STATE OF MAINE
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

NORDIC AQUAFARMS, INC Belfast and Northport Waldo County, Maine	)))	APPLICATION FOR AIR EMISSION, SITE LOCATION OF DEVELOPMENT, NATURAL RESOURCES PROTECTION
A-1146-71-A-N L-28319-26-A-N L-28319-TG-B-N L-28319-4E-C-N L-28319-L6-D-N L-28319-TW-E-N W-009200-6F-A-N	)))))))	ACT, and MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM/WASTE DISCHARGE LICENSES

PRE-FILED DIRECT TESTIMONY OF
Lauren Walsh, Environmental Manager
Cianbro Corporation

1. **Qualifications of Witness (L. Walsh on behalf of Cianbro Corporation)**

My name is Lauren Walsh. I am employed by Cianbro Corporation as Corporate Environmental Manager. I have been with Cianbro for nine years and am responsible for ongoing development and implementation of Cianbro's Corporate Environmental Management system, policy and goals. Inclusive of this role is review of design, construction means and methods and permit conditions to assure project work put in place by Cianbro complies with local, state and federal environmental regulations and requirements. My project experience spans review and permitting assistance of a variety of large infrastructure, transmission/substation, oil/ gas and renewable energy projects; including the Sarah Mildred Long Bridge, ME/NH; various projects within the Portsmouth Naval Shipyard, Kittery ME; The Walk Bridge Project, Norwalk CT; Pittsfield Solar LLC, Pittsfield, ME; Maine Power Reliability Project, various substations and Central Loop transmission line.

Prior to joining Cianbro in 2010, I worked for nearly 5 years with Maine Department of Environmental Protection(DEP) assisting to develop and implement the state's initial Multi Sector General Permit for Discharge of Industrial Stormwater. My tasks included permit development/writing, regulatory assistance and compliance. Through this role, I gained a considerable amount of experience of various industrial processes and their potential impacts on stormwater and sensitive environmental resources of the State.

I spent my first eight professional years working with an engineering, operations and consulting group (OMI, INC) affiliated with CH2MHill within the water, wastewater and industrial waste treatment industry.

I have a Bachelor of Science in Biology with minor in chemistry from Moravian College in 1997. I am an active member of Associated General Contractors of America's Environmental Steering Committee since 2015. The committee regularly participates in meetings and open discussion with both EPA, Army Corp

of Engineers, Fish and Wildlife and other national environmental agencies on policies, construction practices and regulations that affect both the environment and the construction industry. A copy of my resume is attached as Addendum A.

2. Cianbro Corporation(Cianbro) of Pittsfield, Maine, has been retained to provide the design and construction of the sea water access system, which includes saltwater intakes, pump station mechanical systems, and process water discharge. Cianbro is a diversified full service construction and construction management firm experienced in both marine construction and water/wastewater treatment facilities. Additional details regarding Cianbro's relevant experience is provided in Addendum A.

The Cianbro and Woodard & Curran Design-Build team is responsible for designing and constructing the sea water access system for the proposed Nordic Aquafarms facility. To date, Cianbro has provided review of Woodard & Curran's design for the proposed water and wastewater pipelines, the pump station for the pipelines, and the Route 1 temporary bypass. We have also provided construction means and methods for the proposed pipeline construction, and overall constructability guidance for this portion of the facility. Through this scope of work, I have provided review of basic erosion and sediment control measures; review of construction means and methods in respect to avoiding and mitigating impacts to protected resources from construction of the pipeline within the intertidal zone as well as sensitive upland areas associated with the Rt 1 bypass work.

3. **Purpose of Testimony**

The purpose of this testimony is to review and discuss construction methods to provide a picture of construction sequence to reduce erosion, sedimentation and turbidity issues from seawater access construction activity within the intertidal zone and coastal wetland in response to several questions received by Nordic Aquafarms related to the construction sequence and method for the seawater access piping. Those questions were received via letter from Kevin Martin, Maine DEP to Elizabeth Ransom on October 9, 2019. Comments are noted within each section below for reference. Turbidity mitigation measures for the submerged buried portion and exposed portion of the pipeline are also noted within part C of this testimony for information regarding the monitoring program as a whole.

A. Construction process within the intertidal zone/coastal wetland; use of construction mats for access and staging of material
B. Work area placement within Intertidal zone
C. Turbidity Mitigation and Monitoring Measures

4. Construction within the inter-tidal zone/coastal wetland

The intertidal zone portion of the seawater access pipeline extends approximately 850 feet from the shoreline and mean high water to the mean low water line. The current project design requests a 100' wide long access way for construction and installation of the seawater access intake/discharge piping system within the upland and intertidal portions of the coastal wetland. The permanent fill impacts

associated with the trench itself for the piping system will be 15 feet in width by approximately 10 feet depth. (Refer to drawing CS-502 which is Nordic Exhibit 19).

Comment 10 within the DEP letter from Kevin Martin to Elizabeth Ransom, dated October 9, 2019 noted that *"all equipment working within the coastal wetland must operate from a barge or construction mats. If working from construction mats, these mats must be shown on a plan. Construction mats must be removed from the coastal wetland when not in use."*

The temporary impact areas needed for construction of the piping system within the intertidal zone will be minimized and allocated via the following sequence of construction as follows:

- Placement of a timber mat access way (see drawing sheet CS-502) the entire length of the pipe trench location within the intertidal zone from station 5 to 13+50 at the mean low water line. The timber mats will be placed directly over the proposed trench location. Mat access will be placed during low tide cycle but will remain in place as an active work travel way through the entire trench installation process. The mats will provide a stable work surface for equipment and material. The mats will be anchored via concrete barricades or other suitable weight. It is believed that by leaving the access way in place, the risk of producing siltation from repeated removal and placement of the mats over the intertidal sediments will be reduced. Repeated removal and placement of the mats during low tide cycles will add time to the construction process, add impacts through repeated travel over the mud flats, and risk increased turbidity generation through destabilization of the sediments by the repeated travel. One construction process to place the mats will reduce travel time as a whole over the intertidal zone.

- Excavation equipment will travel out the full extent of the mat road to begin trench excavation at the furthest point from shore. It is recognized this is the area with the shortest low tide cycle and will not be kept dry for the full time to install and backfill the trench. Trench boxes will be installed to keep the excavation open and limit siltation and turbidity issues by extending the box walls above the excavation area. See the attached trench excavation details on sheet CS- 502 of Exhibit A. Excavation of the trench and setting of the pipe sections will continue in 20 foot to 40 foot work areas, utilizing the trench box system to keep the trench open and limit exposure of disturbed sediments to the water column. A summary of sequence is as follows:

  a. Twenty foot to forty foot trench lengths will be excavated utilizing a long reach excavator or crane with closed dredge bucket.

  b. Excavated sediments will be deposited on either a barge – which is ground out onto the mudflat at low water within the 100-foot temporary impact area – or onto the timber mat temporary staging area. The placement on timber mats would be a temporary staging area, with removal of excess sediments to a barge prior to becoming impacted by the incoming tide.

  c. Trench box sections, of appropriate length, will be placed into the trench utilizing the crane.

d. Pipe sections will be placed into the trench and connected as appropriate for final design.

e. Stone will be placed into the trench around the pipe sections, within the width of the trench only. The trench will be backfilled with the stockpiled native sediments. Any excess sediments will be placed on the barge and transported to a permitted upland disposal location. Sediments will not be stored on timber mats through a tide cycle.

The work will be scheduled to occur primarily within the low tide cycle to reduce the risk of suspending sediments into the water column as much as possible. Given the short duration of the low tide cycle the furthest 200-300 feet could be exposed to a tide cycle before the trench is backfilled. The goal of scheduling the work would be to excavate the trench, place the box, pipe and stone before the tide cycle turns. Turbidity curtains, excavated material containment measures such as jersey barriers and geotextile filter membranes as well as placement of the mat accessway will all be used as management practices to reduce turbidity generation.

5. Work area organization and equipment placement within the intertidal zone:

The attached drawing detail sheet (Nordic Exhibit 19) shows a typical work area configuration. The equipment will be configured alongside the mat access way and will move in sequence with the excavation described previously in this testimony. Barges and equipment will be moved into place via use of a push boat. Materials, such as stone, piping, small equipment and personnel will be transported to the work area via barge or travel on the mat road dependent on the section of trench under construction. Work will be localized and sequenced to minimize multiple trips either by barge or via travel over the mat road.

Work areas will be sectioned and planned for sequence to allow for efficient use of the total proposed temporary impact area. The drawings and construction narrative note the impact area as approximately a 100-foot area following the pipeline path. In order to most efficiently utilize the total proposed temporary impact areas, a combination of standard spud barges and jack up barges are planned to be utilized. The jack up barges will not ground out onto the bottom. However, the standard barges, as well as the temporary timber mat laydown spaces show in the detail drawing will set on the bottom. Use of the jack up barges will allow for minimization of the impact area. A total of three barges and timber mat laydown area will be utilized along side (in addition) to the timber mat access. The majority of the 100' proposed impact area would be situated to one side of the mat access road. The second and third barges would set on the mud flats during the excavation phase to be utilized for containment of excavated sediments, stone, equipment and other materials. These barges would float with the tide. The jack up barge would remain off the bottom, and would house a crane and pipe sections. All impacts to the bottom could be kept to one side of the access road and trench. If a section of the trench is completed during a tide cycle, equipment and materials will be moved out of that work area during a high tide cycle. Jack up barges cannot be used for containment of excavated material due to the weight of that material on the supporting spuds.

Through utilization of a phased excavation approach, use of jack up barges and moving the work/equipment areas with the excavation process, overall impacts to the 100' corridor are minimized. The entire width will not be impacted for the entire duration of the piping system construction process.

6. Turbidity Mitigation and Monitoring Measures – within the intertidal and open water excavation areas.

Comment 9 from the October 9, 2019 letter states:

"Additional erosion and sediment control measures should be considered and implemented to prevent turbidity in the coastal wetland during construction. Such measures include, but are not limited to, a system for monitoring and reporting turbidity during construction, use of a fully enclosed dredge bucket, limiting the hoist speed of the dredge bucket when operating in the water column, and use of a scow or a secondary containment system to prevent overflow of dredged materials."

Turbidity generation from suspension of sediments associated with the piping system installation process could be generated from the following activities. Their associated immediate operational and physical mitigation measure is also described.

> **Transport and placement of the timber mat access road** – work to construct the access would be completed during low tide cycles. Mats will be anchored via concrete blocks. Use of the mats as a travel way will reduce impacts to the bottom sediments from travel. Equipment travel will also be planned to limit unnecessary travel.
>
> **Excavation of the trench area beyond station 13+50** where excavation will be within the water column at times or the open trench exposed to the tide cycle. Risk of suspension of sediments into the water column will be reduced through the use of a closed dredge bucket during excavation, work at low tide as much as possible, reduced work and reduced excavation activity during high or mid tide. Use of the trench box system and sequence of work to complete excavation, pipe placement and stone placement prior to high water will be emphasized in the planning. Work will be conducted from barges with turbidity curtains placed around the work area and barges.
>
> **Removal of the mat access road** – this work will be completed as the trench is backfilled and during low/dry tide cycles.
>
> **Incidental removal of obstructions** along section of pipe that is placed along the bottom, not within a trench. This activity is not expected based on bathymetric survey, but a turbidity curtain will be utilized along with slow and deliberate equipment operation with a closed dredge bucket if necessary.

Proposed mitigation measures include continuous visual monitoring for turbidity and use of turbidity curtains.

> **Turbidity Curtain Use:**
>
> The curtains will be of appropriate position, length and depth to cover the work area. Curtains will be anchored and positioning reviewed periodically as tide cycle changes and work

progresses. Curtains will likely be attached to the barge sections or moored alongside the work area.

Turbidity visual observations:

Work crew supervisors will designate a trained team member to complete observations for turbidity periodically during any of the above mentioned work activities. Should turbidity be observed that migrates beyond the turbidity curtains, notification to project management will be made and work will cease until the source is determined and mitigation measures applied.

7. Turbidity Monitoring:

Development of a turbidity monitoring plan has been proposed to supplement the visual observations and provide documentation of effectiveness of the mitigation measures noted above. The proposed monitoring program would establish a zone of monitoring around the work area. Background readings would be taken prior to work start, with multiple, ongoing readings taken during work activity within a zone around the work area. The zone would be considered the mixing zone, turbidity levels would be noted through this zone with a stop work condition applied to readings noted at a level above background that would be considered detrimental to the water quality or sensitive habitat. The appropriate mixing zone and potentially detrimental turbidity level would be established in coordination with the Department and would be reflective of the water quality data available for the area. Construction methods would be evaluated for the source of any turbidity exceedance with additional mitigation measures employed prior to work resuming.

8. In summary, construction of the seawater access piping system can be completed with limited impacts to the surrounding intertidal area. Through proper planning, use of a phased construction approach with the proper equipment, combined with visual and metered monitoring of the potential impact areas construction activity can be completed with limited turbidity generation and impacts to the coastal wetland area.

[INTENTIONALLY LEFT BLANK]

Dated: December 11, 2019

By. Lauren Walsh
Environmental Manager
Cianbro Corporation

Lauren Walsh

STATE OF MAINE
County of Somerset, ss.

December 11, 2019

Personally appeared the above-named Lauren Walsh and made oath as to the truth of the foregoing pre-filed testimony.

Before me,

Sarah H Martin

Notary Public / Attorney at law

LAUREN C. WALSH | CORPORATE ENVIRONMENTAL MANAGER

18 YEARS OF EXPERIENCE

Lauren has a strong working knowledge of various industrial sectors, OSHA and environmental regulations/compliance, personnel management, quality control and quality assurance program development/administration, process control, and permit compliance. Lauren is experienced at interacting with State/Government agencies and programs and is versed in writing operating procedures inclusive of environmental compliance. The responsibilities Lauren has been provided with directly represent his experience, knowledge and ability.

EDUCATION

B.S. Biology, Moravian College, Bethlehem, PA

Chemistry Minor, Northampton Area Community College, Bethlehem, PA

CERTIFICATIONS

OSHA 10-Hour | Pennsylvania DEP Biosolids Compliance Training | Erosion & Sediment Control Certification

PROJECT EXPERIENCE

WALDEN GREEN ENERGY BIG LEVEL WIND – HECTOR TOWNSHIP, POTTER COUNTY, PA (*)

Construction of a 90 MW wind farm including site work and access development, foundation, erection of 26 – GE 3.X turbines, underground collection, overhead collection, collection substation, interconnect substation, O&M Building, and a permanent MET tower.

CONNETICUT DEPARTMENT OF TRANSPORTATION CP243 INTERLOCKING & DANBURY BRANCH DOCKYARD – NORWALK, CT (242 MILLION)

Construction of a new 2,200 foot long four-track interlocking to allow for two-track Metro-North Railroad operations during reconstruction of the Walk Bridge along with rail improvements.

PITTSFIELD SOLAR 13.9 MW DC SOLAR PROJECT – PITTSFIELD, ME (*)

Constructed a 10 MW AC solar array, including the installation of 40,200 each 340 and 345 watt modules. Foundations consisted of a pole-mounted racking system with 35% tilt. Generated energy will be delivered via a 2.7 mile transmission line.

345 KV ENERGIZED TRANSMISSION STRUCTURE REPLACEMENTS – ORRINGTON TO ORIENT, ME (*)

Performed energized replacement of (69) 345 kV wood pile H-frame transmission structures.

AMERICAN ELECTRIC POWER 138 KV TRANSMISSION LINE REBUILD – FORT WAYNE, IN TO HAVILAND, OH (*)

Constructed a 25.5 mile 138 kV transmission line.

CORE RESPONSIBILITIES

- Continuous development and execution of the Corporate Environmental Management System
- Support Project Teams with the development and implementation of the Project Environmental Plan
- Assist Project Teams with audits and inspections, and conducting weekly safety and environmental talks
- Work with Project Teams to ensure compliance with EPA and other environmental regulatory agencies
- Ensures compliance with OSHA, EPA, and DEP standards

OTHER NOTABLE PROJECTS

- Williams Field Services Central Phase III Electrical Installation – Susquehanna County, PA
- Pennsylvania Power & Light – 230 kV Transmission Line – Hosensack, PA
- Pennsylvania Power & Light – 138/69 kV Transmission Line – Morgantown, PA
- University of Maine – Offshore Wind Laboratory – Orono, ME

**Withheld Upon Owner Request*

LAUREN C. WALSH | CORPORATE ENVIRONMENTAL MANAGER

PROJECT EXPERIENCE CONTINUED

MADISON ELECTRIC 7 MW DC SOLAR – MADISON, ME (*)

Performed all site work and all electrical work for a 5 MW AC (7 MW DC) solar project including clearing, grubbing, and final grading of 27 acres of land and performing the site work to support the installation of a photovoltaic (PV) system.

NATIONAL GRID 115/34/13 KV SUBSTATION – CHELMSFORD, MA (*)

Retrofitted an existing substation, completed in sequential phases to allow all electrical loads to remain in service. The project included substation yard expansions, duct banks, wiring, foundations, cable trench, fencing, steel and aluminum structures, bus, and electrical equipment installations.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY REHABILITATION OF MERRIMACK RIVER BRIDGE PIERS – HAVERHILL, MA (48 MILLION)

Rehabilitated the bridge's substructure, and the provision of scour countermeasures for the in-water elements.

PORTSMOUTH NAVAL SHIPYARD

- Dry Dock #3 Caisson Replacement and Seat Repairs – Kittery, ME (*)
  Replaced the existing dry dock caisson and repaired the inner and outer seats of the caisson.
- Structural Repairs at Various Berths Berth 11A, 11B, & 11C – Kittery, ME (*)
  Repaired and modernized 1,210 linear feet of pile supported open wharf structures.
- Bridge 1 Structural Repairs – Kittery, ME (14 Million)
  Replaced a 300-foot long, two-lane bridge.

DOMINION ENERGY LINE 1 TRANSMISSION LINE – BLACKSTONE, VA (*)

Installed 12.2 miles of temporary transmission line in an existing ROW with 115 kV single pole structures and constructed a 12.2 mile transmission line with 115 kV DOM type steel H-Frame structures with steel cross arms.

NEW HAMPSHIRE AND MAINE DEPARTMENTS OF TRANSPORTATION SARAH MILDRED LONG BRIDGE REPLACEMENT – KITTERY, ME (165 MILLION)

Constructed a new 2,800-foot concrete vertical-lift bridge.

VERMONT ELECTRIC COOOPERATIVE NORTHEAST KINGDOM CONNECTOR – BLOOMFIELD, LEMINGTON, & CANNAN, VT (8 MILLION)

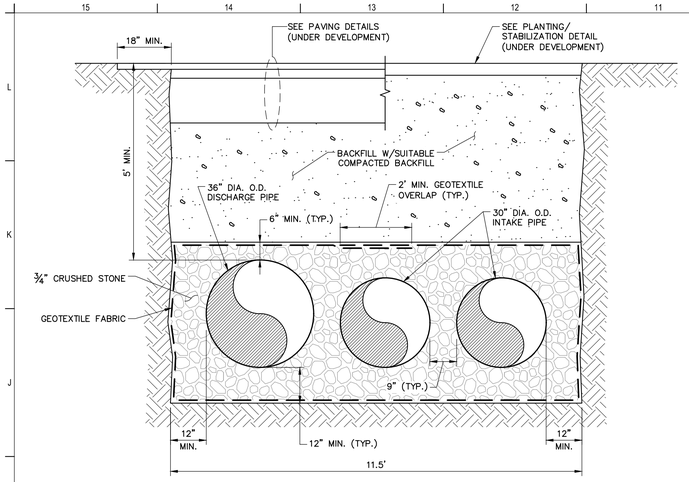
Upgraded the electrical/telecommunications reliability including a new transformer at Island Pond Substation, a new 22-mile, 34.5 kV distribution line, and 37 miles of ADSS fiber optic cable.

QUANTUM UTILITY GENERATION PASSADUMKEAG WINDPARK – LOWELL, ME, VT (40 MILLION)

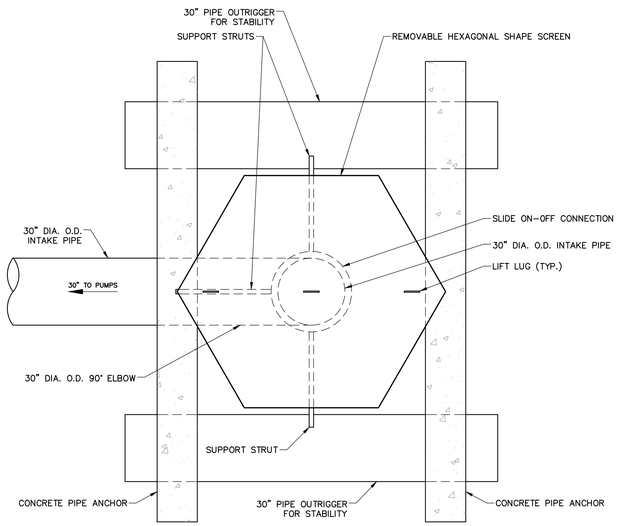
Provided complete engineering, procurement and construction (EPC) services for the 40 MW wind farm.

AVANGRID

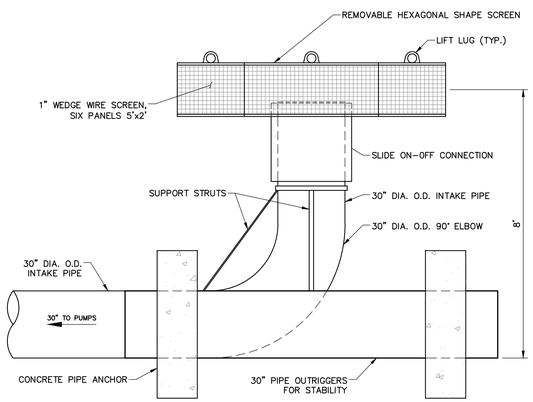
- Various Transmission and Substation Projects – Various Locations (*)
  345 kV Energized Structure Replacements – Various, ME | MPRP Five Design-Build Substations | Lakewood Substation & 115 kV Transmission Line Rebuild – Madison, ME | Berwick-Lebanon-Sanford Substations – Berwick-Lebanon, ME



5 CS502 **BURIED 3–PIPE TRENCH DETAIL (LAND)**
SCALE: 1" = 2'

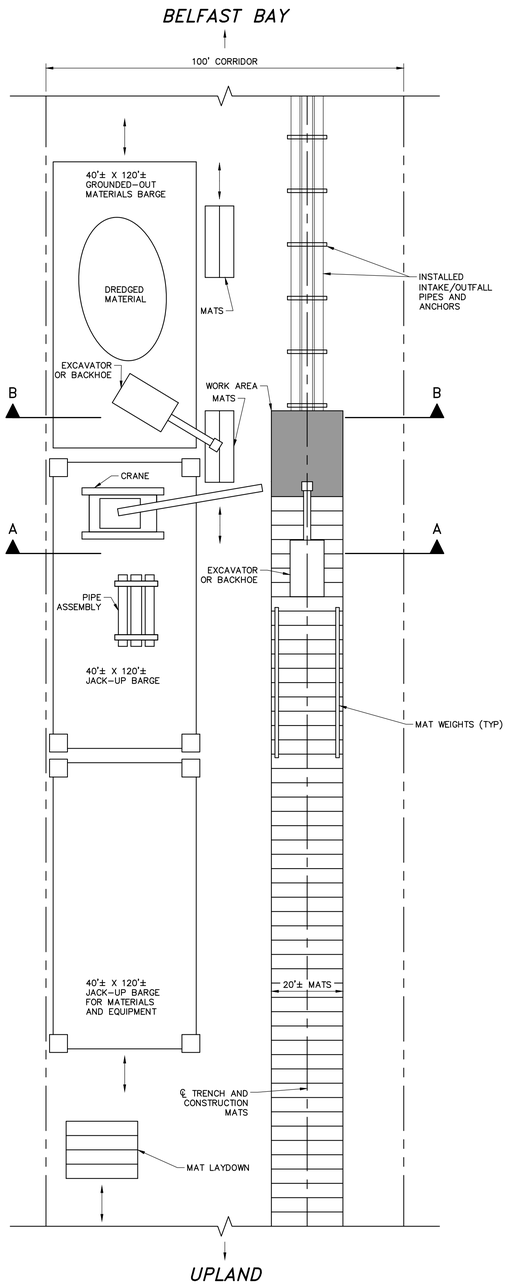


PLAN

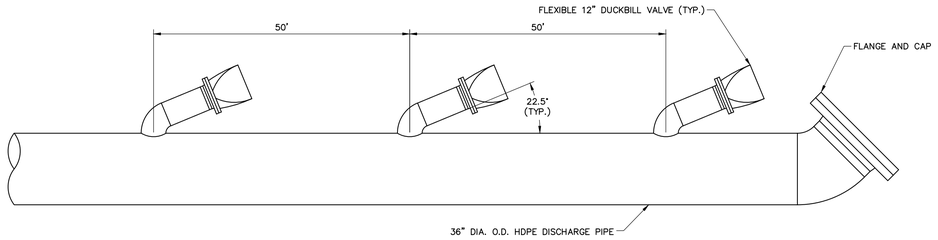


SECTION

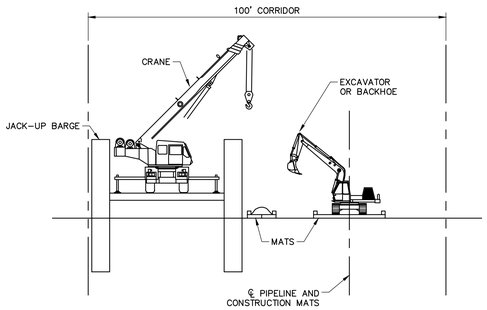
6 CS502 **INTAKE STRUCTURE DETAIL**
SCALE: NOT TO SCALE



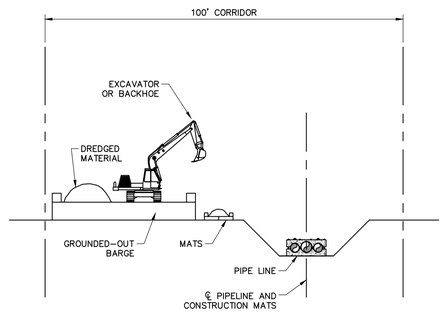
PLAN



7 CS502 **DISCHARGE DIFFUSER DETAIL**
SCALE: NOT TO SCALE



SECTION A–A – CONSTRUCTION ACCESS



SECTION B–B – OPEN TRENCH

7A CS502 **INTERTIDAL ZONE CONSTRUCTION DETAIL**
SCALE: NOT TO SCALE

RANSOM Consulting Engineers and Scientists
WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

REV	DESCRIPTION	DATE

REVISED FOR PERMIT
10-29-19

CURRENT ISSUE STATUS:

STATE OF MAINE JAMES D. WILSON No. 8592 REGISTERED PROFESSIONAL ENGINEER

TRUE NORTH:

SMRT Architects and Engineers
144 Fore Street, PO Box 618
Portland, Maine 04104
ARCHITECTURE | ENGINEERING | PLANNING | INTERIORS | ENERGY
SMRT

NORDIC AQUAFARMS

BELFAST, MAINE

CIVIL DETAILS -2

PROJECT MANAGER:

PROJECT NO: 18076

JOB CAPTAIN:

CS502

NOT FOR CONSTRUCTION

24x36