the 5/8x3/4 service is adequately sized for the units. Normally a four or five bedroom unit would only require a 5/8x3/4 service, but these units are all provided with full baths in each suite and several amenity fixtures that may require higher demand and larger services.

PRELIMINARY PLAN

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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UTILITY PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS

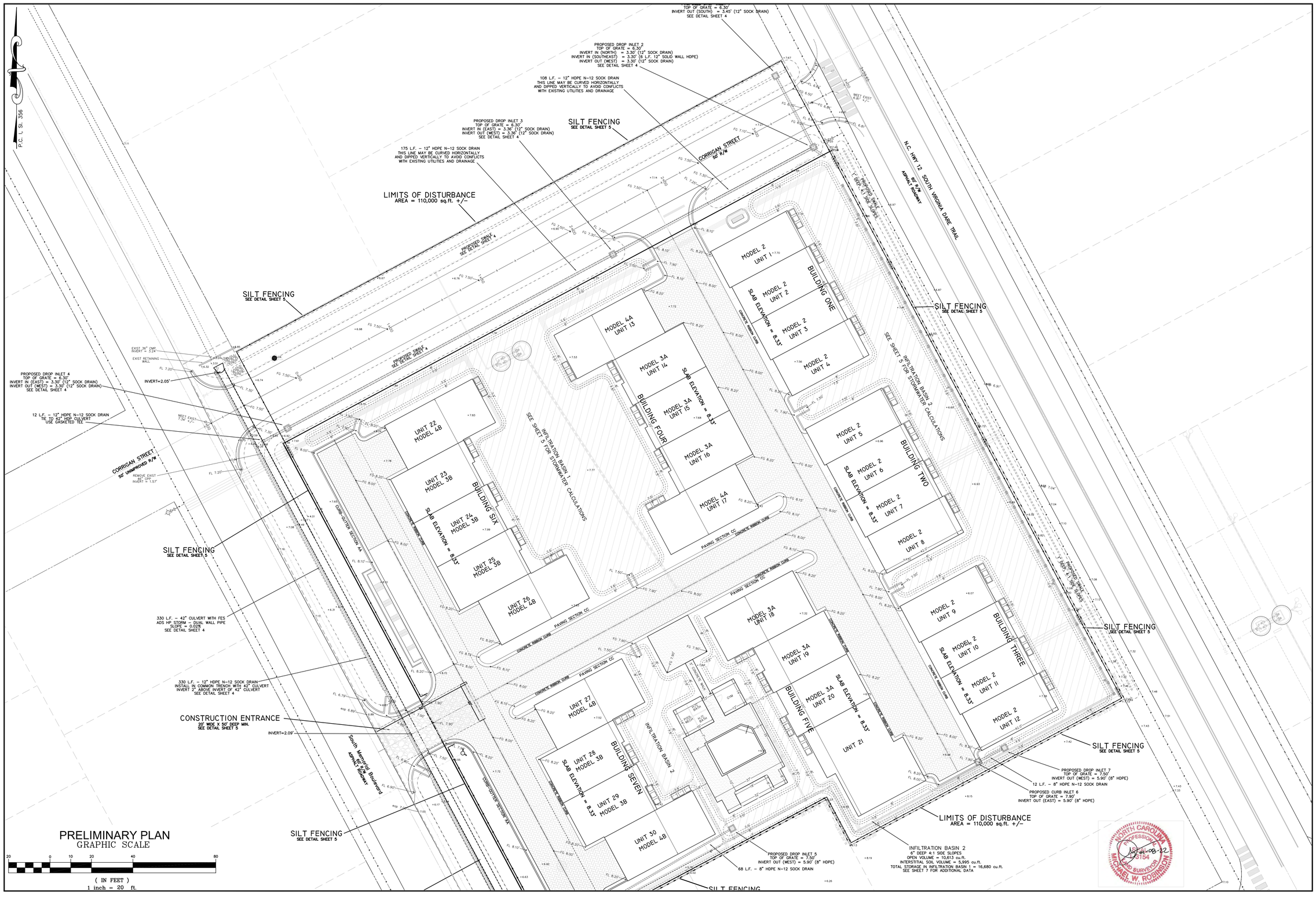
NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA

902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 2B OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SEAL L-3154 LAND SURVEYOR MICHAEL W. ROBINSON
1st-01-22



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SED/EC PLAN
GRADING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS

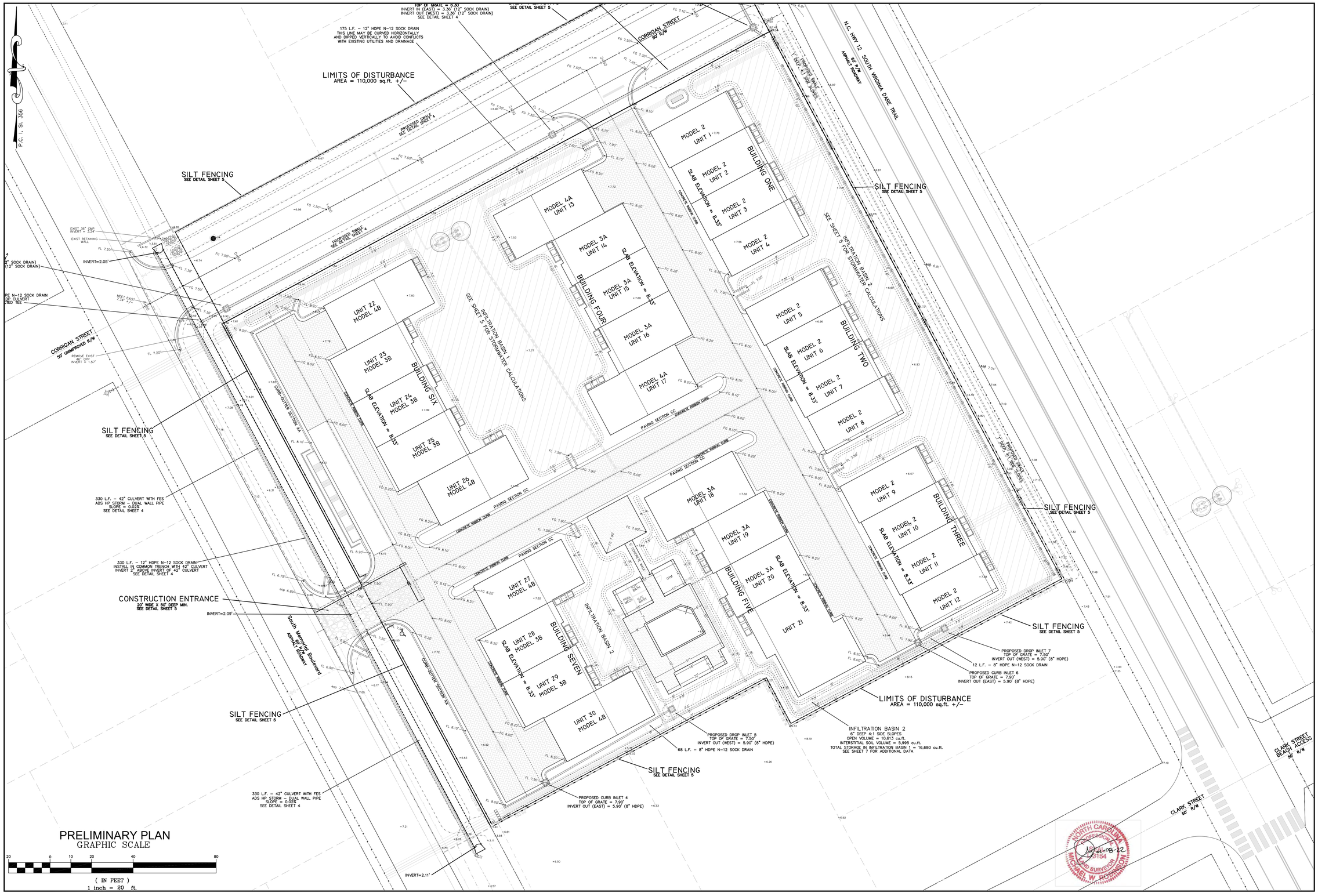
NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS — DARE COUNTY — NORTH CAROLINA

902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 3A OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SEAL 18994 LAND SURVEYOR MICHAEL W. ROBINSON
1st-03-22



PRELIMINARY PLAN
GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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SED/EC PLAN
GRADING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS			
NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS — DARE COUNTY — NORTH CAROLINA

902 SOUTH VIRGINIA DARE TRAIL

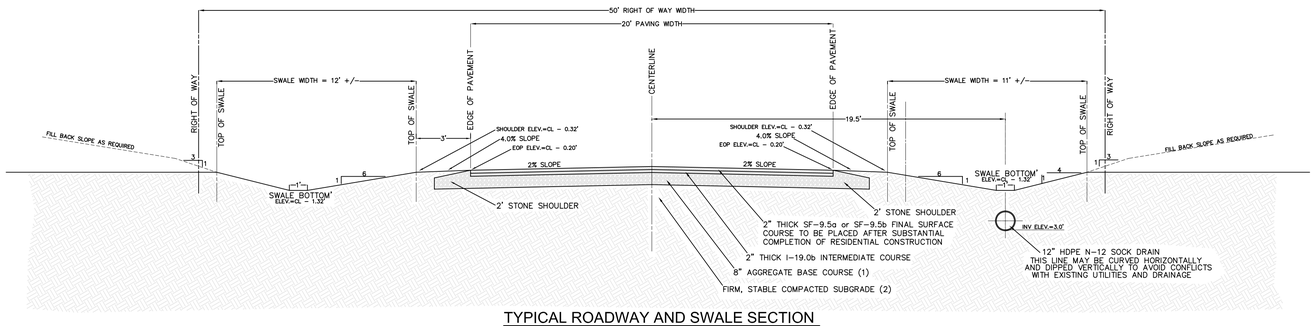
DATE: 01-31-22	SCALE: 1"=20'
DESIGNED: MWR	DRAWN: MWR

SHEET: 3B OF 10

CAD FILE: ocean view cottages-kdh-base.dwg

PROJECT NO: 051121

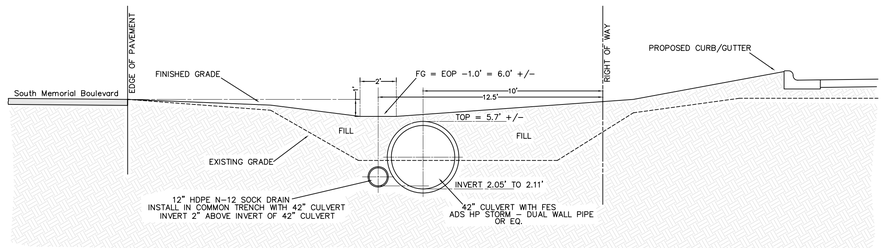
NORTH CAROLINA PROFESSIONAL 3154 LAND SURVEYOR MICHAEL W. ROBINSON 01-28-22



TYPICAL ROADWAY AND SWALE SECTION

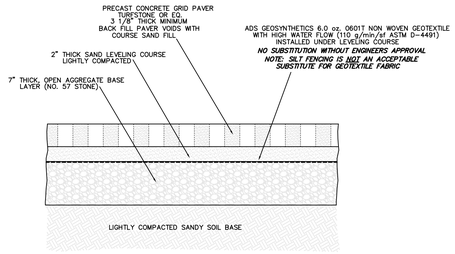
NOT TO SCALE

(1) NCDOT ABC materials compacted to a dry density of at least 100% of the Standard Proctor maximum dry density (ASTM D698)
(2) Subgrade soils compacted to a dry density of at least 100% of the Standard Proctor maximum dry density (ASTM D698)



SOUTH MEMORIAL BLVD. DRAINAGE SECTION

NOT TO SCALE



TURFSTONE/PICP PAVING DETAIL

NOT TO SCALE

The owner and Contractor are reminded that all street and drainage improvements in the Town right of ways will have to be constructed, inspected and tested in accordance with the Town's Technical Specifications which include but are not limited to subsurface geotechnical work, road base & density testing, asphalt paving and core sampling, and drainage work. In addition roadway improvements are to be completed in compliance with the Town of Kill Devil Hills Town Code Chapter 51: Streets and Sidewalks. Excepts outlining specific developer and contractor requirements are listed below. Other relevant sections not listed shall also apply.

CHAPTER 91: STREETS AND SIDEWALKS

§ 91.33 PRELIMINARY PLANS.

(2) Adjacent property owners shall be notified in accordance with established town administrative procedures, which shall include at minimum by first class mail, at least 30 days prior to commencement of construction.

§ 91.16 IMPROVEMENTS WITHIN THE PUBLIC RIGHTS-OF-WAY.

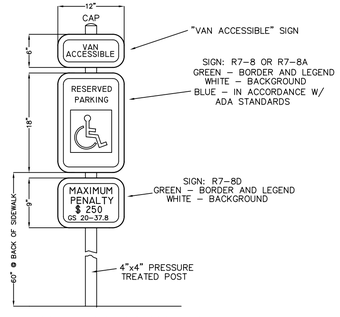
(C) *Seeding and stabilization; bond requirements.* Private developers who apply to construct a new street within a town right-of-way shall post a bond (or cash equivalent) with the Public Services Department for seeding and stabilization of town rights-of-way prior to authorization to construct a new street. The amount of the bond (or cash equivalent) shall be based on a certified seeding and stabilization cost provided by developer and verified by Public Services Department, based on industry standards, plus 15% contingencies. Bonds (or cash equivalent) for seeding and stabilization shall be held for maximum 120 days after the date of Board of Commissioners acceptance of work within a right-of-way.

§ 91.35 REQUIRED IMPROVEMENTS.

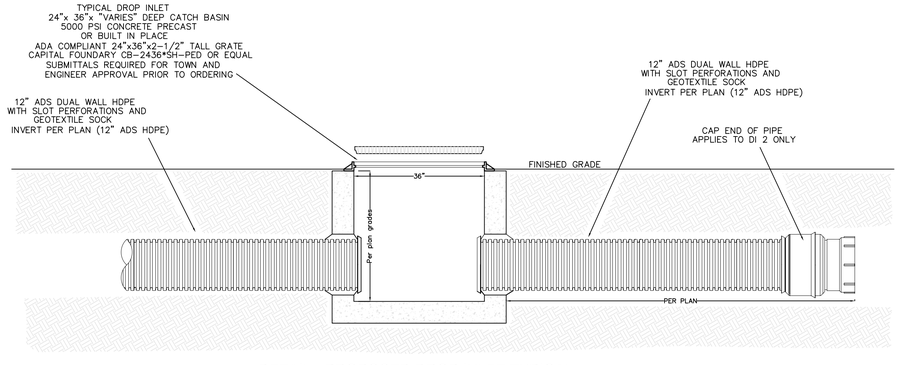
(G) Seeding and stabilization requirements. A private developer shall install seeding and stabilization at least three weeks prior to requesting final inspection of the project. The Public Services Department will inspect the site for compliance with approved plans and determine if permanent ground cover and stabilization has been established or if additional effort is needed.

(1) Approximately 60 days after acceptance by the Board of Commissioners, the Public Services Department will re-inspect the site and determine if permanent ground cover has been achieved. If permanent ground cover has not been accomplished, the developer will be notified of all areas requiring additional work by certified letter.

(2) If within 14 days after receipt of the certified letter the developer does not provide the additional seeding and stabilization required stabilization to accomplish permanent ground cover, the town shall have the right to use funds from the bond (or cash equivalent) to accomplish permanent ground cover.

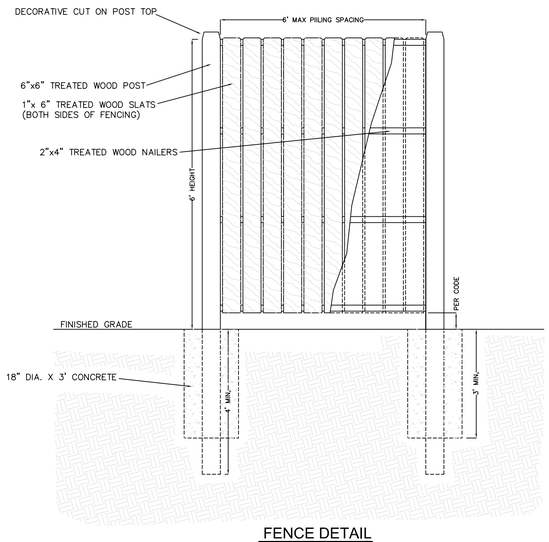


HANDICAP ACCESS SIGNAGE



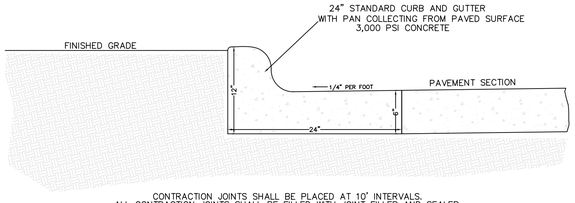
DETAIL - PROPOSED DROP INLET TYPICAL

NOT TO SCALE



FENCE DETAIL

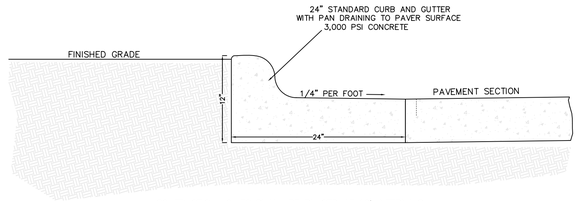
NOT TO SCALE



CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
ALL CONTRACTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.

CURB AND GUTTER PAVING SECTION AA

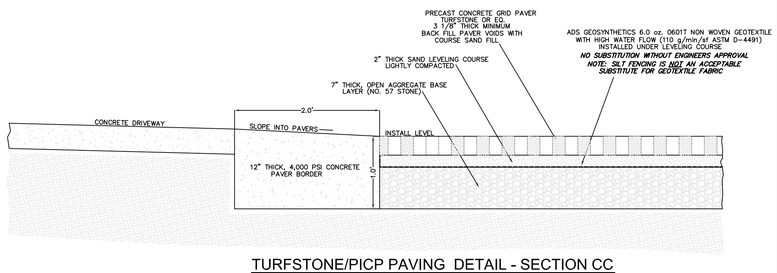
NOT TO SCALE



CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
ALL CONTRACTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.

CURB AND GUTTER PAVING SECTION BB

NOT TO SCALE



TURFSTONE/PICP PAVING DETAIL - SECTION CC

NOT TO SCALE

SIGN TYPE 1

SIGN TYPE 2

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DETAIL PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS

NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS — DARE COUNTY — NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 4 OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

SOIL EROSION & SEDIMENTATION CONTROL PLAN NOTES:

1. SOIL EROSION & SEDIMENT CONTROL PLAN NOTES;
   a.) AREA TO BE DISTURBED: ±110,000 sq.ft. (2.53 ac.)
   b.) PROVIDE A GROUND COVER (TEMPORARY OR PERMANENT) ON ALL SLOPES 3:1 OR STEEPER WITHIN 7 CALENDAR DAYS AND ALL SLOPES FLATTER THAN 3:1 WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. PROVIDE A PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT
   c.) IF LAND DISTURBING ACTIVITIES OCCUR OUTSIDE THE PERMANENT VEGETATION SEEDING DATES (APR. 1– SEP.30) THEN TEMPORARY VEGETATION SEEDING SPECIFICATIONS SHALL BE FOLLOWED FOR PLANTING UNTIL THE NEXT APPROPRIATE PERMANENT SEEDING PERIOD, AT WHICH TIME PERMANENT VEGETATION SHALL BE ESTABLISHED ACCORDING TO PERMANENT VEGETATION SEEDING SPECIFICATIONS (SEE PERM. & TEMP. SEEDING SPECIFICATIONS ON SHEET ES2).
   d.) IF EXCESSIVE WIND EROSION OR STORMWATER RUNOFF EROSION DEVELOPS DURING TIME OF CONSTRUCTION ANY LOCATION ON THE PROJECT SITE, ADDITIONAL SILT FENCING OR OTHER MEASURES SHALL BE INSTALLED AS DIRECTED BY ENGINEER SO AS TO PREVENT DAMAGE TO ADJACENT PROPERTY. SEE SILT FENCE DETAIL ON THIS SHEET.
   e.) SOIL EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSPECTED WEEKLY AND AFTER ANY SIGNIFICANT RAINFALL PRODUCING EVENT AND SHALL BE MAINTAINED AND REPAIRED AS NECESSARY UNTIL PERMANENT CONTROLS ARE ESTABLISHED.
   f.) CONSTRUCTION SCHEDULE:
      1) OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS. NO WORK SHALL BE PERFORMED IN WETLAND AREAS PRIOR TO ISSUANCE OF ALL APPLICABLE USACE PERMITS.
      2) FLAG AND/OR ROUGH STAKE WORK LIMITS.
      3) HOLD PRECONSTRUCTION CONFERENCE (OWNER, CONTRACTOR, ENGINEER, AND APPROPRIATE GOVERNMENT OFFICIALS) AT LEAST ONE WEEK PRIOR TO START OF CONSTRUCTION ACTIVITIES.
      4) INSTALL SILT FENCING AT LOCATIONS SHOWN ON PLAN
      5) COMPLETE CLEARING AND GRUBBING PROCEDURES.
      6) GRADE SITE ACCORDING TO PLAN
      7) INSTALL INFILTRATION BASINS AND STORM SEWER. DROP INLETS TO BE PROTECTED WITH INLET PROTECTION UNTIL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED. PIPE ENDS AT INFILTRATION BASINS SHALL BE PROTECTED WITH OUTLET PROTECTION.
      8) INSTALL PERMEABLE PAVEMENT GRAVEL BASE. BASE LAYER TO BE PROTECTED FROM SEDIMENT AT ALL TIMES. CONSTRUCTION TRAFFIC TO BE RESTRICTED TO SPECIFIC AREAS WITHIN THE BASE (STAGING / WORK AREA TO BE DEFINED BY CONTRACTOR AND CLEARLY DEMARCATED UTILIZING BARRIERS/CONES/TAPE), ONCE HEAVY BUILDING CONSTRUCTION IS COMPLETE, STAGING / WORK AREA BASE MATERIAL WILL BE INSPECTED BY ENGINEER AND IF FOUND TO BE DEGRADED, IT SHALL BE REMEDIATED AT THE EXPENSE OF THE CONTRACTOR. INSTALLATION OF PERMEABLE CONCRETE PAVEMENT SHALL NOT TAKE PLACE UNTIL ALL EARTHWORK ACTIVITIES AND ALL HEAVY BUILDING CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. INSTALLED PERMEABLE CONCRETE SHALL BE PROTECTED FROM SEDIMENT AND FROM HEAVY CONSTRUCTION EQUIPMENT AT ALL TIMES.
      9) ALL EROSION & SEDIMENTATION CONTROL PRACTICES WILL BE INSPECTED WEEKLY AND AFTER HEAVY RAINFALL EVENTS. NEEDED REPAIRS WILL BE MADE IMMEDIATELY.
      10) ONCE SITE IS FULLY STABILIZED; REMOVE INLET AND OUTLET PROTECTION, CLEAN STORM SEWER OF ANY SEDIMENT, FINE-GRADE AND SEED OR LANDSCAPE INFILTRATION BASINS.

TOWN OF KILL DEVIL HILLS ORDINANCE CHAPTER 153 – SECTION 153.071
Whenever land-disturbing activity is undertaken on a tract comprising more than 1/2 acre, the person conducting the land-disturbing activity shall install such sedimentation and erosion control devices and practices as are sufficient to retain the sediment generated by the land-disturbing activity within the boundaries of the tract during construction upon and development of said tract and shall plant or otherwise provide a permanent ground cover sufficient to restrain erosion after completion of construction or development within 15 working days or 90 calendar days, whichever is shorter.

MINIMUM EROSION CONTROL MEASURES:

1. SUBMIT SEDIMENTATION AND EROSION CONTROL PLAN ALONG WITH FINANCIAL RESPONSIBILITY FORM TO OBTAIN TOWN APPROVAL. APPROVAL REQUIRED BEFORE PROCEEDING WITH LAND DISTURBING ACTIVITIES. REFERENCE TOWN CODE 153.071 FOR ADDITIONAL INFORMATION.
2. INSTALL SILT FENCING IN LOCATIONS NOTED ON PLAN SHEET 7. USE METAL FENCE POSTS AND TRENCH IN TOE OF FENCING IN 6" MINIMUM FOR MAXIMUM EFFICIENCY AND DURABILITY.
3. INSTALL CONSTRUCTION ENTRANCE IN LOCATION AS SHOWN ON SHEET 7.
4. PLACE CLEAN TYPE 1 SAND FILL TO ELEVATIONS NOTED ON STORMWATER AND GRADING PLAN SHEET 2.
5. FILL SLOPES SHALL MAINTAIN 3:1 OR FLATTER.
6. INSTALL CONSTRUCTION ENTRANCE PAD AS DEPICTED ON STORMWATER PLAN, LOCATION MAY BE ADJUSTED TO MEET BUILDERS NEEDS.
7. INSTALL FINAL STABILIZATION WITHIN 15 WORKING DAYS OF FINAL COMPLETION. FULL STABILIZATION MUST BE ACCOMPLISHED WITH 90 DAYS OF PROJECT COMPLETION.
8. IF THE PROJECT IS DELAYED INSTALL TEMPORARY STABILIZATION WITHIN 15 WORKING DAYS.
9. FINAL STABILIZATION SHALL BE BERMUDA SOD OR OUTER BANKS COMPATIBLE SEED BLEND. IRRIGATE AS REQUIRED TO ESTABLISH A VIABLE STABILIZING CROP. SILT FENCING SHALL REMAIN IN PLACE UNTIL FULL STABILIZATION IS ACHIEVED.
10. INSPECT ALL SEDIMENTATION AND EROSION CONTROL MEASURES DURING CONSTRUCTION PARTICULARLY FOLLOWING SIGNIFICANT STORMWATER EVENTS. REPAIR ALL EROSION GULLIES ALONG WITH SILT FENCING IMMEDIATELY.
11. ADDITIONAL MEASURES MAY BE REQUIRED IF EXCESSIVE STORMWATER RUNOFF OR EROSION OCCURS PARTICULARLY THAT WHICH AFFECT ADJOINING PROPERTIES.

SEEDING SPECIFICATIONS

PERMANENT VEGETATION

SEEDING DATES: APRIL 1– SEPT 30

SEED MIXTURE	APPLICATION RATES/ACRE
BAHIA	50 LBS.
COMMON BERMUDA (UNHULLED)	50 LBS.
GERMAN MILLETT	15 LBS.
FESCUE	20 LBS.

FERTILIZER
26–13–13 @ 500 LB/ACRE

MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

TEMPORARY VEGETATION

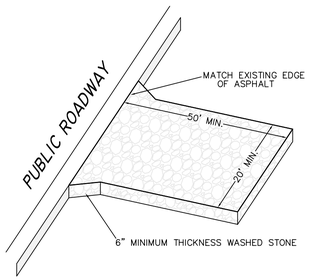
SEEDING DATES: OCT. 1 – MARCH 31

SEED MIXTURE	APPLICATION RATES/ACRE
RYE GRAIN	175 LBS.

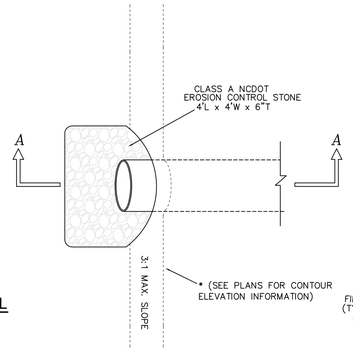
FERTILIZER
10–10–10 @ 1000 LB/ACRE

MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

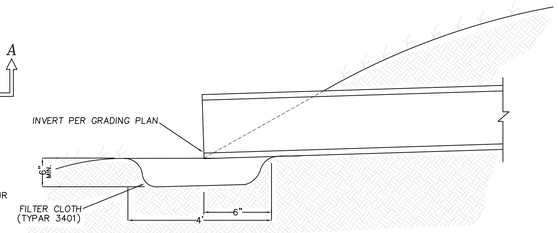
GENERAL: FERTILIZER RATES SHOWN ARE GENERAL RECOMMENDATIONS; FREQUENCY AND AMOUNT OF FERTILIZATION CAN BEST BE DETERMINED THROUGH SITE SPECIFIC SOIL TESTING.
MAINTENANCE: SATISFACTORY STABILIZATION AND EROSION CONTROL REQUIRES A COMPLETE VEGETATIVE COVER. EVEN SMALL BREACHES IN VEGETATIVE COVER CAN EXPAND RAPIDLY AND, IF LEFT UNATTENDED, CAN ALLOW SERIOUS SOIL LOSS FROM AN OTHERWISE STABLE SURFACE. A SINGLE HEAVY RAIN IS OFTEN SUFFICIENT TO GREATLY ENLARGE BARESPOTS, AND THE LONGER REPAIRS ARE DELAYED, THE MORE COSTLY THEY BECOME. PROMPT ACTION WILL KEEP SEDIMENT LOSS AND REPAIR COST DOWN.
NEW SEEDLINGS SHOULD BE INSPECTED FREQUENTLY AND MAINTENANCE PERFORMED AS NEEDED. IF RILLS AND GULLIES DEVELOP, THEY MUST BE FILLED IN, RE–SEEDED,AND MULCHED AS SOON AS POSSIBLE. DIVERSIONS MAY BE NEEDED UNTIL NEW PLANTS TAKE HOLD.
MAINTENANCE REQUIREMENTS EXTEND BEYOND THE SEEDING PHASE.
WEAK OR DAMAGED SPOTS MUST BE RELIMED, FERTILIZED, MULCHED, AND RESEEDED AS PROMPTLY AS POSSIBLE. REFERTILIZATION MAY BE NEEDED TO MAINTAIN PRODUCTIVE STANDS.



GRAVEL CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

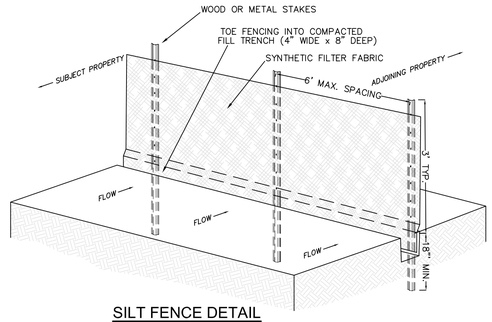


PLAN VIEW



SECTION A-A

STORM PIPE OUTLET DETAIL
(APPLIES TO ALL PROPOSED STORM PIPE OUTLETS)
NOT TO SCALE



SILT FENCE DETAIL
NOT TO SCALE

LANDSCAPE BUFFER TABLE

Tree and Shrub counts noted are minimum requirements

PROPERTY CORNER	TO	PROPERTY CORNER	TYPE OF BUFFER	BUFFER WIDTH	BUFFER REQUIREMENTS	LENGTH OF PROPERTY LINE OR RIGHT OF WAY	NUMBER OF PLANTINGS REQUIRED (MIN)	SPECIES
Ⓐ		Ⓑ	Ornamental Landscaping along Va. Dare Trail. Buffer along right of way for commercial zone dev.	10'	1 tree per 10 l.f. of property line and 1 shrub per 10 l.f. property line	300 l.f.	30 trees and 30 shrubs	Use Wax Leaf Ligustrum (as shrubs), along with mix of Hollywood Junipers and Black Pines.
Ⓑ		Ⓒ	Dense Vegetative Screen along South Property Line. Buffer between incompatible uses.	5'	1 tree per 30 l.f. of property line and 1 shrub per 10 l.f. property line	325 l.f.	11 trees and 33 shrubs	Alternate groups of 4 Russian Olives and Wax Leaf Ligustrum along property line
Ⓒ		Ⓓ	Ornamental Landscaping along S. Memorial Blvd. Buffer along right of way for commercial zone dev.	10'	1 tree per 10 l.f. of property line and 1 shrub per 10 l.f. property line	275 l.f.	28 trees and 28 shrubs	Use Wax Leaf Ligustrum (as shrubs), along with mix of Hollywood Junipers and Black Pines.
Ⓓ		Ⓔ	Ornamental Landscaping along Corrigan Street. Buffer along right of way for commercial zone dev.	10'	1 tree per 30 l.f. of property line and 1 shrub per 10 l.f. property line	300 l.f.	10 trees and 30 shrubs	Alternate groups of 4 Russian Olives and Hollywood Junipers along property line (See Note 1 this sheet)

NUMBER OF PLANTINGS

LAWN AREAS: FINAL GROUND COVER INCLUDING BERMS AND SWALES SHALL BE SEEDED OR SODDED BERMUDA OR HEAT TOLERANT FESCUE TURF GRASS WITH IRRIGATION

LANDSCAPE BUFFER TABLE - NOTES

Note 1 – Ornamental landscaping need not be evenly spaced, but rather dispersed throughout the landscape area to create a natural appearance. In all cases where a fence is constructed, the required landscaped area shall be located between the fence and property line.

Note 2 – Dense vegetative screens shall contain shrubs at least 30 inches high at the time of installation planted two–and–one–half feet on center. The type of shrub used needs to be capable of attaining a height of at least six feet at maturity.

Note 3 –Specific planting subject to change due to availability and lansdsapers preferences. All planing changes will submitted for review and approval by the Town Planning department.

REFER TO KILL DEVIL HILLS TOWN CODE, SECTION 153.073 "LANDSCAPING REQUIREMENTS" FOR ADDITIONAL INFORMATION

MINIMUM PLANT SIZE

REFER TO KILL DEVIL HILLS TOWN CODE, APPENDIX A FOR ADDITIONAL INFORMATION

Plant Material	Perimeter Landscaping Areas, Abutting Vacant Lands,Fences and Berms	All Other Planting
TREE: Deciduous	1½ inches (diam.) 5 feet (hgt)	2 inches (diam.) 8 feet (hgt)
TREE: Evergreen	1½ inches (diam.) 3 feet	1½ inches (diam.) 5 feet
SHRUB: Deciduous	15 inches (hgt)	24 inches (hgt)
SHRUB: Evergreen	12 inches (hgt)	18 inches (hgt)

Important Notice!!!
Buffer Species noted on this sheet are preliminary and subject to be changed by the Landscape Installer based on plant availability and owner preference. Prior to final species selection, the contractor shall submit written landscape species and counts for approval by the Engineer and the Town of Kill Devil Hills Planning Department. The Contractor shall not proceed with ordering plant material or installing plants until written approval by Engineer and the Town Planning Department is received.
Tree and Shrub counts noted are minimum requirements

STORMWATER CALCULATIONS:

STORMWATER MANAGEMENT CALCULATIONS:	
DESIGN DATA	DESIGN STORM: 4.3 INCH RAINFALL EVENT OVER A 2 HOUR PERIOD
	INFILTRATION RATE = 20 INCHES PER HOUR
	INTERSTITIAL SOIL VOID (POROSITY): 20%
	GRAVEL VOID (POROSITY): 40%
	RUNOFF COEFFICIENT = 1.0

DRAINAGE AREA 1 – PARKING AND DRIVES

DRAINAGE AREA 1: BUILT UPON AREA	
CONCRETE DRIVE AND BORDER	4,047 sq.ft.
TURFSTONE PAVING	17,795 sq.ft.
DUMPSTER PAD	224 sq.ft.
TOTAL BUILT UPON AREA	22,066 sq.ft.

STORMWATER GENERATED DRAINAGE AREA 1 BUILT UPON AREA:
22,066 sq.ft. X 4.3/12 = 7,907 cu.ft.

TOTAL STORAGE REQUIRED IN PARKING AND DRIVE DRAINAGE AREA 1 = 7,907 cu.ft.

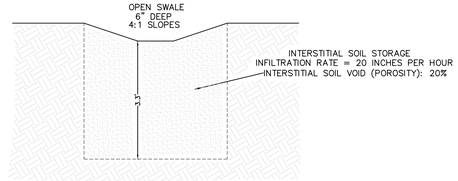
DRAINAGE AREA 2– BUILDINGS AND POOL AREA

DRAINAGE AREA 1: BUILT UPON AREA	
TOWNHOUSE BUILDINGS	29,278 sq.ft.
CONCRETE POOL DECKING AND WALK	1,177 sq.ft.
POOL HOUSE AND GYM	378 sq.ft.
TOTAL BUILT UPON AREA	30,833 sq.ft.

STORMWATER GENERATED DRAINAGE AREA 2 BUILT UPON AREA:
30,833 sq.ft. X 4.3/12 = 11,048 cu.ft.

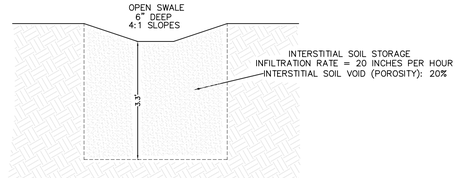
TOTAL STORAGE REQUIRED IN BUILDING AND POOL DRAINAGE AREA 2 = 11,048 cu.ft.

INFILTRATION BASIN 1 – STORAGE VOLUME
STORMWATER STORAGE VOLUME IN SWALE AND INTERSTITIAL SOILS BELOW



STORMWATER STORAGE VOLUME IN SWALE:
STORMWATER SWALE TOP AREA = 9,200 sq.ft.
STORMWATER SWALE MID DEPTH AREA = 8,500 sq.ft.
STORMWATER SWALE BOTTOM AREA = 7,800 sq.ft.
OPEN VOLUME = 8,425 cu.ft.
(TOP AREA + MID DEPTH AREA)/2 X 0.5') + (MID DEPTH AREA + BOTTOM AREA)/2 X 0.5')
INTERSTITIAL SOIL VOLUME = 21,935 sq.ft. X 0.2 = 4,387 cu.ft.
((SWALE TOP AREA x 3.3') – OPEN VOLUME) x 0.2
TOTAL STORAGE IN INFILTRATION BASIN 1 = 12,812 cu.ft.

INFILTRATION BASIN 2 – STORAGE VOLUME
STORMWATER STORAGE VOLUME IN SWALE AND INTERSTITIAL SOILS BELOW

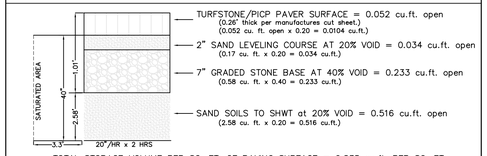


STORMWATER STORAGE VOLUME IN SWALE:
STORMWATER SWALE TOP AREA = 12,300 sq.ft.
STORMWATER SWALE MID DEPTH AREA = 10,600 sq.ft.
STORMWATER SWALE BOTTOM AREA = 8,950 sq.ft.
OPEN VOLUME = 10,613 cu.ft.
(TOP AREA + MID DEPTH AREA)/2 X 0.5') + (MID DEPTH AREA + BOTTOM AREA)/2 X 0.5')
INTERSTITIAL SOIL VOLUME = 29,977 sq.ft. X 0.2 = 5,995 cu.ft.
((SWALE TOP AREA x 3.3') – OPEN VOLUME) x 0.2
TOTAL STORAGE IN INFILTRATION BASIN 2 = 16,608 cu.ft.

TOTAL COMBINED STORAGE VOLUME IN BASIN 1 AND 2 = 29,420 cu.ft.

PERMEABLE PAVERS – STORAGE VOLUME
STORMWATER STORAGE VOLUME IN SWALE AND INTERSTITIAL SOILS BELOW

TURFSTONE PAVING AREA 17,795 sq.ft.



TOTAL STORAGE VOLUME PER SQ. FT. OF PAVING SURFACE = 0.835 cu.ft. PER SQ. FT.
TURFSTONE PAVING AREA = 17,795 sq.ft.
TOTAL STORAGE VOLUME IN TURFSTONE PAVING SURFACE = 17,795 x 0.835 = 14,833 cu.ft.

TOTAL STORAGE AVAILABLE IN PARKING AND DRIVE DRAINAGE AREA 1 = 14,833 cu.ft.

STORAGE VOLUME SUMMARY
STORMWATER VOLUME REQUIRED AND PROVIDED FOR DESIGN STORM

TOTAL STORAGE REQUIRED IN PARKING AND DRIVE DRAINAGE AREA 1 = 7,907 cu.ft.
TOTAL STORAGE REQUIRED IN BUILDING AND POOL DRAINAGE AREA 2 = 11,048 cu.ft.
TOTAL COMBINED STORAGE REQUIRED IN DRAINAGE AREA 2 AND DRAINAGE AREA 2 = 18,955 cu.ft.

TOTAL STORAGE PROVIDED IN COMBINED IN BASIN 1 AND 2 = 29,420 cu.ft.
TOTAL STORAGE AVAILABLE IN PARKING AND DRIVE DRAINAGE AREA 1 = 14,833 cu.ft.
TOTAL COMBINED STORAGE PROVIDED IN BASIN 1, BASIN 2 AND PARKING AREA = 44,253 cu.ft.

STORAGE PROVIDED IS 233% GREATER THAN STORAGE REQUIRED

NORTH CAROLINA PROFESSIONAL SEAL 039154 ENGINEER MICHAEL W. ROBINSON
Apr 08-22

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DETAIL PLAN

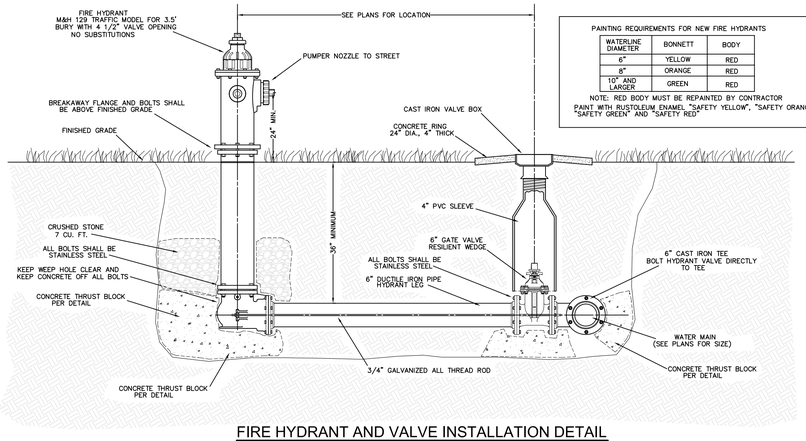
NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS

NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01–31–22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 5 OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121



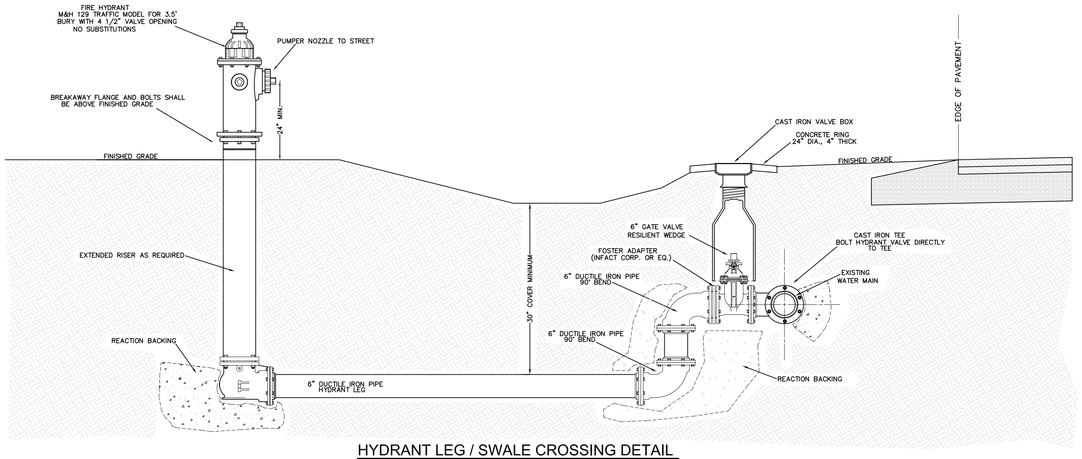
PAINTING REQUIREMENTS FOR NEW FIRE HYDRANTS

WATERLINE DIAMETER	BONNETT	BODY
6"	YELLOW	RED
8"	ORANGE	RED
10" AND LARGER	GREEN	RED

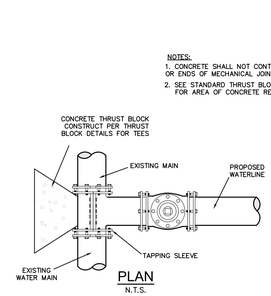
NOTE: RED BODY MUST BE REPAINTED BY CONTRACTOR
PAINT WITH RUSTOLEUM ENAMEL "SAFETY YELLOW", "SAFETY ORANGE" "SAFETY GREEN" AND "SAFETY RED"

NOTES:
1. DO NOT BLOCK HYDRANT DRAIN WITH THRUST BLOCKING
2. COAT TIE RODS AND NUTS WITH EPOXY
3. DO NOT SUPPORT VALVE BOX DIRECTLY ON VALVE
4. ALL JOINTS SHALL BE MECHANICAL JOINTS
5. INSTALL REFLECTIVE HYDRANT MARKER, STIMPSONITE MODEL 88AB, TWO WAY REFLECTOR IN CENTERLINE OF PAVEMENT PERPENDICULAR TO HYDRANT LOCATION USING E-BOND EPOXY ADHESIVE 1240/1241 PER MANUFACTURERS SPECIFICATIONS.

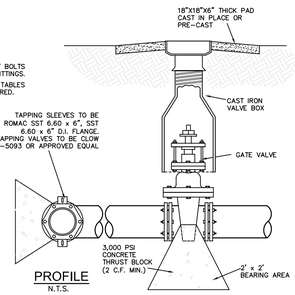
FIRE HYDRANT AND VALVE INSTALLATION DETAIL
NOT TO SCALE



HYDRANT LEG / SWALE CROSSING DETAIL
NOT TO SCALE



PLAN
N.T.S.



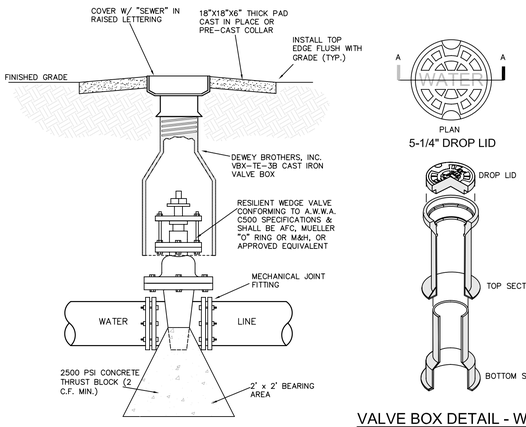
PROFILE
N.T.S.

NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD THRUST BLOCK TABLES FOR AREA OF CONCRETE REQUIRED.

TAPPING SLEEVES TO BE ROMAC SST 6.60 x 6", SST 6.60 x 6" D.I. FLANGE. TAPPING VALVES TO BE CLOW F-5093 OR APPROVED EQUAL

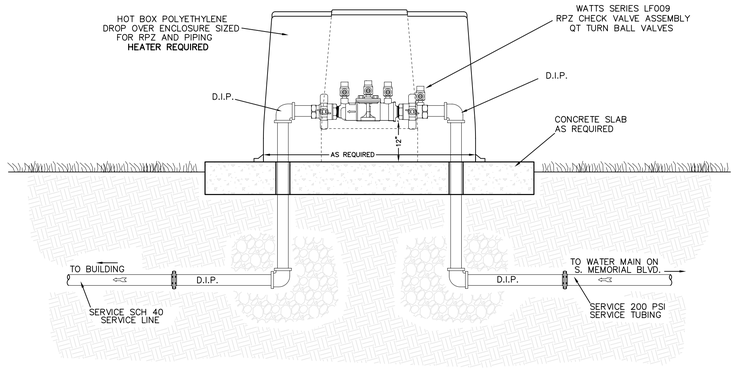
SOLID CONCRETE OR BRICK BLOCKING SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE. PVC PIPE SHALL REQUIRE A 3,000 P.S.I. CONCRETE FOOTING.

TAPPING SLEEVE DETAIL
NOT TO SCALE



VALVE AND BOX DETAIL
NOT TO SCALE

VALVE BOX DETAIL - WATER
NOT TO SCALE



FIRE LINE BACK FLOW PREVENTION FOR SWIMMING POOL SERVICE
NOT TO SCALE

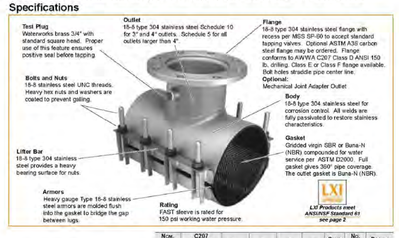
Ford Stainless Steel Tapping Sleeve

Style FAST Tapping Sleeve, 360° Gasket, Stainless Steel, Carbon Steel Flange or Mechanical Joint Adapter Outlet

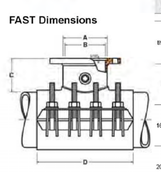
Ford FAST Tapping Sleeves take the guesswork out of large pipe taps. A gridded gasket surrounds the pipe and not only cushions the pipe during the tap, but also helps prevent pipe breaks. The flange outlet is welded inside and out.

The sleeve is constructed of Grade 18-8 type 304 stainless steel to provide corrosion protection. Sleeves are available in pipe sizes 3" through 24", with outlets from 3" through 12". Detailed specifications and critical dimensions are outlined below.

Specifications



FAST Dimensions



Nom. Pipe Size	C201 * Class D Flange	Size	A	B	C	D	Brush Size	No. of Bolts	Dimension Style
4" through 12"	3"	4-1/2"	5-1/4"	4-15/16"	15°	5/8"	8	2 pc.
	4"	5-1/2"	4-1/4"	4-15/16"	15°	5/8"	8	2 pc.
	6"	7-1/2"	6-3/8"	5-1/4"	15°	5/8"	8	2 pc.
	8"	9-1/2"	8-3/8"	5-3/8"	20°	5/8"	12	2 pc.
	10"	11-1/2"	10-3/16"	5-7/8"	20°	3/4"	12	2 pc.
	12"	13-1/2"	12-7/16"	6"	24°	3/4"	14	2 pc.
14"	3"	5-1/2"	5-1/4"	4-15/16"	15°	3/4"	10	2 pc.
	4"	5-1/2"	4-1/4"	4-15/16"	15°	3/4"	10	2 pc.
	6"	7-1/2"	6-3/8"	5-1/4"	15°	3/4"	10	2 pc.
	8"	9-1/2"	8-3/8"	5-3/8"	20°	3/4"	14	2 pc.
	10"	11-1/2"	10-3/16"	5-7/8"	20°	3/4"	14	2 pc.
	12"	13-1/2"	12-7/16"	6"	24°	3/4"	14	2 pc.
16" - 18"	3"	5-1/2"	5-1/4"	4-15/16"	15°	3/4"	15	3 pc.
	4"	5-1/2"	4-1/4"	4-15/16"	15°	5/8"	15	3 pc.
	6"	7-1/2"	6-3/8"	5-1/4"	15°	5/8"	15	3 pc.
	8"	9-1/2"	8-3/8"	5-3/8"	20°	5/8"	18	3 pc.
	10"	11-1/2"	10-3/16"	5-7/8"	20°	3/4"	18	3 pc.
	12"	13-1/2"	12-7/16"	6"	24°	3/4"	21	3 pc.
20" - 24"	3"	5-1/2"	5-1/4"	4-15/16"	15°	3/4"	15	3 pc.
	4"	5-1/2"	4-1/4"	4-15/16"	15°	3/4"	15	3 pc.
	6"	7-1/2"	6-3/8"	5-1/4"	15°	3/4"	15	3 pc.
	8"	9-1/2"	8-3/8"	5-3/8"	20°	3/4"	18	3 pc.
	10"	11-1/2"	10-3/16"	5-7/8"	20°	3/4"	18	3 pc.
	12"	13-1/2"	12-7/16"	6"	24°	3/4"	21	3 pc.

Outlet Options: *Class E or Class F flange available, contact factory
4" - 12" MJ adapter outlets available, contact factory for dimensions.

AA-6

KILL DEVIL HILLS VALVE AND VALVE BOX STANDARDS

Section A.1.Valves.
(a) Resilient wedge gate valves. All resilient wedge gate valves shall conform in all respects to latest AWWA Specification C500 and shall be American Flow Control, Mueller "O" ring or M&H, or approved equal. Resilient wedge gate valves shall be vertical, shall open counterclockwise, and shall be of the non-rising stem type with mechanical joint ends and two (2) inch square operating nut. Resilient wedge valves shall be iron body, double disc, parallel seat, fully bronze mounted. Resilient wedge valves shall be designed for a working pressure of two hundred (200) psi
(c) Valve boxes. Valve boxes shall have the following characteristics:
(1) Valve boxes shall be of close-grained, gray cast iron, in three (3) pieces consisting of
(a) a lower base piece which shall be flanged at the bottom to fit around the stuffing gland and rest on the valve bonnet.
(b) an upper part which shall also be flanged on the lower end, of such size so as to telescope over the lower part and the upper end being constructed in the form of a socket to receive the cover.
(c) The centerpiece shall be minimum five (5) inches inside diameter.
(2) The valve box shall be Dewey Brothers, Inc., VBX-TE-3B or approved equal.
(3) The cover shall have cast on the upper surface in raised letters the word "WATER." Valve boxes shall be painted prior to shipment with a coat of protective asphaltum paint and contain a cement collar.

KILL DEVIL HILLS TESTING STANDARDS

TEST AND CLEANUP
Section A.1.Testing and inspections.
(a) The Town shall monitor all testing and inspect all lines as construction progresses. All testing shall be completed before connecting to existing water lines. The Contractor or developer shall notify the Town twenty-four (24) hours in advance when he/she will be ready for inspection and testing and shall pretest before notifying the Town.
(b) After the pipe has been laid and backfilled as specified, all newly laid pipe, or any valve section thereof; shall be subjected to a pressure of not less than one hundred fifty (150) psi. Air or air-water methods of applying pressure are prohibited. The duration of the pressure test shall be at least four (4) hours, for which time the Contractor shall fill the line slowly, expelling air at the high points, and bring it up to required pressure.
(c) The only lines not required to be pressure tested are short (not longer than 25' unless approved by the Engineer) connection sections used to tie new mains into existing lines.
(d) The Town shall inspect the entire line and appurtenances for leaks and movement. Any leaks or defects shall be repaired and the test repeated until acceptable.
(e) A leakage test shall be conducted after a pressure test has been satisfactorily completed. The average pressure range shall be one hundred fifty (150) psi and be held for four (4) hours, provided that the Engineer may, at his discretion, allow this time to be reduced to (2) hours. The lines shall be filled as for the pressure test or the Contractor shall continue to maintain the pressure from the test. A source of makeup water shall be provided that can be measured. The test will be made to determine the leakage, or the amount of water required to maintain test pressure.
(f) The allowable leakage is less than the value computed by the formula:

$$L = \frac{ND\sqrt{P}}{7{,}400}$$

L = ALLOWABLE LEAKAGE IN GALLONS PER HOUR
N = NUMBER OF JOINTS IN LENGTH OF PIPE TESTED
D = NOMINAL DIAMETER OF PIPE (INCHES)
P = AVERAGE TEST PRESSURE IN PSIG

Should any test of pipe disclose leakage greater than that specified above, the Contractor shall locate and repair defective joints until the leakage is within the specified allowance.
(g) The Contractor shall maintain pressure on the line and close each valve progressively, starting from the far end of the system and vent extreme ends of the line. Allowable pressure drop shall be less than ten (10) psi in five (5) minutes with test pump off

NOTE REGARDING SERVICE LINE AND METER SIZING

The Architect shall provide provide the water meter sizing form for each of the unit models and the pool amenity to determine if the 5/8x3/4 service is adequately sized for the units. Normally a four or five bedroom unit would only require a 5/8x3/4 service, but these units are all provided with full baths in each suite and several amenity fixtures that may require higher demand and larger services.

KILL DEVIL HILLS WATERLINE MATERIAL STANDARDS

PART A. MATERIALS
Section C.1. Generally.
All water system and water line materials used shall conform to the specifications set out in this division and any changes shall be submitted in writing to and approved by the Town.

Section C.2. Pipe standards.
(a) PVC: Except for 2" diameter pipe, PVC pipe shall conform to all requirements of AWWA Specification C900, latest edition, and AWWA C905, latest edition, for sizes larger than 12". PVC pipe and fittings shall be pressure rated at one hundred fifty (150) psi (pounds per square inch) with a standard dimension ratio (SDR) of eighteen (18) for both barrel and bell dimensions. 2" diameter pipe shall comply with ASTN standard D2241, SDR 21. Pipe shall bear the National Sanitation Foundation seal of approval and shall comply with the requirements for Type 1, Grade 1 (PVC 1120) of the ASTM resin Specification D-1784.
(1) Joints. PVC pipe shall have push-on joints, incorporating a rubber ring bell joint which shall be an integral and homogeneous part of the pipe barrel. Solvent-welded joints shall not be used.
(2) Fittings shall be the same as for ductile iron pipe as set forth below.

(b) Ductile Iron: Ductile Iron Pipe shall be furnished in 18 or 20 foot laying lengths, with push-on type joints, except where mechanical joint or pipe is called for on the Drawings. Ductile iron pipe shall conform to the requirements of AWWA C151. Flanged ductile iron pipe shall comply with the requirements of AWWA C115.
(1) Thickness Class of the pipe shall be Pressure Class 350 as required by the pipe size, bedding type and depth. The pipe shall be round and gaged throughout its entire length. Ungaged pipe will not be accepted.
(2) Lining – All pipe shall be single coat cement lined and sealed coated in accordance with AWWA C104.
(3) Joints shall be either mechanical, push on, or flanged conforming to AWWA C111 (ANSI A21.11) or AWWA C115 (ANSI A21.15) as applicable. All flanges and glands for pipes and fittings shall be made of ductile iron.
(4) Fittings shall be manufactured in accordance with AWWA C110 (ANSI A21.10) or AWWA C153 (ANSI A21.53), and shall be ductile iron. The minimum acceptable pressure rating shall be 350 psi. All fittings shall be lined in the same manner as ductile iron pipe.
(5) Coating shall be provided on the exterior of all ductile iron pipe, joints and fittings as required by AWWA C110, C115, C151, or C153 as applicable. All pipes, joints and fittings shall be examined before and after laying to determine if the coating has been damaged. Any damaged areas and all joints shall be coated with approximately 1 mil of a bituminous coating, such as Koppers No. 50 or Intertol No. 49.
(6) Polyethylene Wrap, where indicated on Drawings, shall conform to the requirements of AWWA C105.
(7) Retainer Glands, or other joint restraint devices, shall be cast from high strength ductile iron. Restraint devices shall be rated to perform their restraining function at the full rated pressure of the pipe itself. Devices used on mechanical joint pipe shall be compatible with mechanical joint connectors meeting requirements of AWWA C111. Acceptable types:
(a) For PVC pipe, Uniflange Series 1300 or EBAA Iron Sales, Inc., Series 500 or 1500;
(b) Ductile Iron Pipe shall include a restraining mechanism which, when actuated, imparts muultiple wedging action against the pipe, increasing its resistance as the pressure increases. The gland shall be compatible with mechanical joints meeting the requirements of AWWA C111. Acceptable types shall be Mega-Lug, Series 1100 for mechanical joint pipe and Series 1700 for push-on joint pipe.

ALL WATER LINE MATERIALS, INSTALLATION, TESTING AND DISINFECTION SHALL COMPLY WITH THE TOWN OF KILL DEVIL HILLS STANDARD SPECIFICATIONS. SUBMITTALS REQUIRED FOR ALL MATERIALS WITH WRITTEN APPROVAL BY ENGINEER AND TOWN OF KILL DEVIL HILLS IS REQUIRED

MICHAEL W. ROBINSON, P.E., P.L.S.
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PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

WASTEWATER PLAN

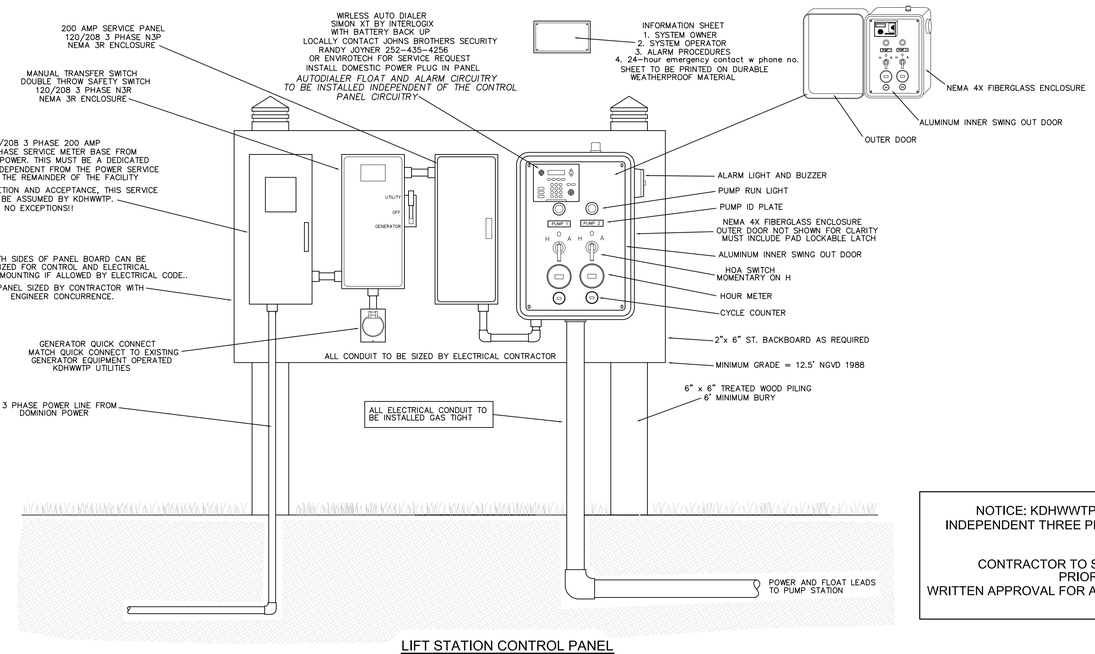
NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

REVISIONS	NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS — DARE COUNTY — NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 6 OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL ENGINEER 18994 SURVEYOR L-3154 MICHAEL W. ROBINSON
Date: 08-22



LIFT STATION CONTROL PANEL

NOT TO SCALE

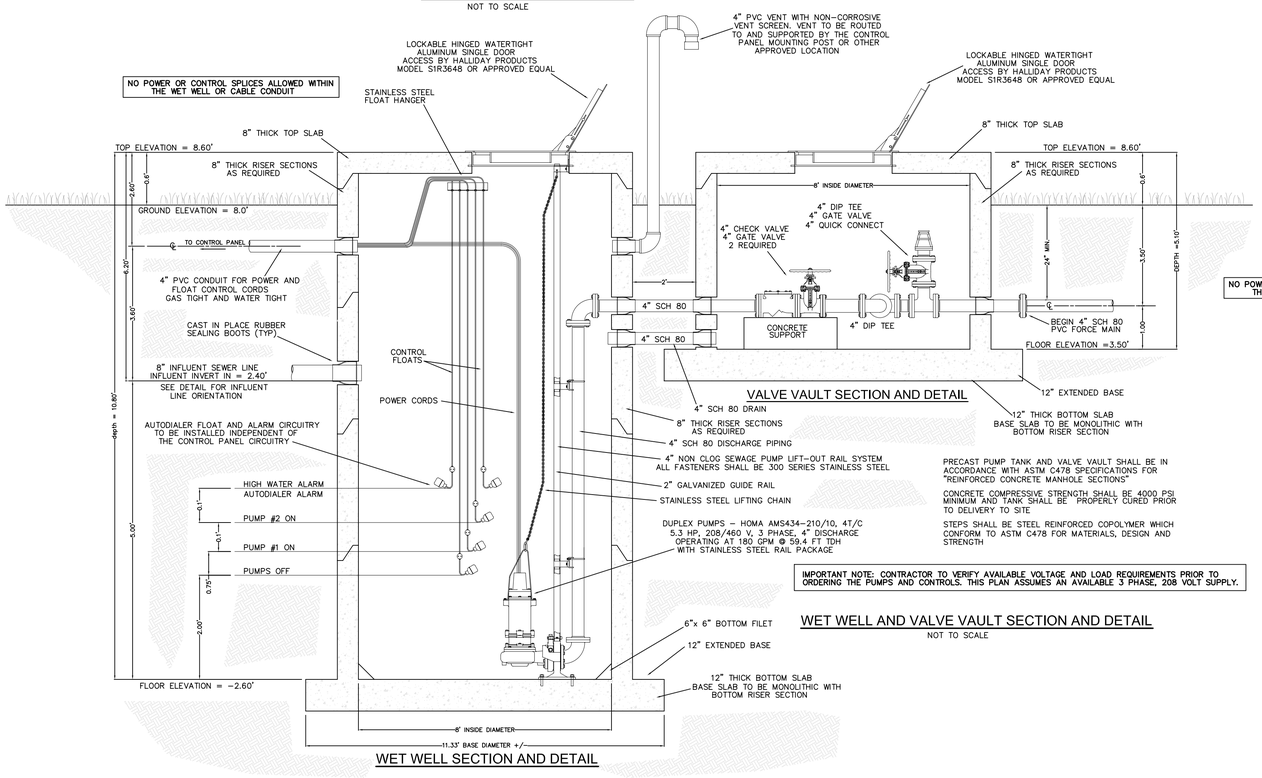
NOTICE: KDHWWTP, LLC UTILITY REQUIREMENTS INCLUDE AN INDEPENDENT THREE PHASE ELECTRICAL SERVICE TO THIS LIFT STATION NO EXCEPTIONS

CONTRACTOR TO SUBMIT CUT SHEETS FOR ALL COMPONENTS PRIOR TO ORDERING MATERIALS
WRITTEN APPROVAL FOR ALL COMPONENTS FROM KDHWWTP, LLC REQUIRED

KILL DEVIL HILLS WASTEWATER NOTES

Kill Devil Hills Wastewater Notes
All work associated with sewer extension construction in the Town right-of-ways shall be performed in accordance with the following permit conditions and the executed Town of Kill Devil Hills Right-of-Way Encroachment Agreement:

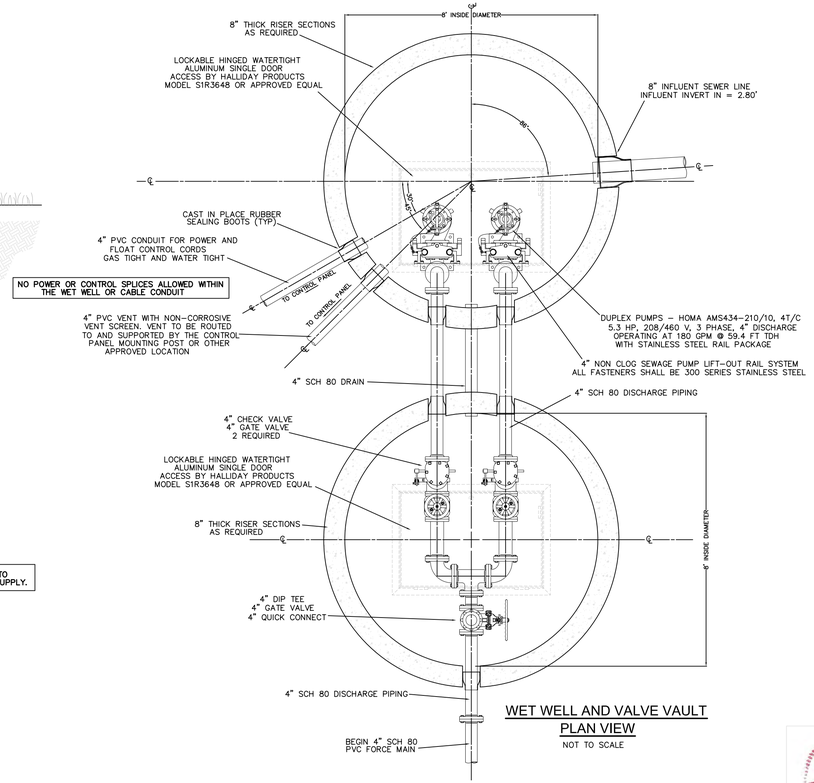
- Working Standards:
  - Project Manager/Administrator – Project requires a designated contact person to coordinate and oversee proper project installation. This person will be the one that the Town contacts in regards to questions, concerns or directions.
  - This person will be responsible for:
  - Conducting an on-site pre-construction meeting with KDH Public Services (KDHPS) and the Contractor prior to work commencing. At least a 2 day notice of such a meeting is needed by KDHPS.
  - Take pictures of project areas pre-existing conditions, provide copies to KDHPS no later than the pre-construction meeting.
  - Verify existing utility locations and depths on construction plans.
  - Notify and coordinate work around any effected wastewater customers of any planned outages.
  - Insure construction activities are kept to within approved project areas. This includes staging areas for pipes and equipment.
  - If any work is to be done in front of a property, mail letters to effected property owners notifying them that work will be occurring within the area adjacent to their properties. This letter should give owners 14 days prior to construction to remove any personal items from the town right of way. The letter outlines the extent of the work to be performed, especially if driveway disruptions are planned, the owner needs to be aware of this. A copy of this letter will be submitted to the town for approval prior to being sent.
  - Insure that all construction safety aspects of work within town rights-of-way are adhered to. This includes the use of proper construction signage within town rights-of-way, insuring that all construction personnel within the construction zone are equipped with the proper safety gear including safety vests and hard hats. Contractor equipment left overnight within the rights-of-way must have proper flagging/safety cones placed around it to notify drivers of the equipment.
  - Road Closures – Any proposed road closures must be approved by KDHPS. Project Manager will be responsible for contacting Dare Central, KDH Police and Fire prior to road closures. Project Manager will then notify all agencies once the road has been reopened.
  - Provide a licensed engineer to oversee the installation of all appurtenances installed within the town right-of-way. The engineer will verify that all infrastructure was installed per the plans. Engineer will sign off on this installation and submits to the State for final approvals. Any changes to the plans involving engineering work must be done by licensed NC engineer and approved by the town.
  - The work within the town rights-of-way must be kept in an orderly and neat fashion. No material (soils, gravel or other project fill) can be placed directly on any street surface without matting being put down first. Any damage to any road surface from construction activities must be repaired at the owner's expense.
  - Driveways – Any driveway removals must have a temporary surface put in the same day as removal. Approved surfaces are ABC or millings. No sand or other materials are approved.
  - Driveway culverts – If any driveway culvert work is included in the project, culvert end elevations must be shown on plans prior to construction. Any culvert damage from construction activities must be repaired/replaced at the project owner's expense. Culverts in project area must have filter cloth installed at both ends prior to construction.
  - Drainage infrastructure – All town drainage infrastructure within the project area will be returned to pre-existing conditions prior to final project approval.
  - Seeding and Stabilization – seeding to be in place within 5 days of project final installations. Grass growth within 10 days. Special note – as it appears the project may be conducted during the hot/dry summer months, it will be of the utmost importance for the contractor to water the new seeding at least once a day, if not more, in order to get growth and stabilization.



VALVE VAULT SECTION AND DETAIL

WET WELL AND VALVE VAULT SECTION AND DETAIL

NOT TO SCALE



WET WELL AND VALVE VAULT PLAN VIEW

NOT TO SCALE

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EMAIL: mrobinson@obxengineering.com

WASTEWATER PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

NO.	DATE	DESCRIPTION	BY
REVISIONS			

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 7 OF 9
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SEAL 3154 LAND SURVEYOR MICHAEL W. ROBINSON 8-22

GENERAL UTILITY SPECIFICATIONS

ALL WORK WITHIN THE RIGHT OF WAY OF NC 12 SHALL CONFORM WITH NCDOT SPECIFICATIONS PORTIONS OF WHICH ARE NOTED ON SHEETS WW-2 WW-3 AND WW-4. FULL SPECIFICATIONS ARE AVAILABLE BY REQUEST EITHER PRINTED OR ON CD FROM THE ENGINEER.

1500–1 DESCRIPTION.
Construct various utilities as required by the plans and special provisions or as directed. Furnish all materials, labor, equipment, and incidentals necessary to complete the proposed utility work unless indicated otherwise in the proposal.
Apply the applicable provisions of the Rules and Regulations of the North Carolina Department of Environment and Natural Resources, Division of Environmental Health to the construction of water lines. Apply the Rules and Regulations of the North Carolina Department of Environment and Natural Resources, Division of Environmental Management to the construction of sanitary sewer lines except as otherwise provided.

1500–2 COOPERATION WITH THE UTILITY OWNER.
Provide access for Department Personnel and the owner's representatives to all phases of construction. Notify Department Personnel and the owners two weeks prior to commencement of any work and one week prior to service interruption.
Except in an emergency, do not operate any of the controls on the existing systems without prior approval of the owner.

1500–3 UTILITY LOCATIONS AND CONTRACTORS RESPONSIBILITY.
The plans depict the best available information for the location, size, and type of material for all existing utilities. Make investigations for determining the exact location, size, and type material of the existing facilities as necessary for the construction of the proposed utilities and for avoiding damage to existing facilities. Repair any damage incurred to existing facilities to the original or better condition at no additional cost to the Department.

1500–4 WEEKEND, NIGHT AND HOLIDAY WORK.
Make connections between existing and proposed utilities at times most convenient to the public, without endangering the utility service, and in accordance with the owner's requirements. Make connections on weekends, at night, and on holidays if necessary.
Should the position of any pole, pipe, conduit, or other structure require removal or adjustment, the Engineer will coordinate the change with the owner of the obstructions or a representative of the owner.

1500–5 RELATION OF WATER MAINS TO SANITARY SEWERS.
Lay water mains at least 10 feet (3.0 m) laterally from existing or proposed sanitary sewers. If local conditions or barriers prevent a 10 foot (3.0 m) separation, lay the water main with at least 18 inches (457.2 mm) vertical separation above the top of the sanitary sewer pipe either in a separate trench or in the same trench on a bench of undisturbed earth.
When a proposed water main crosses over a proposed or existing sanitary sewer, lay the water main with at least 18 inches (457.2 mm) vertical separation above the top of the sanitary sewer. If local conditions or barriers prevent an 18 inch (457.2 mm) vertical separation, construct both the water main and the sanitary sewer for a distance of 10 feet (3.0 m) on each side of the point crossing with ferrous pipe having water main quality joints.
When a proposed water main crosses under a proposed or existing sanitary sewer, construct both the water main and the sanitary sewer of ferrous materials with joints that are equivalent to water main standards for a distance of 10 feet (3.0 m) on each side of the point of crossing. Center the section of water pipe at the point of crossing.

1500–6 PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC.
During the progress of the work, keep sidewalks and crossings open for the passage of pedestrians. Unless otherwise authorized, do not obstruct streets; and unless the complete closing of a street is authorized, take such measures as may be necessary to keep the street open for traffic.
Construct and maintain adequate and approved bridges over excavations as may be necessary for the purpose of accommodating pedestrians or vehicles.
When open cut installation is allowed across a roadway and traffic is to be maintained, construct the installation in sections so that half the width of the roadway will be available to traffic. Provide all traffic control measures necessary to provide for safe traffic passage.
REFER TO NCDOT DIVISION 11, WORK ZONE TRAFFIC CONTROL FOR ADDITIONAL PEDESTRIAN AND VEHICULAR SAFETY REQUIREMENTS

SECTION 1505
EXCAVATION, TRENCHING & BACKFILLING

1505–1 DESCRIPTION.
Perform all pipe undercut excavation, furnish, place and compact foundation conditioning material, shape the pipe foundation, haul and dispose of undercut materials, and perform pavement, sidewalk and driveway repair necessary for installation of water and sanitary sewer mains and services as shown in the plans and special provisions.

1505–2 MATERIALS. SEE ADDITIONAL SPECIFICATION SHEET D3
Meet the requirements of Article 1016–3 for the classification of select material. Use the location and class of select material for foundation conditioning, bedding and backfill as shown on the plans or as directed.

1505–3 CONSTRUCTION REQUIREMENTS.
Apply the applicable requirements of Section 107, Articles 300–1, 300–4, 300–6 and Section 654 of the Standard Specifications and the following specifications:
In general, construct all portions of the excavations so that the safe slope of the earth is not exceeded. Comply with all OSHA requirements and provide a competent person on site to supervise the excavation at all times. Properly and adequately protect any part of the excavation from caving or slipping by the use of sheeting, bracing, or shoring as required.
Install all shoring in trench excavations so that it may be withdrawn in stages on both sides of the trenches to prevent lateral movement of the pipe as the backfilling progresses, except where the Engineer permits the shoring to be left in place at the Contractor's request. Cut off any sheeting left in place at least twenty–four inches (609.6 mm) below finished grade wherever directed. Remove and properly dispose of the cut off material.
Wherever necessary, in quicksand, soft or wet ground, or for the protection of surrounding structures and property, drive sheeting to such depth below the bottom of the excavation as may be necessary. The Contractor may use well points or other methods in lieu of sheeting to stabilize the banks or for protection at the discretion of the Contractor.
Take all measures necessary to keep surface water out of the foundations and trenches by diking, ditching, or otherwise avoiding it. Use approved methods for surface drainage.
Keep all excavations free of water while the work is in progress. Water may be removed by pumps or the use of underdrains, whichever will produce the above results.
Deposit all excavated material in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Leave hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls unobstructed and accessible at all times. Keep gutters clear or use other satisfactory provisions for street drainage. Do not obstruct natural watercourses.
Take whatever measures necessary to control erosion and keep silt runoff from contaminating adjoining property.
Do not lay pipe upon a foundation into which frost has penetrated, or at any time, that in the opinion of the Engineer, there is danger of the formation of ice or frost at the bottom of the excavation. The Engineer may at his discretion allow construction of the pipeline to continue under freezing conditions provided the Contractor promptly backfills the trench as directed.
Carefully lower pipe and accessories into the trench with suitable equipment. Do not drop or dump any of the materials into the trench under any circumstances.
Take care to avoid abrasion of the pipe coating. Use wooden poles as levers for removing skids across trenches which have broad flat faces to prevent damage to the pipe or pipe coating.
Perform backfilling in accordance with Article 300–6 and compact to the density required by Subarticle 235–4(C).

1505–4 REPAIR OF PAVEMENTS, SIDEWALKS AND DRIVEWAYS.
Repair sidewalks and driveways that are disturbed by the excavation and trenching operation to an original or better condition using Class B Concrete.
Use asphalt plant mix for pavement repair to replace pavement which was removed in order to remove or place utility pipe lines. Perform all work in accordance with Section 654. Immediately upon completion of the pipe line removal or installation, make repairs within the pavement area.

BUOYANCY CALCULATIONS

DENSITY ASSUMPTIONS:
CONCRETE – 150 LBS/ CU. FT.
WATER – 62.4 LBS/ CU. FT.
SOIL – 100 LBS/CU. FT.

BUOYANT FORCE CALCULATIONS:
TOP OF TANK ELEVATION = 8.50'
BOTTOM OF TANK ELEVATION = –3.00'
TANK DIAMETER – OUTSIDE = 9.34'
TANK HEIGHT = 11.50'
VOLUME DISPLACED:
$\left(\frac{3.14 \times 9.34^2}{4}\right) \times 11.50' = 788$ CU. FT.
BUOYANT FORCE = 788 CU. FT. X 62.4 LBS/CU.FT. = 49,141 LBS

TANK WEIGHT CALCULATIONS:
TANK DIAMETER – OUTSIDE = 9.34'
TANK DIAMETER – INSIDE = 8.00'
WALL THICKNESS = 0.67'
TOP DIAMETER = 9.34'
TOP THICKNESS = 0.67'
BOTTOM DIAMETER = 10.34'
BOTTOM THICKNESS = 0.67'
TANK WALL VOLUME:
$\left[\left(\frac{3.14 \times 9.34^2}{4}\right) \times 9.83'\right] - \left[\left(\frac{3.14 \times 8.00^2}{4}\right) \times 9.83'\right] = 179$ CU. FT.
TANK WALL WEIGHT = 179 CU. FT. x 150 LBS/CU.FT. = 26,850 LBS
TANK TOP VOLUME = $\left(\frac{3.14 \times 9.34^2}{4}\right) \times 0.67' = 45.9$ CU. FT.
TANK TOP WEIGHT = 45.9 CU. FT. x 150 LBS/CU.FT. = 6,885 LBS
TANK BOTTOM VOLUME = $\left(\frac{3.14 \times 10.34^2}{4}\right) \times 0.67' = 56.3$ CU. FT.
TANK BOTTOM WEIGHT = 56.3 CU. FT. x 150 LBS/CU.FT. = 8,445 LBS
TOTAL TANK WEIGHT = 42,180 LBS.

SOIL WEIGHT CALCULATIONS:
EXTENDED BASE AREA:
$\left(\frac{3.14 \times 10.34^2}{4}\right) - \left(\frac{3.14 \times 9.34^2}{4}\right) = 15.45$ SQ. FT.
SOIL WEIGHT ABOVE EXTENDED BASE:
15.45 SQ. FT. x 10.0 FT DEPTH X 110 LBS/CU.FT. = 16,995 LBS

TOTAL BUOYANT FORCE = 49,141 LBS
TOTAL WEIGHT INCLUDING SOIL = 59,175 LBS
TOTAL WEIGHT EXCEEDS BUOYANT FORCE – ADDITIONAL CONCRETE NOT REQUIRED

SOIL WEIGHT ONLY INCLUDES SOIL DIRECTLY OVER EXTENDED BASE
WEIGHT OF COMPONENTS NOT INCLUDED
CALCULATIONS ASSUME EMPTY TANK AND FULLY SUBMERGED TANK

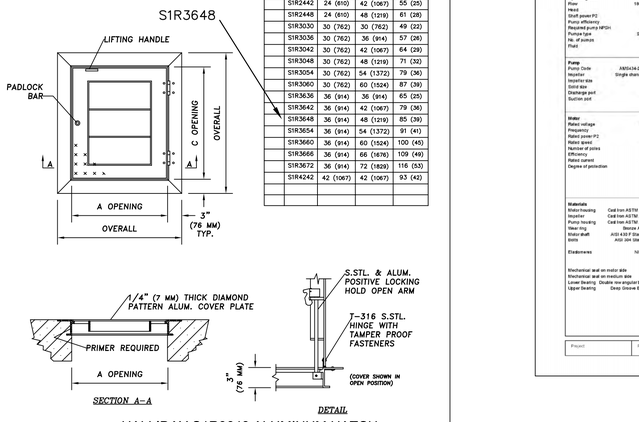
SERIES S1R ACCESS DOOR

HP HALLIDAY PRODUCTS
www.HalldayProducts.com
Phone 800–298–1027
Fax 407–298–4534
Sales@HalldayProducts.com

STANDARD FEATURES:
- AUTO–LOCK T–316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T–316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON–CORROSIVE PADLOCK BAR
- SINGLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

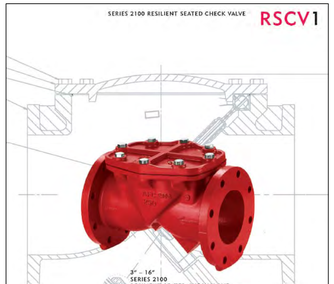
STANDARD SIZES

QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S1R2424	24 (610)	24 (610)	37 (17)
	S1R2430	24 (610)	30 (762)	42 (19)
	S1R2436	24 (610)	36 (914)	48 (22)
	S1R2442	24 (610)	42 (1067)	55 (25)
	S1R2448	24 (610)	48 (1219)	61 (28)
	S1R3030	30 (762)	30 (762)	49 (22)
	S1R3036	30 (762)	36 (914)	57 (26)
	S1R3042	30 (762)	42 (1067)	64 (29)
	S1R3048	30 (762)	48 (1219)	71 (32)
	S1R3054	30 (762)	54 (1372)	79 (36)
	S1R3060	30 (762)	60 (1524)	87 (39)
	S1R3636	36 (914)	36 (914)	65 (25)
	S1R3642	36 (914)	42 (1067)	79 (36)
	S1R3648	36 (914)	48 (1219)	85 (39)
	S1R3654	36 (914)	54 (1372)	91 (41)
	S1R3660	36 (914)	60 (1524)	100 (45)
	S1R3666	36 (914)	66 (1676)	109 (49)
	S1R3672	36 (914)	72 (1829)	116 (53)
	S1R4242	42 (1067)	42 (1067)	93 (42)



HALLIDAY S1R3648 ALUMINUM HATCH

SERIES 2100 RESILIENT SEATED CHECK VALVE **RSCV1**



AMERICAN FLOW CONTROL
"It's What We Know."

4

SERIES 2100 RESILIENT SEATED CHECK VALVE **RSCV1**

FEATURES/BENEFITS/SPECIFICATIONS

FEATURES
The American Flow Control **Series 2100** Resilient Seated Check Valve is simple, durable and eliminates most problems associated with metal seated swing check valves. The **Series 2100** features a compact face–to–face body seat insert. Flexible iron hub seats them below the strength of gray iron.
The disc is made of ductile iron encapsulated with EPDM rubber. The **Series 2100 Valve** is rated for 250 p.s.i.g. Hot water seals 100% drop tight at pressures above 5 p.s.i.g. The body seat is constructed of cast iron with integral, self–cleaning grooves. This allows the rubber to close before flow reversal in most applications.
Flame is only one remedy performing this valve–actually maintenance–free. Should the disc be damaged, it can be removed via the valve port bolt. Its bonded–in rubber seat can be reversed or replaced.

BENEFITS
The **Series 2100 Resilient Seated Check Valve** has three advantages over metal seated swing check valves:
- 250 p.s.i.g. rating
- Ductile iron body, bonnet & disc
- Fusion–bonded epoxy coating: inside & outside
- Does not require outside lever & weights or springs
- Only one moving part
- No O–Rings, packing, pins or bearings to wear out
- No bronze seat ring to wear or need replacing

- Drop–tight shutoff at pressures above 5 p.s.i.g.
- Suitable for buried service
- The 100% unobstructed flow area is free of pockets which can trap debris.
- A factory installed backflushing actuation can be furnished as an option. This device is useful for priming pumps, backflushing, draining lines and system testing.

SPECIFICATIONS
Resilient seated check valves shall be manufactured from ductile iron meeting or exceeding ASTM A536 65–45–12. Valves shall be rated for 250 p.s.i.g. cold water working pressure.
Valves shall have a ductile iron disc fully encapsulated with rubber. Disc bonding to elastomer shall not be more than 25 degrees and shall seal drop tight at pressures above 5 p.s.i.g.
Valves to be furnished with fusion–bonded epoxy on all internal and external ferrous surfaces.
Bronze seat rings are not allowed. Disc shall be the only moveable moving part. No O–Rings, glued pins or other bearings are allowed. Disc must be reversible such that either side will seal equally.
Valves shall be equal to American Flow Control's **Series 2100 Ductile Iron Resilient Seated Check Valve.**

AMERICAN FLOW CONTROL SERIES 2100 RESILIENT SEATED CHECK VALVE

Intrusion / Wireless Keypads

Simon XT™
Reliable, wireless security conveniently controlled when home or away

OVERVIEW:
Simon XT® is a rich, effective security system that offers up to 40 zones of burglary and fire protection, and reliably complies with SIA False Alarm Standards. With a built–in display touchpad and a status speaker that provides visual and voice messages for feedback, Simon XT is well–suited for homes, apartments, and condominiums. Optional GSM reporting and alarm–zone features make Simon XT a versatile choice for any security application.
Check system status, activate an entry delay, or activate the full–sleep feature.
The Simon XT panel comes standard with 40 wireless zones, or it can be set up with 30 wireless zones and two built–in hardwired supervised burglary zones (normally closed loop only). The built–in radio receiver works with both crystal and SAW LuxeMaster® sensors.
Simon XT supports convenient system operation from anywhere within the premises with the use of wireless Two–Way Talking Touch Screens and/or touchpads. Optional Keyfobs (two– and four–button versions) can also be used for convenient local system control. In addition to using the Simon XT as a security system, optional wireless devices can be added to provide control over other functions for added convenience. Wireless Doorbell Chimes, Doorbell Cameras, Doorbell Buttons, Z–Wave wireless thermostats for home HVAC systems and Z–Wave door lock controls.
Simon XT can send messages to a central monitoring station using SIA or Contact ID (CID) formats. The panel can also report alarms to another land line phone location or cell phone using Voice Event Notification. Built–in two–way voice capability with VOX (Voice–Activated Switching) provides additional security and emergency contact with the central monitoring station.

STANDARD FEATURES:
- 40 wireless zones — two can be hardwired (normally closed loop only)
- Built–in 319.5 MHz two–way voice capability (over GSM with optional module)
- Supports both crystal and SAW LuxeMaster sensors
- Supports repeaters
- Supports 2–way RF products (version specific)
- Chime feature for monitoring door, window or motion activity
- 4 master access codes and 8 programmable user access codes of 3 to 6 digits
- SIA or CID central station reporting formats and Voice Event Notification reporting via PSTN (native) and/or optional GSM and IP modules
- Programmable No Activity and No Usage report features
- Meets SIA False Alarm Standards
- 9.0–watt built–in battery and data stamp
- Panel voice and beeps that can be disabled
- Program panel with built–in touchpad or Enterprise Downloader software v5.4 or later
- Digitized voice
- Extensive options
  - Internet–based (interactivity with third–party providers)
  - Support for six premises remote control with optional talking touchpad accessory

interlogix.com

AMERICAN FLOW CONTROL SERIES 2500 RESILIENT SEATED GATE VALVE

SERIES 2500 RESILIENT WEDGE GATE VALVE **RWGV1**

AMERICAN FLOW CONTROL
"It's What We Know."

SERIES 2500 RESILIENT WEDGE GATE VALVE **RWGV1**

FEATURES/BENEFITS/SPECIFICATIONS

FEATURES
The **Series 2500** Ductile Iron 250 p.s.i.g. AWWA Resilient Wedge Gate Valve is designed for use in drinking water, sewage, and fire protection systems. It is for buried, pit, and backflow–control applications.

Ductile Iron Construction
The ductile iron body, bonnet, and wedge provide strength and a pressure rating that meets or exceeds the requirements of AWWA C515. Ductile iron is 2.5 times stronger than possible by cast gray iron designs, and the pressure rating is 250 p.s.i.g. All this strength and higher pressure rating is provided in a compact, lightweight, and easy–to–handle ductile iron valve.

Fusion–Bonded Epoxy
The **Series 2500** valve is fully epoxy coated on the interior and the exterior. The fusion–bonded coating is applied prior to assembly so that even the hub holes and body–to–bonnet flange surfaces are fully epoxy coated.

Triple O–Ring Stem Seals
This valve features triple O–Ring stem seals. Two are located above, and one O–Ring is located below the thrust collar. The lower two O–Rings provide a permanently sealed lubrication chamber that will not require packing adjustment over a longer period of time. The upper O–Ring ensures that used, dirt, or grit cannot enter the valve to cause damage to the lower O–Rings. This is especially important for buried valve/stem service applications.

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Thrust Washers
Two thrust washers are used. One is located above, and one is located below the thrust collar. These thrust washers ensure easy operation at all times.

Wa Flat Gaskets
The bonnet–to–body joint and bonnet–to–bonnet cover each use pressure–energized O–Rings. This eliminates the need for excessive bolt loading, which is required by designs that use flat gaskets. The O–Rings are smaller, which eliminates the need for sharing any cracked repairs.
The **Series 2500** Resilient Wedge Gate Valve is furnished in configurations that are Listed by Underwriters Laboratories, Inc. and Approved by Factory Mutual Research Corp.

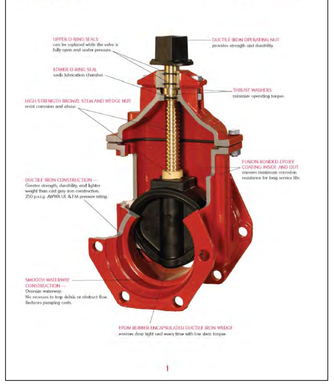
BENEFITS
The **Series 2500** Ductile Iron Resilient Wedge Gate Valve has these standard features:
- UL Listed/FM Approved
- Seat Tested at 500 p.s.i.g.
- Flanges Conform to Drilling Complies With ANSI/AWWA C550
- Solid Bronze Face Flanges Available
- Ductile Iron Body, Bonnet, Wedge, Operating Nut, and Stuffing Box
- Shaft Tested at 500 p.s.i.g.
- 250 p.s.i.g. AWWA UL and FM Pressure Rating
- Triple O–Ring Sealed Wedge
- Triple O–Ring Stem Seals
- Thrust Washers
- Sensor (No Pocket) Waterway
- 100% Leak/Tight Closure
- NSF Standard 61 Certified
- Complies with AWWA C515

SPECIFICATIONS
Valves 2" (12" shall be resilient wedge type rated for 250 p.s.i.g. cold water working pressure. All ferrous components shall be ductile iron, ASTM A536. Valves shall be epoxy coated (interior and exterior) in accordance with AWWA C550. The words "DI," or "Ductile Iron" shall be cast on the valve. The wedge shall be ductile iron or bronze encapsulated with EPDM rubber.
The wedge shall be symmetrical and seal equally well with flow in either direction.
The gate valve stem seal wedge nut shall be manufactured of bronze per Section 4.4.5.1 of the AWWA C515 Standard. Stainless Steel stems are not acceptable. The NRS stem seal have an integral thrust collar in accordance with Section 4.4.5.3 of AWWA C515 Standard. Two–piece stems collars are not acceptable. The wedge nut shall be independent of the wedge to prevent possible misalignment.
Valves shall be certified by NSF to Standard 61.
Rolling materials shall develop not less than the minimum values per ASTM A370 and may have either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1. Metric size socket head cap screws are also acceptable.
The operating nut shall be constructed of ductile iron and shall have four flats at stem connection to ensure even input torque to the stem.
All gaskets shall be pressure energized O–Rings.
Stem shall be sealed by three O–Rings. The top two O–Rings shall be replaceable with valve fully open and under pressure, in the normal working pressure. O–rings, kit, in cartridge shall not be allowed.
Valve shall have thrust washers (washers with (2) shown and (1) below the thrust collar to ensure trouble–free operation of the valve.
All internal and external surfaces of the valve body and bonnet shall have a fusion–bonded epoxy coating, complying with ANSI/AWWA C550, applied electrostatically prior to assembly.
Valves shall be Available Flow Control's **Series 2500 Ductile Iron Resilient Wedge Gate Valve.**

1

SERIES 2500 RESILIENT WEDGE GATE VALVE **RWGV1**

CONSTRUCTION

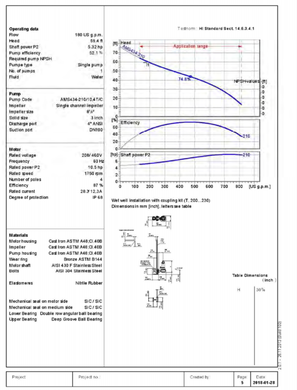


2

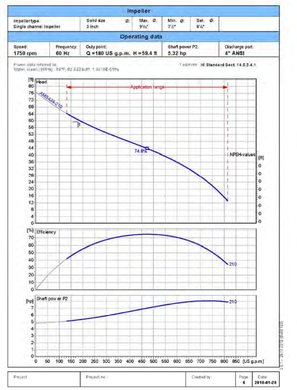
HOMA AMS434–210/10,4T/C 4" NON–CLOG WASTEWATER PUMP
5.3 HP, 208V, 3 PHASE, 4" DISCHARGE OPERATING AT 180 GPM @ 59 FT TDH

IMPORTANT NOTE: CONTRACTOR TO VERIFY AVAILABLE VOLTAGE AND LOAD REQUIREMENTS PRIOR TO ORDERING THE PUMPS AND CONTROLS. THIS PLAN ASSUMES AN AVAILABLE 3 PHASE, 208 VOLT SUPPLY.

Technical Information
AMS434–210/10,4T/C
HOMA Inspire. we'll Solve.



Performance Curve
AMS434–210/10,4T/C
HOMA Inspire. we'll Solve.



Technical Data
AMS434–210/10,4T/C
HOMA Inspire. we'll Solve.

Operating data					
Flow	180 US g.p.m.		Head	59.37 ft	ft
Shaft power P2	5.3	hp	Static head	0	ft
Pump efficiency	62.1	%	Required pump NPSH		ft
Pumpe type	Single pump		No. of pumps	1	
Fluid	Water		Temperature	68	°F
Density	62.31	lb/ft³	Kin. viscosity	1.0116	ft²/s

Pump					
Pump Code	AMS434–210/10,4T/C		Speed	1750	rpm
Suction port	DN100		Head	Min.	54.3 ft
Discharge port	4" ANSI			Max.	13.2 ft
Impeller type	Single channel impeller		Flow	Min.	174.9 US g.p.m.
Solid size	9	inch	Pump efficiency max.		74.8 %
Impeller ID	9.27	inch	Required rated power max. P2		6.1 hp

Motor					
Motor design	Submersible motor		Insulation class		H
Motor name	AM173.51.5T.4G		Degree of protection		IP 68
Frequency	60	Hz	Temperature class		104C
Rated power P1	10.3	hp	NEMA code		D
Rated power P2	10.5	hp	Explosion protection		
Rated speed	1755	rpm		100%	87.9 %
Rated voltage	208 / 460 V	3~	Efficiency	75%	86.8 %
Rated current	28.3 / 12.3	A	at % rated power	50%	86.8 %
Starting current, direct starting	170.9 / 99.5	A	cos phi	100%	0.87
Starting current, standards		A	at % rated power	75%	0.84
Starting mode	Directly			50%	0.75
Power cable	4G4		Control cable		5G1.5
Type of power cable	H07RN-F PLUG		Type of control cable		H07RN-F
Cable length	32.825 ft		Service factor		1.15
Shaft seal	Mechanical seal on motor side		SiC / SiC		
	Mechanical seal on medium side		SiC / SiC		
Bearing	Lower Bearing		Double row angular ball bearing		
	Upper Bearing		Deep Groove Ball Bearing		
Remarks					

Materials / Weight			
Motor housing	Cast iron ASTM A48 CI.40B	Bolts	AISI 304 Stainless Steel
Pump housing	Cast iron ASTM A48 CI.40B	Elastomeres	Nitrile Rubber
Impeller	Cast iron ASTM A48 CI.40B		
Wear ring	Bronze ASTM B144		
Motor shaft	AISI 420 F Stainless Steel		
Weight agregat	257.32 lb		

Project
Project no.
Created by
Page 3
Date 2010.01.03

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, NC 27948
PHONE: 252–255–8026
EMAIL: mrobinson@obxengineering.com

WASTEWATER PLAN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18994 MICHAEL W. ROBINSON

REVISIONS

NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

DATE: 01–31–22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 8 OF 10
CAD FILE: ocean view cottages–kdh–base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18994 MICHAEL W. ROBINSON
04–08–22

FORCE MAIN INSTALLATION AND TESTING

FORCE MAIN SANITARY SEWER

Construct force main sewers in conformance with NCDENR Minimum Design Criteria for the Fast-Track Permitting of Pump Stations and Force Mains.

INSTALLATION GENERAL

Install lines with 36" to 42" of cover to finished grade unless otherwise directed or approved. Install lines with greater cover for short distances to accommodate utility controls, to make tie-ins to existing facilities, to eliminate high points in the pipeline or to provide clearance from existing or proposed utilities, drainage, other obstacles or actual field conditions

PRESSURE TESTING

1. A HYDROSTATIC PRESSURE TEST SHALL BE PERFORMED ON EACH SEGMENT OF INSTALLED FORCE MAIN.
2. THE TEST SHALL BE PERFORMED AFTER THE FORCE MAIN HAS BEEN BACKFILLED AND AT LEAST SEVEN DAYS FOLLOWING THE POURING OF THE LAST THRUST BLOCK.
3. THE FOLLOWING PROCEDURES SHALL BE FOLLOWED IN PERFORMING HYDROSTATIC PRESSURE TESTS ON FORCE MAINS:
   a. THE FORCE MAIN SEGMENT SHALL BE CAREFULLY FILLED WITH WATER AT A VELOCITY OF APPROXIMATELY ONE FOOT PER SECOND. WATER MAY BE INTRODUCED FROM EITHER THE PUMP STATION OR A TEMPORARY CONNECTION MADE IN THE FORCE MAIN. APPROPRIATE MEASURES NECESSARY TO ELIMINATE ALL AIR FROM THE FORCE MAIN SHALL BE TAKEN DURING THIS PROCESS.
   a. ONCE FULL OF WATER, THE FORCE MAIN SEGMENT SHALL BE PRESSURIZED AND ALLOWED TO STABILIZE AT A MINIMUM TEST PRESSURE OF 1.5 TIMES THE MAXIMUM DESIGN PRESSURE OF THE FORCE MAIN PIPE MATERIAL.
   b. THIS PRESSURE SHALL BE MAINTAINED FOR AT LEAST TWO CONSECUTIVE HOURS.
   e. IF THE STATED PRESSURE CANNOT BE MAINTAINED, THE APPLICANT IS RESPONSIBLE FOR ASSURING THAT THE CAUSE OF TEST FAILURE IS DETERMINED, ALL NECESSARY REPAIRS ARE MADE, AND REPEATING THE HYDROSTATIC PRESSURE TEST UNTIL THE FORCE MAIN SEGMENT PASSES.

THE PRESSURE TEST MAY BE PERFORMED CONCURRENTLY OR SEPARATELY WITH THE LEAKAGE TEST AS NOTED BELOW

LEAKAGE TESTING

1. A LEAKAGE TEST SHALL BE PERFORMED ON EACH SEGMENT OF INSTALLED FORCE MAIN AT THE HYDROSTATIC PRESSURE TEST STIPULATED ABOVE
2. LEAKAGE SHALL BE DEFINED AS THE QUANTITY OF WATER REQUIRED TO MAINTAIN A PRESSURE WITHIN FIVE POUNDS PER SQUARE INCH OF THE SPECIFIED TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND ALL AIR HAS BEEN EXPELLED.
3. LEAKAGE SHALL BE MEASURED WITH A CALIBRATED TEST METER AND SHALL NOT EXCEED THE AMOUNT GIVEN BY THE FOLLOWING FORMULA:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

S = LENGTH OF PIPE (FEET)
L = LEAKAGE (GPH)
D = NOMINAL DIAMETER OF PIPE SEGMENT TESTED (INCHES)
P = TEST PRESSURE (POUNDS PER SQUARE INCH)

ALL VISIBLE LEAKS SHALL BE REPAIRED REGARDLESS OF THE AMOUNT OF LEAKAGE. IF LEAKAGE EXCEEDS THIS RATE, THE APPLICANT IS RESPONSIBLE FOR ASSURING THAT THE CAUSE OF TEST FAILURE IS DETERMINED, ALL NECESSARY REPAIRS ARE MADE, AND REPEATING THE TEST UNTIL THE FORCE MAIN SEGMENT PASSES.

4. THE LEAKAGE TEST MAY BE PERFORMED CONCURRENTLY OR SEPARATELY WITH THE

NCDOT POLICY ON DIRECTIONAL DRILLING OF UTILITIES

Directional drilling methods have not been given statewide approval for use on NCDOT right of way. The following conditions shall apply. Under no condition shall the jetting along (wet boring with water) of utility pipelines be allowed. Directional boring utilizing jetting with a Bentonite (or equivalent material) slurry is approved at a minimum depth of ten (10') feet below the pavement surface on non-controlled access routes, a minimum depth of fifteen (15') feet below the pavement surface on controlled access routes, and a minimum of five (5') feet below any ditch line. Any parallel installation utilizing the directional boring method shall be made at a minimum depth of three (3') feet below the ground surface, except where the parallel installation crosses a paved roadway. The tip of the drill string shall have a cutter head. Any changes shall be submitted to the District Engineer for approval prior to construction.An overbore shall not be more than two (2") inches greater than the diameter of the pipe or encasement. An overbore exceeding two (2") inches greater than the diameter of the pipe or encasement will be considered if the encroachment agreement includes a statement signed and sealed by a North Carolina Registered Professional Engineer indicating that an overbore in excess of two (2") inches of the pipe or encasement will arch and no damage will be done to the pavement or subgrade.

2.0 WASTEWATER COLLECTION SYSTEM

2.1 Gravity Sewer Main Materials

Ductile iron pipe shall be designed as per ANSI A21.50 and ANSI A21.51 for a working pressure of 150 psi, laying condition B. Pipe shall be manufactured as per AWWA C141 in 18 ft. minimum lengths.

Pipe joints shall be of the push-on type as per AWWA C151. Pipe lining shall be cement mortar with a seal coat of bituminous material, all in accordance with AWWA C104.

Polyvinyl Chloride (PVC) pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B (with minimum tensile modulus of 500,000 psi) as defined in Specifications D1784. PVC pipe shall have integral wall bell and spigot joints for the conveyance of domestic sewage. Fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13364-B as defined in Specifications D1784. Fittings must be manufactured by pipe supplier or approved equal, and have bell and/or spigot configurations compatible with that of the pipe. Compounds with superior properties are also acceptable.

Pipe shall have a maximum Standard Dimension Ratio (SDR) of 35. Where laying conditions so warrant, and in accordance with manufacturer's recommendations, lower SDR values (stronger pipe) may be required.

Installation shall consist of either Class I or Class II bedding material (as defined hereinafter), placed 6" below the pipe barrel and continuing to a minimum of 6" above the pipe, as per ASTM D2321. In addition, the installation of PVC pipe shall satisfy the flexible pipe requirements as outlined hereinafter. No Clay or VCP Pipe will be accepted.

Additional Requirements for PVC Pipe

A.Installation of PVC pipe shall follow the recommendations of ASTM-D-2321 "Underground Installation of Flexible Thermoplastic Sewer Pipe". For flexible pipe bedding and embedment material shall be either Class I or Class II. In any area where the pipe will be installed below existing or future ground water levels or where the trench could be subject to inundations, only Class I material shall be used for bedding and embedment.

B. The manufacturer's specifications or otherwise approved method shall be used in determining the stiffness class of the pipe to be installed so as to attain the required deflection control. The class of the pipe must be approved by the Engineer prior to installation.

C. The maximum allowable deflection after installation shall BE LESS THAN 5% of the pipe diameter. The mandrel (go/no-go) deflection test must be performed on each line prior to acceptance, and no less than 30 days after installation. The Contractor shall supply the mandrel used for this performance test. The mandrel device shall be cylindrical in shape and have 9 possible contact points with the pipe. The mandrel's length and diameter (ID of proving ring) shall equal the dimensions in the following table, and shall be subject to the Engineer's approval.

For flexible PVC pipes, the following shall apply:

Nominal Diameter	Length	Proving Ring Dia.Mandrel
8"	8"	7.40"

D. For flexible PVC pipe, the pipe shall be produced with bell and construction. Joining will be accomplished by rubber gasket in accordance manufacturer's recommendations, unless otherwise directed or approved Engineer. Flexible watertight elastomeric seals in accordance D3212-81, may also be used. Each pipe length shall be clearly marked information including pipe size, profile number, and class number.

E. A minimum trench width shall be one pipe diameter plus 9" on each the pipe.

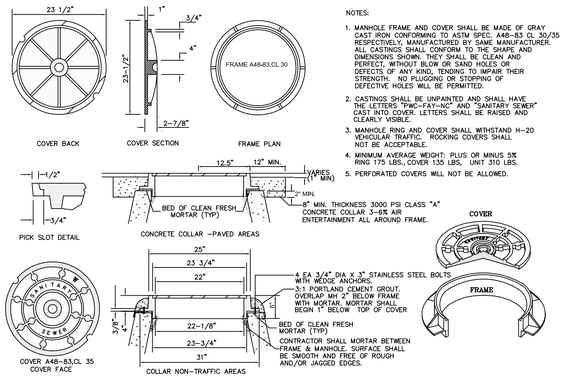
F. The bedding (6" minimum) and embedment materials shall be per ASTM D2321. The embedment materials shall be installed from trench wall to trench wall and from the invert to a minimum of 6" above the crown of the pipe.

G. The bedding and embedment materials shall be compacted to a minimum of 90% Standard Proctor density for Class I and II materials. Bedding and embedment materials classifications shall be defined as follows:

Class I
Angular (1/4" to 1-1/2") graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, crushed gravel and crushed shells.

Class II
Coarse sands and gravels with maximum particle size of 1-1/2", including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil types GW,GP, SW & SP are included in this class.

H. The minimum design slope for gravity sewer mains shall be 0.6% and no gravity lines will be accepted with less than 0.5% slope "installed".



NOTES:

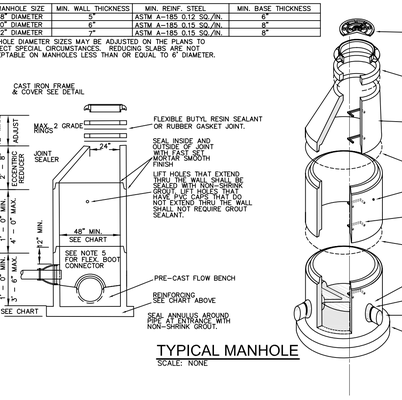
1. MANHOLE FRAME AND COVER SHALL BE MADE OF GRAY CAST IRON CONFORMING TO ASTM SPEC. A48-83 CL 30/35 RESPECTIVELY, MANUFACTURED BY SAME MANUFACTURER. ALL CASTINGS SHALL CONFORM TO THE SHAPE AND DIMENSIONS SHOWN. THEY SHALL BE CLEAN AND PERFECT, WITHOUT BLOW OR SAND HOLES OR DEFECTS OF ANY KIND, TENDING TO IMPAIR THEIR STRENGTH. NO PLUGGING OR STOPPING OF DEFECTIVE HOLES WILL BE PERMITTED.
2. CASTINGS SHALL BE UNPAINTED AND SHALL HAVE THE LETTERS "FWC-FAY-NC" AND "SANITARY SEWER" CAST INTO COVER. LETTERS SHALL BE RAISED AND CLEARLY VISIBLE.
3. MANHOLE RING AND COVER SHALL WITHSTAND H-20 VEHICULAR TRAFFIC. ROCKING COVERS SHALL NOT BE ACCEPTABLE.
4. MINIMUM AVERAGE WEIGHT: PLUS OR MINUS 5% RING 175 LBS., COVER 135 LBS, UNIT 310 LBS.
5. PERFORATED COVERS WILL NOT BE ALLOWED.

TYPICAL MANHOLE FRAME & COVER

SCALE: NONE

PIPE SIZES	MANHOLE SIZE	MIN. WALL THICKNESS	MIN. REINF. STEEL	MIN. BASE THICKNESS
21" & LESS	48" DIAMETER	5"	ASTM A-185 0.12 SQ./IN.	8"
24" – 36"	60" DIAMETER	6"	ASTM A-185 0.15 SQ./IN.	8"
42"	72" DIAMETER	7"	ASTM A-185 0.15 SQ./IN.	8"

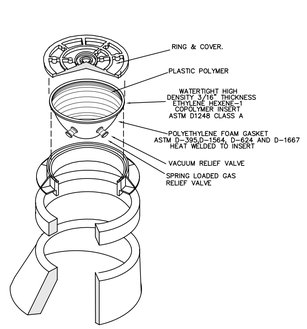
MANHOLE DIAMETER SIZES MAY BE ADJUSTED ON THE PLANS TO REFLECT SPECIAL CIRCUMSTANCES. REDUCING SLABS ARE NOT ACCEPTABLE ON MANHOLES LESS THAN OR EQUAL TO 6' DIAMETER.



NOTES: 1. PRECAST REINFORCED CONCRETE MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478
2. MIN. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI.
3. MANHOLES GREATER THAN 4' DEPTH SHALL HAVE MIN. 6" EXTENDED BASE.
4. FLEXIBLE BUTYL RESIN JOINT SEALANT SHALL BE IN ACCORDANCE W/ ASTM C990. RUBBER GASKET JOINTS SHALL BE IN ACCORDANCE W/ASTM C-443.
5. FLEXIBLE EPDM RUBBER BOOT CONNECTORS SHALL BE IN ACCORDANCE W/ ASTM C923, INSTALLED BY MANUFACTURER W/STAIN- LESS STEEL COMPRESSION RING AND TAKE-UP CLAMP. CONNECTION TO MAIN SHALL BE BY CONTRACTOR WITH STAINLESS STEEL PIPE CLAMP.
6. CONNECTIONS TO EXISTING MANHOLES SHALL BE BY CORING MAN- HOLE AND FIELD INSTALLING A FLEX. BOOT CONNECTOR. DO NOT ALLOW DEBRIS TO ENTER SYSTEM.
7. MORTAR SHALL BE QUICK SETTING, NON-SHRINK GROUT MIXED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. MANHOLE STEPS SHALL BE IN ACCORD- ANCE WITH ASTM C478 AND OSHA REGULATIONS ALIGN W/INVERT OUT.

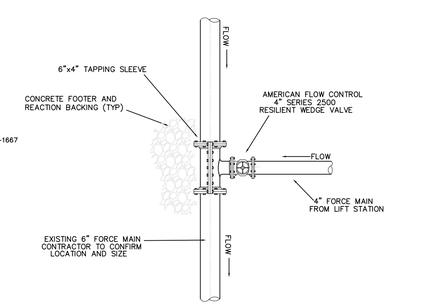
TYPICAL MANHOLE

SCALE: NONE



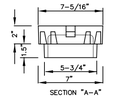
TYPICAL MANHOLE INSERT

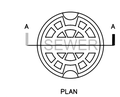
SCALE: NONE



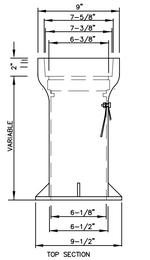
FORCE MAIN CONNECTION DETAIL - PLAN

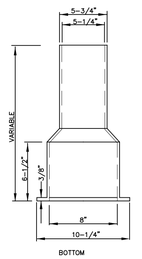
SCALE: NONE





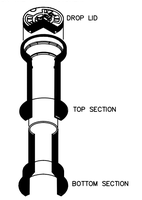
5-1/4" DROP LID





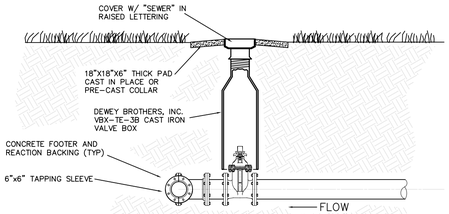
NOTES

1. VALVE BOX SHALL BE 3 PART SLIP-TYPE MANUFACTURED BY ALABAMA PIPE CO. , CHAPMAN VALVE CO., COLUMBIAN IRON WORKS R.D. WOOD CO. OR APPROVED EQUAL.
2. VALVE BOX SHALL BE 3-PIECE CLOSE GRAINED CAST IRON SLIP-TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
3. VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
4. VALVE BOX ACCOMMODATES 4" THRU 12" VALVES.
5. VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4" X 1-1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A 12GA. THIN TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
6. SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
7. DIMENSIONS SHOWN ARE FOR INFORMATION ONLY AND VARY BASED UPON THE MANUFACTURER.



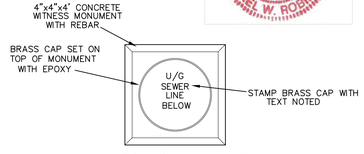
VALVE BOX DETAIL - SEWER

NOT TO SCALE



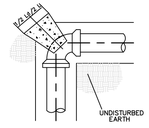
FORCE MAIN CONNECTION DETAIL - PROFILE

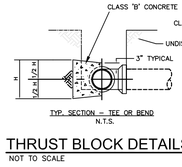
SCALE: NONE

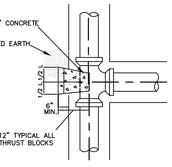


WITNESS MONUMENT DETAIL

SCALE: NONE







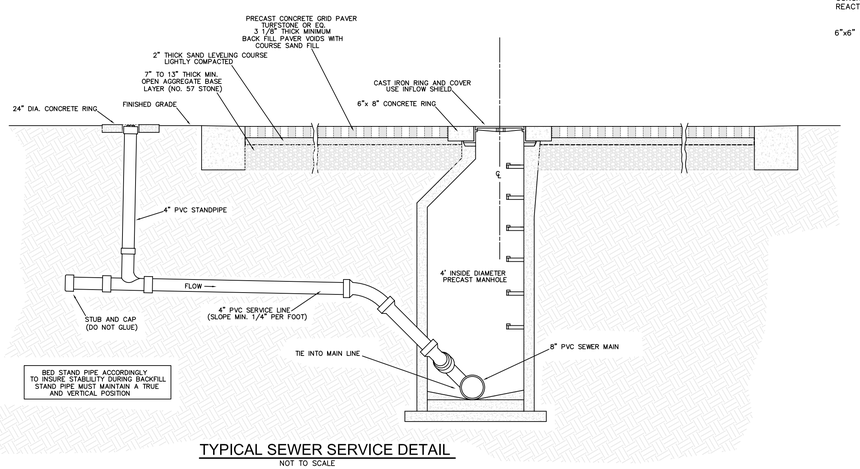
THRUST BLOCK DETAILS

NOT TO SCALE

NOTE:
WRAP ALL FITTINGS IN 6 MIL. PLASTIC BEFORE POURING REACTION BACKING . ALL CONCRETE TO BE 3000 PSI

CONCRETE THRUST BLOCK SCHEDULE

PIPE SIZE INCHES	TEE AND DEAD END H	L	C.Y.	BEND 90° H	L	C.Y.	45° H	L	C.Y.	22 1/2° H	L	C.Y.	11 1/4° H	L	C.Y.	DESIGN PRESSURE PSI
4" & 2"	1.5'	2.0'	0.11	1.5'	2.0'	0.11	1.5'	2.0'	0.11	1.5	2.0	0.11	1.5	2.0	0.11	150
6"	2.5'	2.5'	0.23	2.5'	2.5'	0.23	1.5'	2.0'	0.11	1.5	2.0	0.11	1.5	2.0	0.11	150
8"	2.5'	2.5'	0.23	3.0	3.0	0.33	2.5'	2.5'	0.23	1.5	2.0	0.11	1.5	2.0	0.11	150



TYPICAL SEWER SERVICE DETAIL

NOT TO SCALE

Relation of Water Mains to Sewers

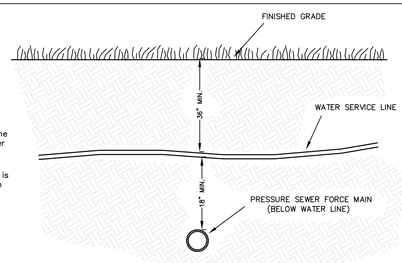
(a) Lateral Separation of Sewers and Water Mains. Water mains shall be laid at least 10 feet laterally from existing or proposed sewers, unless local conditions or barriers prevent a 10-foot lateral separation---in which case:

(1) The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the sewer; or

(2) The water main is laid in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 18 inches above the top of the sewer.

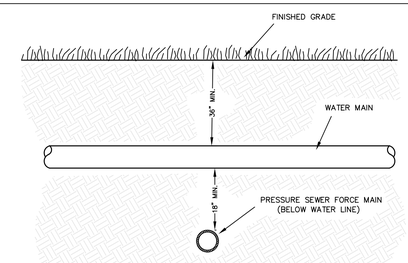
(b) Crossing a Water Main Over a Sewer. Whenever it is necessary for a water main to cross over a sewer, the water main shall be laid at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer, unless local conditions or barriers prevent an 18 inch vertical separation---in which case both the water main and sewer shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing.

(c) Crossing a Water Main Under a Sewer. Whenever it is necessary for a water main to cross under a sewer, both the water main and sewer shall be constructed of ferrous materials and with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing. A section of water main pipe shall be centered at the point of crossing.



WATER SERVICE / SEWER FORCE MAIN CROSSING DETAIL

NOT TO SCALE



WATER MAIN / SEWER FORCE MAIN CROSSING DETAIL

NOT TO SCALE

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, NC 27948
PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

WASTEWATER PLAN

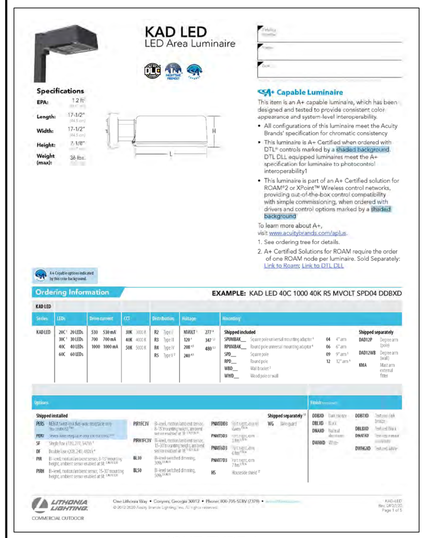
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18994 MICHAEL W. ROBINSON

REVISIONS

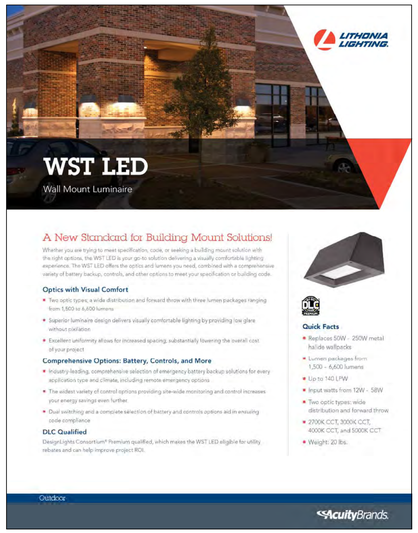
NO.	DATE	DESCRIPTION	BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS DARE COUNTY NORTH CAROLINA
902 SOUTH VIRGINIA DARE TRAIL

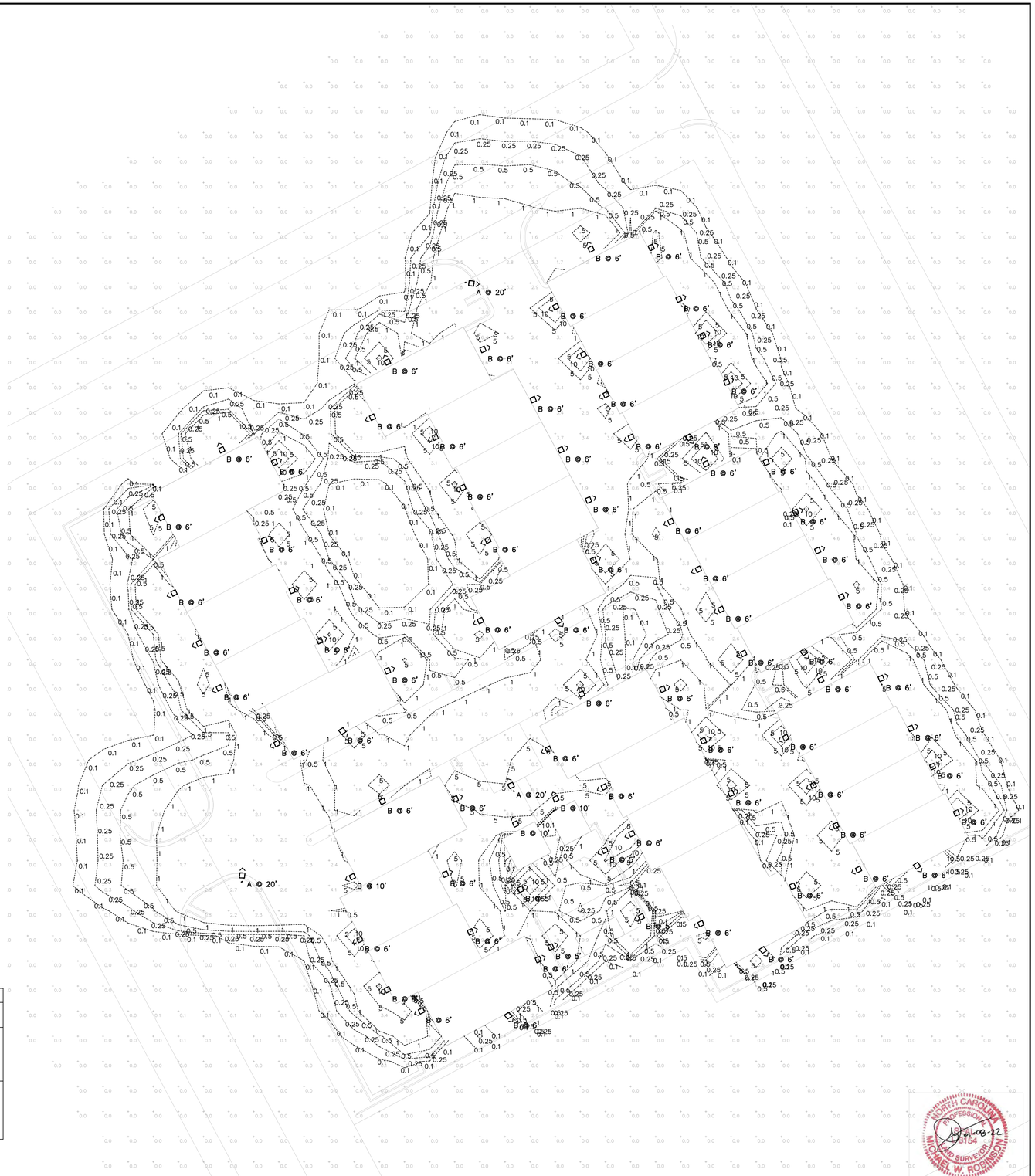
DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 9 OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121



LIGHT TYPE A
LITHONIA LIGHTING - KAD LED AREA LUMINAIRE
OPTIONAL HOUSE SIDE SHIELD AND DIMMER WITH AMBIENT SENSOR
COLOR AND FINISH BY OWNER
M.H. = 20' ABOVE PARKING



LIGHT TYPE B
LITHONIA LIGHTING - WST LED WALL MOUNT LUMINAIRE
P1-27K-VF HVOLT WITH MOTION/AMBIENT LIGHT SENSOR
COLOR AND FINISH BY OWNER
M.H. = 6' ABOVE PARKING



VISUAL

SITE STATISTICS

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
1	+	0.6 fc	19.4 fc	0.0 fc	N/A	N/A

LUMINARE SCHEDULE

REFER TO SITE PLAN FOR POLE LOCATION AND LUMEN ORIENTATION

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Number Lamps	Filename	Lumens per Lamp	Lumen Multiplier	LLF	Wattage	Efficiency
A	A	3	Lithonia Lighting	KAD LED 60C 530 50K R5 MVOLT HS	KAD LED, 60 LED, 530mA MVOLT DRIVER, 5000K, TYPE 5 OPTICS WITH HOUSE SIDE SHIELDS.	1	KAD_LED_60C_530_50K_R5_MVOLT_HS.ies	10224	1	1	103	100%
C	C	30	Lithonia Lighting	WST LED P1 27K VF HVOLT	WST LED, Performance package 1, 2700 K, visual comfort forward throw, HVOLT	1	WST_LED_P1_27K_VF_HVOLT.ies	1494	1	1	14	100%

Per §153.074(E)(3) All light produced on-site shall be contained within the perimeter of the site by design, orientation or shielding of the light source."

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
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KILL DEVIL HILLS, NC 27948
PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

LIGHTING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 18994 ENGINEER MICHAEL W. ROBINSON

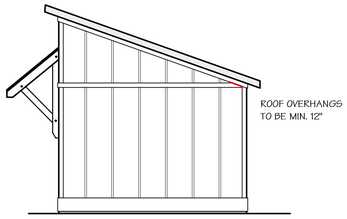
REVISIONS		
NO.	DATE	DESCRIPTION BY

PROJECT:
OCEAN BREEZE TOWNHOMES
KILL DEVIL HILLS NORTH CAROLINA
DARE COUNTY
902 SOUTH VIRGINIA DARE TRAIL

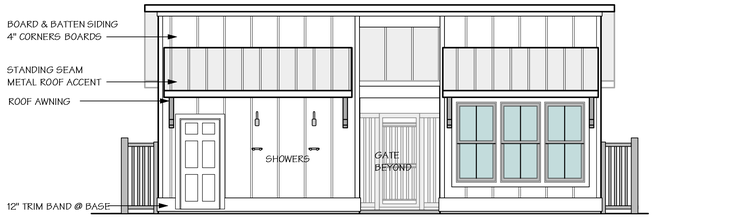
DATE: 01-31-22
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 10 OF 10
CAD FILE: ocean view cottages-kdh-base.dwg
PROJECT NO: 051121

NORTH CAROLINA PROFESSIONAL SEAL 3154 LAND SURVEYOR MICHAEL W. ROBINSON
01-03-22

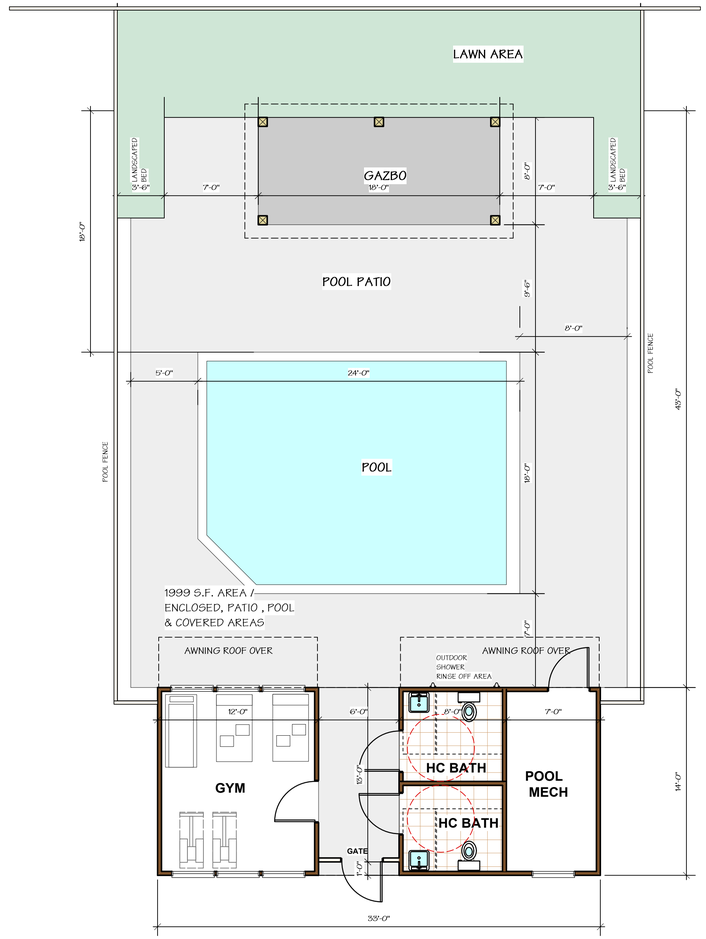
FRONT FENCE - HWY 12



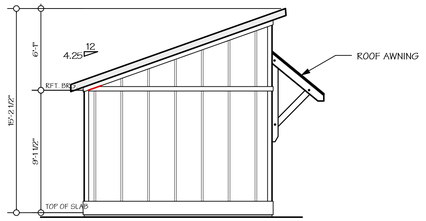
POOL BATH HOUSE
LEFT SIDE ELEVATION



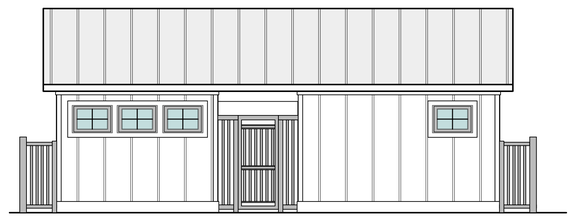
POOL BATH HOUSE
REAR ELEVATION



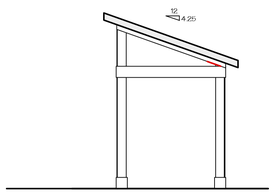
POOL PLAN



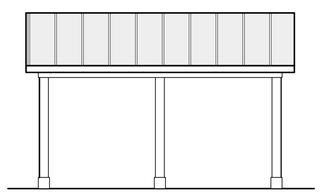
POOL BATH HOUSE
RIGHT SIDE ELEVATION



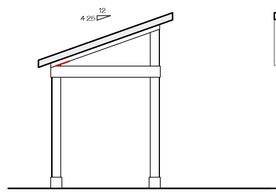
POOL BATH HOUSE
FRONT ELEVATION



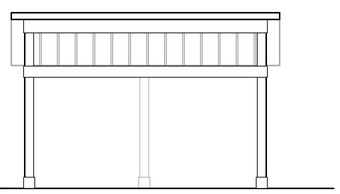
GAZEBO RIGHT
SIDE ELEVATION



GAZEBO
REAR ELEVATION



GAZEBO LEFT
SIDE ELEVATION



GAZEBO
FRONT ELEVATION

AREA SCHEDULE

BATH ROOMS	112 SQ.FT.
GYM	168 SQ.FT.
MECH	98 SQ.FT

PLANNING BOARD REVIEW SET

SCALE: 3/16" = 1'-0"

PROJECT NAME:

Ocean View Townhomes
Pool Bath House & Gazebo

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FLOREZ
DESIGN STUDIOS, P.C.
florezdesignstudios.com
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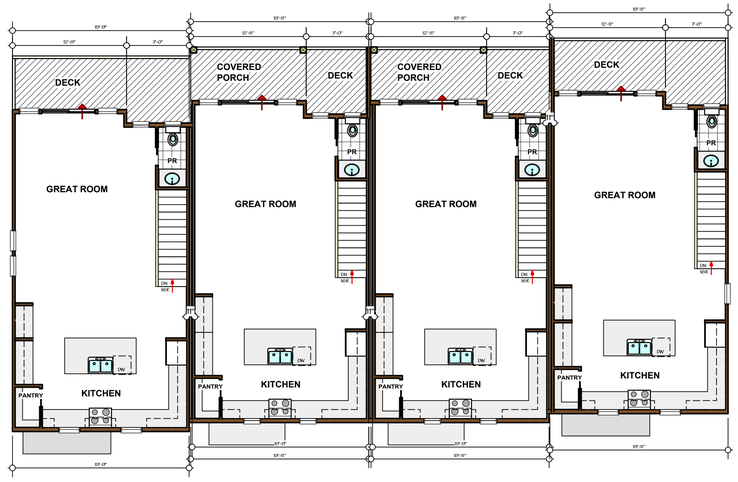
Email: florezdesignstudios@gmail.com
www.florezplans.com
PO Box 170, 9138 Caratoke Hwy.
Point Harbor, NC 27964

PROJECT #
SCALE: AS NOTED
DRAWN BY: BD
DATE: JAN 30, 2022
CHECKED:
REVISIONS:
SHEET # **P1**

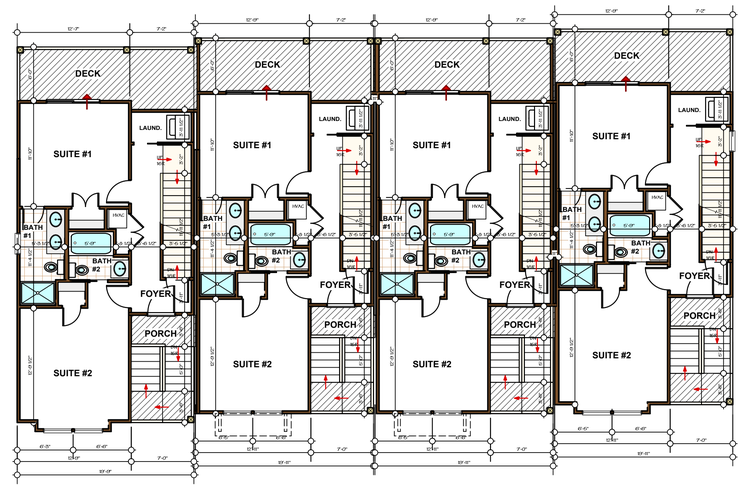
AREA SCHEDULE

THE ASHEVILLE

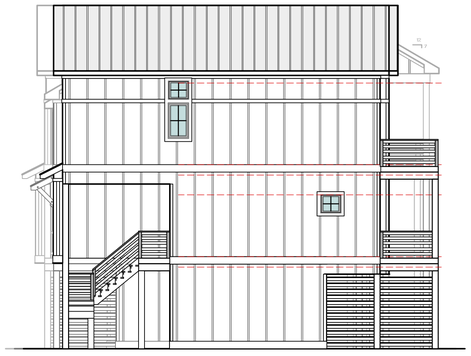
FIRST FLOOR	620 SQ.FT.
SECOND FLOOR	665 SQ.FT.
TOTAL UNIT HEATED AREA	1,285 SQ.FT.
BUILDING TOTAL HEATED AREA	5,140 SQ.FT.
BUILDING TOTAL COVERED PORCHES	482 SQ.FT.



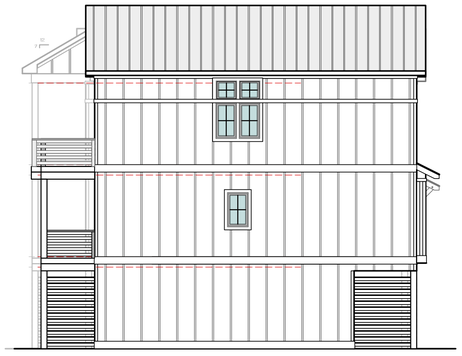
SECOND FLOOR PLAN



FIRST FLOOR PLAN



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

GROUND FLOOR PLAN

REAR ELEVATION- EAST

TYPICAL EXTERIOR

4" TRIM BAND

BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

FRONT ELEVATION - WEST

PLANNING BOARD REVIEW SET

SCALE: 1/8" = 1'-0"

PROJECT NAME:

OCEAN BREEZE TOWNHOMES
BUILDING #1
THE ASHEVILLE

FLOREZ DESIGN STUDIOS, P.C.
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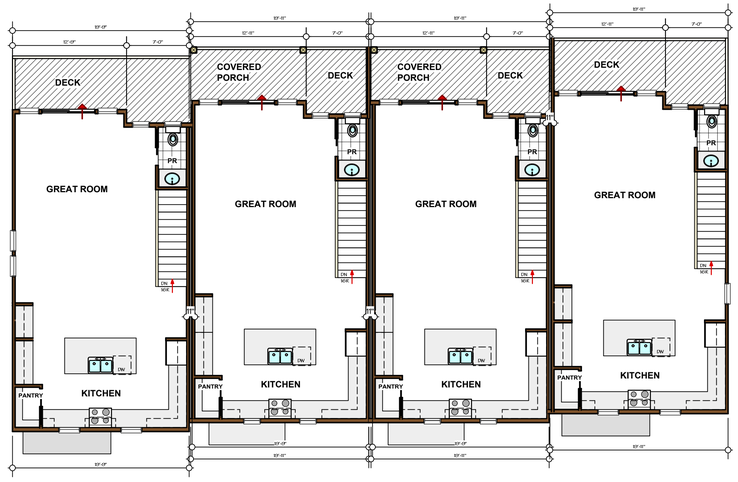
Tel: 252-491-8000 Fax: 252-491-9975
Email: florezdesignstudios@gmail.com

PROJECT #	
SCALE: AS NOTED	
DRAWN BY: BD	
DATE: JAN. 30, 2022	
REVISIONS:	
SHEET #	A1

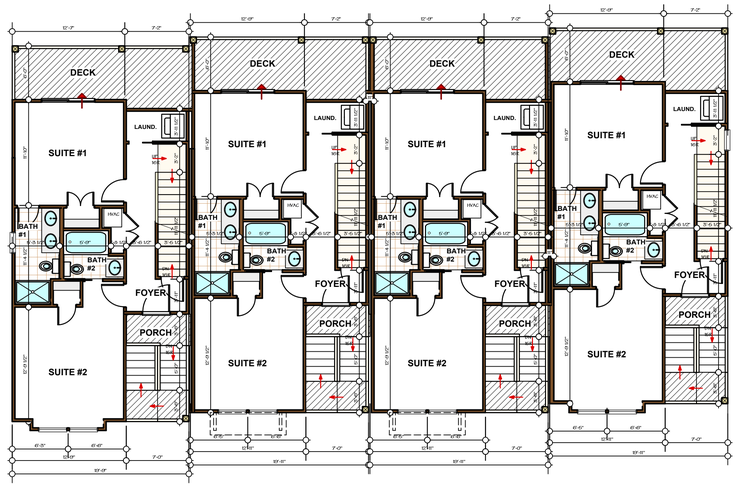
AREA SCHEDULE

THE ASHEVILLE

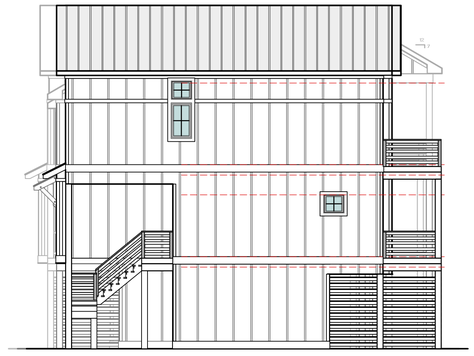
FIRST FLOOR	620 SQ.FT.
SECOND FLOOR	665 SQ.FT.
TOTAL UNIT HEATED AREA	1,285 SQ.FT.
BUILDING TOTAL HEATED AREA	5,140 SQ.FT.
BUILDING TOTAL COVERED PORCHES	482 SQ.FT.



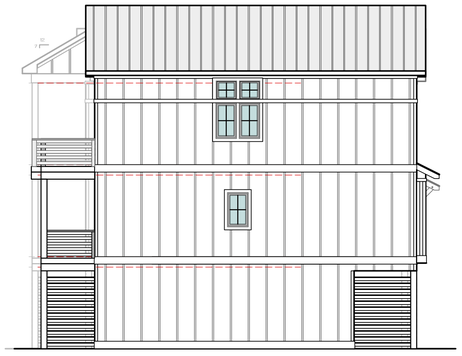
SECOND FLOOR PLAN



FIRST FLOOR PLAN



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

REAR ELEVATION- EAST

TYPICAL EXTERIOR

4" TRIM BAND

BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

GROUND FLOOR PLAN

FRONT ELEVATION - WEST

PLANNING BOARD REVIEW SET

SCALE: 1/8" = 1'-0"

PROJECT NAME:
OCEAN BREEZE TOWNHOMES
BUILDING #2
THE ASHEVILLE

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Tel: 252-491-8000 Fax: 252-491-9975
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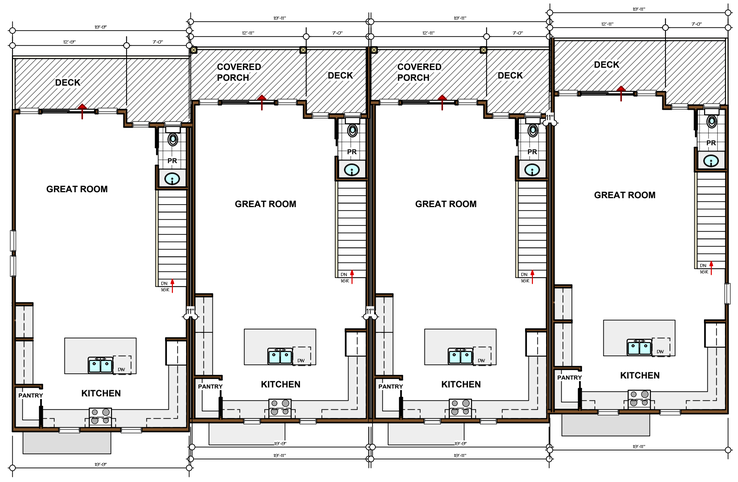
SCALE: AS NOTED
DRAWN BY: BD
DATE: JAN. 30, 2022
REVISIONS:
PROJECT #
SHEET # A1

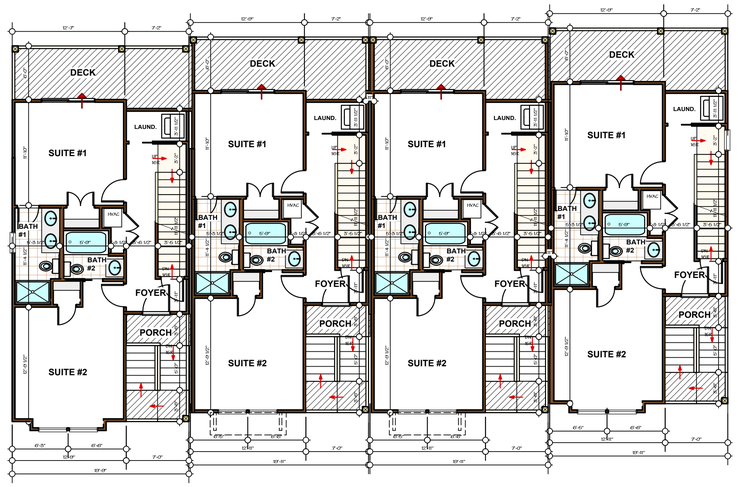
AREA SCHEDULE

THE ASHEVILLE

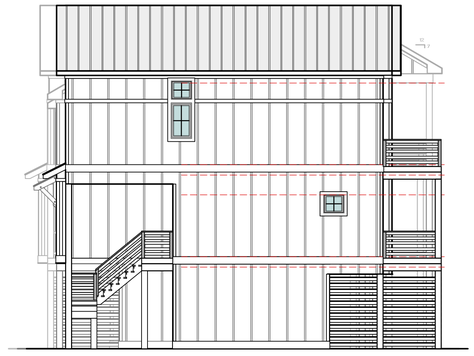
FIRST FLOOR	620 SQ.FT.
SECOND FLOOR	665 SQ.FT.
TOTAL UNIT HEATED AREA	1,285 SQ.FT.
BUILDING TOTAL HEATED AREA	5,140 SQ.FT.
BUILDING TOTAL COVERED PORCHES	482 SQ.FT.



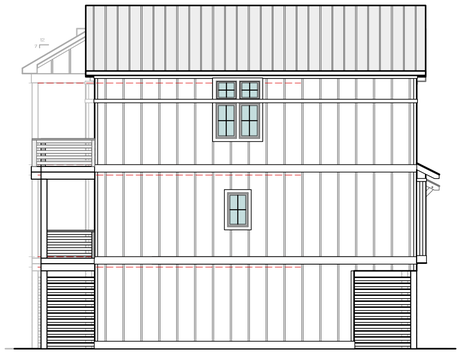
SECOND FLOOR PLAN



FIRST FLOOR PLAN



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

GROUND FLOOR PLAN

REAR ELEVATION- EAST

TYPICAL EXTERIOR

4" TRIM BAND
BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

FRONT ELEVATION - WEST

PLANNING BOARD REVIEW SET

SCALE: 1/8" = 1'-0"

PROJECT NAME:
OCEAN BREEZE TOWNHOMES
BUILDING #3
THE ASHEVILLE

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Point Harbor, NC 27964

PROJECT #
SCALE: AS NOTED
DRAWN BY: BD
DATE: JAN. 30, 2022
REVISIONS:
SHEET # A1

RIGHT SIDE ELEVATION

REAR ELEVATION

LEFT SIDE ELEVATION

TYPICAL EXTERIOR

4" TRIM BAND
BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

The Charlotte - A | The Wilmington - A | The Wilmington - B | The Wilmington - C | The Charlotte - A

FRONT ELEVATION

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

PROJECT NAME:

Ocean Breeze Townhomes
Building #4

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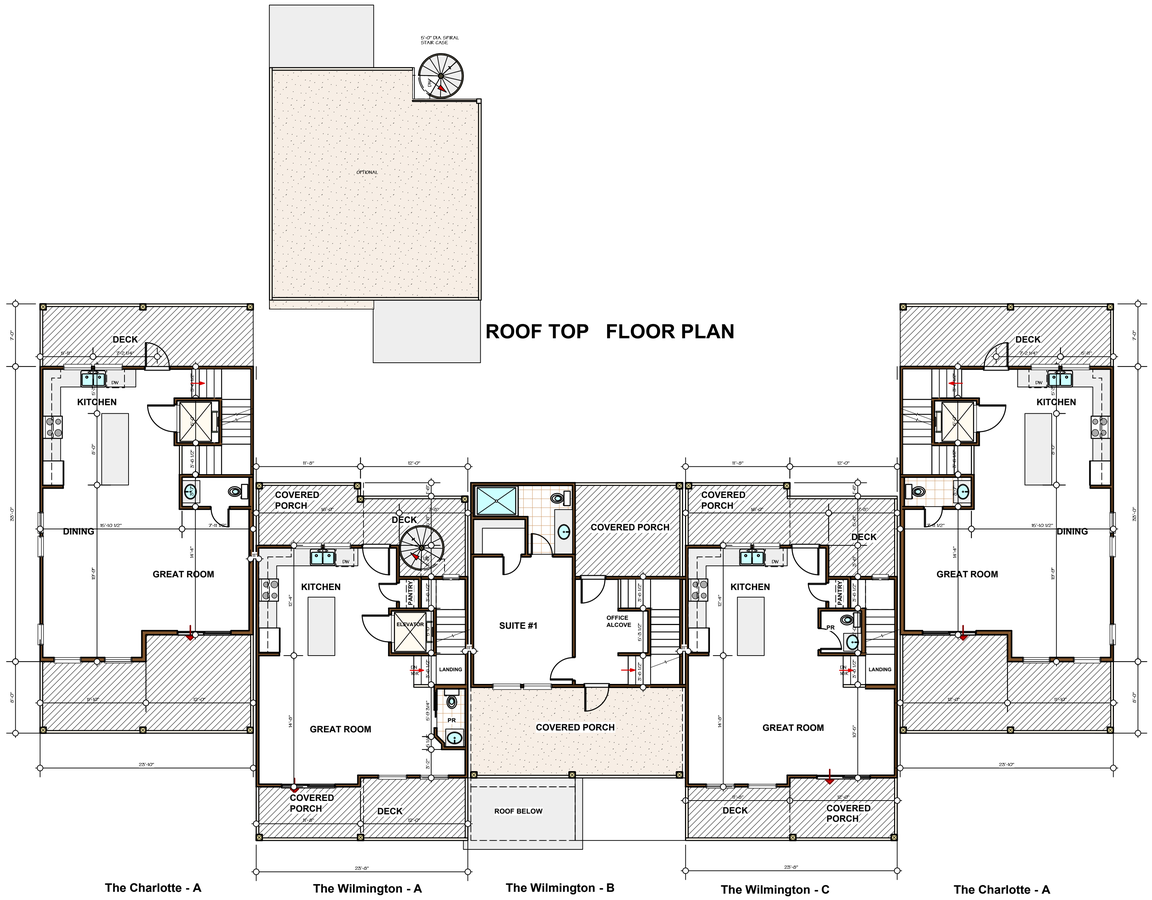
PROJECT #
SCALE: AS NOTED
DRAWN BY: BD
DATE: JAN 17, 2022
CHECKED:
SHEET #
REVISIONS:

A1

AREA SCHEDULE

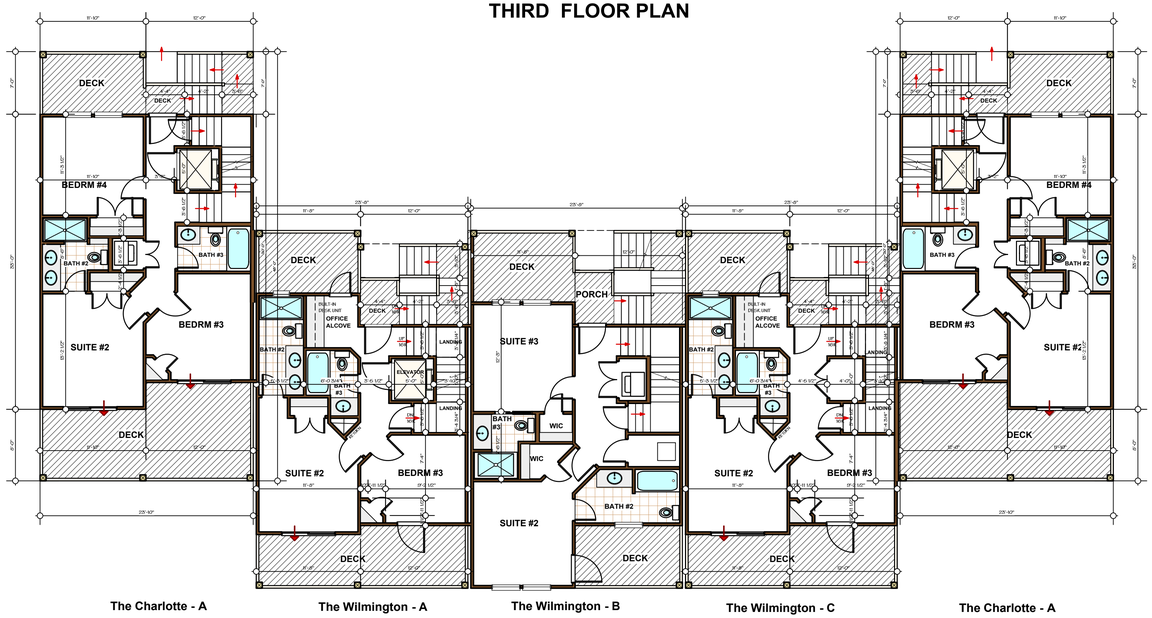
THE CHARLOTTE A		THE WILMINGTON A		THE WILMINGTON B		THE WILMINGTON C		THE CHARLOTTE A	
FIRST FLOOR	750 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	643 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	750 SQ.FT.
SECOND FLOOR	329 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	656 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	329 SQ.FT.
THIRD FLOOR	655 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	350 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	655 SQ.FT.
TOTAL	1,734 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,649 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,734 SQ.FT.

TOTAL BUILDING COVERED PORCHES 1,604 SQ.FT.
TOTAL BUILDING HEATED AREA 8,653 SQ.FT.

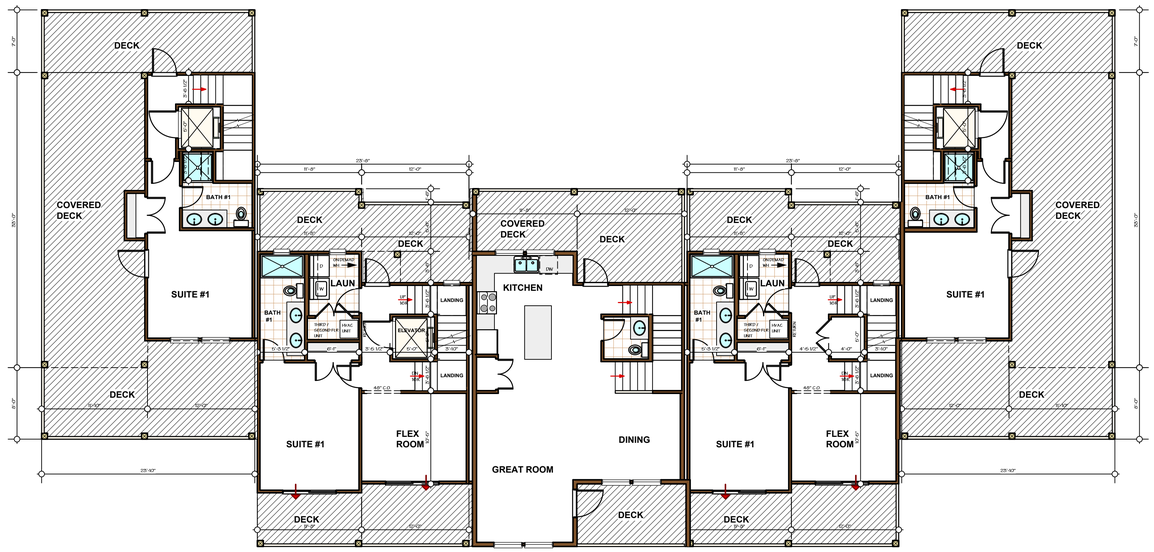


ROOF TOP FLOOR PLAN

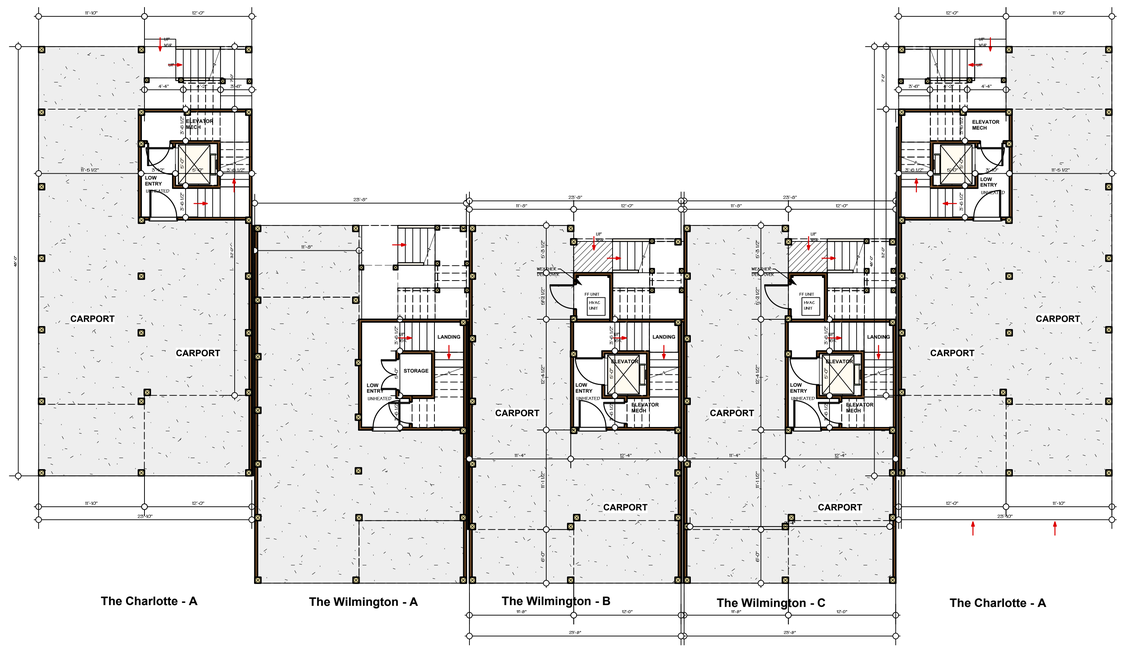
THIRD FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN



GROUND FLOOR PLAN

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

PROJECT NAME:
Ocean Breeze Townhomes
Building #4

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Email: florezdesignstudios@gmail.com

PROJECT #
SCALE: AS NOTED
DRAWN BY: BD
CHECKED:
DATE: JAN 17, 2022
REVISIONS:
SHEET #
A2

RIGHT SIDE ELEVATION

REAR ELEVATION

LEFT SIDE ELEVATION

TYPICAL EXTERIOR

4" TRIM BAND

BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

The Carolinian | The Wilmington - A /E | The Wilmington - C /E | The Charlotte - A/E

FRONT ELEVATION

PROJECT NAME:

Ocean Breeze Townhomes
Building #5

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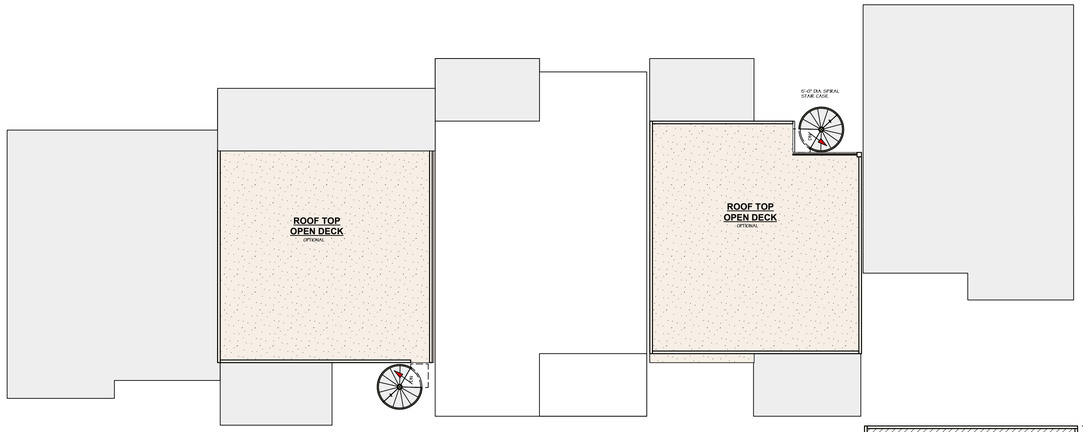
PROJECT #
DATE: JAN 30, 2022
SHEET #
SCALE: AS NOTED
DRAWN BY: BD
CHECKED:
REVISIONS:

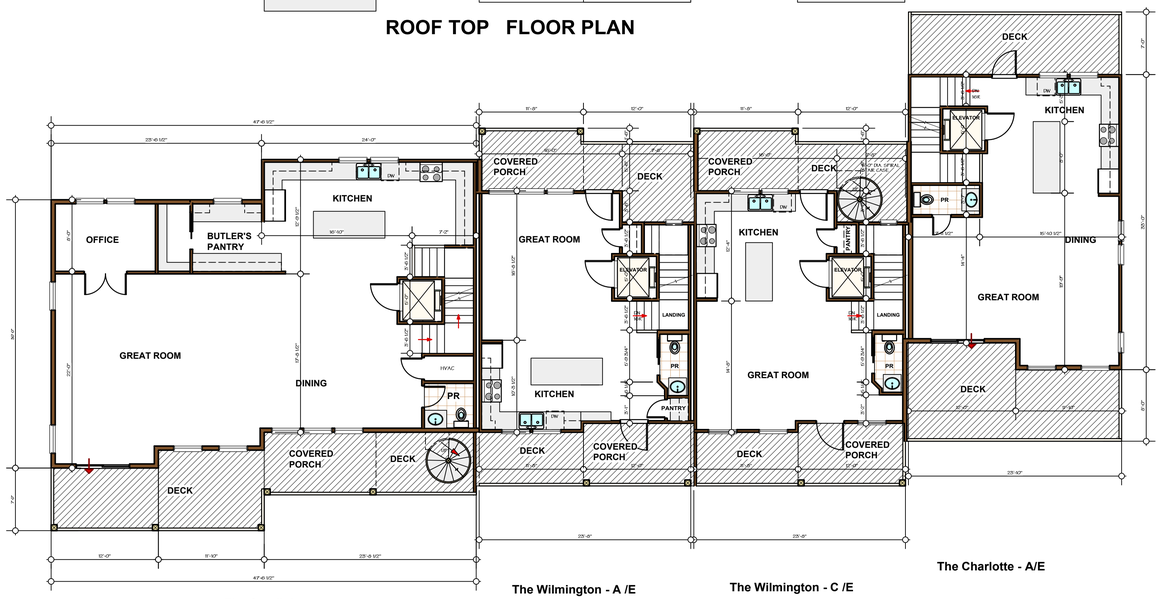
A1

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

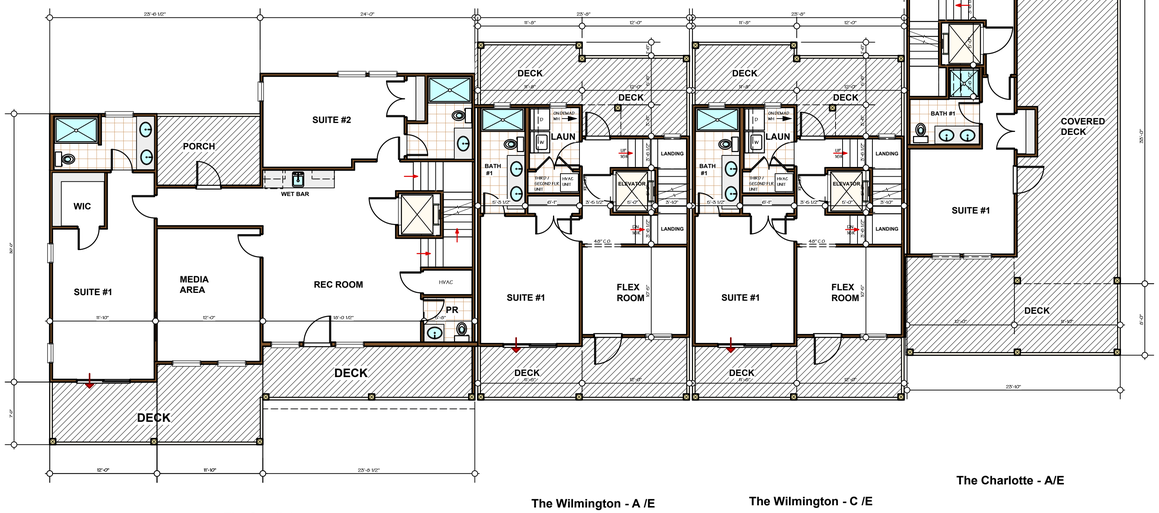


ROOF TOP FLOOR PLAN

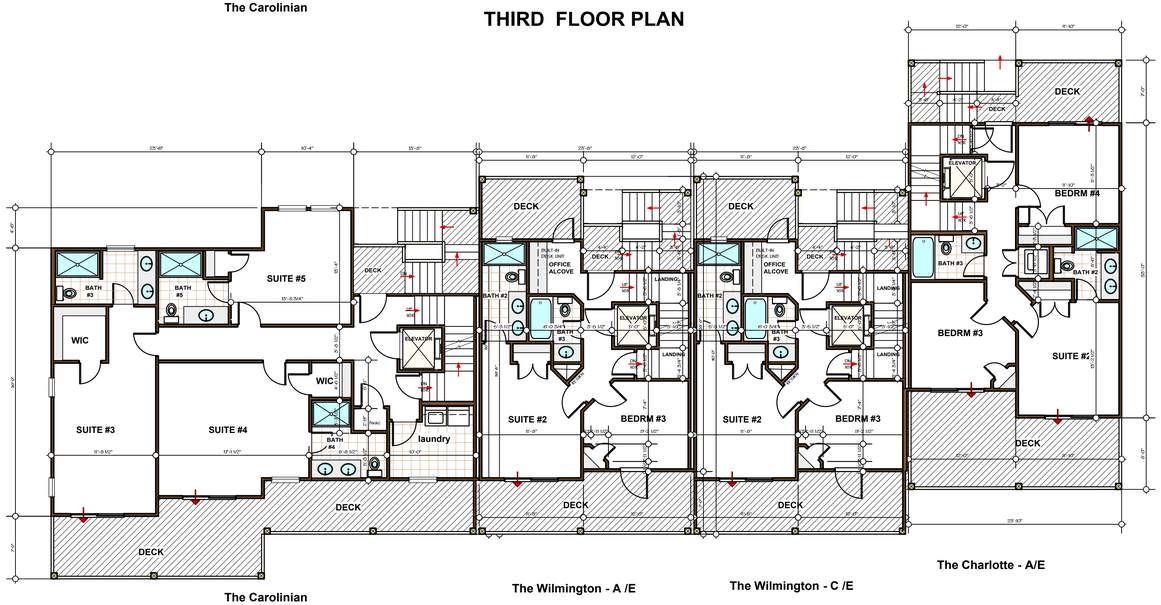
AREA SCHEDULE							
THE RALEIGH		THE WILMINGTON A		THE WILMINGTON C		THE CHARLOTTE A	
FIRST FLOOR	1,284 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	750 SQ.FT.
SECOND FLOOR	1,322 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	329 SQ.FT.
THIRD FLOOR	1,415 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	655 SQ.FT.
TOTAL	4,021 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,734 SQ.FT.
		TOTAL BUILDING COVERED PORCHES 1736 SQ.FT.					
		TOTAL BUILDING HEATED AREA 9,291 SQ.FT.					



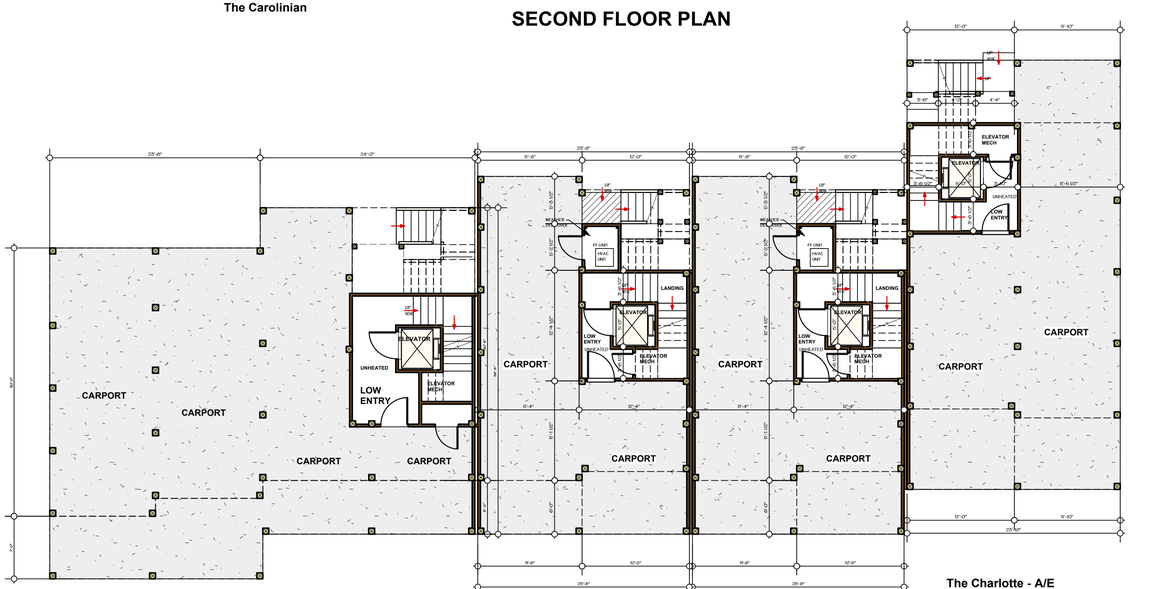
THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

PLANNING BOARD REVIEW SET

SCALE 1/8" = 1'-0"

PROJECT NAME:

Ocean Breeze Townhomes
Building #5

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Point Harbor, NC 27964
Email: florezdesignstudios@gmail.com

PROJECT #
DATE: JAN 30, 2022
SHEET #
SCALE: AS NOTED
DRAWN BY: BD
CHECKED:
REVISIONS:

A2

RIGHT SIDE ELEVATION

REAR ELEVATION

LEFT SIDE ELEVATION

TYPICAL EXTERIOR

4" TRIM BAND

BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

The Charlotte - B | The Wilmington - A /E | The Wilmington - B | The Wilmington - A /E | The Charlotte - B/E

FRONT ELEVATION

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

PROJECT NAME:

Ocean Breeze Townhomes
Building #6

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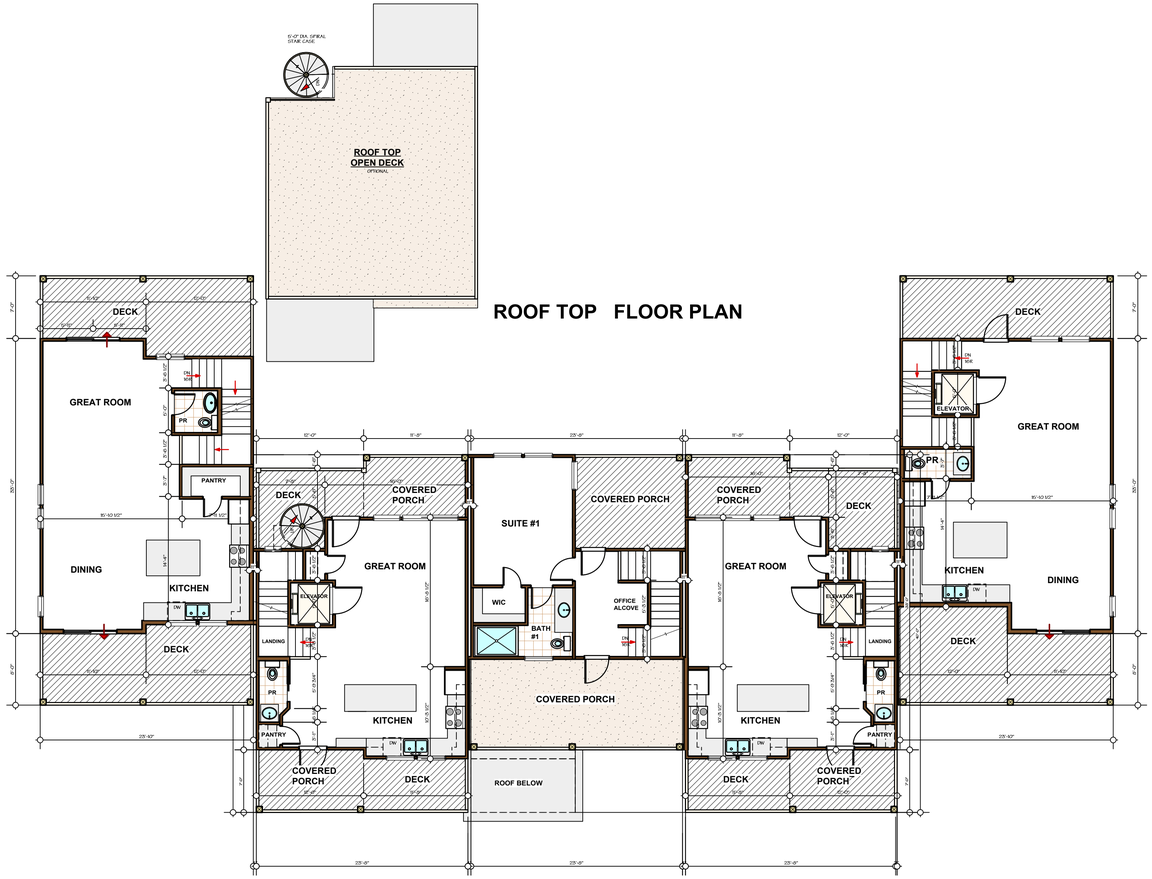
PO Box 170, 9138 Caratoke Hwy.
Point Harbor, NC 27964

PROJECT #	
DATE: JAN 30, 2022	
SCALE: AS NOTED	
DRAWN BY: BD	
CHECKED:	
REVISIONS:	
SHEET #	A1

AREA SCHEDULE

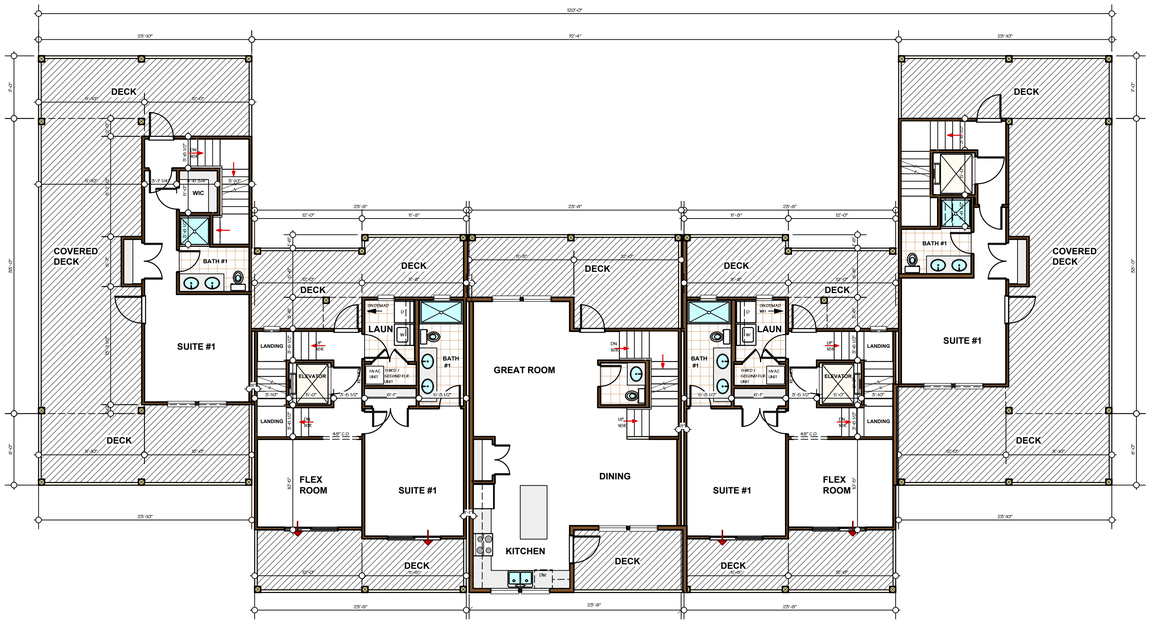
THE CHARLOTTE B		THE WILMINGTON B		THE WILMINGTON A		THE WILMINGTON A		THE CHARLOTTE B	
FIRST FLOOR	750 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	750 SQ.FT.
SECOND FLOOR	329 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	329 SQ.FT.
THIRD FLOOR	655 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	655 SQ.FT.
TOTAL	1,734 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,734 SQ.FT.

TOTAL BUILDING COVERED PORCHES 1,970 SQ.FT.
TOTAL BUILDING HEATED AREA 8,772 SQ.FT.

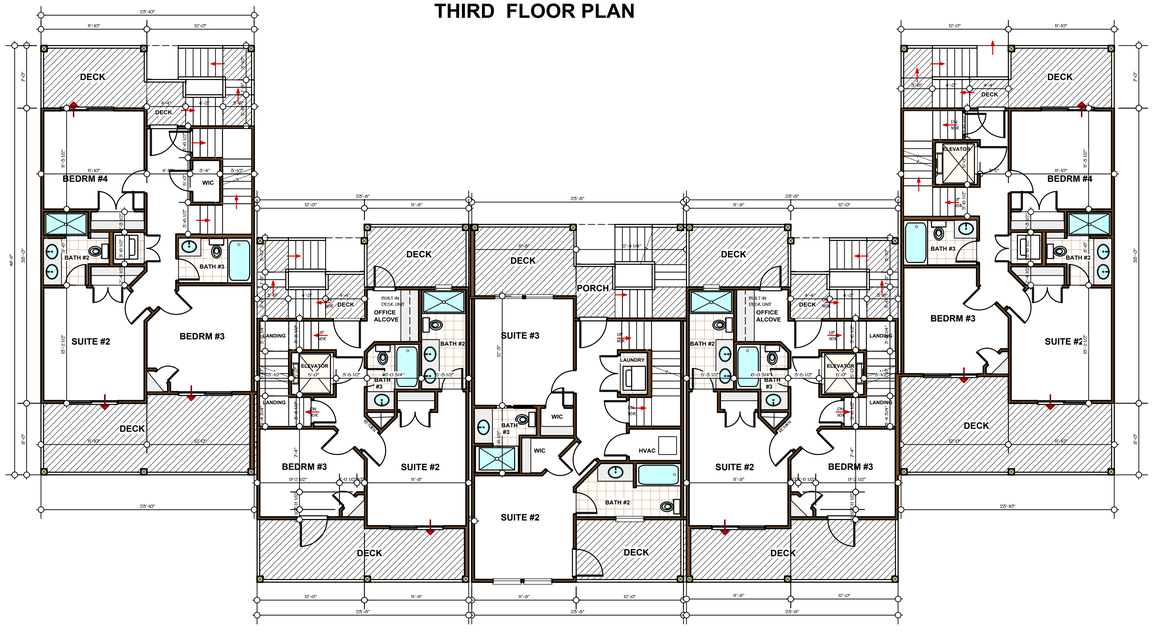


ROOF TOP FLOOR PLAN

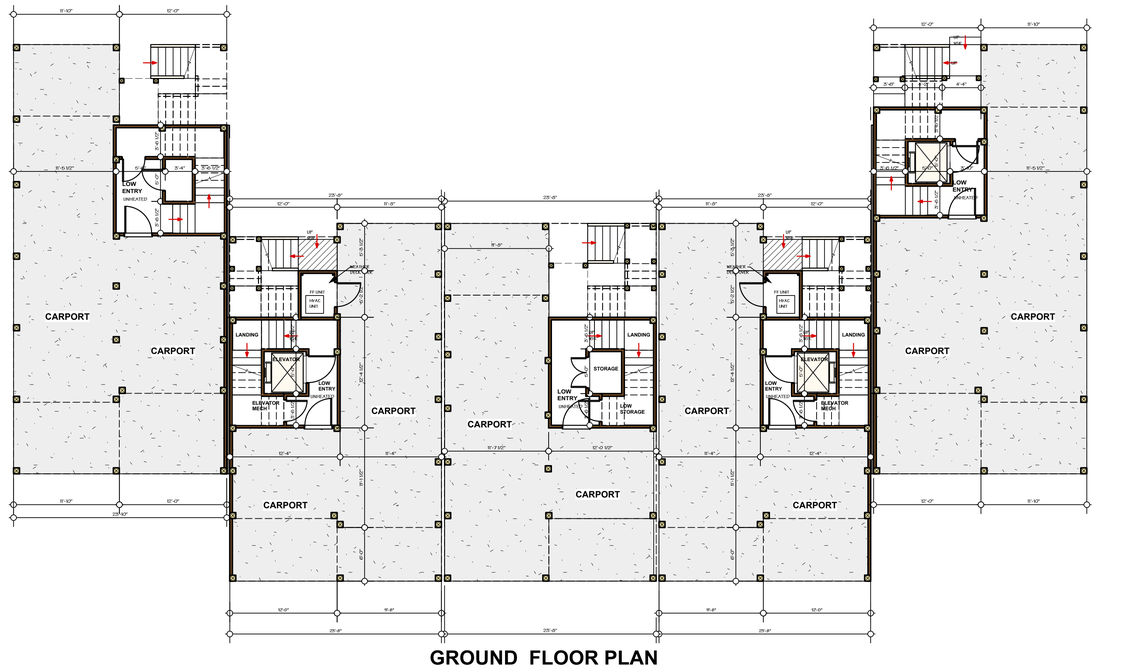
THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

The Charlotte - B | The Wilmington - A /E | The Wilmington - B | The Wilmington - A /E | The Charlotte - B/E

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

Ocean Breeze Townhomes
Building #6

PROJECT NAME:

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PROJECT #
SCALE: AS NOTED
DRAWN BY: BD
CHECKED:
DATE: JAN.30, 2022
REVISIONS:
SHEET #
A2

RIGHT SIDE ELEVATION

REAR ELEVATION

LEFT SIDE ELEVATION

TYPICAL EXTERIOR

4" TRIM BAND
BOARD & BATTEN SIDING
4" CORNERS BOARDS
OR LAP SIDING AS SHOWN

STANDING SEAM
METAL ROOF ACCENT

10" TRIM BAND

DECK AND PORCH RAILS :
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS

ROOF TOP DECK OPTIONS:
METAL POST & HORIZONTAL
PAINTED T.W. CATTLE RAILS
AND CABLE RAILS

ROOF OVERHANGS TO BE MIN.
12"

The Charlotte - B | The Wilmington - A /E | The Wilmington - B | The Charlotte - B/E

FRONT ELEVATION

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

PROJECT NAME:
Ocean Breeze Townhomes
Building #7

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PROJECT #
DATE: JAN.30, 2022
SHEET #
SCALE: AS NOTED
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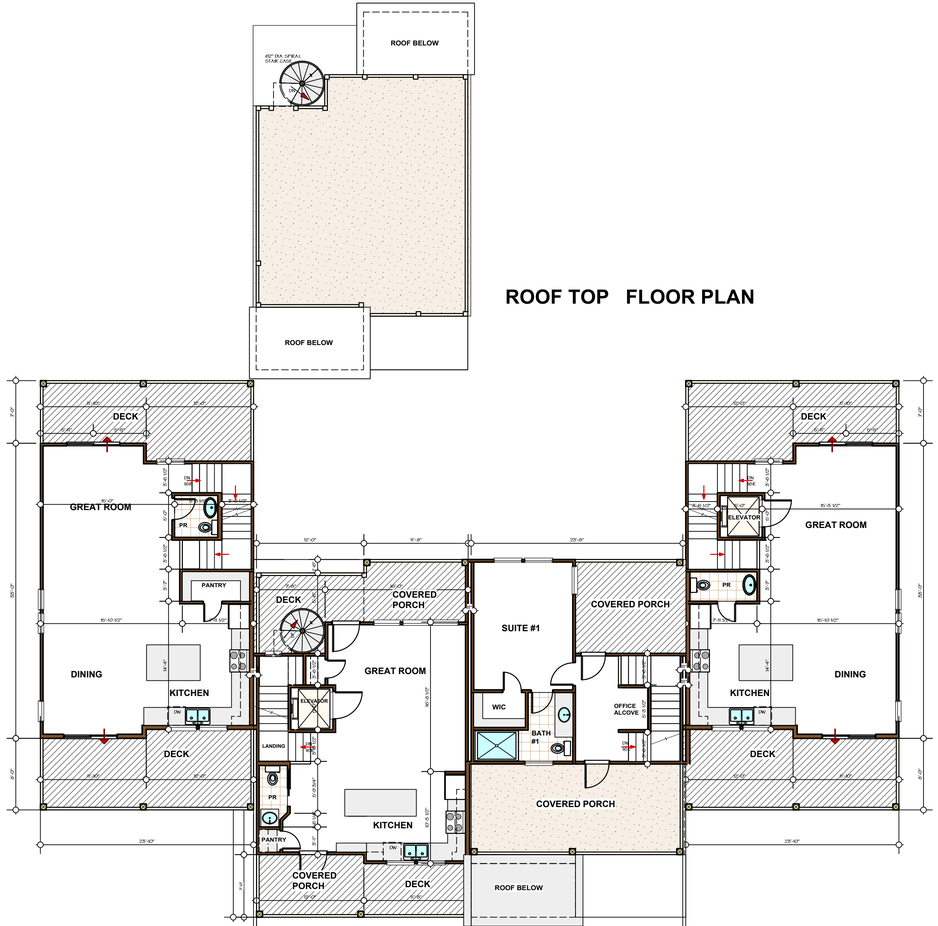
REVISIONS:

A1

AREA SCHEDULE

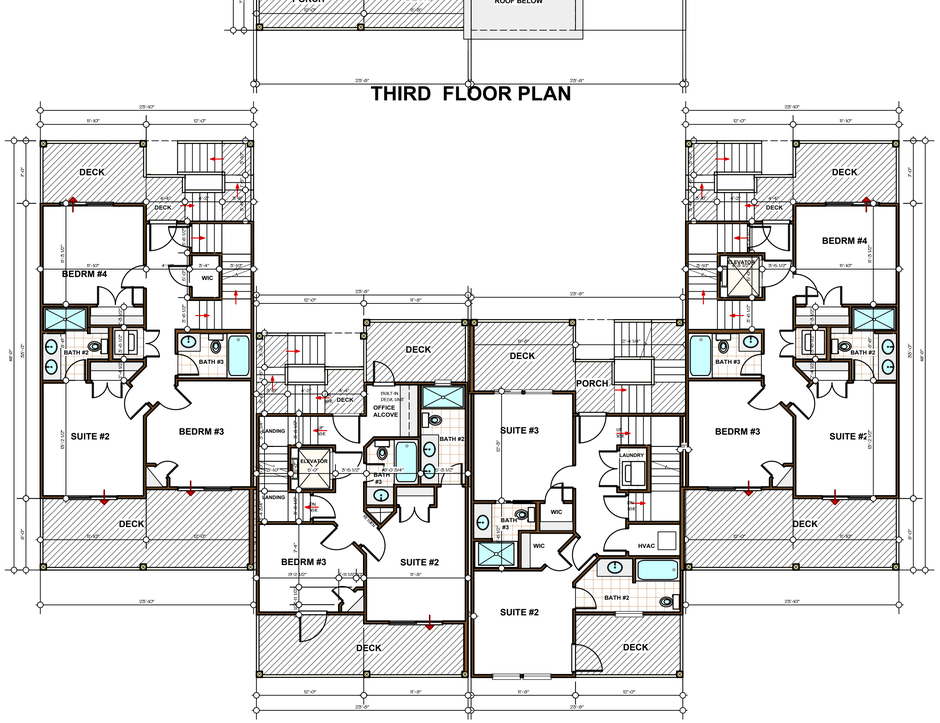
THE CHARLOTTE B		THE WILMINGTON B		THE WILMINGTON A		THE CHARLOTTE B	
FIRST FLOOR	750 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	584 SQ.FT.	FIRST FLOOR	750 SQ.FT.
SECOND FLOOR	329 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	584 SQ.FT.	SECOND FLOOR	329 SQ.FT.
THIRD FLOOR	655 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	600 SQ.FT.	THIRD FLOOR	655 SQ.FT.
TOTAL	1,734 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,768 SQ.FT.	TOTAL	1,734 SQ.FT.

TOTAL BUILDING PORCHES 1,645 SQ.FT.
TOTAL BUILDING HEATED AREA 8,772 SQ.FT.

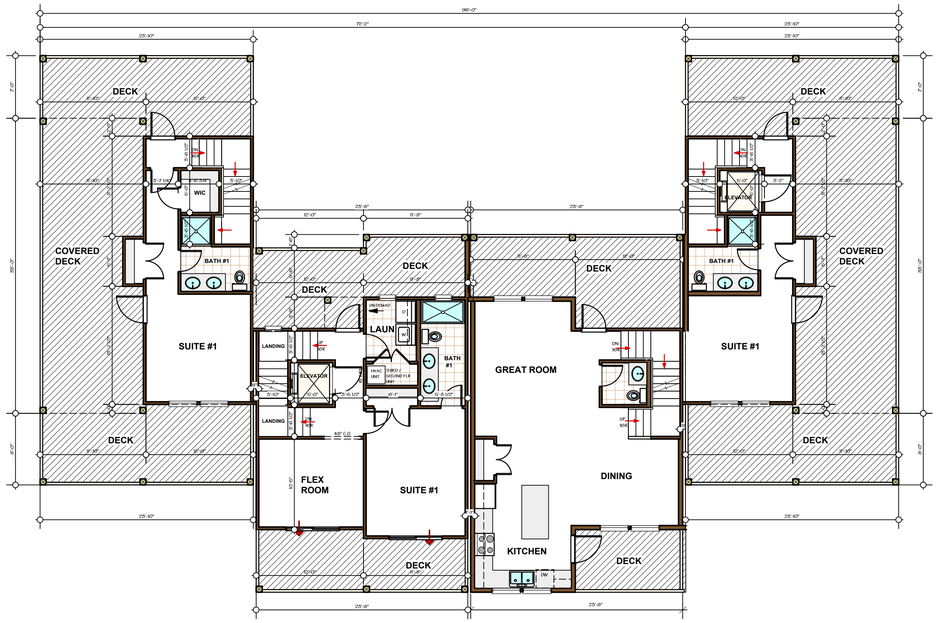


ROOF TOP FLOOR PLAN

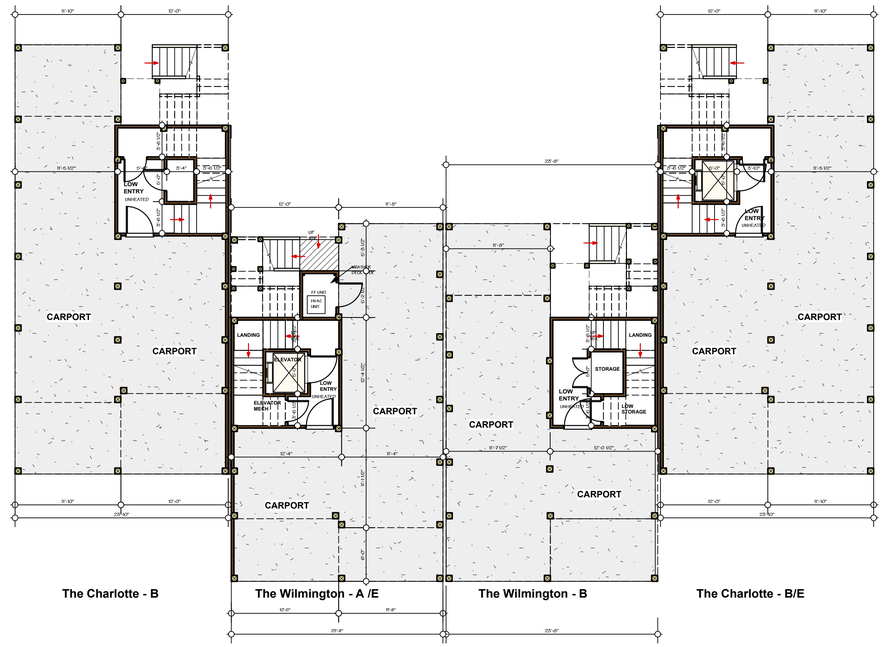
THIRD FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN



GROUND FLOOR PLAN

PLANNING BOARD REVIEW SET
SCALE 1/8" = 1'-0"

PROJECT NAME:
Ocean Breeze Townhomes
Building #7

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PROJECT #
DATE: JAN 3rd, 2022
SHEET # A2
SCALE: AS NOTED
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