

Source: NOAA Navigational Chart No. 12224 dated February 2006

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.

**JOINT PERMIT APPLICATION  
KEY MAP**

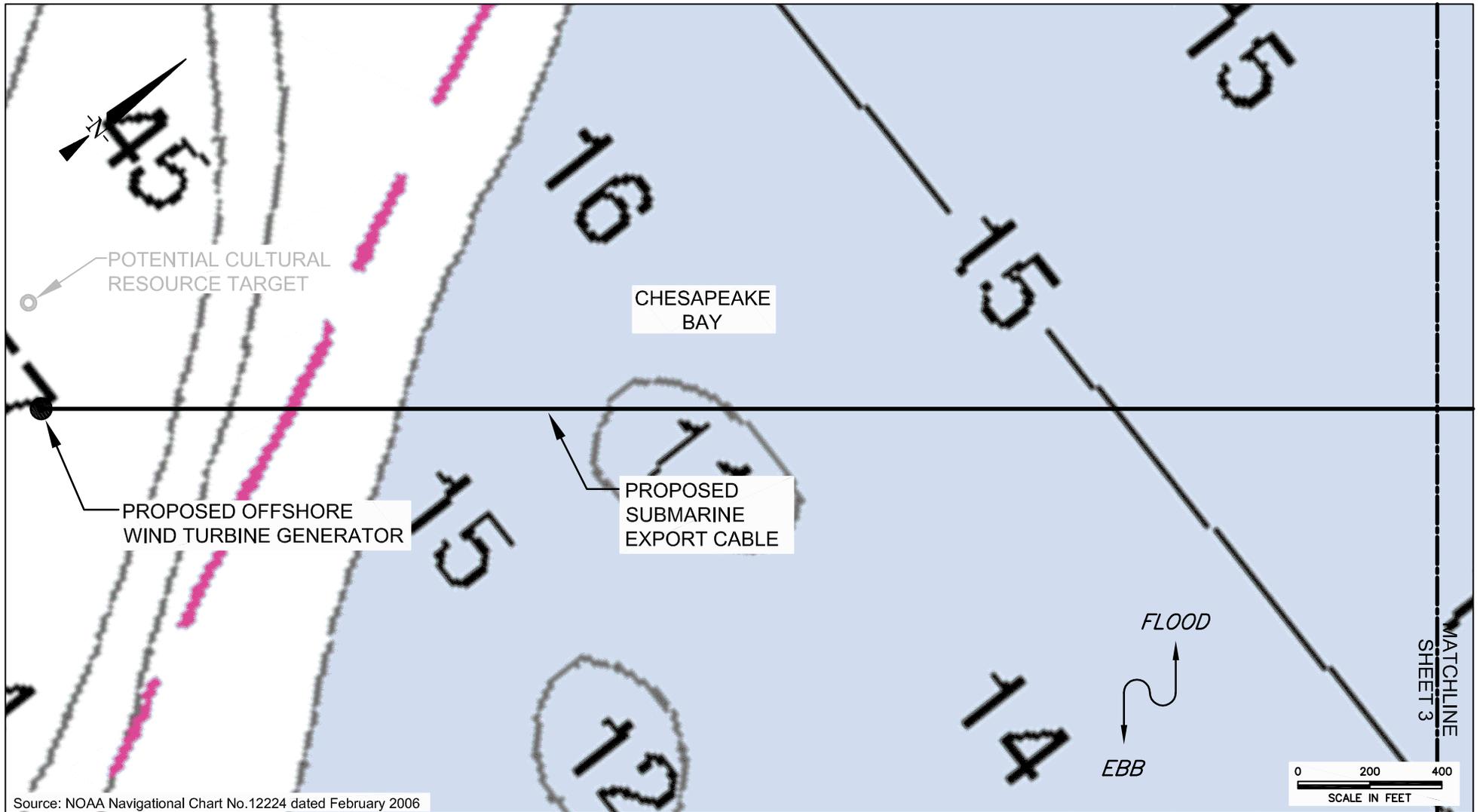
SCALE: 1" = 2,000'

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
Hampton, VA 23666  
p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 1 of 18  
**DATE:** JANUARY 26, 2012



Source: NOAA Navigational Chart No.12224 dated February 2006

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.

**JOINT PERMIT APPLICATION**

**SITE PLAN**

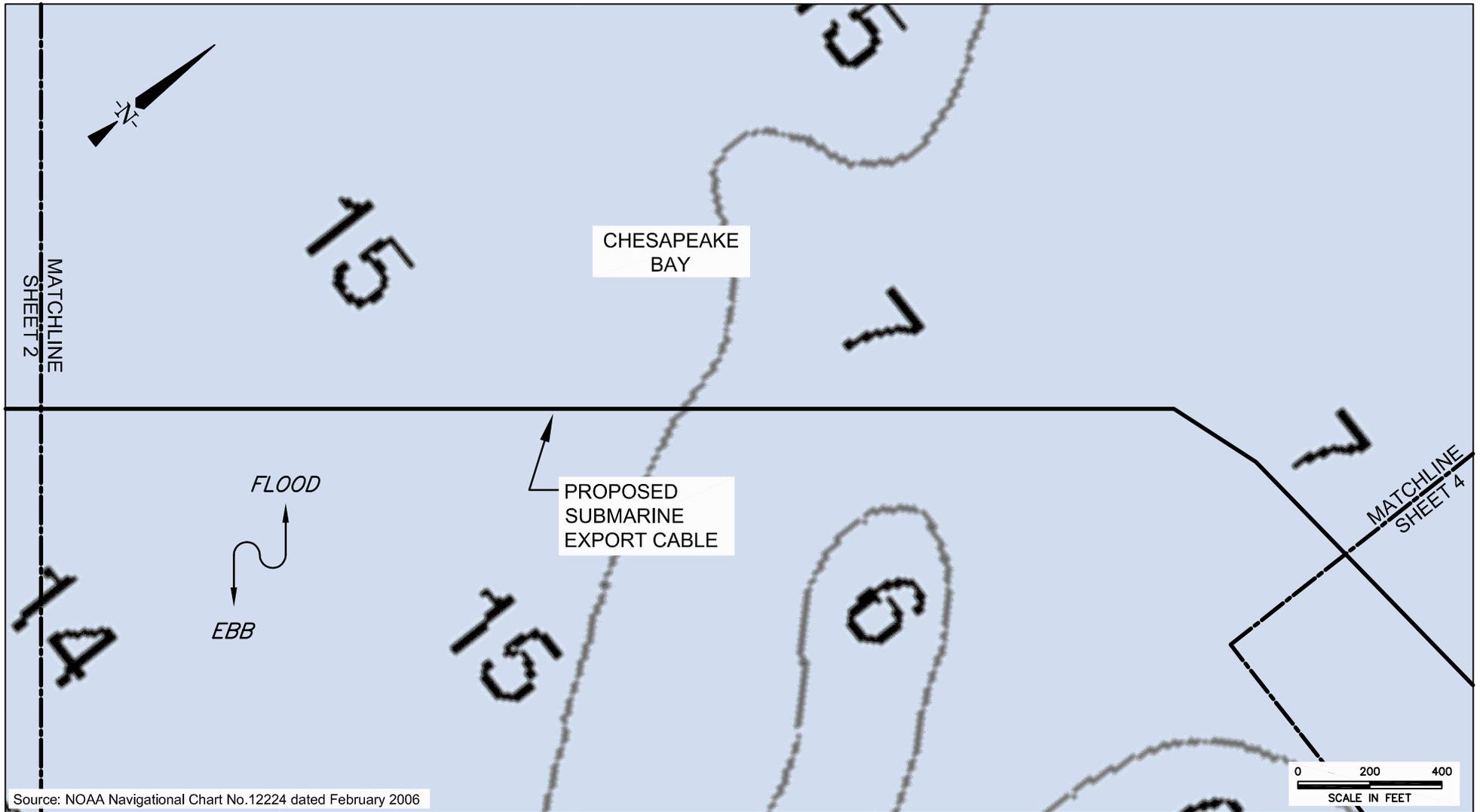
SCALE: 1" = 400'

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
Hampton, VA 23666  
p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 2 of 18  
**DATE:** JANUARY 26, 2012



Source: NOAA Navigational Chart No.12224 dated February 2006

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

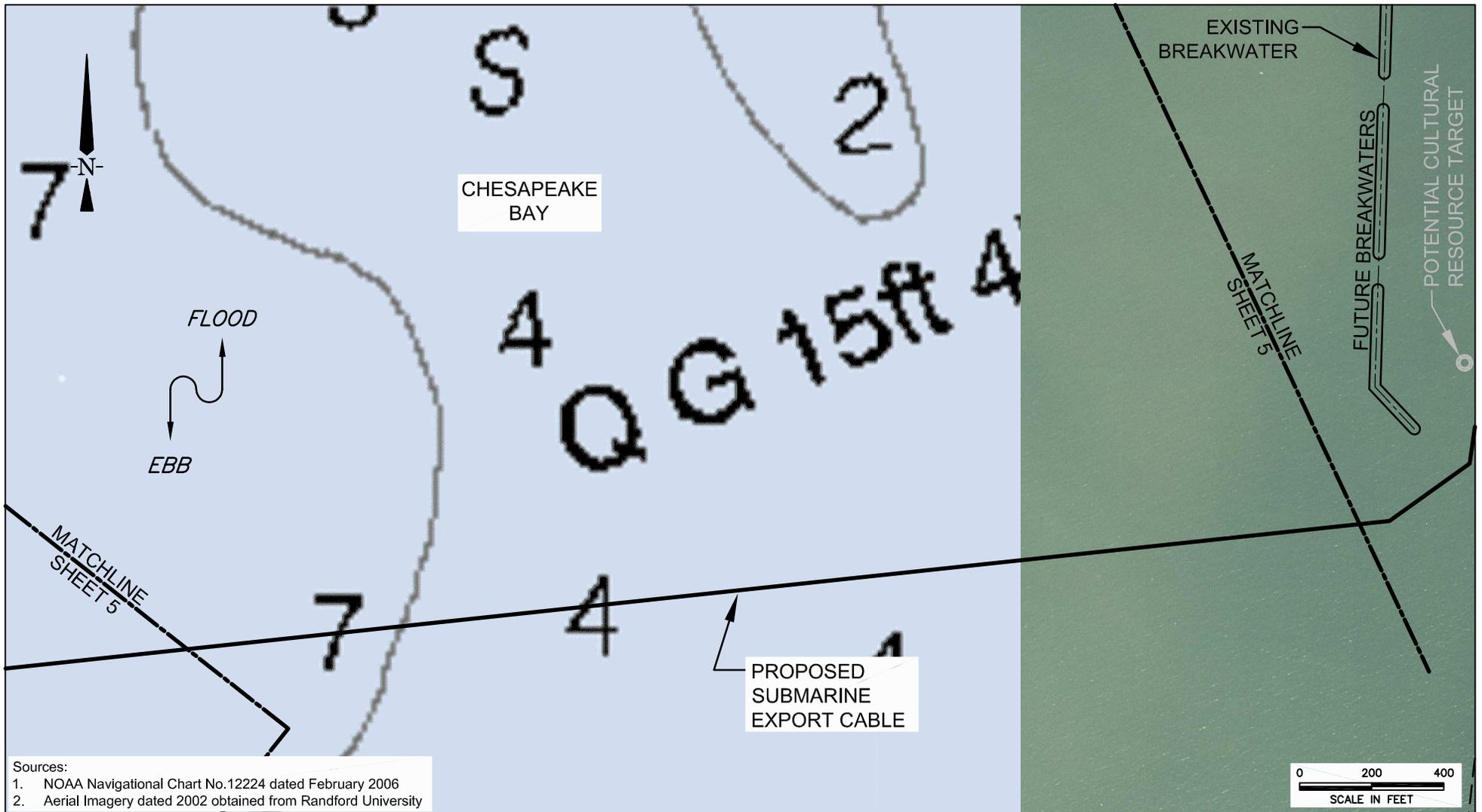
1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.

**JOINT PERMIT APPLICATION**  
**SITE PLAN**  
 SCALE: 1" = 400'

**G11X OFFSHORE WIND TURBINE PROJECT**


 4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 3 of 18  
**DATE:** JANUARY 26, 2012



- Sources:
1. NOAA Navigational Chart No.12224 dated February 2006
  2. Aerial Imagery dated 2002 obtained from Randolph University

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

- NOTES:**
1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
  2. ELEVATIONS ARE REFERENCED TO MLLW.

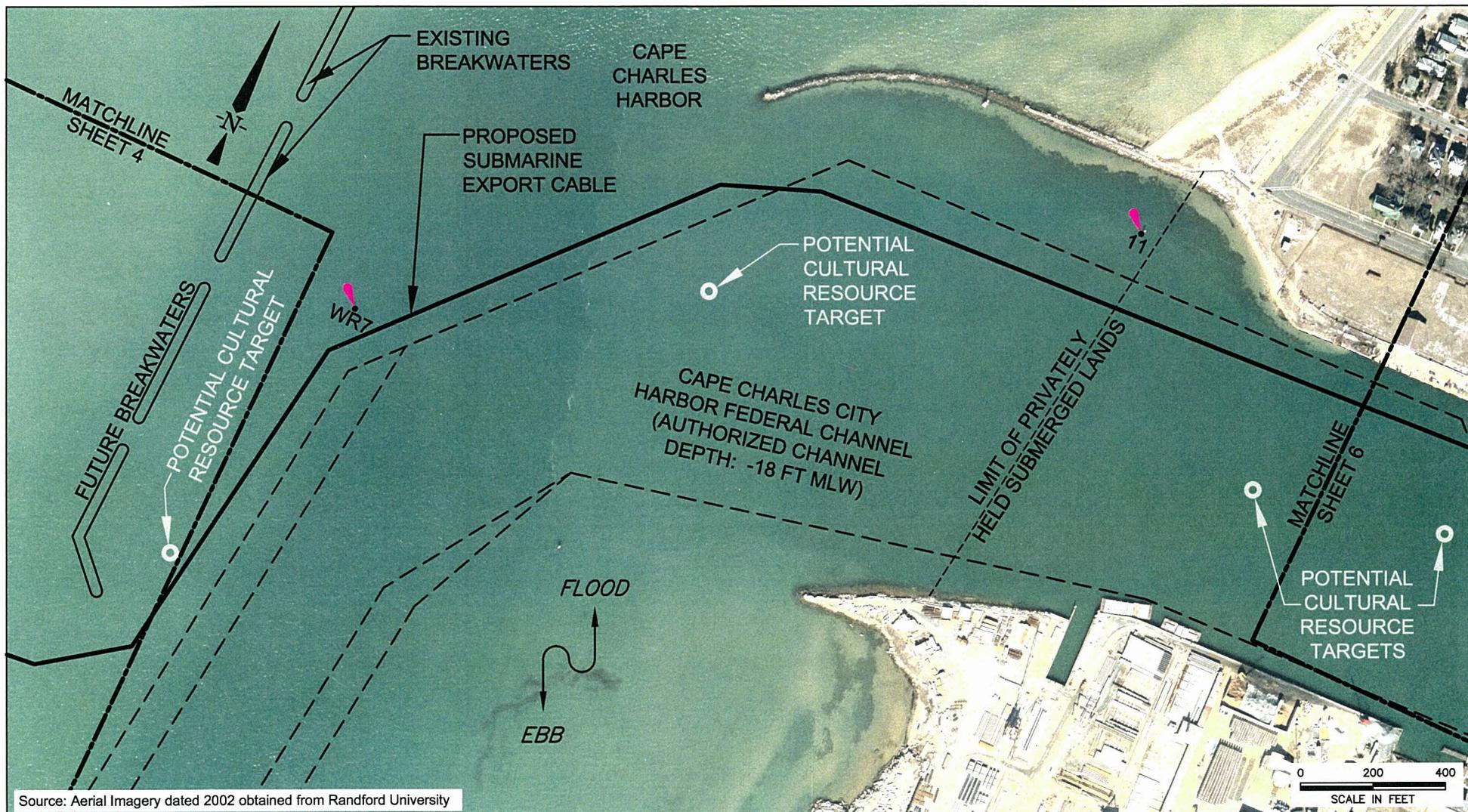
**JOINT PERMIT APPLICATION  
SITE PLAN  
SCALE: 1" = 400'**

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
Hampton, VA 23666  
p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 4 of 18  
**DATE:** JANUARY 26, 2012



Source: Aerial Imagery dated 2002 obtained from Randolph University

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.

**JOINT PERMIT APPLICATION**

**SITE PLAN**

SCALE: 1" = 400'

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
Hampton, VA 23666  
p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC

**WATERWAY:** Cape Charles Harbor

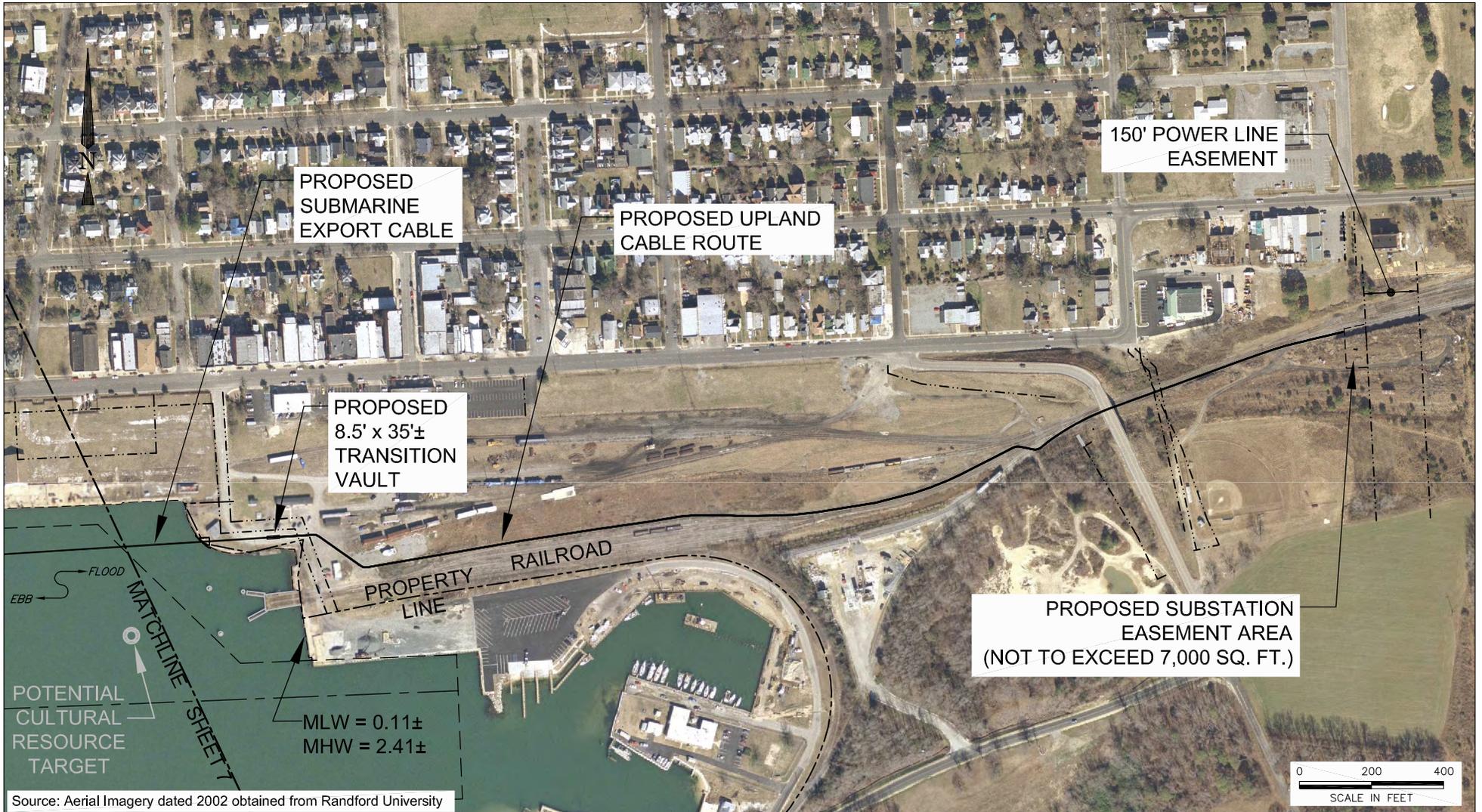
**IN:** Chesapeake Bay

**TOWN:** Cape Charles

**COUNTY:** Northampton

**NUMBER OF SHEETS:** 5 of 18

**DATE:** JANUARY 26, 2012



**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.
3. MHW & MLW ARE COINCIDENT WITH BULKHEAD.

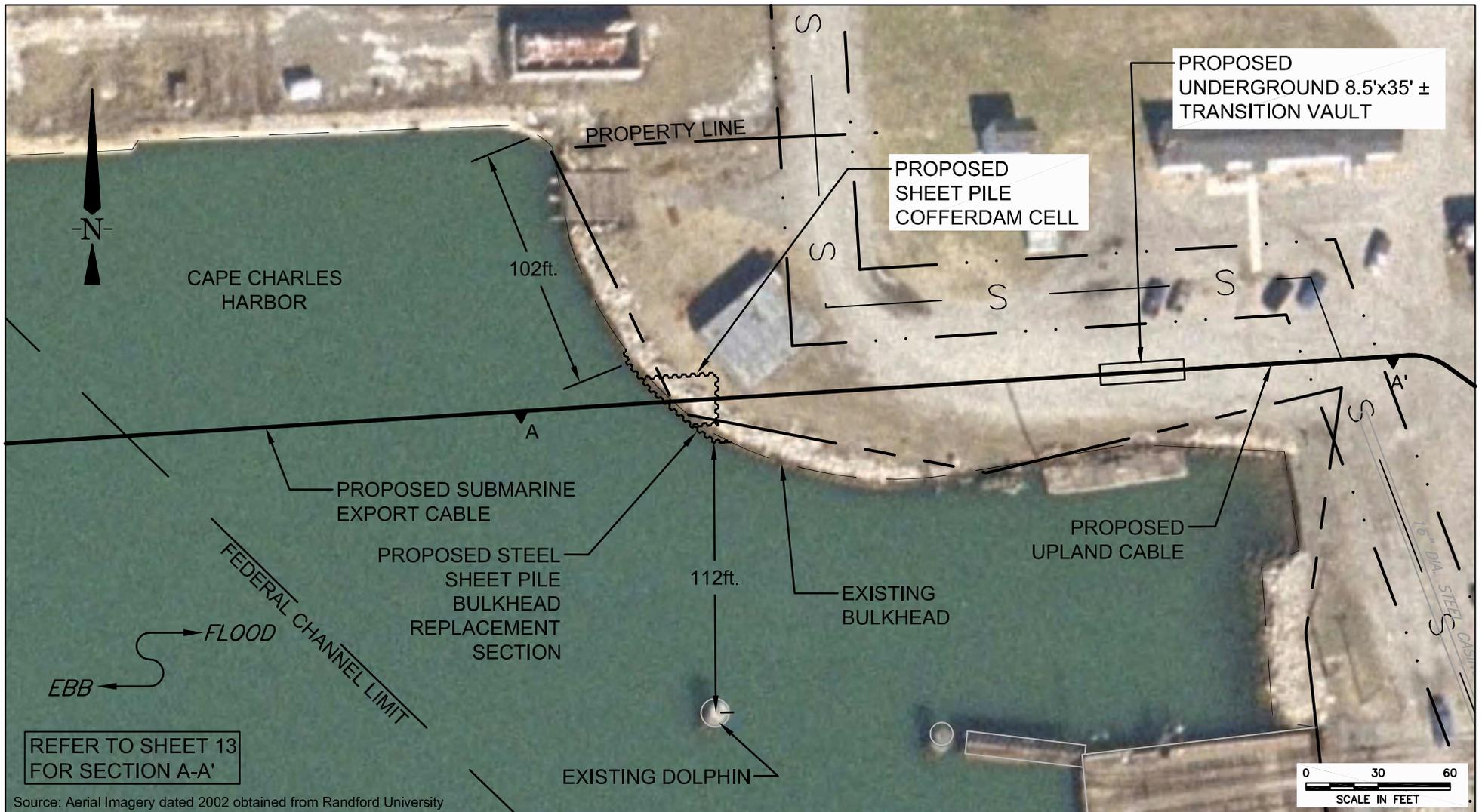
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**JOINT PERMIT APPLICATION  
SITE PLAN  
SCALE: 1" = 400'**

**G11X OFFSHORE WIND TURBINE PROJECT**


**ESS group**  
 environmental consulting & engineering services  
 4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 6 of 18  
**DATE:** JANUARY 26, 2012



Source: Aerial Imagery dated 2002 obtained from Randolph University

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.
2. ELEVATIONS ARE REFERENCED TO MLLW.
3. MHW & MLW ARE COINCIDENT WITH BULKHEAD.

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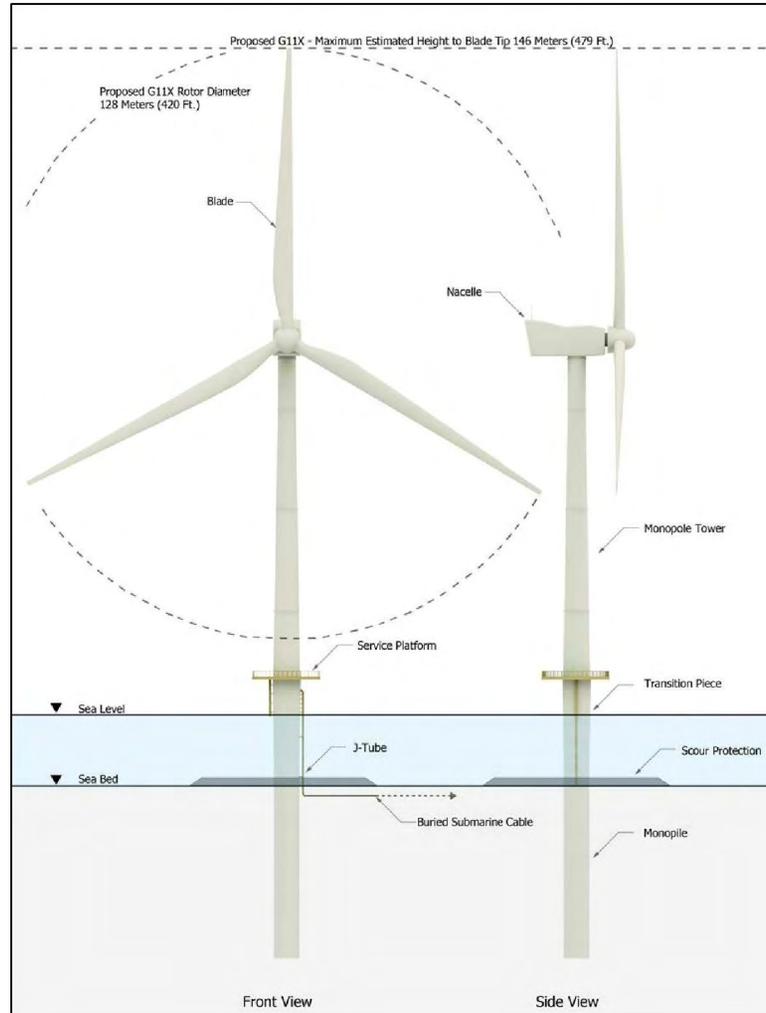
**JOINT PERMIT APPLICATION  
LAYOUT FOR SUBMARINE CABLE LANDFALL  
SCALE: 1" = 60'**

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
Hampton, VA 23666  
p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 7 of 18  
**DATE:** JANUARY 26, 2012



Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

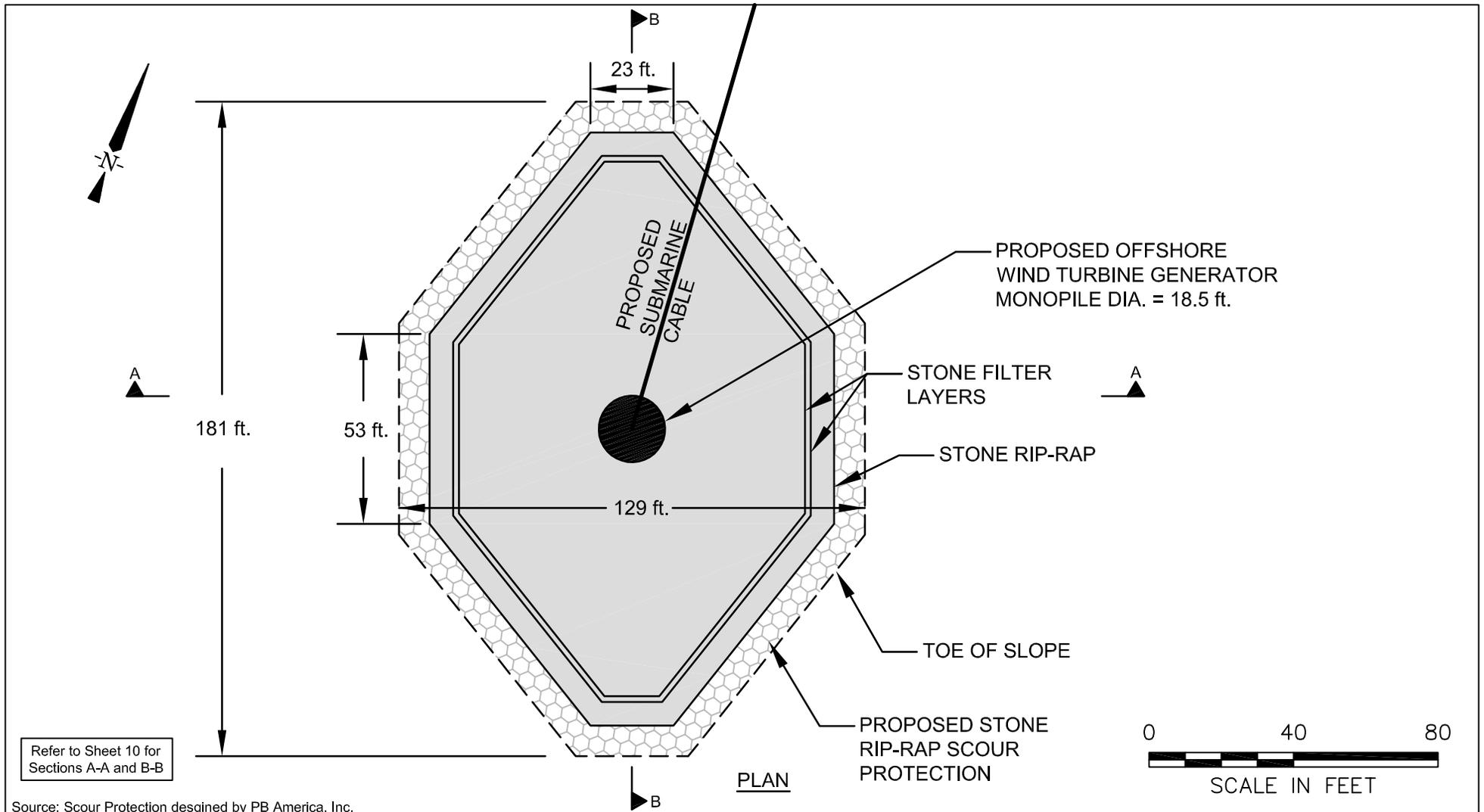
**JOINT PERMIT APPLICATION**  
**WIND TURBINE GENERATOR DETAIL**  
 SCALE: N.T.S.

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 8 of 18  
 DATE: JANUARY 26, 2012



Source: Scour Protection designed by PB America, Inc.

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.

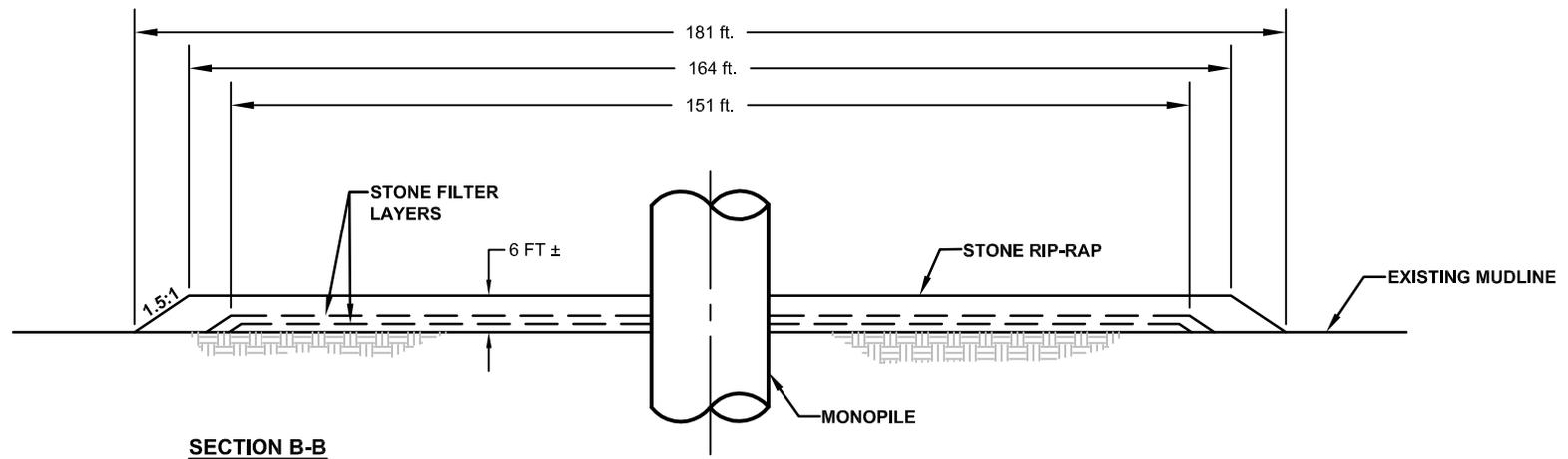
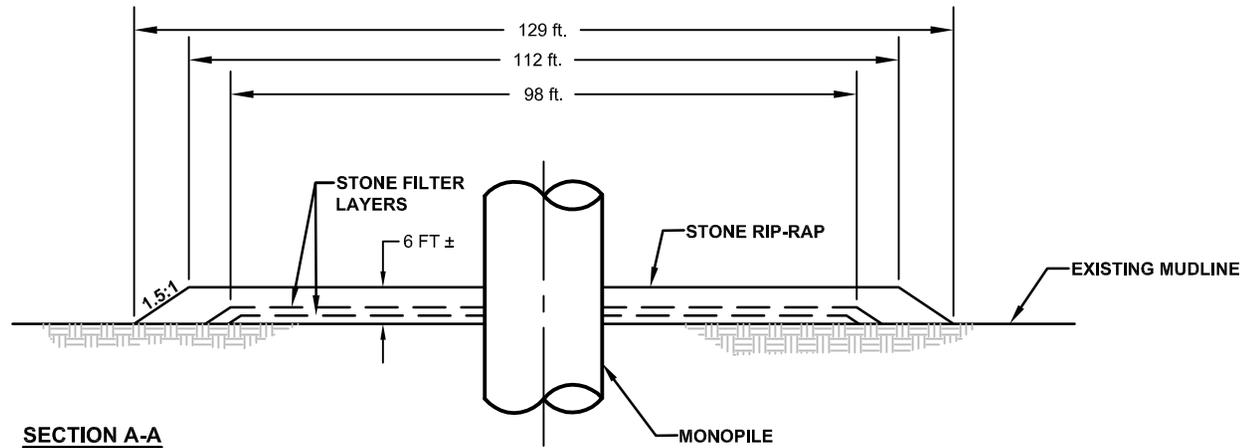
**JOINT PERMIT APPLICATION**  
**WIND TURBINE GENERATOR FOUNDATION SCOUR PROTECTION**  
 SCALE: 1"=40'

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 9 of 18  
**DATE:** JANUARY 26, 2012



Source: Scour Protection designed by PB America, Inc.

**Purpose:** Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**NOTES:**

1. HORIZONTAL DATUM REFERENCED TO VIRGINIA STATE PLANE, SOUTH, NAD 83, FEET.

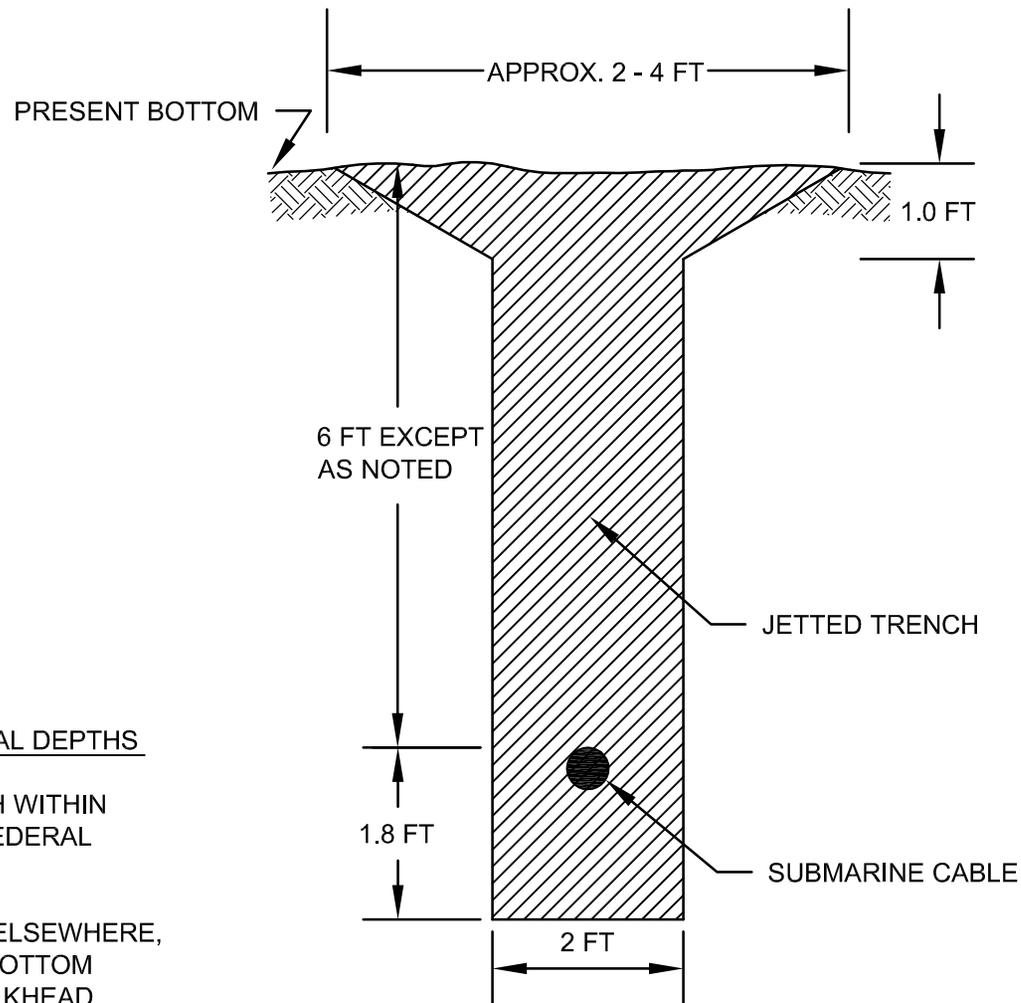
**JOINT PERMIT APPLICATION**  
**WIND TURBINE GENERATOR FOUNDATION SCOUR PROTECTION**  
 SCALE: N.T.S.

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

**APPLICANT:** Gamesa Energy USA, LLC  
**WATERWAY:** Cape Charles Harbor  
**IN:** Chesapeake Bay  
**TOWN:** Cape Charles  
**COUNTY:** Northampton  
**NUMBER OF SHEETS:** 10 of 18  
**DATE:** JANUARY 26, 2012



PROPOSED SUBMARINE CABLE BURIAL DEPTHS

- 6 FT BELOW AUTHORIZED DEPTH WITHIN CAPE CHARLES CITY HARBOR FEDERAL CHANNEL LIMITS.
- 6 FT BELOW PRESENT BOTTOM ELSEWHERE, EXCEPT 3 FT BELOW PRESENT BOTTOM WITHIN 40 FT OF PROPOSED BULKHEAD

Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

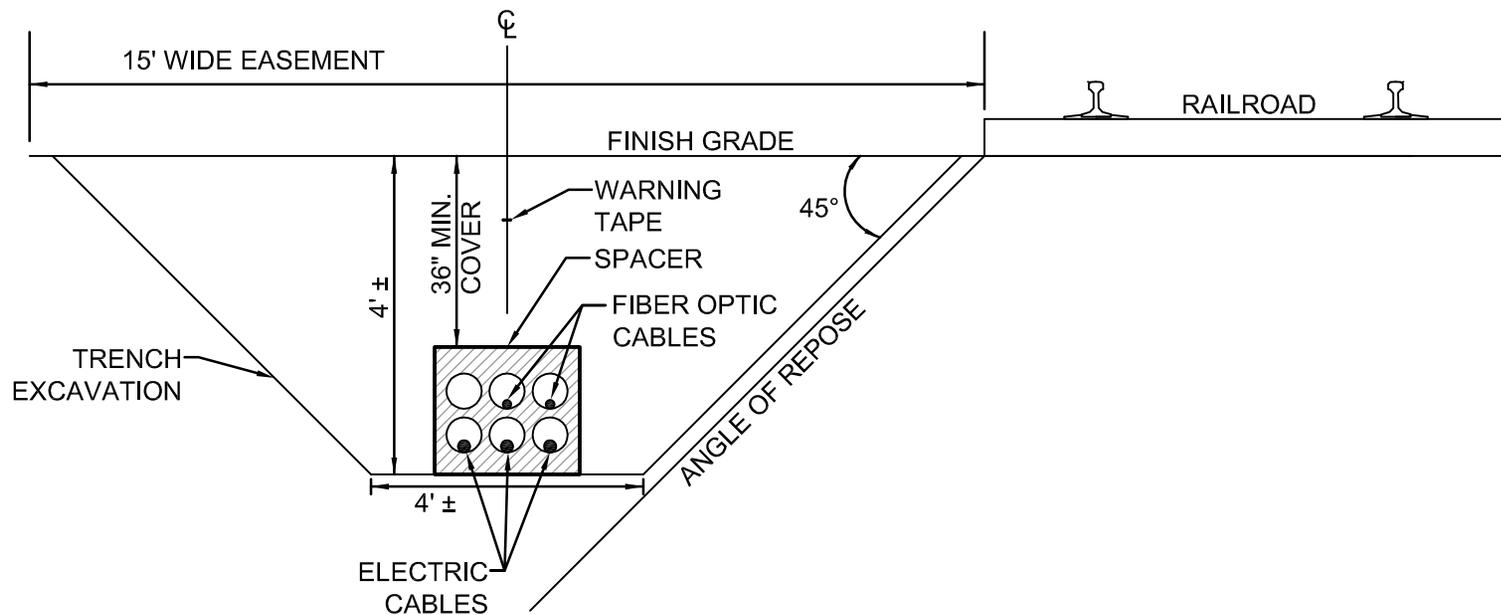
**JOINT PERMIT APPLICATION**  
 TYPICAL CROSS SECTION OF SUBMARINE CABLE TRENCH  
 SCALE: N.T.S.

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 11 of 18  
 DATE: JANUARY 26, 2012



Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

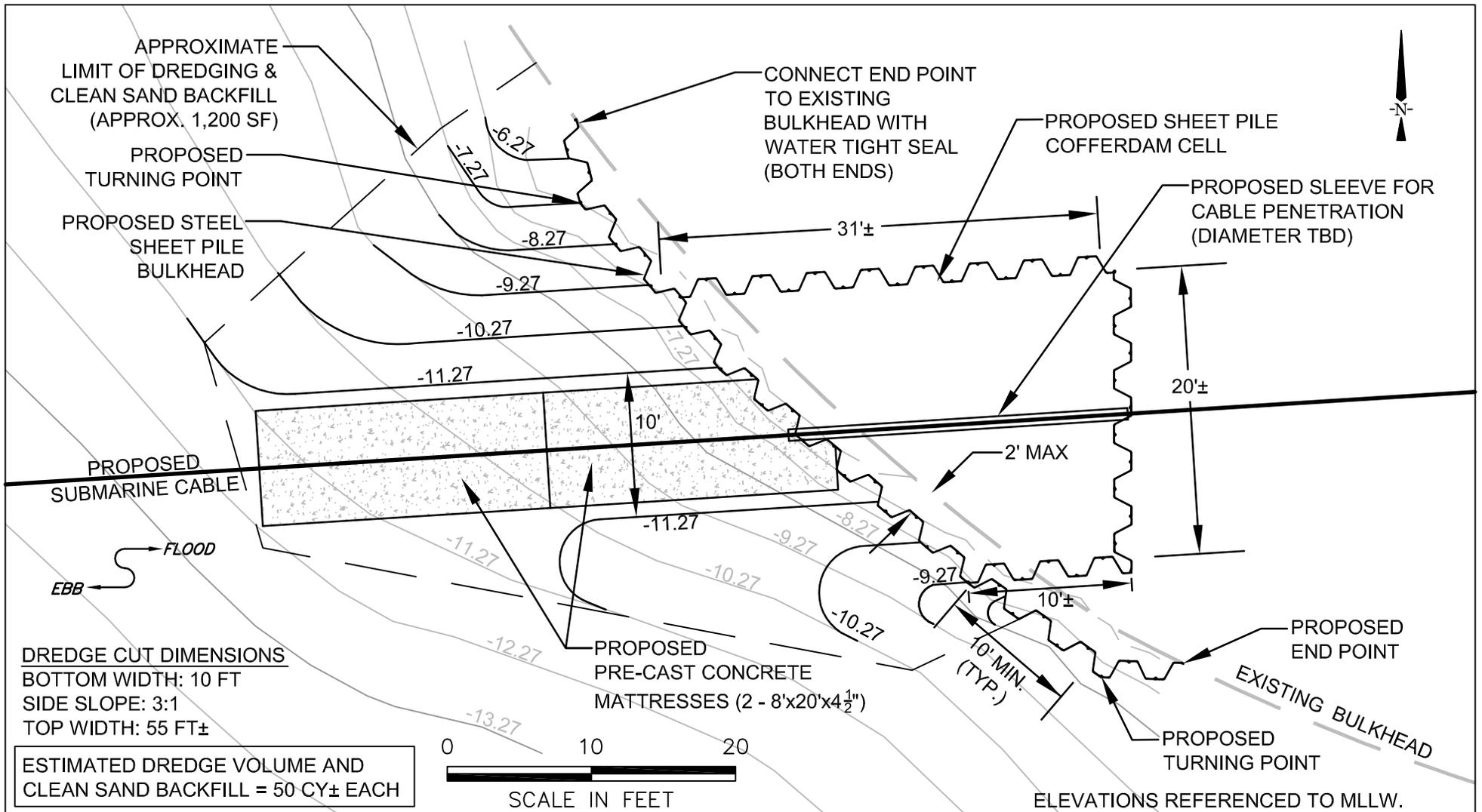
**JOINT PERMIT APPLICATION**  
 TYPICAL CROSS SECTION OF UPLAND CABLE TRENCH DETAIL  
 SCALE: N.T.S.

G11X OFFSHORE WIND TURBINE PROJECT



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 12 of 18  
 DATE: JANUARY 26, 2012



Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

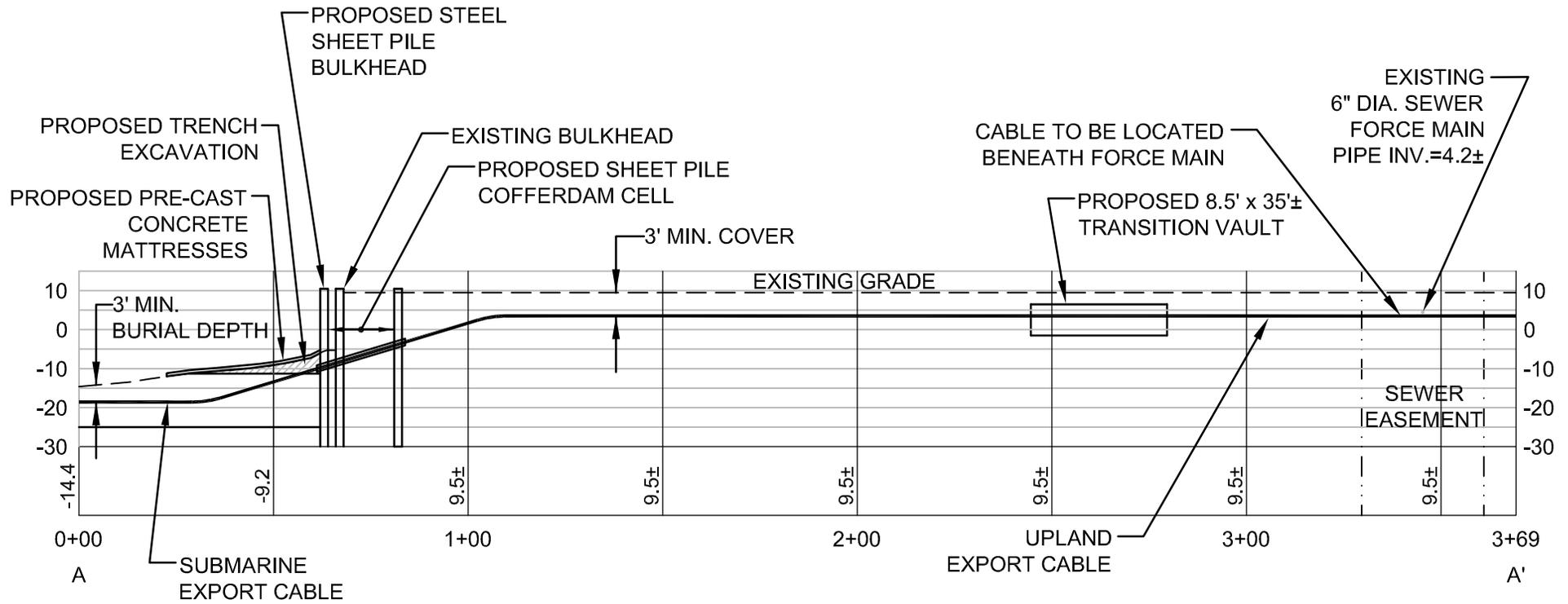
**JOINT PERMIT APPLICATION**  
**LANDFALL TRANSITION - PLAN VIEW**  
 SCALE: 1"=10'

**G11X OFFSHORE WIND TURBINE PROJECT**



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 Hampton, VA 23666  
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APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 13 of 18  
 DATE: JANUARY 26, 2012



ELEVATIONS REFERENCED TO MLLW.

Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

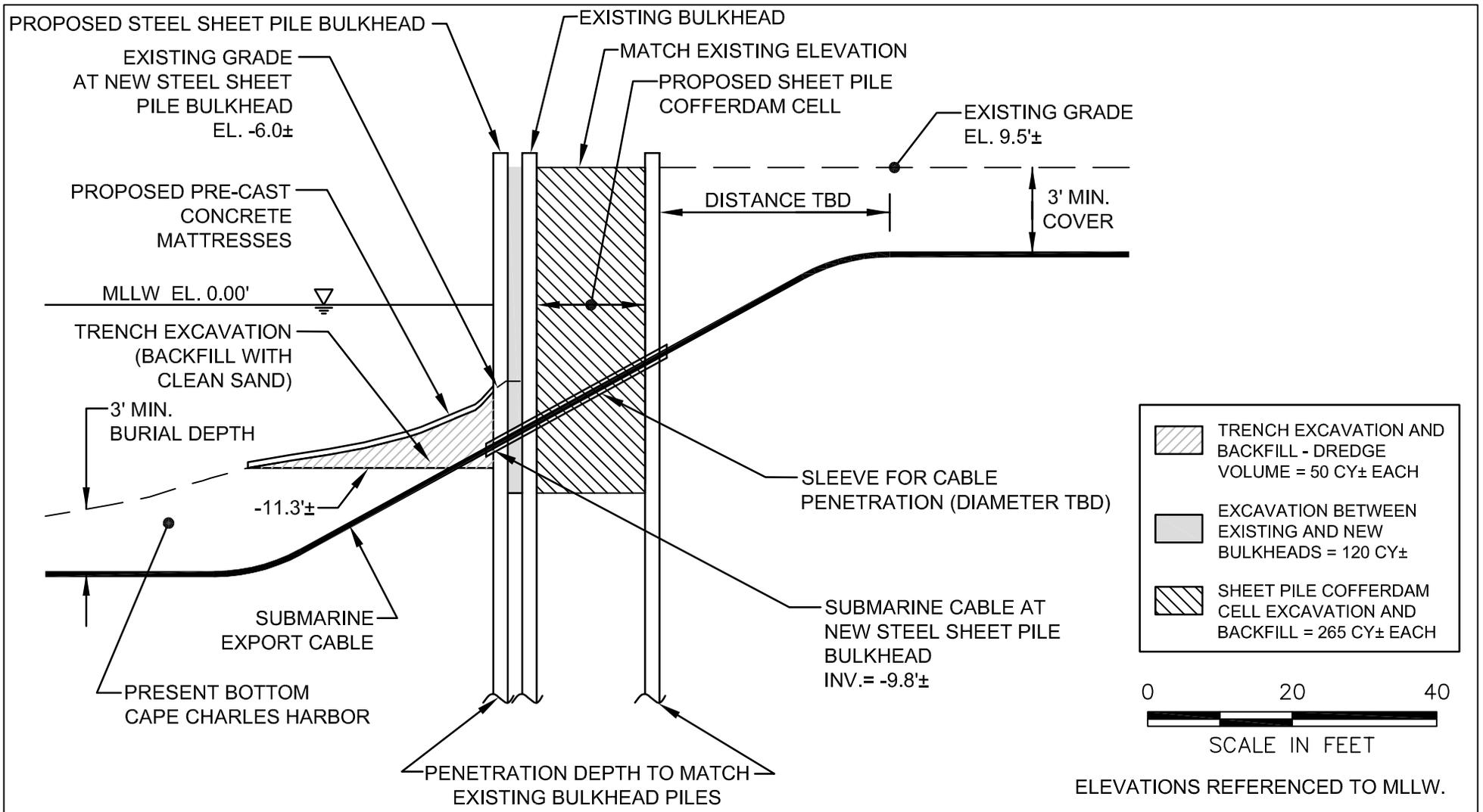
**JOINT PERMIT APPLICATION**  
**LANDFALL TRANSITION - SECTION VIEW**  
 SCALE: 1"=40'

**G11X OFFSHORE WIND TURBINE PROJECT**



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 14 of 18  
 DATE: JANUARY 26, 2012



Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

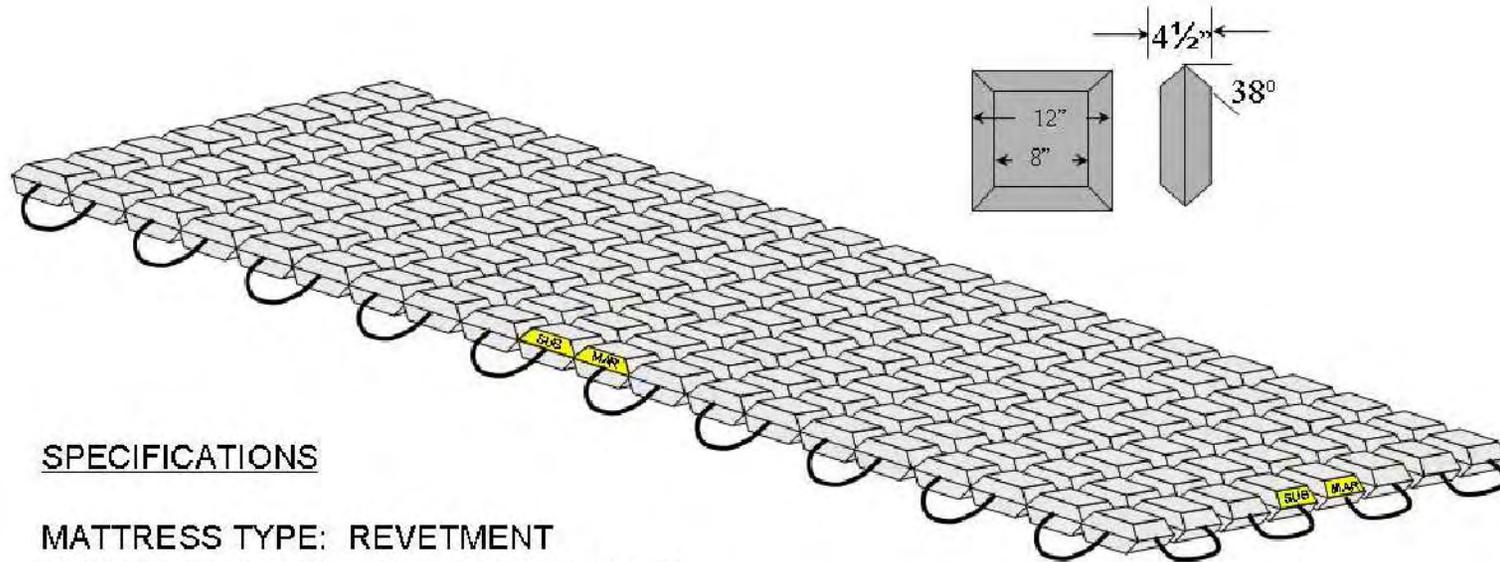
JOINT PERMIT APPLICATION  
 LANDFALL TRANSITION - SECTION VIEW  
 SCALE: 1"=20'

G11X OFFSHORE WIND TURBINE PROJECT



4410 East Claiborne Square, Suite 334  
 Hampton, VA 23666  
 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 15 of 18  
 DATE: JANUARY 26, 2012



**SPECIFICATIONS**

**MATTRESS TYPE: REVETMENT**

**MATTRESS DIMENSIONS: 8' X 20' X 4 1/2"**

**MATTRESS WEIGHT: AIR 6,200 LBS, UNDERWATER 3,600 LBS**

**CONCRETE DENSITY: 145 LBS. PER CU. FT., 4,000 PSI**

**160 ELEMENTS: 5/8" ULTRA VIOLET STABILIZED COPOLYMER EXTRUDED FIBER ROPE, MINIMUM TENSILE STRENGTH 9,500 POUNDS**

Source: [www.submar.com](http://www.submar.com)

Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

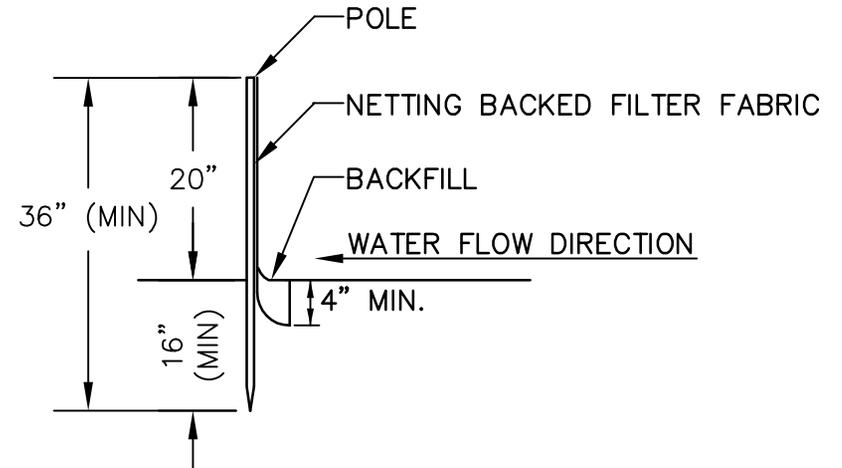
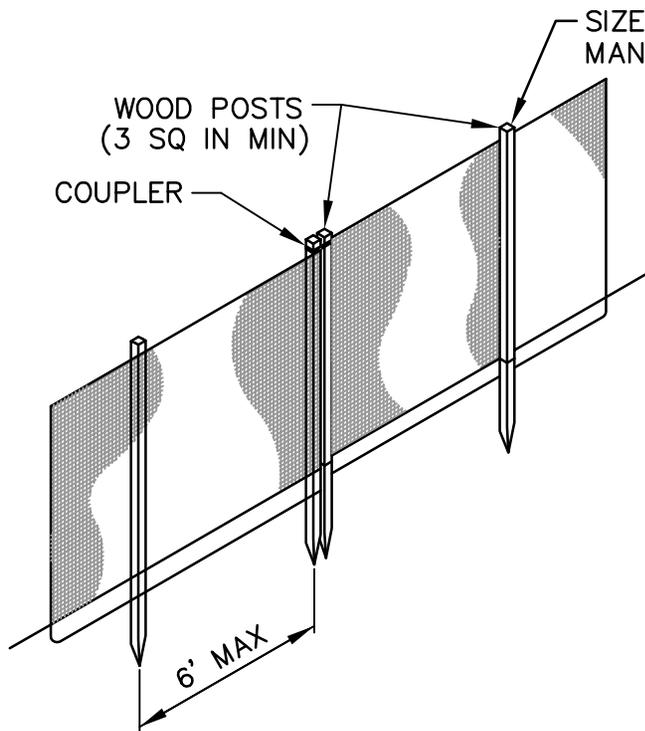
**JOINT PERMIT APPLICATION**  
**PRE-CAST CONCRETE MATTRESS DETAIL**  
 SCALE: N.T.S.

**G11X OFFSHORE WIND TURBINE PROJECT**



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 Hampton, VA 23666  
 p 757.251.3790

**APPLICANT: Gamesa Energy USA, LLC**  
**WATERWAY: Cape Charles Harbor**  
**IN: Chesapeake Bay**  
**TOWN: Cape Charles**  
**COUNTY: Northampton**  
**NUMBER OF SHEETS: 16 of 18**  
**DATE: JANUARY 26, 2012**



NOTES:

1. THE FILTER FABRIC MUST BE LOCATED ON THE UP-SLOPE SIDE OF THE FENCE. ADJOINING SECTIONS OF FENCE SHOULD BE OVERLAPPED BY A MINIMUM OF 6" (24" PREFERRED).
2. THE BOTTOM 4" OF FILTER FABRIC MUST BE BURIED IN A PRE-EXCAVATED TRENCH WHICH WILL BE BACKFILLED AND TAMPED FOR STABILITY.

Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**JOINT PERMIT APPLICATION**  
**SILT FENCE DETAIL**  
 SCALE: N.T.S.

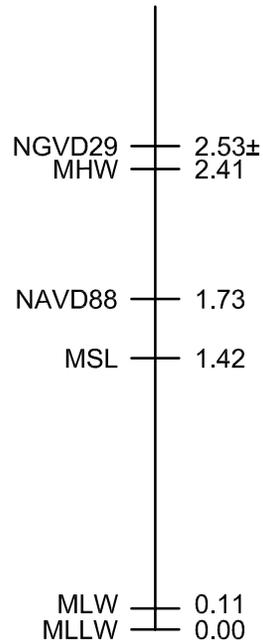
G11X OFFSHORE WIND TURBINE PROJECT



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 p 757.251.3790

APPLICANT: Gamesa Energy USA, LLC  
 WATERWAY: Cape Charles Harbor  
 IN: Chesapeake Bay  
 TOWN: Cape Charles  
 COUNTY: Northampton  
 NUMBER OF SHEETS: 17 of 18  
 DATE: JANUARY 26, 2012

MLLW  
DATUM



Kiptopeke, VA  
NOAA ID:  
8632200  
transferred to  
Cape Charles  
Harbor

Purpose: Installation and operation of a prototype offshore wind turbine including foundation system and submarine electric export cable.

**JOINT PERMIT APPLICATION**  
**MLLW TIDAL DATUM RELATIONSHIPS**  
SCALE: N.T.S.

**G11X OFFSHORE WIND TURBINE PROJECT**



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APPLICANT: Gamesa Energy USA, LLC  
WATERWAY: Cape Charles Harbor  
IN: Chesapeake Bay  
TOWN: Cape Charles  
COUNTY: Northampton  
NUMBER OF SHEETS: 18 of 18  
DATE: JANUARY 26, 2012