



ENVIRONMENTAL MANAGEMENT PLAN



HURRICANE HOLE MARINA PROJECT

Prepared for:

Sterling Hurricane Hole Ltd.

Prepared By:

Design Elements Ltd.

Date:

18 September 2020

Revision 2

**HURRICANE HOLE MARINA
ENVIRONMENTAL MANAGEMENT PLAN R2**

Prepared by:

Design Elements
#4 Saint Street
P.O. Box N-10377
Nassau, The Bahamas
Ph: (242)601-0251

Prepared for:

Department of Environmental Planning and Protection
Ministry of the Environment and Housing
Ground Floor, Charlotte House
P.O. Box N-7132
Nassau, The Bahamas

On behalf of:

Sterling Hurricane Hole Marina
Sterling Global Financial Limited
81 East Bay Street
PO Box N1812,
Nassau, Bahamas

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SECTION 1: BACKGROUND

1.1 Introduction

Hurricane Hole Marina is located on the southern shore of Paradise Island, The Bahamas (see Figure 1: Project Location). The property is comprised of a 3.0 acres marina basin and 8.5 acres with support facilities. The site which has been operational as a marina for decades was previously owned by Brookfield Asset Management and acquired by Sterling Hurricane Hole Limited – SHHL (The Developers) in early 2018. The Developers intend to expand the marina and improve the existing amenities.

In November 2017 Design Elements produced a Phase 1 Environmental Site Assessment (ESA) for SHHL to facilitate the due diligence process of acquiring the property. Following acquisition of the property, SHHL submitted the ESA report to the Bahamas Environment Science and Technology (BEST) Commission (now Department of Environmental Planning & Protection-DEPP) for comments, at which time additional baseline data for the marine environment was requested. Thus, Design Elements performed a biological assessment within the project limits that provided additional information on the terrestrial environment and detailed descriptions of the marine environment. Upon submission of the biological assessment, BEST Commission (now DEPP) advised that an Environmental Management Plan (EMP) would be required for the project. SHHL engaged Design Elements to prepare this EMP to complete the environmental requirements of the project's application for site plan approval.

An EMP was submitted on 10 September 2018. The BEST Commission (now DEPP) provided feedback on the document in a communication dated 24 October 2018. This revised document addresses comments from the BEST (now DEPP) review and presents the findings of subsequent marine studies to facilitate the proposed coral relocation mitigation project.

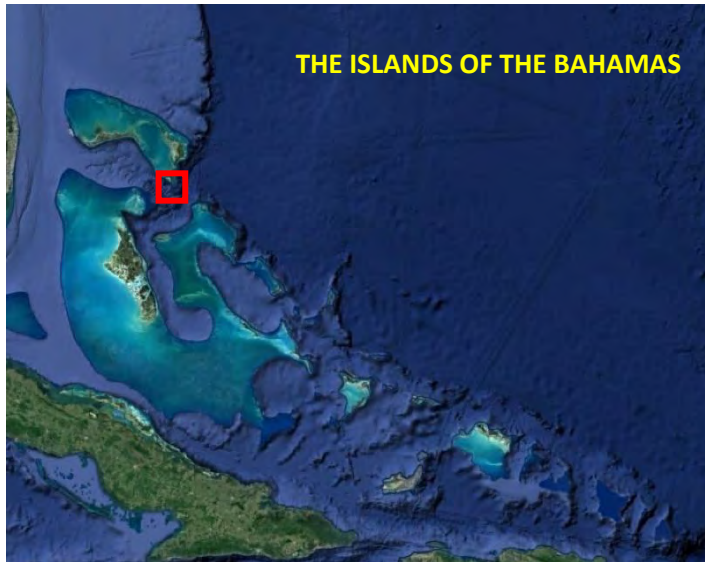


Figure 1: Project Location Map

1.2 Purpose & Scope

This EMP is a project specific document developed to ensure that appropriate environmental management measures are followed during the construction of the Hurricane Hole Marina Project, to eliminating or minimize environmental impacts.

More specifically, the purpose of the document is to ensure that:

1. Environmental impacts and risks are identified
2. Environmental impacts and risks are effectively managed
3. The project complies with applicable legislative requirements
4. Guidelines and best management practices (BMP) are outlined for the project management team regarding protection for the physical and natural environment
5. Systems are implemented to manage social impacts associated with the project

To achieve the outlined purpose, the following subjects are detailed:

- Applicable legislative requirements
- Environmental impacts
- Specific mitigation measures
- Management plans
- Environmental management framework
- Site-specific method statements
- Training requirements

The EMP is a comprehensive living document and will be updated throughout the construction phase of the project in the event of unforeseen circumstances or change in project scope. It is to be used in conjunction with the Hurricane Hole Marina, Phase 1 Site Assessment (6 November 2017) and the Hurricane Hole Marina, Biological Assessment (19 July 2018); but is presented in a standalone format.

1.3 Project Overview

1.3.1 Project Description

The masterplan envisions a three (3) phased construction, of three hundred thousand square feet (300,000 sq. ft.) for a combined use of residential and commercial spaces; including fifteen thousand square feet (15,000 sq. ft.) of office space, sixteen (16) residential units located over office space, twenty thousand square feet (20,000 sq. ft.) of convenience-commercial retail, fifteen thousand square feet (15,000 sq. ft.) of restaurant space, two (2) buildings up to eighty-nine (89) feet high for 50-70 residential units, town homes, and permanent back-of-house including parking, delivery facilities, storage, waste management and maintenance.

The master plan includes both restoration and demolition of existing buildings as well as construction of new buildings on the site. The project will incorporate alternative energy in the form of solar bollard lights and energy efficient LED streetlights.

Presently, SHHL estimates that the commercial space will comprise approximately 35,000 to 55,000 square feet and the residential space will comprise approximately 245,000 to 265,000 square feet (See Figure 2: Project Master Plan).

The development offers an improvement in the existing marina services, expansion of food and beverage options and increased shopping opportunities. It will make contributions of \$194 million to the Bahamian economy during the construction phase. SHHL estimates five hundred (500) permanent and part-time jobs for Bahamians arising from the completed development, including all employment to be provided by third parties. A 95% Bahamian work force is anticipated.



Figure 2: Project Conceptual Master Plan

1.3.2 Site Description

The proposed site is owned by the Developers and is zoned for commercial use. It is surrounded by hotels, restaurants, shopping complexes and parking facilities.

Site conditions consist of human altered areas that have been previously developed; and includes a 90-slip marina, marina office building, fuel dock, a two-story laundry building and a small building used as a “charter-shack”. The site also contains a small restaurant with outdoor seating, mobile kitchen, and male/female restrooms.

During the biological assessment (2018) a total of sixty-four (64) vascular plant species were recorded within the project limits; including one (1) species listed on the Conservation & Protection of the Physical Landscape Act, Protected Trees Order (2010) and eleven (11) species listed on the National Invasive Species Strategy (2013).

Ten (10) avian species were recorded during the rapid biological assessment including: six (6) permanent residents, one (1) summer resident, one (1) introduced resident, one (1) fall/winter migrant and one (1) vagrant. No endangered or endemic avian species were recorded.

The benthic assessment revealed five (5) alga genera, five (5) epifauna species and nine (9) coral species. Three (3) of the coral species observed are categorized as reef-building species Twelve (12) fish species were observed. None of the fish species observed were of commercial importance. However, the assessment noted reef important species like Parrotfish (various species including *Sparisoma rubripinne*, Yellowtail Parrotfish, *Sparisoma viride* Spotlight Parrotfish, *Scarus taeniopterus* Princess Parrotfish and *Scarus iserti* Striped Parrotfish).

SECTION 2: ENVIRONMENTAL MANAGEMENT SYSTEM

2.1 Environmental Policy Statement

SHHL has adopted the following Environmental Policy Statement of its commitment to minimize environmental and social effects associated with the construction and operation of Hurricane Hole Marina.

Sterling Hurricane Hole Limited will operate in compliance with all relevant national environmental legislation and will strive to use environmental best practices in all we do.

We are committed to preventing harm to the environment through proactive management. To further this policy, we are committed to:

- *identify and assess the environmental aspects and impacts of the company's activities to prevent avoidable environmental damage;*
- *involve employees in our environmental program and provide necessary training to enable them to perform their duties in a manner that is environmentally responsible;*
- *reduce the amount of waste generated;*
- *improve resource efficiency (including our use of water, fuel/energy and raw materials);*
- *communicate our environmental commitment to clients, customers, vendors and the public and encourage them to support it; and*
- *carry out all reasonable practical measures to continuously improve environmental performance.*

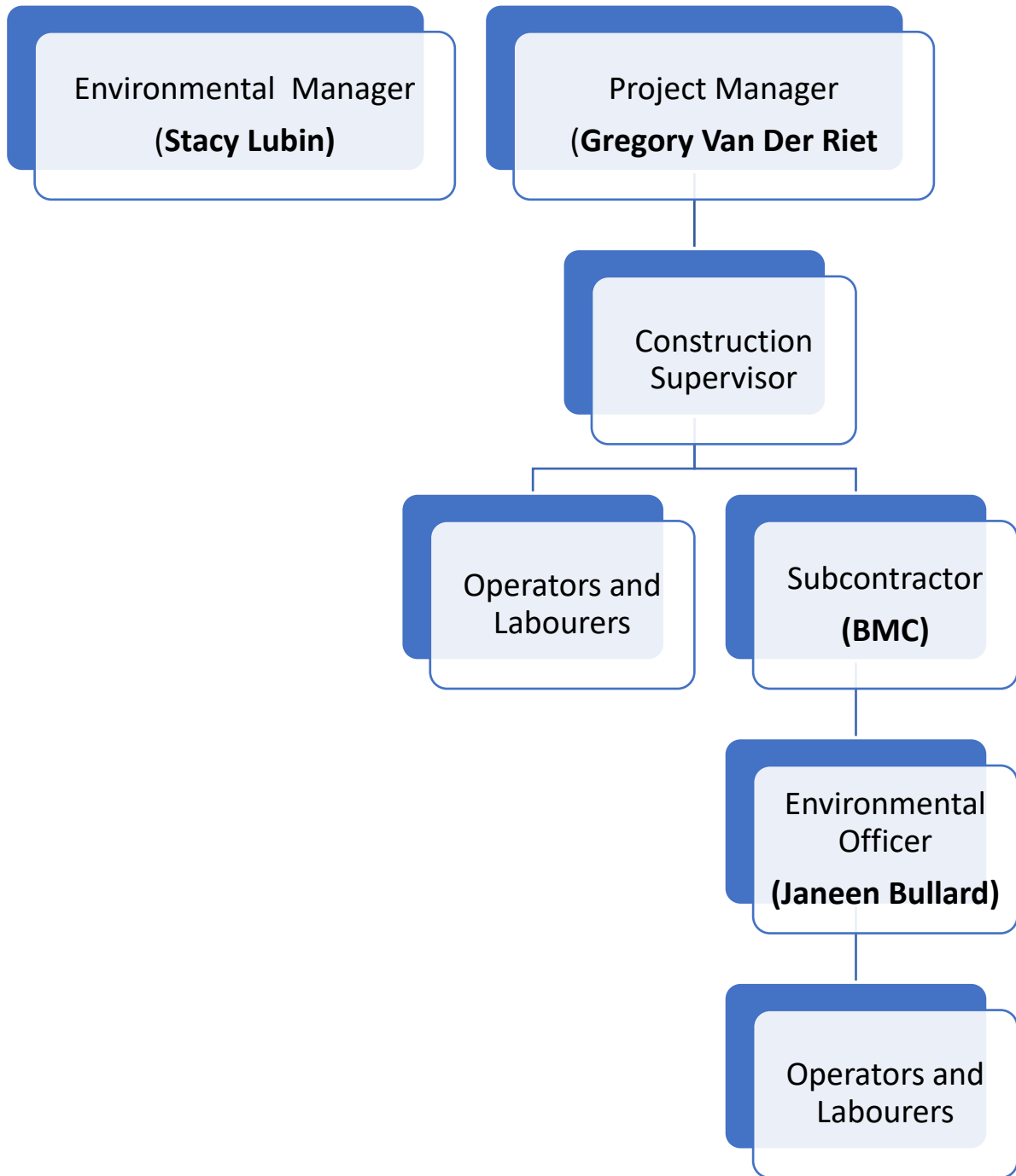
This policy is publicly available on request.

All subcontractors will adopt and adhere to this environmental policy while working on behalf of SHHL.

2.2 Environmental Management Framework

The Environmental Management Framework outlined herein identifies key elements for developing, implementing, achieving, reviewing and maintain the environmental policy; including organizational structure, planning activities, responsibilities, practices, procedures, processes and resources.

2.2.1 ORGANIZATIONAL STRUCTURE (Relative to Environmental Management)



2.2.2 Roles and Responsibilities

Implementation of this EMP will be monitored by the Environmental Manager, the Contractor's Project Manager and the Subcontractor's Environmental Officer. Responsibilities of each individual identified in the organizational chart is as follows:

Environmental Manager

Stacy Lubin has been appointed as the Environmental Manager (EM) for the project (CV attached in Appendix 8). The EM responsibilities are as follows:

- Day to day oversight of construction activities to ensure that works are conducted using best management practices and the project maintains environmental compliance with the EMP and the company's environmental policy.
- Conduct daily site inspections using site inspection sheet.
- Conduct official site inspections with DEPP personnel.
- Produce and submit bi-monthly environmental reports to DEPP.
- Issue Nonconformance on matters arising from site inspections.
- Liaise with all parties and follow up on NCR issued to seek resolution and close out.
- Log incidents into the BESTPROTECT242 App and contact DEPP on incidents occurring on the site.
- Conduct environmental site inductions.
- Perform toolbox talks on matters of environmental concern.
- Witness daily turbidity monitoring.
- Conduct daily inspections of turbidity curtains.
- Maintain Stakeholder engagement log.
- Update EMP based on new information or changes in project scope.
- Perform stakeholder engagement and respond to issues of environmental and social concern.
- The EM is the point of contact for the DEPP and is responsible for submitting reports to the agency.
- Conduct final inspection of hurricane preparedness preparations

Project Manager

Gregory Van Der Riet has been appointed as the Project Manager (PM) for the project (CV attached in Appendix 8). The PM will be responsibilities for the following tasks related to implementation of the EMP:

- Ensure that the EM is immediately informed of an incident of environmental concern that occurs on the site.
- Advise the EM of all new employees on the site for environmental site induction.
- PM will facilitate toolbox talks on environmental matters, which will be administered by the EM and EO.
- Perform toolbox talks on health and safety matters.
- Along with the EM will ensure that environmental stipulations outlined in method statements are adhered to in construction activities.
- Oversee hurricane preparedness preparations.

Construction Supervisor

The Construction Supervisor (CS) will report to the PM and EM. The CS is responsible for ensuring that subcontractors, operators and laborers adhere to environmental safeguards outlined in the works methodology.

Environmental Officer

Janeen Bullard has been appointed as the Environmental Officer (EO) for the subcontractor (CV attached in Appendix 8). The Subcontractor's EO will ensure that the subcontractor is compliant with the terms of the EMP. The EO will:

- Conduct internal site inspections.
- Supervise marine works including:
 - Conduct turbidity monitoring with contractor.
 - Conduct daily in water inspection of the turbidity curtains.
 - Inspect of benthic area enclosed by turbidity curtains.
- Conduct daily site inspections.
- Conduct formal weekly site inspections with the EM.
- Submit incident reports to the EM.
- Perform toolbox talks on matters of Environmental compliance or concern.

Subcontractors and Employees

It is the responsibility of the subcontractors and employees working on the project to report any incidents of nonconformance or potential nonconformance to the CS.

2.3 Environmental Management Tools

The overall goal of the Environmental Management System for Hurricane Hole Marina project is to ensure that the project remains in compliance with the Government's Environmental Regulations and Policies and that works are conducted using industry best practices to avoid, reduce or mitigate environmental impacts associated with the project.

The following Environmental Management Tools will be used as a part of the overall environmental management system.

2.3.1 Site Inspections

The most essential element of the environmental management system is the site inspections. This is a key tool in identifying, addressing and avoiding issues of environmental concern. The Contractor's EM have daily oversight of construction activities and will conduct weekly inspections using a site inspection sheet. A site inspection sheet template is provided in Appendix 5: Environmental Report Templates.

Official inspections with DEPP will be conducted upon request. Site inspections will include the following observations:

- Site Safety and Health including Personal Protective Equipment (PPE) and Waste Management
- Groundwater Management
- Protection of waterbodies & Sediment Control
- Vegetation including Protected Species
- Materials including Fuel Storage, Construction Equipment Condition, Maintenance and Problems, Hazardous Materials / Contaminated Soil
- Air Quality
- Noise Quality

2.3.2 Report and Communications

Reports will be used as a means of documenting and providing information of environmental aspects of the project. The following section outlines various reports related to the environmental management process.

2.3.2.1 Maintenance of EMP

The EMP is the major guiding tool for environmental management of the project. As the EMP is a dynamic document, it will be necessary to provide relevant information to update the document for the life of the project to reflect changes and new circumstances that might arise. The EM will be responsible for updating the EMP document and submitting revisions to DEPP.

2.3.2.2 Environmental Reports

The Project's EM will be responsible for producing bi-monthly environmental report on the project's activities and submitting reports to the DEPP. A template for the environmental report is provided in Appendix 5: Environmental Report Templates.

2.3.2.3 Incident Reports

Employees are required to report incidents to the PM or EM immediately. The PM will ensure that the EM is immediately informed of an incident. The EM shall log all incidents into the BESTPROTECT242 APP and notify DEPP of the incident via telephone. The Contractor's EO is required to submit to the EM detailed reports outlining an incident with an environmental concern. The EM will include incident reports in bi-monthly environmental reports to DEPP. An incident report template is provided in Appendix 5: Environmental Report Templates.

2.3.2.4 Nonconformance Reports (NCR)

NCR will be issued by the EM as an official notification of an environmental concern. An incident report template is provided in Appendix 5: Environmental Report Templates.

It outlines the issue of concern and requires the Contractor to provide corrective actions to be taken. When an NCR is issued, the EM will ensure that corrective actions described in NCR are carried out.

2.3.2.5 Method Statement Review

Method statements will be submitted by the Contractor and reviewed by the EM to ensure that environmental concerns were taken into consideration and appropriate control measures are included (See Appendix 1: Method Statements).

2.3.3 Training

2.3.3.1 Site Inductions

Environmental and Site Safety inductions are to be conducted prior to the commencement of construction activities and for all new employees. All project team members and sub-contractors, will be required to sign that they have received, understood and will comply with measures as set forth in the site inductions. A register of all persons attending site inductions will be maintained as a part of the record keeping for the project and included in the environmental report.

2.3.3.1.1 Environmental Site Induction

Environmental site inductions will be conducted by the EM. Topics to be covered in the presentation include:

- Project's Organizational Structure
- Description of Site's Biological Aspects including vegetation, avian population and marine life
- Protection of the marine environment including sediment control, impacts of marine debris on marine life and The Bahamas' ban of single use plastics
- Waste Management including storage and disposal of solid and hazardous waste
- Noise and light control
- Spill Prevention Control Plan Procedure
- Proper use of Spill kits
- Hurricane Preparedness Plan Procedures

2.3.3.1.2 Safety Site Induction

Site Safety inductions will be conducted by the Contractor's PM and or EO (See Appendix 6: Contractor's Site Safety Induction).

2.3.3.2 Toolbox Talks

The Contractor’s PM and or EO will conduct toolbox talks as a preventative measure on topics of environmental and site safety. Toolbox talks will also be by conducted the EM, the Contractors PM and the Contractors EO as a follow up action in response to an NCR.

2.4 Summary of Applicable Legislation

There are ten (10) Legislations that are relevant to the physical and natural environment which may apply to the project as outlined in Table 1 below:

Table 1: Summary of Applicable Legislation

Act Title	Enacted	Comments
Water & Sewerage Corporation Act (Amended 2015)	1976	Provides regulatory framework for the management of water resources in The Bahamas.
Environmental Health Services Act (Amended 2004)	1987	Provides the framework for environmental regulations that will ensure compliance for the Project. The Act authorized the DEHS to develop regulations that prevent and control air pollution, soil contamination and preserve water quality.
Wild Animals (Protection) Act (Amended 1974)	1968	Prohibits the taking, capturing or hunting of any animal without a permit.
Wild Birds Protection Act (Amended 1994)	1952	Prohibits the taking, capturing or hunting of any wild birds without a permit. Protects birds and eggs during closed season.
Plant Protection Act (Amended 2016)	1916	Relates to plant disease and controls importation of plants to prevent outbreaks of exotic disease and establishment of unwanted species.

Act Title	Enacted	Comments
Conservation and Protection of the Physical Landscape of The Bahamas Act (Amended 2010)	1997	Protects physical landscape from environmental degradation, flooding and removal of hills; regulates filling of wetlands, drainage basins or ponds; prohibits digging or removing sand from beaches and sand dunes; prevents harvesting or removing protected trees. In order to perform activities that may affect the physical landscape of The Bahamas, permits must be obtained for these activities based on methodology and purpose. The Department of Physical Planning issues the permits and enforces the regulations.
The Bahamas National Trust Act (Amended 2010)	1959	Directs the Bahamas National Trust to promote permanent preservation of lands, buildings, underwater areas of beauty, and areas of natural interest. The Act also allows the Trust to identify sites for protection, and to manage areas declared protected. It was empowered to prohibit or regulate activities on land or on the seabed within national parks or protected areas. The Act formalizes the organization's role as an advisor to the government and the private sector on development, biodiversity and heritage issue policies.
Planning and Subdivision Act	2010	This Act provides for: A land use planning based development control system led by policy, land use designations and zoning; Prevention of indiscriminate division and development of land; Promotion of sustainable development in a healthy natural environment; Maintenance and improvement of the quality of the physical and natural environment; Protection and conservation of the natural and cultural heritage of The Bahamas; and Planning for the development and maintenance of safe and viable communities.

Act Title	Enacted	Comments
		The Act repeals the Town Planning Act, the Private Roads and Subdivisions Act, the Private Roads and Subdivisions (Out Islands) Act and the Conservation and Protection of Physical Landscape of The Bahamas (Quarrying and Mining Zones) Order, 1997.
The Forestry Act	2010	Protects wetlands, water reserves, endemic flora and fauna and protected trees. It establishes a legal framework for the long-term sustainable management of forests, a governmental forestry agency and a permanent forest estate. It requires a license for timber cutting and other activities in the Forest Reserves. The Act mandates that a National Forest Plan be developed every five years to govern management activities, such as harvesting and reforestation measures, prescriptions for fire prevention, wildfire suppression and prescribed burning and soil and water conservation.
Department of Environment Planning Act	2019	This bill establishes an integrated environmental management system and provides a legal framework for the protection and conservation of the environment. It establishes the Department of Environmental Planning and Protection, to provide for the prevention or control of pollution, the regulation of activities, and the administration, conservation and sustainable use of the environment and for connected purpose.

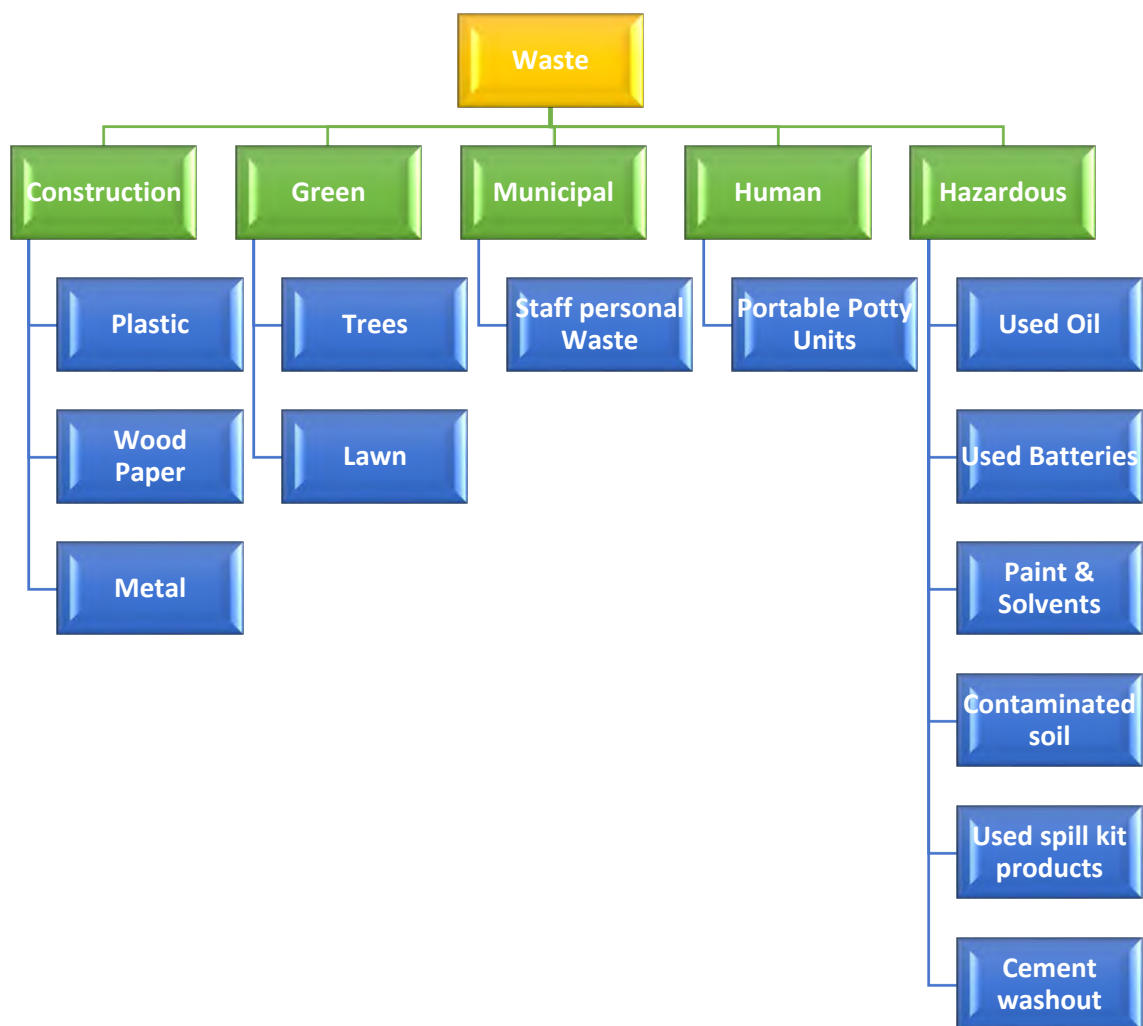
SECTION 3: CONSTRUCTION MANAGEMENT PLANS

3.1 WASTE MANAGEMENT PLAN

Waste generation is a byproduct of all aspects of the construction that can have negative impacts on the environment and human health and safety. This plan aims to address management of waste and associated impacts.

There are five (5) classes of waste that will be generated during construction: green waste, construction waste, domestic waste, human waste and hazardous waste. Example of each category of waste applicable to the Hurricane Hole Marina Project is listed in Chart 1.

Chart 1: Waste Classification for Hurricane Hole Marina Project Construction Phase



3.1.1 Potential Impacts

Potential Impacts associated with waste management include:

- Groundwater and coastal water contamination from cement, fuel and human waste - handling, storage, disposal and spills.
- Risks of fires from improper storage and handling of hydrocarbon waste.
- Dispersed solid waste from unsecure storage sites that can result in marine debris.
- Plastics entering the marine environment can be harmful to marine organisms.
- Accidents and injury from improper disposal of construction debris and untidy site.
- Rodent and vector attraction/breeding that can spread disease.
- Exposure to human waste that can spread disease.

3.1.2 Waste Management Strategy

General waste management techniques to be applied for all waste generated on the site include:

Storage

- All waste to be stored on asphalt surface in the laydown area.
- All waste generated will be kept in appropriate waste containers as outlined in Table 2.
- Waste to be segregated into waste class as outlined in Chart 1 waste classification guide.
- Waste bins to be clearly labelled to identify the type of waste contained.
- Waste to be removed from site as needed.
- Waste should not be allowed to overflow from bins.

Training

- Method statements should include specifics on what waste will be generated by the activity and how it will be disposed of.
- Potential impacts associated with waste management will be included in the site induction training.

Table 2: Waste Storage Containers Guide for Hurricane Hole Marina during Construction

Waste Class	Type of Waste	Appropriate Container	Example
Construction	Wood Plastic Metal	Commercial Bins	
Green	Land clearing Vegetation		
Municipal	Staff (final site disposal)		
	Staff (daily disposal)	Trash Receptacles	
Hazardous	Used Batteries	Used Battery Bin	
	Used oil Contaminated soil Used spill kit products Paint & Solvents	55 gallons Oil Barrels	
	Used oil	Intermediate Bulk Container (IBC)	

3.1.2.1 Solid Waste

Solid waste that will be generated on the site include construction (wood, paper, plastic, metal) and municipal waste generated by the staff on site

Management techniques for solid waste include:

Storage

- Litter bins with lids to be distributed through construction site.
- Litter bins to be emptied in larger skip bin at the end of each workday.
- Skip bins to be stored in the construction laydown area.

House keeping

- Site to be cleaned at the end of each workday and waste placed in skip bins.
- Any plastic material that reaches the marine environment is to be immediately retrieved and placed in the waste bin and secured with wood or pallets.
- Shrink wrap and other plastic coverings are to be rolled tightly after being removed from package to prevent them from being carried by the wind.

Disposal

- Solid waste to be disposed of in the New Providence Ecological Park dump site.
- The Contractor will be required to provide disposal tickets which shall be cross referenced with amount of load listed in pay application.

3.1.2.2 Hazardous Waste Management

Hazardous waste that will be generated on the site include used oil, used and damaged batteries, paint cans, cement, contaminated soils from fuel spill cleanup and used spill kit products.

Hazardous waste management techniques include:

Training

- Employees and subcontractors will be educated on the handling, storage, disposal and clean-up of hazardous materials/ waste as per the Spill Prevention and Control Plan.

Storage & Handling:

Used oil storage, handling and cleanup is detailed in the fuel spill prevention & containment plan provided in Appendix 4: Emergency Response Plan. The following BMP are outlined in the plan:

- Different types of hazardous waste will be separated in the laydown area.
- Hazardous waste bins to be clearly labelled.
- Waste containers will be inspected during site inspections for labeling and leaks.

The following BMP relate to storage and handling of cement on site:

- Runoff from uncured concrete, concrete wash water or other chemicals may be high in pH and are considered harmful to fish and aquatic life and can contaminate groundwater. There shall be no contact with ground, surface and open water through spillage, hosing off surfaces, rain, cleaning of tools or concrete washout.
- An above ground concrete washout is to be established utilizing bulk sandbag recycled from the project. A concrete frame will be built to house the bags. Metal rebars will extend from the corners of the concrete frame to hold sandbag straps in place securely. When filled, bags will be removed using heavy equipment and a new bag replaced.
- Signage will be installed indicating the concrete washout area.
- Concrete washout contents will be crushed and reused on the project as backfill and subbase material.
- Cement will be kept in the laydown area and should be covered to prevent the potential for mixing with water and release of substance into the environment.
- Any excess cement shall be removed from the island upon project completion.



Figure 3: Bagged concrete washout removal system



Figure 4: Signage for concrete washout

3.1.3 Human Waste Management

Portable toilets (portable potty) are to be utilized on the construction site for sanitary convenience. The following measures are to be apply for proper management of human waste associated with portable potty units on site.

Storage:

- Portable potty units to be stored on asphalt surface in construction laydown area.
- Units must be located more than 100ft from the edge of the open water.
- Male and Female units are to be designated.

Maintenance & Service:

- Units to be serviced (pumped or replaced) weekly or as needed.
- They must be maintained on a daily basis to ensure they are clean and stocked with supplies.
- Female units are to be equipped with necessary equipment for feminine sanitary needs.

Securing units:

- They should be secured to avoid being knocked over by heavy winds and vandalism.

Disposal:

- Removal and disposal of waste from portable potty units will be the responsibility of the licensed waste management subcontractor.

3.1.4 Green Waste Management

Green Waste generated from the project will consist of plant material from site clearing. Land clearing debris will be minimal as the site is already developed and existing vegetation is limited to a large area of sod with palms and trees dispersed throughout.

The following measures are to be apply in green management:

- Waste reduction measure include reuse of some plant material.
- Selective plants will be harvested during clearing, housed in a tree farm and reuse in landscaping.
- Plant material not retained for future use will be placed in waste bin in laydown area
- Green waste will be disposed of in the New Providence Ecological Park dump site.

3.1.5 Municipal Waste Management

Municipal Waste generated from the project will consist of general refuse from site workers.

The following measures are to be apply in municipal waste management:

- Trash bins will be conveniently located within work and break areas.
- Trash bins to be fitted with a lid to discourage flies, rodents and stray dogs.
- Bins to be emptied in larger skip in the laydown area at the end of each workday.

3.2 NOISE AND LIGHT CONTROL PLAN

3.2.1 Potential impact

Potential impacts associated with noise & light include:

- Disturbances to surrounding community, particularly during the evening and overnight hours.
- Damage to staff hearing from continuous exposure to load noise from equipment.

3.2.2 Management Strategy

3.2.2.1 Noise Control

To manage noise impacts contractors shall utilize the following noise control BMP:

- Equipment should be maintained in good working order.
- Implement the use of best available control technologies such as mufflers and silencers to reduce noise.
- Implement a speed limit of less than 15 miles per hour to slow vehicle movement on site and limit noise generation.
- Turn off idling equipment when not in use.
- Construction operations shall be restricted to daylight hours between 0700 hrs and 1900 hrs.
- Where there is a reason to work outside these hours, local communities will be given advance notice.
- Stakeholder engagement communication will be conducted for mutual resolution of feedback in this regard.

3.2.3 Light Control

If construction is to occur during hours when sufficient daylight is not available, and lighting of the work area is required, the Contractor is expected to manage excess lighting and glare by:

- Strategic placement of lights away from living areas.
- Tilting lights downwards.
- Using shielding to restrict the glare of lights.

3.3 AIR QUALITY CONTROL PLAN

3.3.1 Potential impacts

Air pollution sources on the construction site include dust and vehicle emissions from equipment. Dust is created as a result of fine particles of sediment that become airborne. Disturbance of sediment during construction activities and exposed loose sediment after clearing has the potential to generate dust. Potential impacts associated with dust include:

- Dust build up on vegetation can reduce photosynthetic ability and gas exchange which can result in die back and eventual death of plants.
- Workers exposure to dust and breathing it in can lead to short term conditions such as sinus infections and long-term respiratory problems if exposed over a prolonged period.
- Dust buildup on the road, vehicles and windows can be a nuisance to the local community and general public.

The use hydrocarbon powered engine vehicles on the construction site will produce vehicle emission that contain biproduct of hydrocarbon that can impact air quality and human health. Potential impacts associated with vehicle emissions include:

- Release of greenhouse gases that contribute to climate change.
- Workers exposure to exhaust and breathing it in can have short term impacts such as headaches, dizziness and nausea and can lead to respiratory problems if exposed over a prolonged period.

3.3.2 Management Strategy

3.3.2.1 Dust

Measures to be implemented to minimize dust and maintain air quality include:

- Construction will commence immediately after clearing to minimize the time loose sediment is exposed and the potential for wind erosion.
- A street sweeper or manual sweeping will be used to clear away excess dust from public roads, if needed.
- A water truck will be employed, as required, to dampen work areas and stockpiles to prevent emission of excessive dust from the site.
- Dust control and dust build up on vegetation will be monitored during site inspections.
- If dust build up on vegetation is noted, the water truck with a hose attached will be used to control dust build up on vegetation.

3.3.2.2 Vehicle Emissions

Air quality control measures to minimize or avoid construction phase air quality impacts from emissions shall include:

- Preventative maintenance program to include oil change and oil and air filters replacement where and as needed.

3.4 GROUNDWATER MANAGEMENT PLAN

3.4.1 Potential Impact

Water use during the construction phase will be sourced from Paradise Utilities thus there will be no draw down on groundwater supply. Potential to impact groundwater quality during the construction include:

- Contamination from spills associated with fuel storage and handling.
- Human waste contamination from portable potty spills.
- Trenching for utility installation that might expose groundwater increasing vulnerability to contamination for sources previously mentioned

3.4.2 Management Strategy

To mitigate this risk associated with hydrocarbon contamination, a detailed fuel spill prevention & containment plan is provided in Appendix 4: Emergency Response Plan. This plan includes BMP for:

- Fuel Storage including primary, secondary and tertiary containment measures.
- Fuel handling including where to fuel, how to properly refuel and proper maintenance procedures.
- Spill Response Plan including communication, clean up and reporting protocols.

BMP to address the potential for human waste contamination are addressed in section 3.1.

3.5 BIODIVERSITY MANAGEMENT PLAN

3.5.1 Terrestrial Environment

3.5.1.1 Potential Impact

3.5.1.1.1 Native Vegetation

Impacts to native vegetation and ecosystems in the terrestrial environment will be minimal as the entire site is human altered and has been subject to development for decades. There are several small patches of native palms on the site and approximately seven (7) individuals of the protected species *Swietenia mahagoni* (Mahogany), within the areas proposed for clearing.

Potential impacts include:

- Loss of protected species
- Loss of native species

3.5.1.1.2 Avian Population

While the site is human altered and almost completely devoid of natural native habitats, there is still a significant avian population that utilizes the human altered habitats on the site. However, impacts to the avian population due to construction will be minimal given that the construction will be phased, allowing for some areas to remain undisturbed while other areas are being developed. Additionally, there is an abundance of similar human altered habitats, as well as natural habitats, in the surrounding areas near the site.

3.5.2 Management Strategy

The following activities will be undertaken to mitigate the impacts associated with native vegetation loss:

- All protected species have been tagged for removal and will be incorporated back into the project during landscaping.
- Selective native species have been tagged for removal and will be incorporated back into the project during landscaping.

Landscape Palette:

- Plant selection criteria for landscape palette include:
 - Native species, including protected species.
 - Approximately 60% of the plants will be native species.
 - No invasive species will be permitted on the landscape palette.
 - No banned species will be permitted on the landscape palette (e.g. Citrus sp. from Florida).
- Landscape Palette will be submitted to DEPP for approval prior to finalizing.
- Notwithstanding the removal and relocation of *Swietenia mahagoni* (Mahogany), this species will be included in the landscaping to account for any loss of this species during the transplant process.
- A minimum of fourteen (14) *Swietenia mahagoni* (Mahogany) will be used in the landscaping to fulfill the requirements of 2:1 replacement of protected species should none of the relocated trees survive the transplant process.

Plant Procurement

To safeguard against the introduction of plant pest and disease:

- Local procurement of plants will be a first option.
- When purchasing from outside of The Bahamas, a phytosanitary certificate from the point of origin, certifying that plants are free from pest and disease, will be provided for all imported plants.
- Upon arrival, plants will be inspected by an agricultural officer

3.5.3 Marine Environment

A detailed Marine Environment Management Plan is provided in Appendix 2.

3.6 STAKEHOLDER ENGAGEMENT PLAN

A detailed Stakeholder Engagement Plan is provided in Appendix 3.

3.7 EMERGENCY RESPONSE PLAN

A detailed Emergency Response Plan is provided in Appendix 4.

3.8 HEALTH & SAFETY PLAN

The subcontractor has provided a comprehensive Health & Safety Plan included in Appendix 7.

**HURRICANE HOLE MARINA EMP
APPENDIX 1
METHOD STATEMENTS**

EXCAVATION AND DREDGE METHOD STATEMENT

Title		The Hurricane Hole Marina Excavation and Dredge Method Statements		M.S. No.	01
				Rev:	00
Project:	The Hurricane Hole Marina			Copy No.	
Revision	Date	By	Approved		
00	08/01/2020	B.M.C			
1.0	Scope	10.0	Environment		
2.0	Contract Reference	11.0	Inspection and Testing		
3.0	Specification Reference	12.0	Document Control		
4.0	Method	13.0	Reference To Other Documents		
5.0	Materials	14.0	Drawings / Sketches		
6.0	Plant / Equipment	15.0	Hold Points		
7.0	Storage	16.0	Appendices		
8.0	Personal Protective Equipment (PPE)				
9.0	Personnel				
<u>DISTRIBUTION</u>					
1.	Owner	6.	Surveyor		
2.	Owner's Representative	7.	Board of Representatives		
3.	Project Manager	8.	QA		
4.	Construction Manager	9.	File		
5.	Site Engineer	10.	Testing		
<u>NOTES</u>					

1.0 Project Description & Scope of Works

The intent of this project is restoration of existing Hurricane Hole marina to High Class Super Yacht Marina Development.

The following are the primary scope of works identified in the project documents:

- Construction of the Breakwater with sheet pile cofferdam & concrete cap and slab.
- New Marina Bulkhead with sheet piles and concrete cap.
- Construction of concrete fixed dock and floating docks.
- Excavation of new marina extension and existing marina.

2.0 Contract Reference

Contract Drawings & Contract Technical Specifications

3.0 Specification Requirements

All work is to be completed in accordance with related items within the Specification of the Contract Documents.

4.0 Method

4.1 Pre-commencement

- Coordinate with Sterling Financial (Employer) and CCS(Employer's representative) to confirm level datum and any information necessary for the works.
- Setup project office and material storage yard for the imported material.
- Site shall be cleared as required, and unsuitable material will be disposed of. The Employer's representative should instruct Contractor if certain items are not to be removed.
- Submit environmental, safety and traffic management plans as per the guidelines provided by contract, as well as environmental, safety, waterway traffic and traffic management requirements by local authority (Ministry of Works and Urban Development).
- Other legislative requirements as per the contract documents.

4.2 Construction Compound

The location of the Contractor's temporary construction compound will be as per the drawings and agreed with Employer's representative. The compound will comprise:

- A laydown area for materials
- Temporary office trailer for site office and welfare facilities including toilets (with provision for sealed waste storage and removal). The office will have two rooms, four cubicles and a meeting room for 6 people.
- Workshop and tool trailer
- Parking for cars and construction vehicles
- Area for the excavated suitable material to be used for construction

The construction compound area will be identified by surveyors and clearly pegged. Surface soils will be excavated and set aside for reinstatement on completion of the project. Any existing drainage lines or paths will be diverted around the extent of the compound, if necessary.

Facilities for waste management, refuelling, power, water supply will be provided. All welfare facilities will be provided for the duration of the contract.

Site security will be on site to protect the works from theft or vandalism. Lighting will be used around the compound to assist with the overall security of the facility.

4.3 Temporary navigational lights

The provision of temporary navigational hazard lights demarking the limits of construction is allowed. An inspection system will be developed from Contractor's QA/QC procedures to ensure marina areas are left secure and safe at the end of all shifts. All marine crane barges to be left with in the marina construction area with navigational hazard lights.

4.4 Waterways Traffic Control

4.4.1 Tug boat captain to contact Harbor Patrol at channel 16 during movement of crane barges to the site around Nassau Harbor.

4.4.2 All crane barge to maintain safe distance per harbour patrol at all times during waterway movement.

4.6 Bulkhead & Breakwater Works

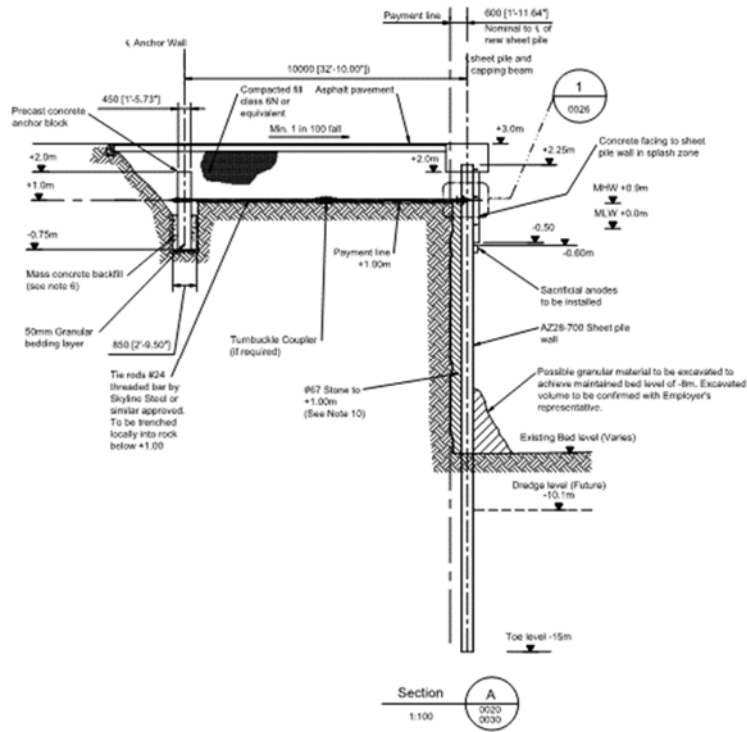
Construction of Bulkhead & breakwater comprises sheet pile wall and fill placement within the sheet pile cofferdam. Works to be completed include:

- Drive the temporary template pile.
- Temporary positioning the sheet pile template at required level.

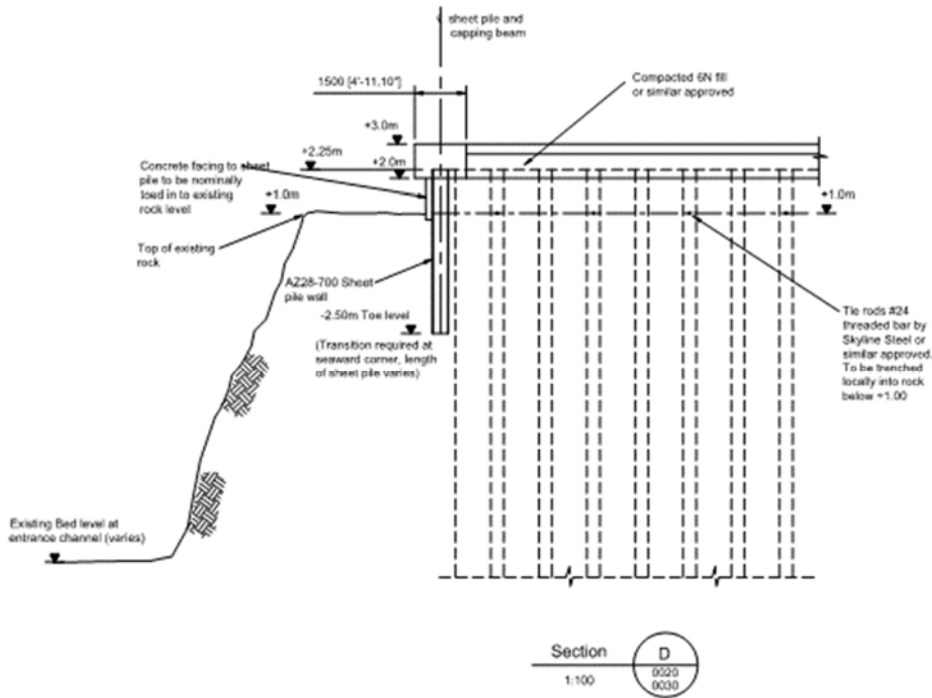
- Pitch the sheet pile into the template.
- Confirm verticality, and adjustments as needed.
- Drive the sheet pile to template level using the vibratory hammer.
- Pitch the next pair into the template and drive the pile and continue until the template is full.
- Remove the sheet pile template and set up next template; continue until all sheet piles for the QW is driven.
- Install the walers, anchor wall and tie-rods. Tension the tie-rods to achieve the correct wall alignment if required.
- Fill the space between the sheet pile walls with granular fill.
- Cast concrete cap and concrete slab post compaction of the fill.

Steel sheet piles will be AZ Sections, by Skyline Steel, and shall be as per sizes specified on the contract drawings. The steel will also meet ASTM standards and meet the required grade. All material will be handled accordingly and with caution and be stored appropriately by knowledgeable personnel. Reference data sheet of AZ Sheet Piles in Appendix B.

Section View:



Elevation View:



4.7 Concrete Works

Concrete works include the sheet pile wall coping and concrete slab for the breakwater. Works to be completed includes:

- Submit the detailed form work for the concrete coping.
- Submit the detailed reinforcement shop drawings for approval.
- Install the false works (50' section) as per the approved form work details necessary for the concrete skirt.
- Install the prefabricated reinforcement as per the approved shop drawings.
- Pressure clean the sheet pile surface before installation of the vertical outside formwork.
- Install the formwork and necessary bracing and ties.
- Place the concrete in 12" layers until required concrete elevation is achieved. Vibrate the concrete using concrete vibrator above water to eliminate the air bubbles.
- Move to next setup until the concrete coping is completed for entire sheet pile wall.
- Place concrete as per approved mix design. Curing compound to be sprayed after finishing of the coping concrete on all exposed surfaces.
- Construction and expansion joints placement to be as per the contract drawings and approved shop drawings.

4.8 Excavation & Dredging Works

Excavation Works excavation of existing marina for marina extension and dredging of existing marina to marina design depths as per plan. This dredge plan is developed considering the following EMP requirements:

- Minimize Turbidity and maintain water quality.
- Turbidity Curtain to be installed around active excavation to minimize adverse impact to the benthic communities adjacent to the project site.
- Turbidity measurements shall be conducted for the duration of excavation daily. Samples will be taken up current of marina basing (500 meters of active works) and compliance samples will be taken down current of the excavation (200 meters of active works) or visible turbidity plume area. Turbidity to be recorded in NTU and contractor will be responsible for assuring the turbidity monitoring in following the proper protocols. The Contractor shall keep daily turbidity monitoring logs and have them available for inspection by any regulatory agency during construction. All excavation will immediately cease if average compliance sample reading exceed average background reading by more than 29 NTU. Work will not recommence until turbidity has returned to an acceptable level.
- Excavation is performed in three stages to maximize control to achieve the above targets.

Stage 1(Refer to attached Exhibit): This stage covers all the inland marina excavation. These works to be started post installation of the sheet piles for the bulkhead and breakwater. This will make this area as inland excavation with marina channel as open area connected to Nassau Harbor. Turbidity curtain to be installed at the marina entrance to mitigate any turbidity to Nassau harbour. Excavation to be carried out using excavator on land or excavator on barge.

Stage 2 (Refer to attached Exhibit): This stage covers all the area west of inland marina basin. These works to be started post installation of the sheet piles for the west marina bulkhead. Turbidity curtain to be installed as per the Stage 2 exhibit. Excavation to be carried out using excavator on barge.

Stage 3 (refer to attached Exhibit): This stage covers all the area East of inland marina basin. These works to be started post installation of the sheet piles for the East marina bulkhead. Turbidity curtain to be installed as per the Stage 3 exhibit. Excavation to be carried out using excavator on barge.

The project will excavate upto 70,000 cubic yards of mostly limestone rock material. Proposed excavated material to be re-used for the fill material within the breakwater Construction and upland project fill material to raise the site to +8.00 or +9.00 (MSL) for insurance purposes.

4.9 Testing and Hand-over

Contractor shall test materials as per the specifications and Employer's requirements. A certified materials facility/ engineer will be utilized (reference Contractor's QMP).

Contractor shall submit results of testing to the Employer's representative within 48hrs after they have become available.

Contractor shall notify Employer's representative of any completed works to be inspected, and submit a request for inspection with 24hr notice.

After successful inspections, all parties shall be notified of approval/ sign-off. Once all necessary inspections have been carried out and works completed to Employer's satisfaction, hand-over process will commence with Employer.

4.10 Management and control of works operations

4.10.1 Supervisory staff

At all times of working, an experienced competent supervisor will be present at each work area on-site. A site engineer/surveyor will control levels and ensure works are being carried out in accordance with the design.

4.10.2 Operations

All equipment to be operated as per Site Safety Procedures.

All marine equipment to be kept within the marked construction area.

Fuel trucks and trained personnel will fuel equipment in the morning and evening during operations at approved locations only.

Hours of work to be as outlined in the Specification. There shall be no work on Sundays or designated Public Holidays unless agreed with the Employer.

5.0 Materials

All material used in the permanent construction should be as per the approved material submittal.

6.0 Plant and Equipment

Earth Works

- 500 Excavators
- 300 Excavator
- Articulate Dump Trucks
- 200 Loaders
- Spud Barge 120'x45'

Sheet Piling with cop beam

- Floating Spud Barge 120'x45' (Company Asset)
- American Crane- 7260 or 5299(Company Asset)
- Drill Rig- to predrill the sheet pile line (Company Asset)
- Hydraulic Vibrator Hammer- ICE 44 (Company Asset)
- Power Pack for above hammer- ICE 580T (Company Asset)
- Sheet Piling Template

- Clamshell Bucket
- Carpenter Barge- 40'x12' with 200HP Engine

Concrete Works

- 55 Ton Mobile Crane
- Carpenter Barge- 40'x12' with 200HP Engine
- Tremie Pipe with concrete bucket
- Forklifts
- Formwork, Shoring & Scaffold
- Concrete Vibrators
- Concrete Pumps
- Small Tool- Concrete vibrator, generator, air-compressor etc

General

- Light Towers
- Generators
- Water Trucks
- GPS Equipment
- Small Tools

7.0 Storage

All storage of evaluated material will be in designated areas as agreed with the Employer and/or Employer's representative.

All storage of unsuitable material will be in designated areas as agreed with the Employer or Employer's representative.

All imported or national material to be stored at the approved safe location.

8.0 Personal Protective Equipment

All personnel shall be provided with appropriate P.P.E., particularly hi-vis clothing, hard hats, and safety footwear; and will be expected to wear them at all times.

9.0 Personnel

- Contractor Representative
- Construction Manager
- Project Engineer

- Site Supervisors/ Superintendents
- Site Surveyor
- Operators, Pile Driver, Deck Hand, Steel fixers, Boat Crew, Divers, Skilled Labour and General Labour
- Road Paving Crew

10.0 Environment

All necessary precautions in accordance with the contract requirements shall be adopted for the successful completion of this item of work. Turbidity Curtain to be installed during Armor stone placement or any other marine works which create turbidity. Turbidity monitoring should be conducted during these works. Upstream (500m from work area) and downstream (500m from work area) turbidity reading should be conducted daily twice the day. Turbidity reading up/s and down/s should be <29NTU. All works should cease immediately if the reading difference is >29NTU.

11.0 Inspection and Testing

Inspection and testing to comply with Contract Specifications and quality control/quality assurance procedures. Reports to be provided as scheduled by Contract or on request from the Employer's Representative.

12 Document Control

The Contractor's appointed Document Controller will be responsible for management of the site document control process. The Document Controller reports to the Project Manager and will have overall responsibility for Document Control.

12.1 Procedures

A designated document control and site records area will be allocated within the site office layout. Incoming correspondence is checked and distributed to the relevant persons. Outgoing correspondence will be documented.

12.2 Progress Monitoring Procedures

The methods and systems to be used in monitoring of the production progress for the works will be in accordance with Contractor Management System and Employer's Contract Requirements.

12.3 Progress Monitoring Schedule

Internal progress monitoring will be performed on a weekly basis in accordance with Contractor's standard procedures. The Project Engineer will be responsible for the collection of data for analysis. The Project Manager will be responsible for analysis of the data and implementing recovery measures if required.

12.4 Progress Monitoring Phases

Five sequential phases to Progress Monitoring will be implemented for the works.

- Phase 1 – Progress Records
- Phase 2 – Progress Updates
- Phase 3 – Progress Analysis & Reports
- Phase 4 – Progress Reviews
- Phase 5 – Post – Review Actions

12.5 Progress Records

The following progress records will be produced for the works.

- Daily site diaries
- Weekly progress sheets
- Labour/ Equipment allocation sheets
- Photographs (with date time references)
- Phasing Diagrams/ Progress Updates

12.6 Progress Reviews

Internal Progress reviews will be held on weekly basis for project, attended by Contractor's key personnel. The objective of the meeting is to confirm current status, identification of critical remaining works and determination of production improvement/ time saving measures.

12.7 Post-Review Actions – Measures to expedite schedule.

The Project Manager will be responsible for implementing the post-review actions. Examples of these measures include the following:

- Changes to the sequence of the works
- Additional working hours
- Additional resources
- Establish production improvement incentives/ targets
- Early warning mechanisms to prevent future slippage

12.8 Monthly Progress Reports

A monthly progress report will be issued by Contractor to Employer as agreed. This will include the following information:

- a) New electronic copy of the schedule to be created in the database each month.

14.6 Other recommended hold points may be advised by the Employer's representative

EXHIBITS

- b) Each monthly update process will start with the entry of actual start/ finish dates, works completed and remaining durations for all activities worked in the month. The resulting schedule to be re-calculated and graphically compared to the approved Contractor Schedule.

A written report identifying major changes to the schedule, identifying problems and remedial actions to be included. Photographs and daily log of labour by subcontract and major equipment also to be included.

13.0 Reference to Other Documents

Environmental Management Plan
Health and Safety Plan (including Hurricane Preparedness)
Quality Management Plan
Risk Assessment
Site Safety Procedures

14.0 Drawings / Sketches

Contract Construction Drawings

15.0 Hold Points

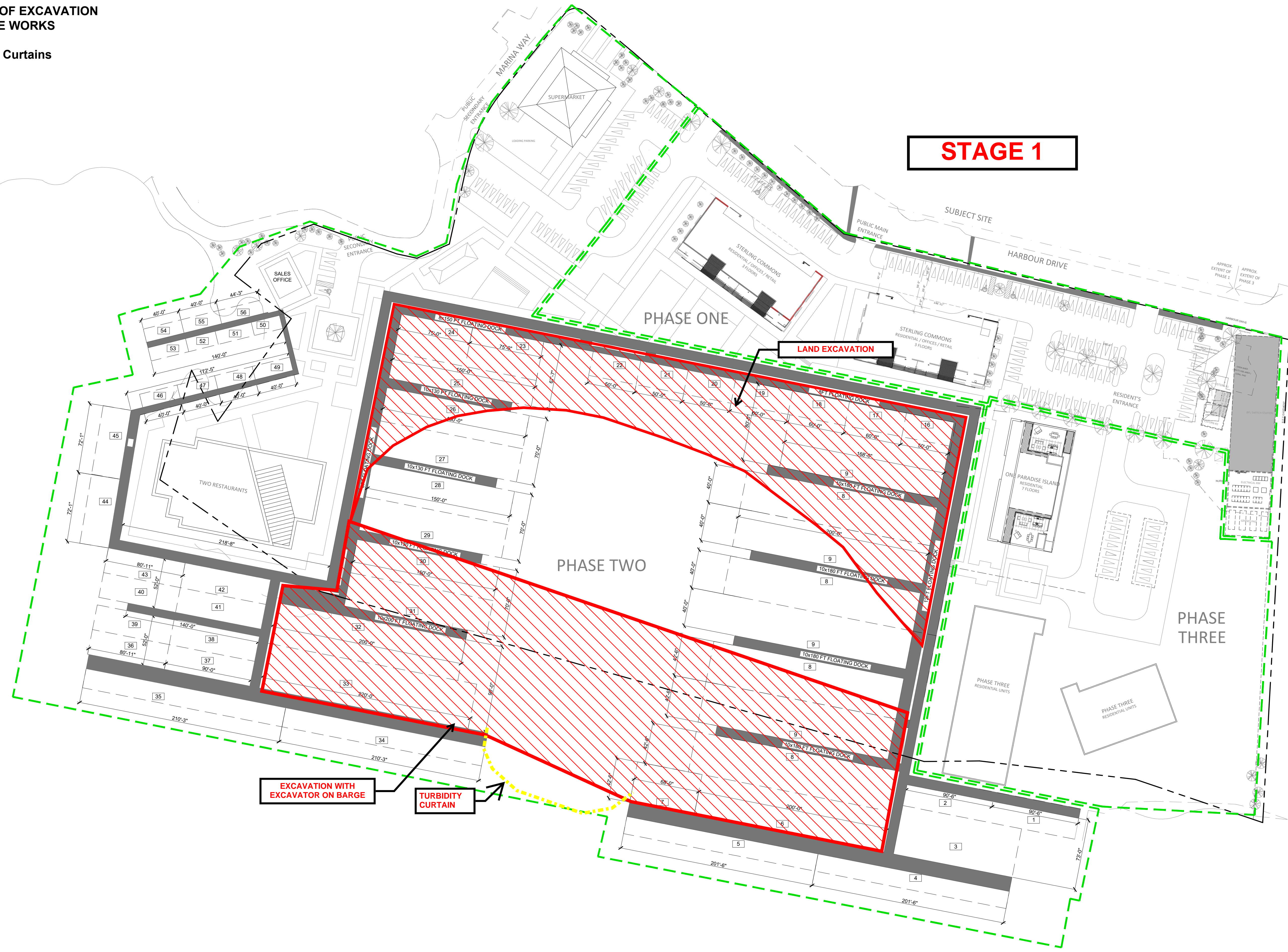
- 14.1 All crane barges to be kept with in the marina construction area.
- 14.2 All navigational hazard lights should be checked daily.
- 14.3 Ensure goal posts and warning signs have been erected in appropriate areas prior to commencement of works.
- 14.3 Check setting out prior to commencement of works.
- 14.4 Evaluation ancillary works prior to installation.
- 14.5 Ensure Turbidity Curtain installed prior to excavation.
- 14.6 Ensure Turbidity reading log maintained daily.
- 14.7 Material testing and inspection at each stage of the works.

STAGE ONE OF EXCAVATION AND DREDGE WORKS

--- Turbidity Curtains



STAGE 1



MASTER PLAN

SCALE: 1" = 50'-0"

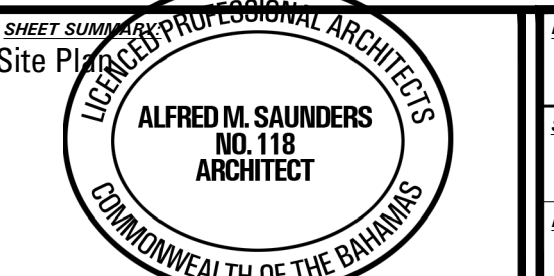


Design Architects:		TURNER FLEISCHER	
REV.	NO.	DESCRIPTION	DATE (dd/mm/yy)
△	1	ISSUED TO THE DOCK COMMITTEE REVIEW ONLY	July 9, 2020

Proposed Project:
Sterling Hurricane Hole Ltd.
 "Marina"
 Harbour Drive - Hurricane Hole
 Paradise Island, The Bahamas

THIS PLAN HAS BEEN PREPARED TO MEET TOP PROFESSIONAL STANDARDS AND PRACTICES. AMS ARCHITECT ASSUMES NO LIABILITY FOR ANY BUILDING CONSTRUCTED FROM THIS PLAN.
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ARCHITECT'S SEAL:

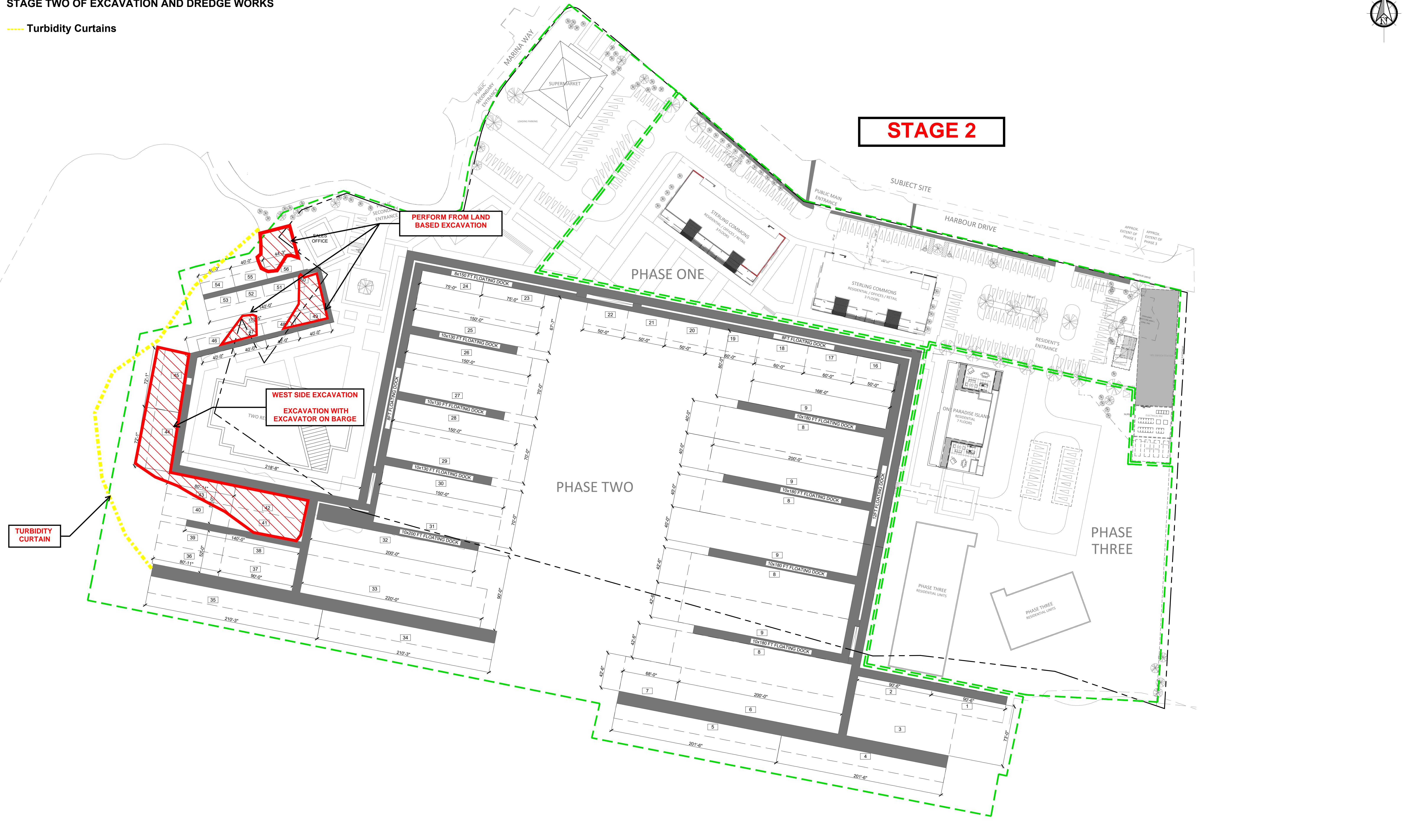


DRAWN BY:	DATE STARTED:	PILOT DATE:
AS	May 22, 2019	July 9, 2020
SCALE:	As Shown	
PROJECT NUMBER:	0512-2018	
SHEET NO.:	A003	

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STAGE TWO OF EXCAVATION AND DREDGE WORKS

--- Turbidity Curtains



MASTER PLAN

SCALE: 1" = 50'-0"



547 BAILLOU HILL ROAD
NASSAU, THE BAHAMAS
P.O. BOX N-4466
TEL (242) 424-0132
asaunders@amsarchitect.com

TURNER
FLEISCHER

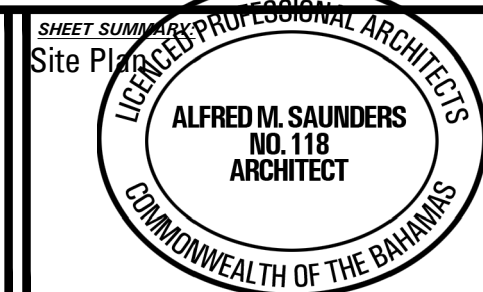
Turner Fleischer Architects Inc.

REV.	NO.	DESCRIPTION	DATE (dd/mm/yy)
△	1	ISSUED TO THE DOCK COMMITTEE REVIEW ONLY	July 8, 2020

Proposed Project:
Sterling Hurricane Hole Ltd.
"Marina"
Harbour Drive - Hurricane Hole
Paradise Island, The Bahamas

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ARCHITECT'S SEAL:



DRAWN BY:	DATE STARTED:	PILOT DATE:
AS	May 22, 2019	July 9, 2020
SCALE:	SHEET NO.:	
As Shown	A003	
PROJECT NUMBER:	0512-2018	

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STAGE THREE OF EXCAVATION AND DREDGE WORKS

--- Turbidity Curtains



STAGE 3



MASTER PLAN

SCALE: 1" = 50'-0"



TURNER FLEISCHER
Turner Fleischer Architects Inc.

REV.	NO.	DESCRIPTION	DATE (dd/mm/yy)
△	1	ISSUED TO THE DOCK COMMITTEE REVIEW ONLY	July 9, 2020

Proposed Project:
Sterling Hurricane Hole Ltd.
"Marina"
Harbour Drive - Hurricane Hole
Paradise Island, The Bahamas

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ARCHITECT'S SEAL:
Site Plans



DRAWN BY:	DATE STARTED:	PILOT DATE:
AS	May 22, 2019	July 9, 2020
SCALE:	As Shown	SHEET NO.:
PROJECT NUMBER:	0512-2018	A003

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Turbidity Curtain Method Statement

Title		Hurricane Hole Marina Method Statements Turbidity Curtain Installation	M.S. No.	02
			Rev:	00
Project:	Hurricane Hole Marina Project		Copy No.	
Revision	Date	By	Approved	
00	17/09/2020	B.M.C		
1.0 Scope		10.0 Environment		
2.0 Contract Reference		11.0 Turbidity Curtain Specification Sheet		
3.0 Specification Reference				
4.0 Method				
5.0 Management and control off operations				
6.0 Plant / Equipment				
7.0 Storage				
8.0 Personal Protective Equipment (PPE)				
9.0 Personnel				
<u>DISTRIBUTION</u>				
1. Owner		6. Surveyor		
2. Owner's Representative		7. Environmental Manager		
3. Project Manager		8. QA		
4. Construction Manager		9. File		
5. Site Engineer		10. Testing		
<u>NOTES</u>				

1.0 Project Description & Scope of Works

The intent of this document is to install turbidity curtains at the Hurricane Hole Marina.

The following are the primary scope of works identified in the project documents:

- Installation off Type II turbidity curtains

2.0 Contract Reference

Contract Drawings & Contract Technical Specifications

3.0 Specification Requirements

All work is to be completed in accordance with related items within the Specification of the Contract Documents.

4.0 Method

4.1 Curtain Installation

- Turbidity curtains will be installed for containment.
- Type II curtains will be used for the duration off the activities. They will be installed to the manufacture's specification (see 11.0).
- Loaders and manual handling will be used to move curtains into place. Anchors have been provided with the curtain assemblages, but additional concrete blocks will be used to anchor curtains to ensure stability.
- Curtains will be in 100ft lengths and 10 ft depths.

4.2 Turbidity Curtain connections will include a slide mechanism to alleviate the need for overlap and use of strings to secure.

4.3 Solar lights will be installed on the curtains to ensure they are visible to boaters at night.

4.4 Once installed the environmental officer will conduct an in-water inspections to ensure that the connections are secure and anchors are they have been installed. The curtains will be inspected daily and include:

- Confirm the curtain skirt has no marine growth, sediment or debris that might cause reduced freeboard.
- Check buoys for damage.
- Confirm that the curtain is maintaining its anchored profile. If the curtain or a portion thereof appears out of place, inspect the anchoring system and placement of the anchors. Adjust and/or repair the anchoring system as required.
- Ensure the turbidity curtain has not moved into shallower water whereby the bottom of the curtain is resting on bottom.
- While inspecting, look for areas where turbid water is escaping into the larger water body.

5.0 Management and control of operations

5.1 Supervisory staff

At all times of working, an experienced competent supervisor will be present at each work area on-site. An environmental manager will ensure the installations are being carried out in accordance with the manufacturing specifications.

6.0 Plant and Equipment

Turbidity Curtains

Concrete Blocks

Loaders

7.0 Storage

All storage of evaluated material will be on the barge.

8.0 Personal Protective Equipment

All personnel shall be provided with appropriate P.P.E., particularly hi-vis clothing, hard hats, safety footwear and life vest; and will always be expected to wear them.

9.0 Personnel

- Project Manager
- Site Engineer
- Environmental Manager
- Environmental Officer
- Site Surveyor
- Operators
- General Workers

10.0 Environment

All necessary precautions in accordance with the contract requirements and Environment Management Plan shall be adopted for the successful completion of this item of work.

11.0 Turbidity Curtain Product Specification Sheet



Triton Type II DOT Silt and Turbidity Barrier



Triton [Type 2](#) DOT Silt Curtains are designed to meet or exceed state DOT requirements for silt and turbidity control in areas with moving water, currents, waves or tides. These barriers surround projects and help to contain materials until they have enough time to settle.



GEI
WORKS

Triton Type II DOT

Silt and Turbidity Barrier

Constructed using robust and reliable components, these barriers actively work to contain silt, turbidity and displaced particles around your site. [Type 2](#) DOT curtains are typically recommended for use in water locations with waves up to two feet (2'), moderate wind, and currents up to 1 knot.

Applications:

- Dredging Projects
- DOT Roadwork and Construction Projects
- Dock Repair, Demolition and Maintenance
- Boat Ramp Creation
- Pile Driving
- Shoreline Construction
- Rip Rap Installation
- Remediation Projects

Accessories are an important component to the installation of any silt curtain or barrier in order to maximize effectiveness.

Turbidity Curtain Accessories:

- Anchor Kits
- Buoys
- Marker Lights
- Tow Bridles

Importance of Anchoring:

Anchoring and anchor kits are one of the most important accessories for sites dealing with moving currents, waves, tides or other site factors. Having the right anchor pattern, installation design and anchors can significantly influence, reduce and redistribute loads placed on your barrier. Contact our technical team (+1 772.646.0597) for more information regarding anchor placement and use.



Triton Type II DOT Silt and Turbidity Barrier



How a [Turbidity Curtain](#) Works:

The main function of a silt screen or turbidity barrier is to control the dispersion of suspended silt and to improve settling times (Stokes Law). During a construction project, silt and other materials often become suspended in the water area. Curtains are placed within the water to create a confined zone of contained materials. Contained areas allow marine contractors to stay within Federal and State Clean Water Act and NPDES Phase II regulations. In turn, this helps sites to avoid fines and allows projects to be completed on time.

Please note, turbidity curtains are designed to act as a temporary area that increases the amount of time solids have to settle back down to the bottom of the area. They will not act as dams or walls.

Product Considerations:

Knowing these elements can help determine the right anchoring strategy, curtain model and deployment method.

Turbidity Curtains and Salt Water

When using the Type II Silt Barrier in salt water areas, consideration should be given to the tension cables and connectors. The following component adjustments are recommended for any location with salt water; Stainless Steel Cable and Zinc Anode Connectors upgrade, Stainless Steel Chain upgrade, or a combined Cable/Chain upgrade.

For short term projects, galvanized components can be used for a period of up to 12 months.

Fabric Considerations

Alternative fabrics are also available for extended deployment in areas with high pH levels, high temperatures, low temperatures or in areas where chemicals are present.

When should I use a Permeable Silt Curtain?

Permeable Type II Silt Barriers are most commonly used when they are either specified in a site project or when the curtain will be dealing with a significant amount of water pressure. Use of the bottom filter panel can help reduce pressure on the curtain by allowing water to continue to the flow through the curtain.

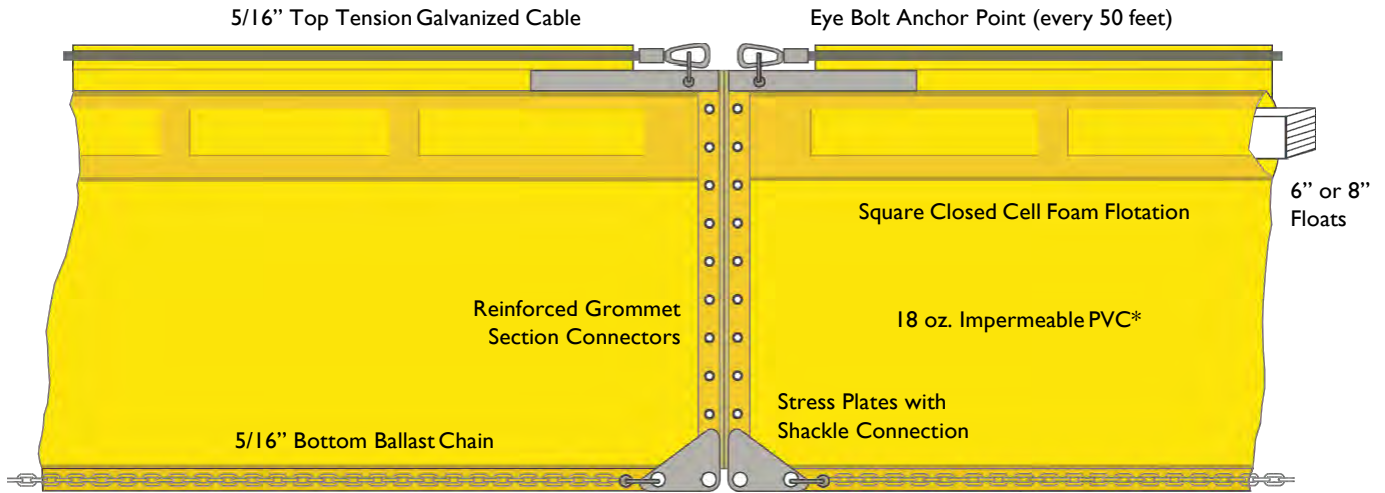
Water Conditions, Factors and Considerations

Consideration of site and water conditions is an important step for any location looking to control silt in a moving water body. Due to the current and waves in these areas, additional pressure is placed on the barrier during use. In order to accommodate and contain silt in these conditions, it is important to consider the following:

- Water Velocity
- Waves (height, frequency)
- Wind Speed and Direction
- Tides
- Soil Type (contaminated?)
- Project Duration

Triton Type II DOT

Silt and Turbidity Barrier



SPECIFICATIONS

Length	50' or 100'
Depth	5' (3' - 20' Available on Request)
Fabric	18 oz. PVC
Flotation	Square Foam Filled Flotation
Flotation Size	6" or 8"
Tension Cable	5/16" Tension Cable Below Float
Bottom Ballast Chain	5/16" Galvanized Chain
Section Connectors	Grommets, Top & Bottom Stress Plates
Color	Yellow
Anchor Points	Every 50'

GEI Works is dedicated to developing innovative turbidity curtain solutions that provide superior performance and achieve the desired results for our customers. We work closely with our client team to design a deployment layout that takes into consideration all of your project requirements including water conditions, project progress, budget and water quality goals.

Our goal is to work with our clients to develop the best solution for their specific project and help them come in under budget and on time.

*22 oz. PVC available upon request to meet your state's requirement.

For more complete information on GEI Works products and solutions, visit us on the Web at www.geiworks.com.

Phone: (1+) 772-646-0597 | info@geiworks.com

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Materials and specifications are subject to change without notice. Featured products in photos may include additional equipment or accessories.

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DEMOLITION METHOD STATEMENT

Title		HURRICANE HOLE MARINA OFFICE BUILDING DEMOLITION - METHOD STATEMENT		M.S. No.	01
				Rev:	00
Project:	HURRICANE HOLE MARINA			Copy No.	01
Revision	Date	By	Approved		
00	09/16/2020	BMC			
1.0 Introduction/ Project Scope 2.0 Contract Reference 3.0 Location Plan 4.0 Traffic Management 5.0 Pre-commencement 6.0 Management & Control of Work Operations 7.0 Personnel 8.0 Personal Protective Equipment (PPE) 9.0 Plant and Equipment 10.0 Contractor's Compound and Staging Area			11.0 Method of Works 12.0 Environmental Considerations 13.0 Document Control 14.0 Hold Points		
<u>DISTRIBUTION</u>					
1. Owner 2. Owner's Representative 3. Contractor Representative 4. Project Manager 5. Demolition Site Manager					
<u>NOTES</u>					

1. Introduction - Project Description & Scope of Works

The intent of this project is to demolish and remove the existing building at the Hurricane Hole Marina on Paradise Island (reference Section 3. Location drawing). The building is made of concrete walls and conventional wooden shingle roofing.

Overview of Works

Works will include:

- Fence and screen installation around the site.
- Installation of relevant Safety Signage.
- Inspection of building to be carried out prior to commencement of works.
- Remove any deleterious materials.
- Demolish building (ref. Section 11 – Method of Works)
- Clear area of all equipment, and leave in a safe and tidy condition.

2. Contract Reference

Contract Drawings/ Location plan.

3. Location



Figure 1: Location of building

4. Traffic Management

Due to the locality of the structure in relation to the harbour and boat activities, the building will be carefully demolished under strictly controlled conditions. The building is set back 400ft from the main vehicular and boating thoroughfares and the entrances will be blocked off during demolition exercises. It is within an active construction site and there will be limited access to the area and only construction related traffic will be allowed. The importance of dust, noise and vibration control is also noted due to the risks. Hours of work will be coordinated with the Employer's representative and local authority. Relevant signage will be displayed at key locations, to inform the public of activities and restrictions.

5. Pre-commencement

- Submit required documents to The Ministry of Public Works for demolition permit approval.
- Inspect the building to assess the structural integrity, and review the works to be performed.
- Arrange with BPL/ BTC/ Cable Bahamas/ WSC to disconnect services to building.
- Service disconnections, diversions, systems drained and pipe works purged and certified safe.
- Secure the site to be demolished.

6. Management and control of works operations

Supervisory staff

At all times of working, an experienced competent supervisor will be present at each work area on-site.

Operations

All equipment to be operated as per Site Safety Procedures.

Fuel trucks and trained personnel will fuel equipment in the morning and/or evening during operations at approved locations only.

Hours of work to be agreed with Employer. There shall be no work on Sundays or designated Public Holidays unless agreed with the Employer.

7. Key Personnel

- Contractor Representative
- Project Manager
- Demolition Site Manager and/ or Site Supervisor
- Plant Operatives
- Demolition Operatives

8. Personal Protective Equipment

All personnel shall be provided with appropriate P.P.E., particularly hi-vis clothing, hard hats, and safety footwear; and will be expected to wear them at all times.

9. Plant and Equipment

- 340 - 500 Excavator
- Trucks
- Forklift
- Crane
- Heavy duty hydraulic breaker
- Lowboy with flatbed (to remove steel)
- Hand tools
- Cleaning tools

10. Contractor's Compound and Laydown Area

The location of the Contractor's temporary compound and laydown area has been identified in the EMP.

11. METHOD

11.1 Site Establishment

All visitors to our site will be required to follow Hurricane Hole's security procedures. They will be inducted into the activities being carried out that day and at all times whilst they are on site they will wear the required PPE and they will also be escorted by a member of the Contractor's staff.

There will be no stockpiling of material as the building is stripped and demolished materials will be removed in bins and dump trucks. The demolition method will employ collapsing the building internally to minimize dust exposure.

Materials that are to be removed by the internal soft strip will include doors, door frames, fixed and non-fixed furniture, floor coverings, signage and other non-structural materials.

Operatives will strip out all doors, frames, windows, timber of any description, (not appertaining to roof or main structure) toilets, pipe work, ducting, electrical items and any debris.

Where possible the materials will be loaded by hand method into dump trucks and removed from the site.

At no time shall operatives gain access to partially demolished or unsafe buildings to recover soft stripped materials, these materials will be removed by mechanical means and when safe to do so by hand method.

All waste materials will be transported from the site where it will be taken to the New Providence Ecological Park (NPEP).

11.2 Hard Demolition of Building

The building being demolished is a concrete structure.

To prevent a collapse of the floor during mechanical demolitions, any voids that are identified will be backfilled leveled with the existing ground level.

The building will be soft stripped as described above, prior to demolition.

Where dust will be an issue, a water truck will be on standby to reduce dust exposure.

Concrete walls/ columns will be knocked inwardly to contain the debris within the building footprint as best as possible.

All debris will be removed from the site in suitable dump trucks that will be transported from the site for disposal to a government approved landfill/ dump site.

11.3 Excavation of Floor Slabs and Foundations and the Crushing of All Demolition Rubble

Prior to removing any ground slabs or foundations the entire area will be checked in conjunction with site services plans for 'live' services.

Concrete floor slabs will be broken up using heavy duty hydraulic breakers.

All crushed arisings will be hauled to NPEP.

12. Environmental Considerations

All necessary precautions in accordance with the contract requirements shall be adopted for the successful completion of this item of work. All materials removed from the site will be accounted for with an authorized receipt from the NPEP. All trucks and dumpsters leaving the site will be covered with tarpaulin.

Environmental incidents / complaints will be reported immediately to the relevant organizations and the appropriate measures to deal with any such incident will be implemented. All operations will be carried out in accordance with Department of Environmental Health Services disposal requirements.

13. Document Control

The Contractor's appointed Document Controller will be responsible for management of the site document control process. The Document Controller reports to the Project Manager and will have overall responsibility for Document Control.

14. Hold Points

- All equipment to be kept within the construction/ designated area.
- All traffic management barriers should be checked daily.
- Ensure goal posts and warning signs have been erected in appropriate areas prior to commencement of works.
- Check setting out prior to commencement of works.
- Other recommended hold points may be advised by the Employer's representative.

15. Hold Points

- All equipment to be kept within the construction/ designated area.
- All traffic management barriers should be checked daily.
- Ensure goal posts and warning signs have been erected in appropriate areas prior to commencement of works.
- Check setting out prior to commencement of works.
- Other recommended hold points may be advised by the Employer's representative.

**HURRICANE HOLE MARINA EMP
APPENDIX 2
MARINE ENVIRONMENT MANGAGEMENT
PLAN**



MARINE ENVIRONMENT MANAGEMENT PLAN



HURRICANE HOLE MARINA PROJECT

Prepared for:
Sterling Hurricane Hole Ltd.

Prepared By:
Design Elements Ltd.

Date:
18 September 2020

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Appendix 1: Final Technical Marina Design

Appendix 2: Turbidity Monitoring Log Template

Appendix 3: Marina Construction Schedule

Appendix 4: Coral Relocation Plan

1. Introduction

Marine resources are considered precious in The Bahamas as it supports two of the country's major industries - Tourism and Fisheries. Bahamian Fisheries regulations are aimed at an integrated management of the fishery resources, coastal zone and the marine environment for the wellbeing of the Bahamian Environment.

Potential impacts to the marine environment as a result of construction activities have been identified and specific plans and best management practices (BMP) to mitigate impacts are addressed in this plan and other sections of the Environmental Management Plan document.

2. Purpose

The purpose of this plan is to ensure that potential impacts to marine environment during construction are addressed. Specifically, this plan aims to:

- Preserve marine life habitats
- Prevent unintentional and intentional harm to the marine environment and marine organisms

3. Applicable Legislation

The following national legislations relevant to the physical and natural environment apply to marine environment management:

- The Bahamas National Trust Act (Amended 2010)
- Fisheries Resources (Jurisdiction and Conservation) Act
- Fisheries Resources (Jurisdiction and Conservation) Regulations
- Shark Fishing Amendment
- Marine Mammal Protection Act
- Marine Mammal Protection (General) Regulations
- Nassau Grouper Amendment – official closed season dates
- Department of Environmental Planning & Protection Bill (2019)

4. Priority Construction Activities & Potential Impacts

Potential Impacts associated with marine life management include:

Turbidity

- Sedimentation runoff from land clearing and material stockpile
- Turbidity from dredging and pile driving for dock installation

Harm to marina organisms

- Damage to marine life during dredging and pile driving for dock
- Intentional molestation and harm to marine life such as sharks

Fuel Storage and handling

- Hydrocarbon spills from storage and handling for construction equipment and vessels
- Hazardous waste contamination

A detailed plan to address impacts associated with fuel storage and handling is included in Hurricane Hole Marina EMP Appendix 4 Emergency Response Plan - Plan Fuel Spill Prevention & Control Plan.

Waste storage

- Spills from portable potty
- Improper waste storage resulting in debris such as plastic being blown into ocean

A detailed plan to address impacts associated with waste storage is included in Hurricane Hole Marina EMP, Section 3.1 Waste Management Plan.

Hurricanes conditions

Hurricanes and periods of heavy rains can increase the potential of:

- Runoff from material stockpile
- Spills from hydrocarbon storage that can reach the sea with flooding

A detailed plan to address impacts associated with hurricanes and heavy rains is included in Hurricane Hole Marina EMP, Appendix 4 Emergency Response Plan - Hurricane Preparedness Plan.

5. Management Techniques

The following are management techniques to address turbidity and harm to marine organisms during dredging and dock pile installation.

5.1 Method Statement

Works will be conducted according to specific method statements outlining how tasks are to be completed in accordance with details outlined in this plan (See Hurricane Hole Marina EMP Appendix 1: Method Statements).

5.2 Training

Site Induction:

Potential impacts associated with marine environment management will be included in the site induction training to be administered to all personnel on site before commencement of any works.

Toolbox Talks:

Toolbox talks outlining the works methodology will be administered before the execution of tasks to ensure that all personnel involved understand the potential impacts and how works are to be executed to avoid or minimize identified impacts.

5.3 Turbidity Control Plan

The redesign of the marina basin (see Appendix 1: Final Technical Marina Design) will require dredging which will break up consolidated sediments along the marina wall and displace seabed sediments resulting in turbidity.

Turbidity is a measure of the degree to which water loses its transparency due to the presence

of suspended particulates. The more total suspended solids in the water, the higher the turbidity. Waterborne sediment not only affect water clarity but can also collect on marine flora and fauna resulting in suffocation and eventual death of organisms. Turbidity control will be managing in three ways: 1. Control of the amount of turbidity from the source (source control), 2. containment of sediment released and 3. monitoring of sediment levels.

Control:

- The first effort will be to limit the amount of turbidity generated due to the activity.
- Every effort should be made to conduct works during favorable weather conditions.
- The Contractor should monitor weather conditions and the turbidity generating activity should temporarily cease if weather conditions are unfavorable; resulting in turbidity levels that are at or near the established threshold (see monitoring section for threshold details).

Containment:

- Turbidity generated by construction activities should be contained by the installation of turbidity curtains.
- A turbidity curtain is a floating sediment control barrier that is installed in water bodies to contain suspended sediments associated with construction activities. The curtain is a flexible material that extends downward from the water surface and is maintained in a vertical position by floatation material at the top and an anchoring mechanism at the bottom. Turbidity curtains control sediment through settlement. The curtain acts as a containment barrier for suspended sediment and allows particles to settle (see figure 1 sample turbidity curtain detail).
- Turbidity curtains will be deployed prior to dredging activities.
- Type II turbidity curtains will be used for the project dredging and dock pile driving works.

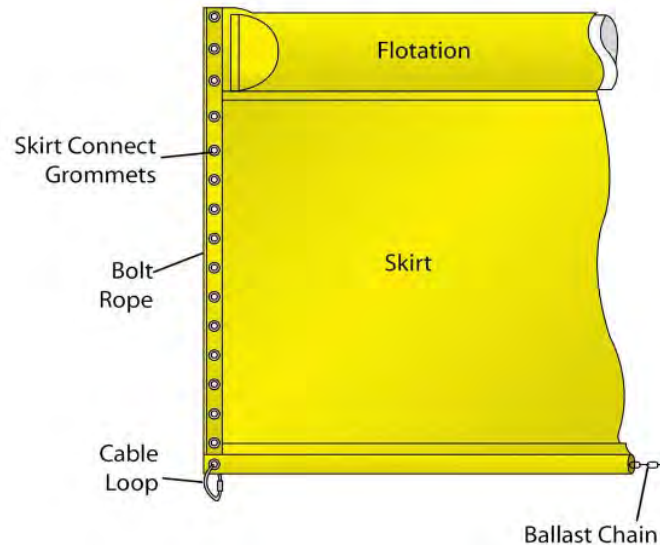


Figure 1: Sample Turbidity Curtain Detail

- The locations for the turbidity curtains placement have been included in the Hurricane Hole Marina EMP Appendix 1: Method Statement for dredge / excavation.
- The Contractor has provided a method statement for the installation of the turbidity curtains in the Hurricane Hole Marina EMP Appendix 1: Method Statement.

Turbidity Curtain installation steps should include the following:

1. Lay out sections of turbidity curtains on land.
2. Connect sections until the required length is achieved.
3. Sections should be securely connected in accordance with the manufacture’s recommendations for the brand.
4. The assembled curtain should be towed to the desired location and set in place according to the placement outlined in the approved construction method statement.
5. Anchor the curtain as per the manufacturer’s specifications for the product.
6. Release the panels when the turbidity curtain is in the desired position and anchored.

Protocol for Inspection of Turbidity Curtains:

- Turbidity curtains will be inspected after installation and daily before the start of works to ensure that there are no breaches in the connection points that would allow sediments to escape.
- The Environmental Manager (EM) will conduct visual inspections of the turbidity curtain from a boat moving along the path of the turbidity curtain.
- In water inspections will be conducted by the Contractor's Environmental dive team swimming along the path of the turbidity curtain.
- If damage or weak points are noted, repairs will be made as needed prior to commencement of works.
- Divers will be equipped with underwater cameras to capture any breaches observed and will share image with the construction and environmental management team to discuss repair needs.
- If there is a breach in the curtain during the execution of works, activities will be stopped immediately, repairs will be made and works recommenced after a turbidity reading below the prescribed threshold is achieved.

Turbidity Monitoring Protocol:

- Turbidity is measured in NTU: Nephelometric Turbidity Units.
- The instrument used for measuring Turbidity is called nephelometer or turbidimeter.
- Baseline turbidity levels at the site will be taking prior to the start of works.
- The turbidity baseline of 1 NTU and the maximum of 29 NTU established by DEPP will be adhered to.
- Turbidity monitoring readings should be taken every 3 hours for a 12 hr. workday.
- The EM shall oversee dredge operations and request additional monitoring reading based on visual observation of turbidity levels during execution of works.
- Turbidity readings will be undertaken by the Contractor and witnessed by the EM.
- Measurements should be conducted during the active working operations.

- Monitoring should be conducted for the duration of the turbidity generating activity.
- If test results are near prescribed levels, operations/ methodology will be modified as needed.
- If test results exceed prescribed levels, dredging will temporarily cease until turbidity has settled and a turbidity reading is taken that indicates levels are below the prescribed threshold.
- Works methodology should also be adjusted in response to excess turbidity e.g work should cease during periods of intense wave activity contributing to excess turbidity.

Turbidity measurement protocols

- The turbidity meter should be calibrated at the beginning of each sampling session.
- Samples should be taken at the densest part of the turbidity plume.
- Samples should be taken two feet from the surface of the water.
- Daily monitoring logs should be kept (See Appendix 2: Turbidity Monitoring Report template).
- Turbidity monitoring shall be included in the bi-monthly environmental report submitted to Department of Environmental Planning & Protection (DEPP) by the EM.

Removal of Turbidity curtain:

- Installation of turbidity curtains for prolonged periods can result in stagnant waters enclosed in the curtain.
- All sediments within the turbidity enclosure should be allowed to settle out before removal of turbidity curtain.

5.4 Protection of Marine Organism

5.4.1 Corals and Urchins

Corals and other reef building epifauna have been identified in waters within the area of impact

for dredging. A detailed coral relocation plan is included in Appendix 4 and addresses mitigation for reef building corals and urchins in the area of impact for dredging.

5.4.2 Marine Organisms

While the various benthic assessments conducted for the project did not record any marine mammals or turtles, there are anecdotal accounts of Manatees and Dolphins observed in the basin and waters surrounding the site and turtles have been observed on occasion in the area.

5.4.2.1 Potential Impacts

Potential impacts to marine organisms as a result of the works include:

- Animals crossing the turbidity barrier and entering the work zone into the area of impact can sustain damage or death by dredging equipment.
- Animals may become entangled in ropes connecting turbidity curtain sections and sustain injury or death.

The following practices will be implemented to mitigate the potential for harm to marine organisms during dredging:

- The benthic area inside the turbidity curtain will be inspected at the start of each workday for the presence of marine organism that may have entered the work zone overnight.
 - If a marine organism is present in the work zone, the EM will be notified, and a section of the turbidity curtain will be opened to allow the animal to safely leave the area. The turbidity curtain connection will be reestablished, and work will be allowed to commence after all outer daily safety inspections and check are completed.
- A spotter will be assigned during dredging as a look out to identify marine organism in or near the area of impact.
 - If an animal is sighted works shall cease immediately, The EM will be notified, and works will remain suspended until the animals have left the area of impact at which

time works can recommence.

- If at any point a marine animal is found to be entangled or otherwise impaired by the presence of the turbidity curtain, all activities will cease immediately, and the EM will be notified.
 - The EM will contact DEPP and Department of Marine Resources (DMR) immediately and log the incident into the BESTPROTECT242 APP.
 - The EM will assess the scenario and determine the best course of action to assist the animal based on consultation with DMR and DEPP.
 - Efforts to assist the animal may involve contractors and resources present on site.
 - When the animal has been released, the turbidity curtain will be inspected for damage, and repairs or replacement made prior to recommencement of works.
 - The EM will provide a detailed incident report to DEPP and DMR within 48 hours of the incident outlining the details and actions taken to address the matter.
 - Repeat occurrence of animals entering the work zone or becoming trapped will be investigated to identify the root cause and actions to prevent reoccurrences.
- The possible presence of marine organisms in work zones will be included in the site induction.
- Protocol for marine organism sightings will be administered as a toolbox talk prior to commencement of dredging works.
- Signage will be installed indicating the possible presence of marine organisms in the work zone.

5.4.3 Sharks

There is a general fear of sharks by many Bahamians and the common response to seeing one near shore is to kill or harm it. Management techniques to address this concern include:

- Workers will be educated on the protection of sharks and advised that killing or harming them is strictly forbidden.
- Signage will be installed as a reinforcement (see Figure 2 below).

Sharks are Protected by Law



It is illegal to fish or possess a shark or any part of a shark in The Bahamas

No person shall sell any shark, shark parts or shark products within The Bahamas

Export or import of shark, shark parts or shark products is prohibited

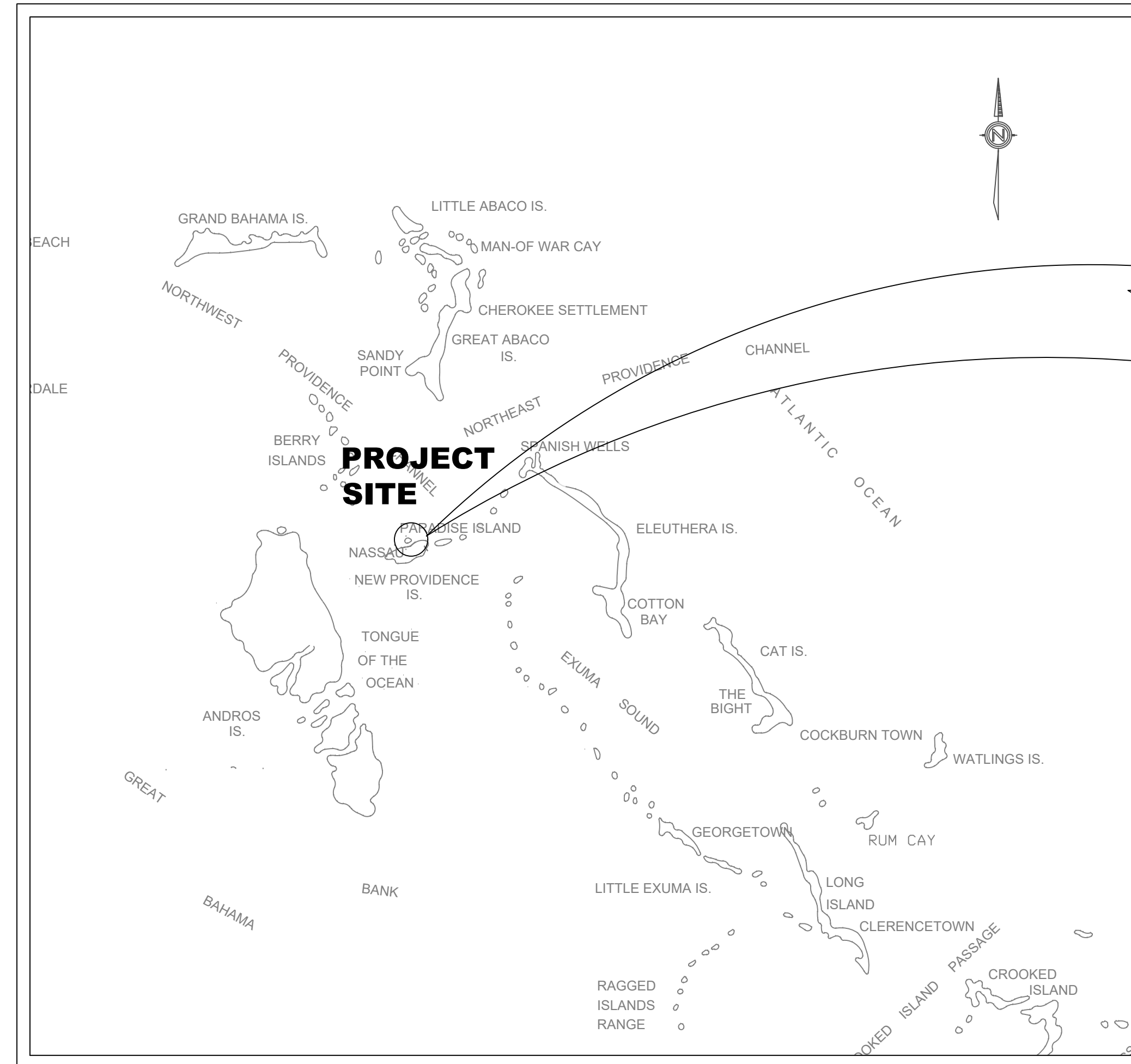


IF YOU UNINTENTIONALLY HOOK A SHARK IT MUST BE RELEASED

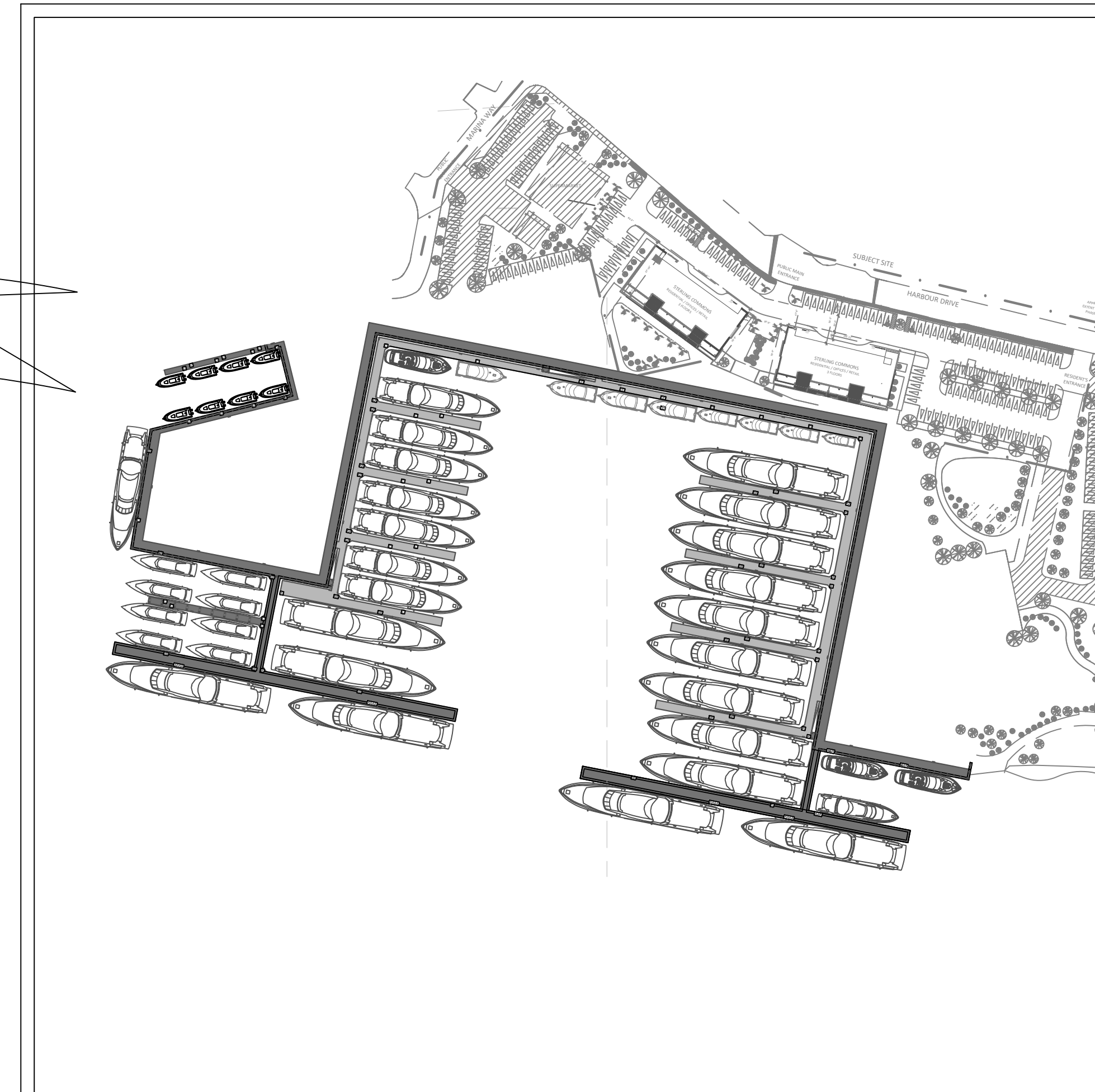
Figure 2: Construction signage on Shark protection

APPENDIX 1
FINAL MARINA TECHNICAL DRAWINGS

HURRICANE HOLE MARINA, PARADISE ISLAND, THE BAHAMAS



LOCATION MAP



**HURRICANE HOLE
MARINA**

PREPARED BY:



UNIT 2, SHOPPES OF CABLE BEACH,
WEST BAY ST.
NASSAU, THE BAHAMAS
p 242-327-5348 f 242-327-4981
email. info@caribbeancoastal.com
website. www.caribbeancoastal.com

DESIGN CRITERIA

DESIGN IS PERFORMED IN ACCORDANCE WITH THE BAHAMAS BUILDING CODE 2003, THE AMERICAN SOCIETY OF CIVIL ENGINEERS - ASCE 7-10/ASCE - ENGINEERING PRACTICE NO. 50, AND OTHER SPECIFIC CODES AS SET FORTH BELOW.

DESIGN LOADS

SOIL UNIT WT.	125 PCF
SURCHARGE LOAD (BULKHEAD WALLS ONLY)	200 PSF
SURCHARGE LOAD DOCK STRUCTURES (ALL PIERS)	100 PSF
DESIGN WIND SPEED (VESSELS & PIERS)	75 MPH

GENERAL NOTES:

- THE FOLLOWING SPECIFICATIONS ARE TO SERVE AS AN OUTLINE OF MINIMUM MATERIAL REQUIREMENTS AND THEIR APPLICATION. MANUFACTURER'S SPECIFICATIONS AND BUILDING CODE REQUIREMENTS ARE TO GOVERN WHERE SHOWN TO EXCEED THE REQUIREMENTS SPECIFIED HEREIN. THE CONTRACTOR IS RESPONSIBLE FOR THE REVIEW AND SUBMISSION OF ALL SHOP DRAWINGS AND IS OBLIGATED TO REPORT ANY DOCUMENT DISCREPANCIES TO THE EOR PRIOR TO FABRICATION AND ERECTION OF RELATED ELEMENTS.
- THESE DRAWINGS REPRESENT STRUCTURAL COMPONENTS IN THEIR FINISHED STATE AND ARE MEANT TO SERVE AS A GRAPHICAL GUIDE TO THEIR INSTALLATION. THE GENERAL CONTRACTOR OR SUBCONTRACTOR CHARGED WITH DOING THE WORK IS RESPONSIBLE FOR THE EXECUTION OF ADEQUATE CONSTRUCTION PROCEDURES, METHODS, SAFETY PRECAUTIONS OR MECHANICAL REQUIREMENTS UTILIZED IN THE ASSEMBLY OF THE AFOREMENTIONED COMPONENTS.
- USE OF THIS CONSTRUCTION DOCUMENT IS RESTRICTED TO THIS PROJECT ONLY. CCS ACCEPTS NO RESPONSIBILITY FOR DAMAGES RESULTING FROM UNAUTHORIZED APPLICATION OF THIS DOCUMENT ON ANY PROJECT OTHER THAN THAT FOR WHICH IT WAS PREPARED.
- ALL DRAWINGS SHALL BE THOROUGHLY REVIEWED BY THE CONTRACTOR. ANY CONDITIONS THAT REQUIRE CHANGES FROM THE DRAWINGS SHALL BE COMMUNICATED TO CCS FOR APPROVAL PRIOR TO BIDDING AND ALL COSTS OF THOSE CHANGES MUST BE INCLUDED IN THE BID PRICE.
- REUSE OF SALVAGED MATERIALS IS NOT PERMITTED. DEFICIENT WORK SHALL BE REPLACED OR REPAIRED, AS DETERMINED BY THE ENGINEER.
- IMMEDIATELY UPON MOBILIZATION TO SITE THE CONTRACTOR SHALL VERIFY ALL EXISTING SHORELINE DIMENSIONS AND CONFIGURATION TO ENSURE COMPLIANCE WITH THE INTENDED DESIGN. THE CONTRACTOR SHALL NOTIFY CCS IMMEDIATELY OF ANY DISCREPANCIES.
- CONTRACTOR SHALL EXECUTE WORKS WITH MINIMAL DISRUPTION TO EXISTING VEGETATION. UPON COMPLETION OF WORKS, CONTRACTOR SHALL MAKE GOOD ALL WORK AREAS.
- CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE BORE HOLE LOGS AVAILABLE FOR THE SITE. NO ADDITIONAL FEES OR CHARGES SHALL BE LEVIED AS A RESULT OF EXISTING CONDITIONS.
- NEW DOCK STRUCTURES AND CONCRETE RAMPS SHALL NOT BE USED TO STORE OR OFF LOAD MATERIALS DURING CONSTRUCTION.
- DEBRIS FROM DEMOLITION TO BE REMOVED FROM MARINA AREA AND STOCKPILED AT THE DESIGNATED LOCATION ON ISLAND. ALL PILES TO BE REMOVED SHALL BE REMOVED COMPLETELY. CUTTING OF PILES IS NOT PERMITTED.
- CONTRACTOR SHALL COORDINATE PILE DRIVING SCHEDULE SO AS NOT TO INTERFERE WITH OR BE DETRIMENTAL TO ANY CONCRETE PLACING OPERATIONS.
- THE CONTRACTOR SHALL INSTALL AND CONNECT TIE RODS PRIOR TO BACKFILLING THE BULKHEAD. BULKHEAD BACKFILL SHALL BE DONE USING WELL GRADED GRANULAR FILL NOT GREATER THAN 3"Ø. FILL SHALL BE COMPACTED TO 98% SPD IN 12" LIFTS.
- EXCAVATION AS MAY BE NEEDED TO EXECUTE THE WORKS CONTAINED HEREIN SHALL BE PERFORMED USING SUITABLE METHODS TO PROVIDE STRAIGHT SMOOTH VERTICAL CUTS. METHODS USED SHALL LEAVE THE ROCK TO REMAIN IN SOUND CONDITION.
- ALL DOCK ELEVATIONS IS REFERENCE TO THE MEAN SEA LEVEL (MSL).

CONCRETE

- ALL CONCRETE WORK SHALL CONFORM TO ACI 318-95/ 318R-95 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY." IN CONJUNCTION WITH ACI 301-99 "SPECIFICATIONS FOR STRUCTURAL CONCRETE"
- PORTLAND CEMENT SHALL CONFORM TO ASTM C150 TYPE I. WATER/CEMENT RATIO = 0.45 MAX. MINIMUM COURSE AGGREGATE SIZE TO BE 3/8" SLUMP = 3" +/- 1" THE CONTRACTOR SHALL FURNISH MIX DESIGN TO EOR PRIOR TO PROCEEDING
- MINIMUM CONCRETE STRENGTH IN PSI SHALL BE AS FOLLOWS :

28 DAY STRENGTH IN WALLS & BULKHEADS	4500
28 DAY STRENGTH IN ALL CAP BEAMS	4500
28 DAY STRENGTH IN PRECAST DECK PANELS	5000
28 DAY STRENGTH IN ALL OTHER ELEMENTS	4500
28 DAY STRENGTH IN CEMENTITIOUS UNDERWATER HIGH STRENGTH GROUT	8500
- PROTECTIVE CONCRETE COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS (UNLESS NOTED OTHERWISE):

ALL CONCRETE ELEMENTS (UNLESS NOTED ON PLANS)	3"
---	----
- NO CONCRETE ADMIXTURES SHALL BE USED UNLESS APPROVED BY STRUCTURAL ENGINEER.
- FOOTINGS ARE DESIGNED TO BEAR ON SOIL WITH MIN. 2500 P.S.F. ALLOWABLE BEARING PRESSURE. THE STRUCTURAL ENGINEER SHOULD BE NOTIFIED IMMEDIATELY UPON ENCOUNTERING QUESTIONABLE SOIL.
- EXCAVATIONS FOR FOOTINGS SHALL BE NEAT AND FREE FROM TRASH AND DELETERIOUS MATERIAL
- FOOTINGS, BEAMS AND WALLS SHALL BE INSPECTED BY STRUCTURAL ENGINEER PRIOR TO POURING CONCRETE. **A MINIMUM NOTICE OF 4 DAYS IS REQUIRED.**
- DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO "ACI 315-90" ACI DETAILING MANUAL - 1990.
- REINFORCEMENT SHALL BE AS FOLLOWS:

REINFORCING BARS # 4 AND LARGER TO CONFORM TO ASTM A-615 GRADE 60(60,000 PSI YIELD)	#3 BARS TO CONFORM TO ASTM A-615 GRADE 40(40,000 PSI YIELD)
---	---
- ALL REINFORCING STEEL DESIGNATED AS "CONTINUOUS" SHALL BE LAPPED AS FOLLOWS:

#5 OR SMALLER	- 30"
#6	- 36"
#7	- 42"
#8	- 48"

WALL AND COLUMN STARTER BARS SHALL COMPLY WITH THE ABOVE. SPLICING OR LAPPING OF REINFORCEMENT STEEL WITHIN COLUMNS AND BEAMS IS STRICTLY PROHIBITED WITHOUT PRIOR CONSENT FROM THE EOR

LAPS AT CORNERS AND INTERSECTIONS SHOULD BE MADE WITH A STANDARD 90° BEND.
- BOTTOM BARS TO BE LAPPED AT SUPPORTS, TOP BARS TO BE LAPPED AT CENTER SPAN.
- ALL RETAINING WALLS AND BULKHEADS SHALL BE ALLOWED TO CURE FOR 28DAYS MIN OR UNTIL THE CONCRETE HAS REACHED 100% OF ITS DESIGN STRENGTH PRIOR TO THE BACKFILLING AND COMPACTION OPERATION HAS BEGUN.
- SUPPORT OF REBAR USING ROCKS TO PROVIDE COVER REQUIREMENTS IS STRICTLY PROHIBITED. PROPER STEEL CHAIRS ARE REQUIRED. CONTRACTOR SHALL SEEK APPROVAL OF METHOD OF REBAR SUPPORT AND SPACING CONTROL FROM THE EOR PRIOR TO INSTALLATION.
- PROPER CONCRETE CURING METHODS SHALL BE CONDUCTED AS PER ACI 308-92, STANDARD PRACTICE FOR CURING CONCRETE. CONTRACTOR SHALL SUBMIT PROPOSED CURING METHODOLOGY AND ANY PRODUCTS TO BE USED TO EOR FOR REVIEW PRIOR TO PLACEMENT OF CONCRETE.
- REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ANY ADDITIONAL SLEEVES AND OPENINGS OMITTED FROM STRUCTURAL DRAWINGS. ENGINEER MUST BE NOTIFIED PRIOR TO PENETRATING ANY STRUCTURAL ELEMENTS NOT SHOWING OPENINGS IN THESE DOCUMENTS.
- ALL CONCRETE SLABS ON GRADE TO BE PLACED ON MINIMUM OF 1'-0" ENGINEER - APPROVED FILL FREE FROM TRASH, LARGE ROCKS, ORGANICS AND DELETERIOUS MATERIAL. FILL TO BE PLACED AND COMPACTED IN 12 INCH MAX LIFTS BY MECHANICAL MEANS.
- ALL CONCRETE CORNERS AND EDGES TO BE CHAMFERED 3/4".
- CONTRACTOR SHALL REPAIR ALL CONCRETE BELMISHES WITHIN 24HRS. CONCRETE REPAIR PROCEDURE AND MATERIALS SHALL BE SUBMITTED TO EOR FOR APPROVAL PRIOR TO PLACEMENT OF CONCRETE.
- ALL CONSTRUCTION JOINTS SHALL HAVE A 2"DP X 4"WD CONTINUOUS SHEAR KEY
- ALL FORMWORK SURFACES SHALL BE TREATED WITH APPLICABLE FORMWORK RELEASE AGENT PRIOR TO POURING CONCRETE. SELECTED RELEASE AGENT SHALL EFFECTIVELY PROTECT AGAINST BOND WITH CONCRETE AND ABSORPTION OF MOISTURE BY FORMWORK. CONTRACTOR SHALL SUBMIT PRODUCT SPECIFICATIONS PRIOR TO CONSTRUCTION OF FORMWORK.
- SAMPLES FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE SHALL BE TAKEN NOT LESS THAN ONCE PER DAY, NOR LESS THAN ONCE FOR EACH 150 CUBIC YARDS, NOR LESS THAN ONCE FOR EACH 5000 SQ. FT. OF SURFACE AREA FOR WALLS AND SLABS. CYLINDERS FOR STRENGTH TESTS SHALL BE MOLDED AND LABORATORY-CURED IN ACCORDANCE WITH ASTM-C 31 AND TESTED IN ACCORDANCE WITH ASTM C 39.
- WALL FORMWORK TO REMAIN IN PLACE FOR A PERIOD OF 7 DAYS. SHOULD THE CONTRACTOR WISH TO REMOVE THE FORMWORK EARLIER A PROCEDURE FOR CURING THE CONCRETE SHALL BE ISSUED TO THE EOR FOR APPROVAL PRIOR TO CONCRETE PLACEMENT.
- SLABS (ON GRADE OR SUSPENDED) TO BE CONTINUOUSLY MOIST CURED FOR A PERIOD OF 7 DAYS OR BE TREATED WITH A CURING COMPOUND. CONTRACTOR SHALL SUBMIT SPECIFICATIONS FOR CURING COMPOUND PRIOR TO PLACEMENT OF CONCRETE.
- LOCATION OF ALL CONSTRUCTION JOINTS NOT SHOWN IN DRAWINGS SHALL BE SUBMITTED TO STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO DETAILING OF REINFORCING.

STRUCUTRAL STEEL & SHEET PILES

- ALL STRUCTURAL STEEL SHALL BE PERFORMED TO THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL. ALL STRUCTURAL STEEL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY CODE (ANSI/AWS D101.1 - LATEST EDITION)
 - MATERIAL SHALL CONFORM TO THE FOLLOWING, U.N.O.:

WIDE FLANGE SHAPES TO CONFIRM TO ASTM A572 WITH MINIMUM YIELD STRESS, Fy=50ksi. STRUCTURAL PLATES AND ANGLES TO CONFORM TO ASTM A-36 (36 KSI YIELD). STEEL PIPE TO CONFORM TO ASTM A53, TYPE E OR S, GRADE B (35KSI YIELD). STRUCTURAL TUBING TO CONFORM TO ASTM A500, GRADE B (36 KSI YIELD). ANCHOR BOLTS - STAINLESS STEEL TYPE A316 MISC. BOLTS, NUTS WASHERS HOT DIPPED GALVANIZED TYPE A325
 - SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER. PROPOSED LOCATION AND CONFIGURATION OF DESIRED SPLICE TO BE CLEARLY ILLUSTRATED TO STRUCTURAL ENGINEER SHOULD SUCH A SPLICE BE DESIRED.
 - NOTE ALL STRUCTURAL STEEL, CONNECTORS OR FASTENERS COMING IN CONTACT WITH TREATED LUMBER SHALL BE HOT DIPPED GALVANIZED OR STAINLESS STEEL.
 - ALL DAMAGED GALVANIZED FINISHED SURFACES SHALL BE COATED WITH 2 COATS OF ZINC RICH PAINT.
 - ALL STEEL SHEET PILES SHALL BE AZ 19-700, ASTM A 572 GRADE 50, STEEL GRADE 50KSI AS MANUFACTURED BY NUCOR OR E.A.E.
 - ALL SHEET PILES SHALL BE COATED WITH SHERWIN WILLIAMS TARGARD COAL TAR EPOXY COATING 16MIL D.F.T., BOTH SIDES. SHEET PILES SHALL BE TREATED WITH CARE ON SITE. ANY DAMAGED COATING SHALL BE REINSTATEMENT PRIOR TO INSTALLATION OF SHEET PILE.
 - TIE RODS SHALL BE TO THE SIZE AND LENGTH SPECIFIED ON THE DRAWINGS AS PROVIDED BY WILLIAMS FORM ENGINEERING CORP. TIE ROD SHALL BE TO GRADE 75 ALL THREAD 75KSI. TIE RODS SHALL NOT BE BENT OR WELDED ON SITE.
 - TIE RODS SHALL BE WRAPPED WITH CARBOLINE DENSYL TAPE.
 - ALL WASHERS, NUTS AND TURNBUCKLE SHALL BE GRADE A36 AS PROVIDED WITH THE WILLIAMS TIE ROD SYSTEM. BEVELED WASHERS ARE REQUIRED AS SHOWN ON PLANS AND SECTIONS.
- TIMBER FRAMING**
- TIMBER PILES AND FRAMING HAS BEEN DESIGNED IN ACCORDANCE WITH AF&PA/ASCE 16-95 LRFD MANUAL FOR ENGINEERED WOOD CONSTRUCTION.
 - TIMBER PILES SHALL BE SOUTHERN YELLOW PINE NO. 1 IN ACCORDANCE WITH ASTM D3200, Fc = 2,160psi (LRFD) PARALLEL TO GRAIN.
 - ALL PILES SHALL BE 14"Ø IN ACCORDANCE WITH ASTM D25 AND SHALL HAVE A MINIMUM CIRCUMFERENCE OF 3FT FROM THE BUT OF 44" AND 33" AT THE TIP.
 - PILES SHALL BE TREATED WITH CHROMIUM COPPER ARSENATE (CCA) IN ACCORDANCE WITH AWPA C3 & C18.
 - TIMBER FRAMING (STRINGERS, JOISTS, CROSS BRACING & MISC. FRAMING) SHALL BE SOUTHERN YELLOW PINE NO. 1, Fb=2,480psi (LRFD).
 - TIMBER FRAMING NOTED ABOVE SHALL BE MARINE GRADE TREATED WITH ALKALINE COPPER QUATERNARY. ACQ SHALL BE APPLIED AT A RETENTION RATE OF 0.40 PCF.
 - ALL TREATED LUMBER SHALL BEAR AN END TAG OR PERMANENT INK STAMP INDICATING: NAME OF WOOD TREATING COMPANY, PLANT LOCATION, SYMBOL FOR ACQ, PRESERVATIVE RETENTION LEVEL AND CODE REPORT NUMBER.
 - ACQ TREATED WOOD MATERIAL SHALL NOT BE IN DIRECT CONTACT WITH ALUMINUM OR MILD STEEL.
 - MATERIALS SHALL BE STORED ON SITE PROTECTED FROM EXPOSURE TO RAIN. AVOID STORING MATERIAL IN CONTACT WITH THE GROUND. KEEP MATERIALS DRY AT ALL TIMES. PROTECT AGAINST EXPOSURE TO WEATHER AND CONTACT WITH DAMP OR WET SURFACES. STACK LUMBER AND PROVIDE CIRCULATION OF AIR WITHIN STACKS.
 - ALL FASTENERS SHALL HOT DIPPED GALVANIZED (HDG) UNLESS NOTED OTHERWISE TO THE SIZE SHOWN ON PLAN (3/8" MIN).
 - BOLTS SHALL HAVE A MINIMUM EDGE DISTANCE OF 4 X BOLT DIAMETER.
 - DECK FRAMING SHALL BE 2" THICK SOUTHERN YELLOW PINE. ALL FASTENERS SHALL BE STAINLESS STEEL AND PRE-DRILLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

DOCK ACCESSORIES

- ELECTRICAL PEDESTALS SHALL BE AS SHOWN ON THE ELECTRICAL DRAWINGS CONTAINED HEREIN AND AS SUPPLIED BY EATON CORPORATION - MARINA POWER AND LIGHTING. ALL ELECTRICAL SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
- SEWERAGE PUMP OUT SYSTEM SHALL BE AS SHOWN ON THE PLUMBING DRAWINGS CONTAINED HEREIN AND AS SUPPLIED BY KECO/PUMP-A-HEAD. ALL SYSTEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
- ALL CLEATS SHALL BE CAST ALMG 35 - 12" LG S TYPE CAST AS SUPPLIED BY INTERNATIONAL DOCK PRODUCTS LTD. OR E.A.E.
- SWIM LADDERS SHALL BE MARINE GRADE ALUMINUM 6-STEP STANDARD LADDER AS SUPPLIED BY INTERNATIONAL DOCK PRODUCTS LTD. OR E.A.E.
- ALL EXPOSED TIMBER PILES TO BE CAPPED WITH ROUND CONE TYPE WHITE PVC PILE CAP APPROPRIATELY SIZED AS SUPPLIED BY INTERNATIONAL DOCK PRODUCTS LTD. OR E.A.E.
- ALL HANGER COMPONENTS ELECTRICAL, PLUMBING, FIRE AND SEWER PIPES TO BE AIKINSTRUT AS MANUFACTURED BY AETNA PLASTICS(WWW.AETNAPLASTICS.COM) OR E.A.E.

ABBREVIATIONS:

(B)	BOTTOM
(M)	MIDDLE
(T)	TOP
ARCH.	ARCHITECTURAL DRAWINGS
BL	BOTTOM LOWER LAYER
BP	BENT PLATE
BUL	BOTTOM UPPER LAYER
CIP	CAST-IN-PLACE
D	DEEP
DL	DOUBLE ANGLE
EAE.	ENGINEER APPROVED EQUAL
EL.	ELEVATION
EOR	ENGINEER OF RECORD
HDG	HOT DIPPED GALVANIZED
HEX.	HEXAGONAL
HORIZ.	HORIZONTAL
LLV	LONG LEG VERTICAL
L	ANGLE/LONG
MAX.	MAXIMUM
MIN.	MINIMUM
O.C.	ON CENTER
PL.	PLATE
R/C.	REINFORCED CONCRETE
REINF.	REINFORCEMENT/ REINFORCED
RS	RIBBED SLAB
RWP	RAIN WATER PIPE
SCHED.	SCHEDULE
ST.	STEEL
TLL	TOP LOWER LAYER
T.O.C.	TOP OF CONCRETE
TS	TUBULAR STEEL
TUL	TOP UPPER LAYER
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
U/S.	UNDERSIDE
VCJ.	VERTICAL CONTROL JOINT
VERT.	VERTICAL
VS	VERTICAL SUPPORT
W	WIDE
W/	WITH
WWF	WELDED WIRE FABRIC

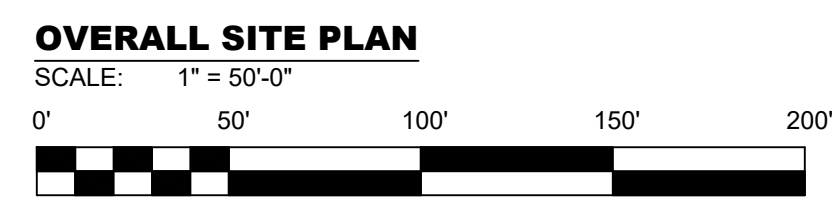
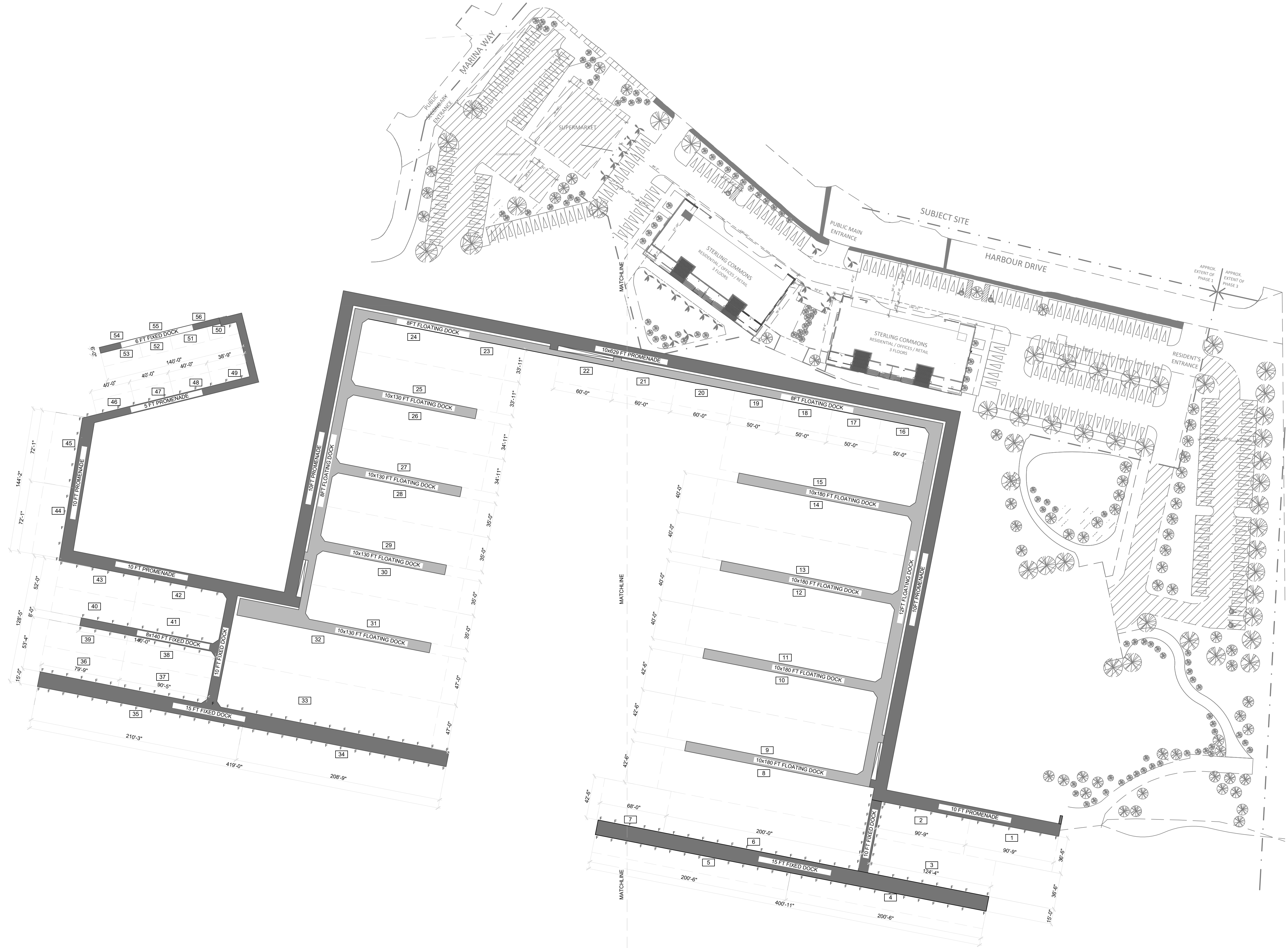
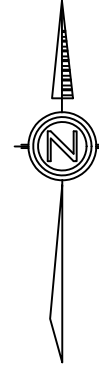


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PROJECT NAME:	HURRICANE HOLE MARINA
DRAWING DESCRIPTION:	GENERAL NOTES AND SPECIFICATIONS
PROJECT LOCATION:	PARADISE ISLAND, THE BAHAMAS

REV. NO.	DATE (dd/mm/yy)	ISSUE DESCRIPTION
1	20/01/2020	30% DD - ISSUED FOR REVIEW
2	20/02/2020	75% DD - ISSUED FOR REVIEW
3	13/03/2020	ISSUED FOR PERMIT

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Checked S.B.	
Appr. C.P.	
Date JULY 2018	
Proj. No. 1806035	



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PROJECT NAME:
HURRICANE HOLE MARINA
PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
OVERALL SITE LAYOUT PLAN

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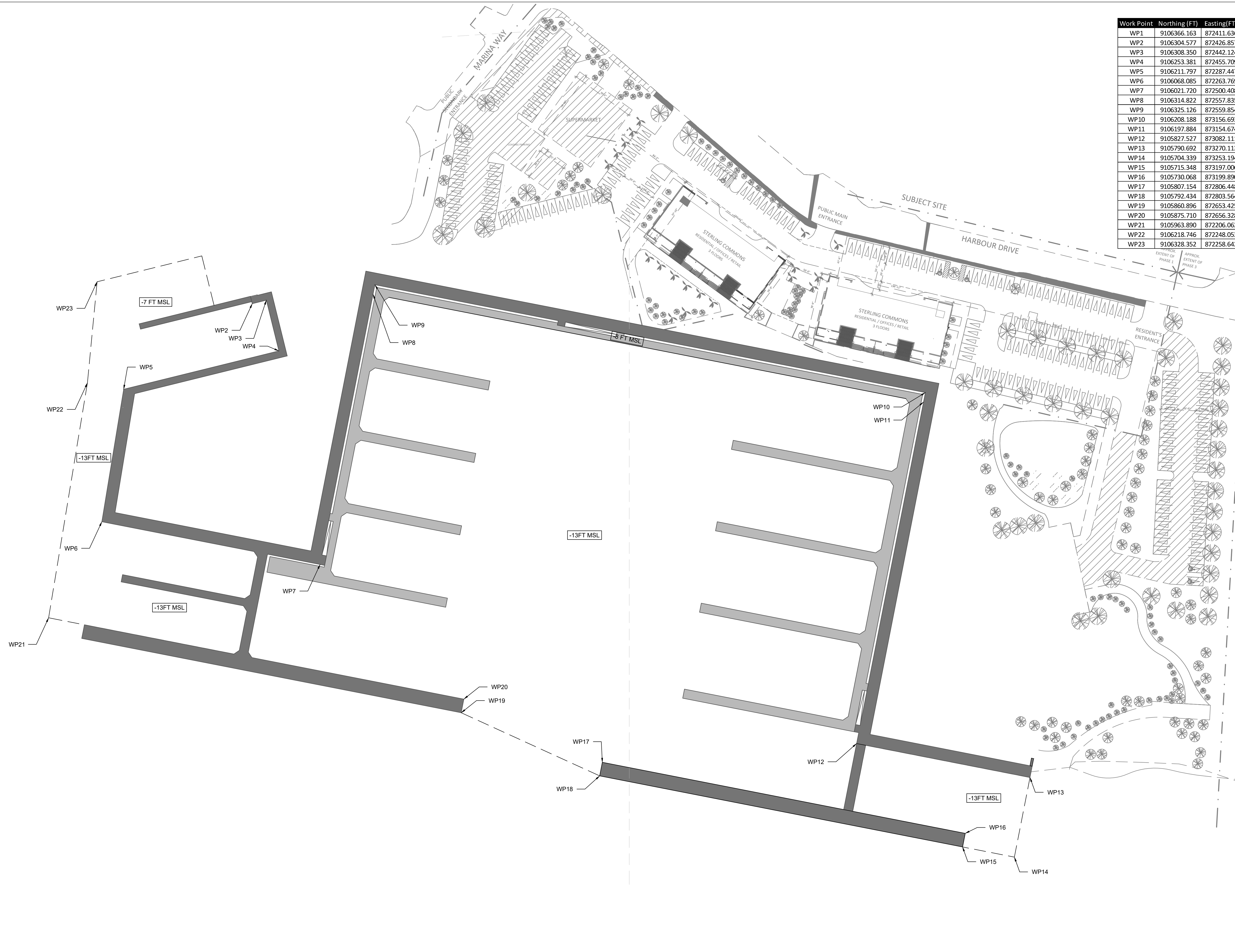
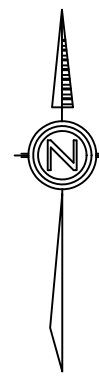
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Appr.
C.P.

Date
DEC 2019

Proj. No.
1806035

Drawing No.
G-02



Work Point	Northing (FT)	Easting (FT)
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WP2	9106304.577	872426.857
WP3	9106308.350	872442.124
WP4	9106253.381	872455.709
WP5	9106211.797	872287.447
WP6	9106068.085	872263.769
WP7	9106021.720	872500.408
WP8	9106314.822	872557.835
WP9	9106325.126	872559.854
WP10	9106208.188	873156.693
WP11	9106197.884	873154.674
WP12	9105827.527	873082.111
WP13	9105790.692	873270.113
WP14	9105704.339	873253.194
WP15	9105715.348	873197.006
WP16	9105730.068	873199.890
WP17	9105807.154	872806.448
WP18	9105792.434	872803.564
WP19	9105860.896	872653.425
WP20	9105875.710	872656.328
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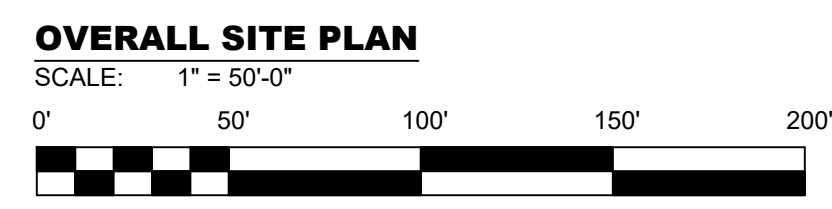


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HURRICANE HOLE MARINA
 PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
DREDGE PLAN

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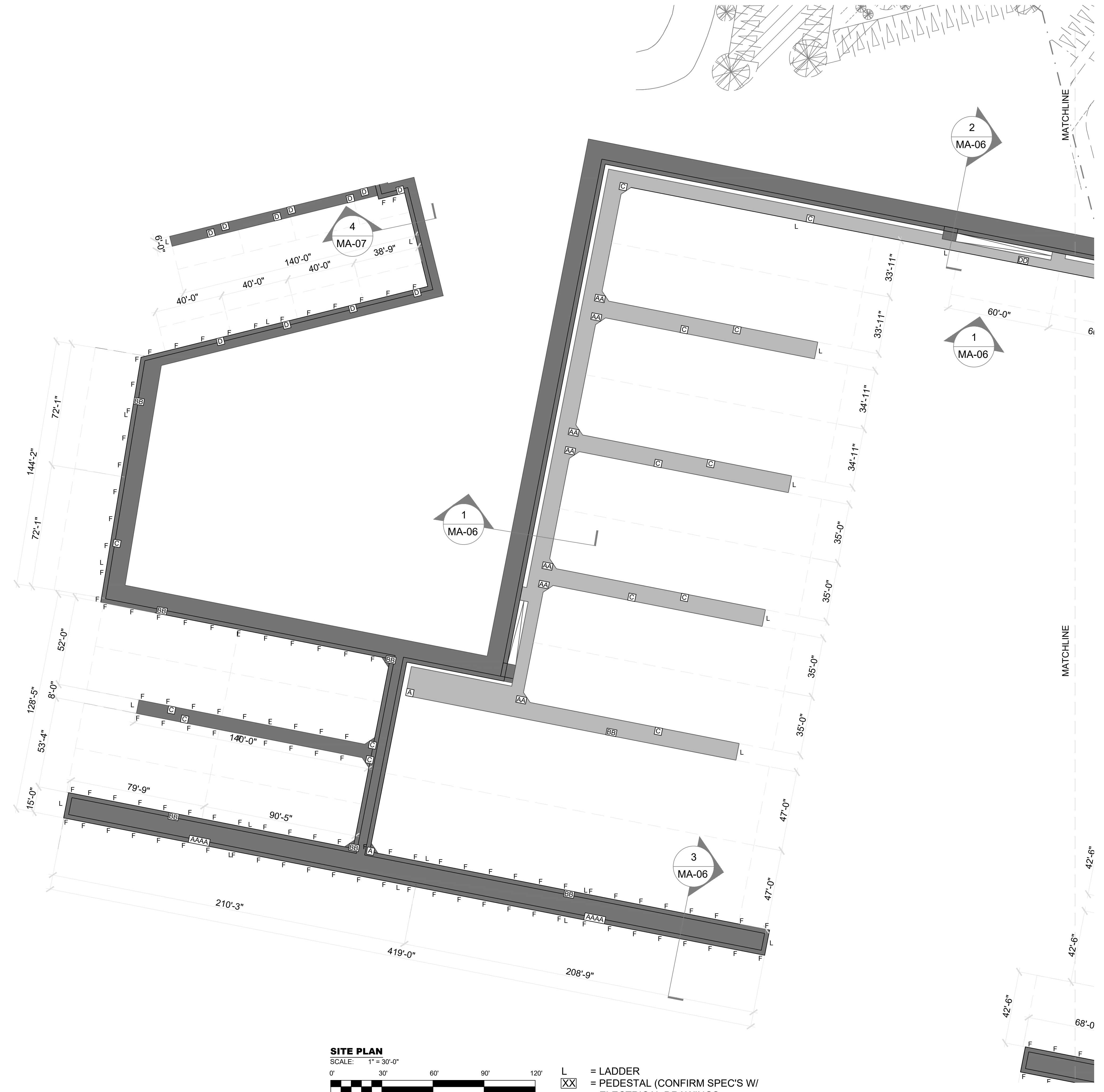
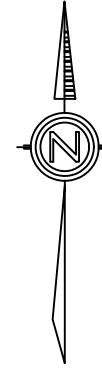
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Date
DEC 2019

Proj. No.
1806035

Drawing No.
MA-01



SITE PLAN
 SCALE: 1" = 30'-0"
 0' 30' 60' 90' 120'

L = LADDER
 XX = PEDESTAL (CONFIRM SPEC'S W/ ELECTRICAL DRAWINGS)

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PROJECT NAME:
HURRICANE HOLE MARINA
 PARADISE ISLAND, THE BAHAMAS

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PARTIAL SITE LAYOUT PLAN

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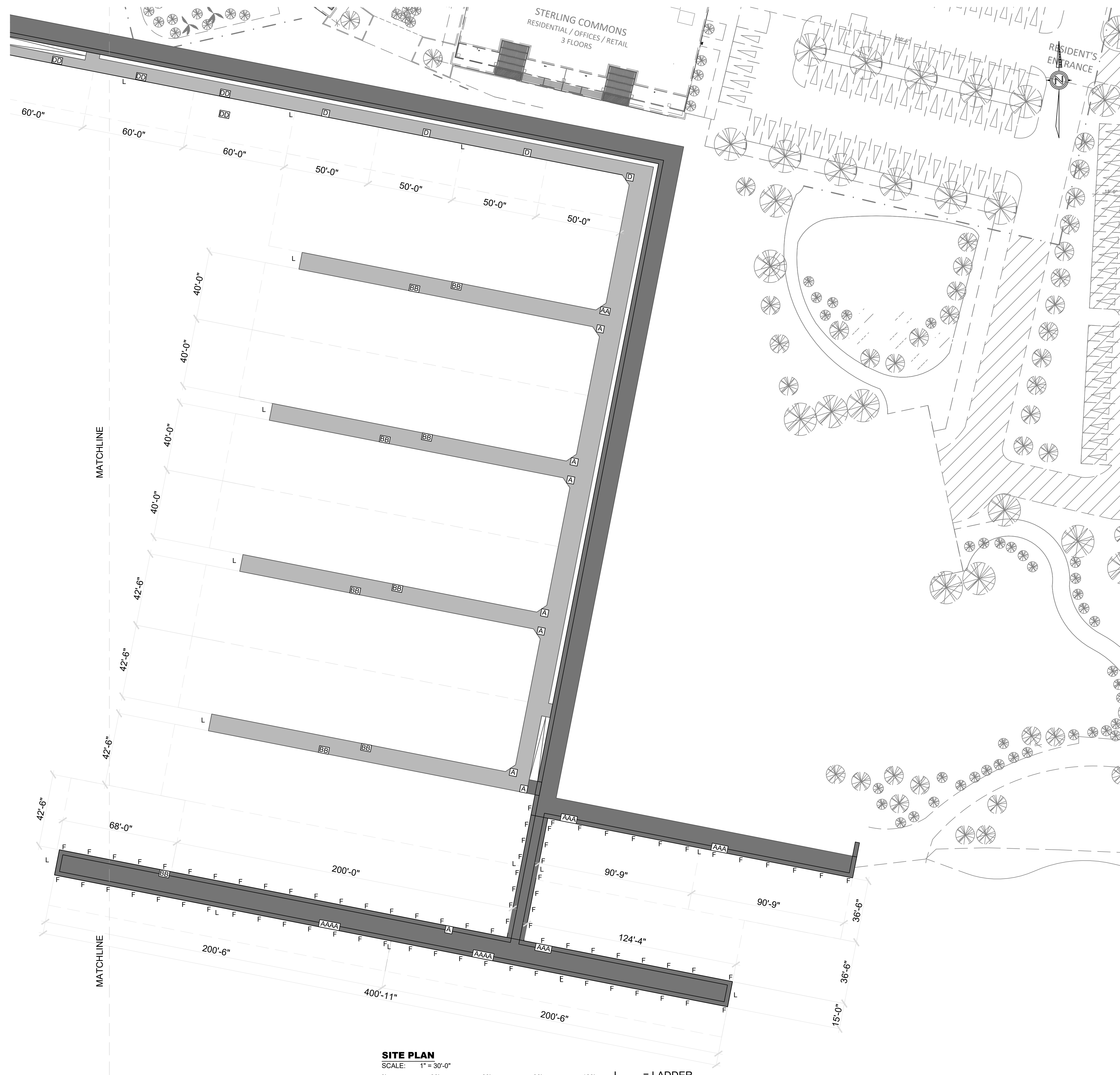
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Date
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1806035

Drawing No.
MA-02



SITE PLAN
 SCALE: 1" = 30'-0"
 0' 30' 60' 90' 120'

L = LADDER
 XX = PEDESTAL (CONFIRM SPEC'S W/ ELECTRICAL DRAWINGS)

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PROJECT NAME:
HURRICANE HOLE MARINA
 PARADISE ISLAND, THE BAHAMAS

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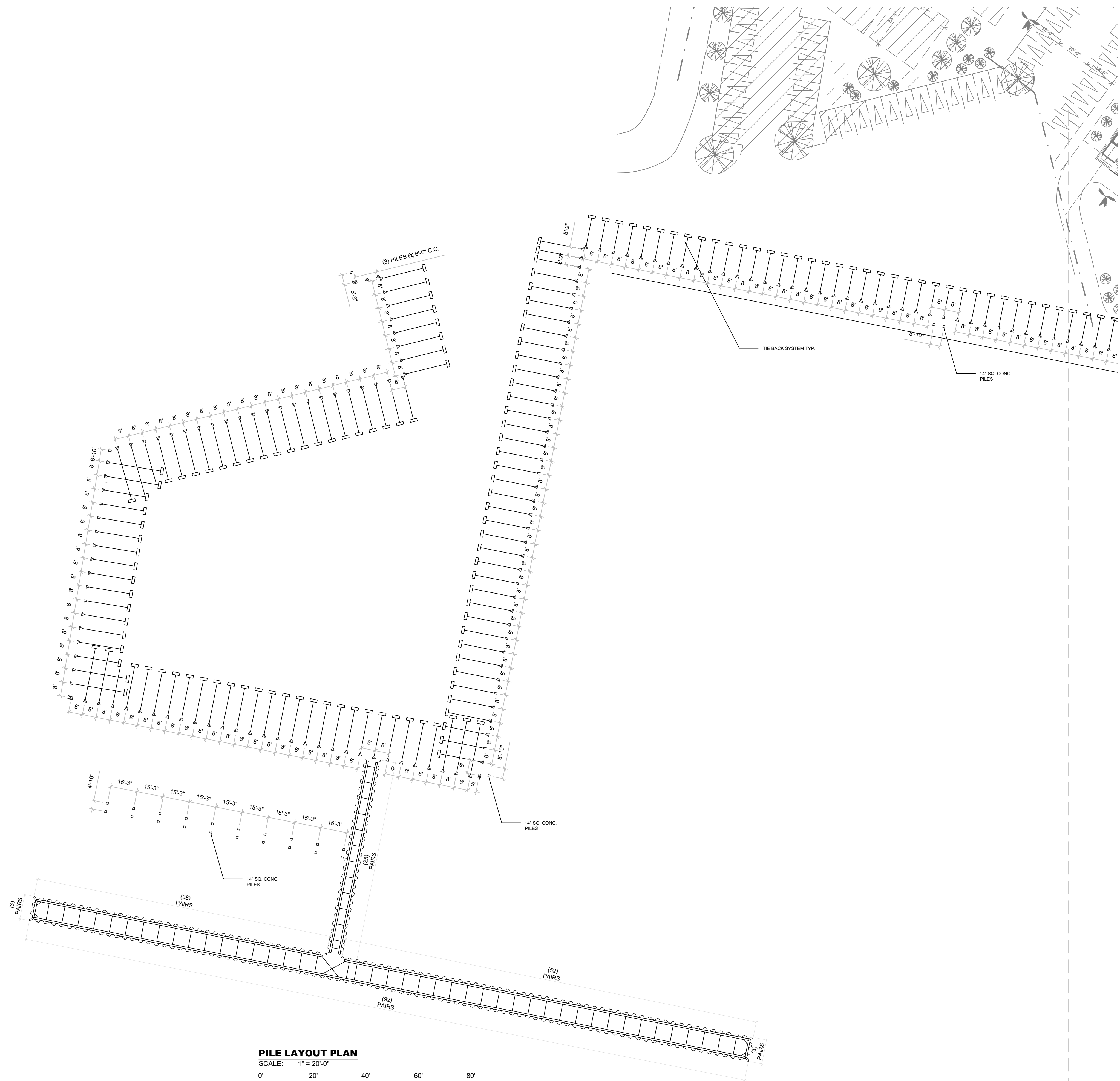
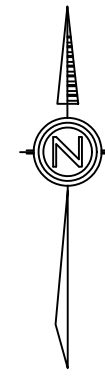
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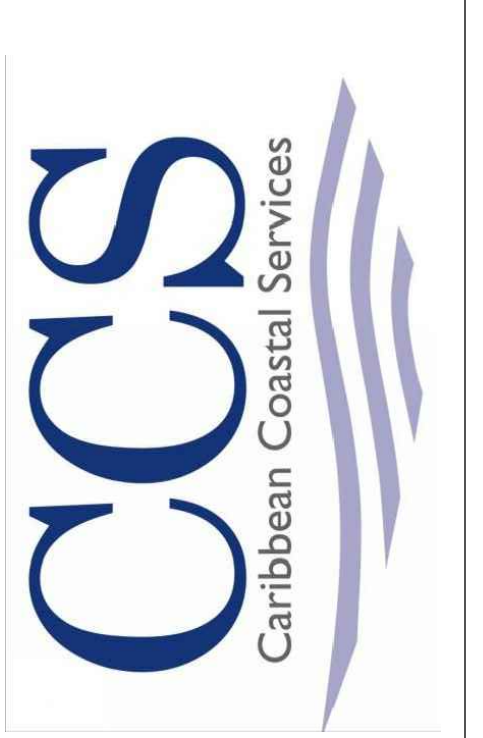
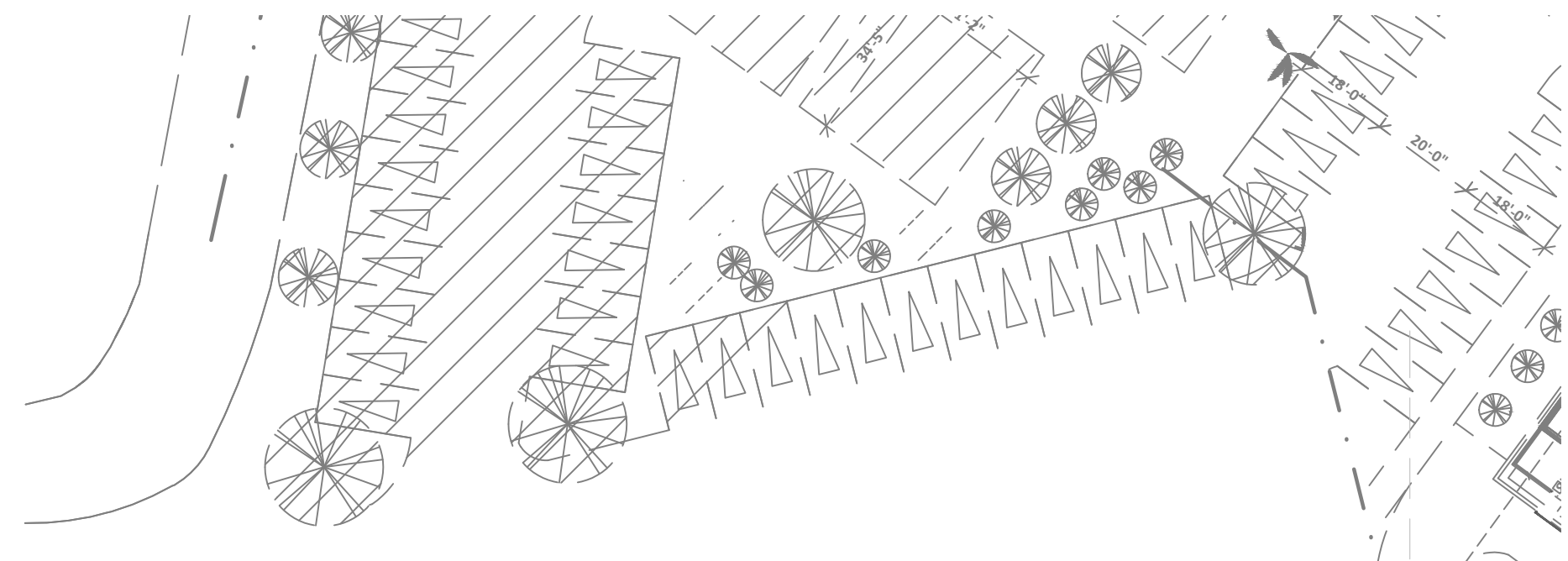
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DEC 2019

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Drawing No.
MA-03



PILE LAYOUT PLAN
SCALE: 1" = 20'-0"



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PROJECT NAME:
HURRICANE HOLE MARINA
PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
PARTIAL PILE LAYOUT PLAN

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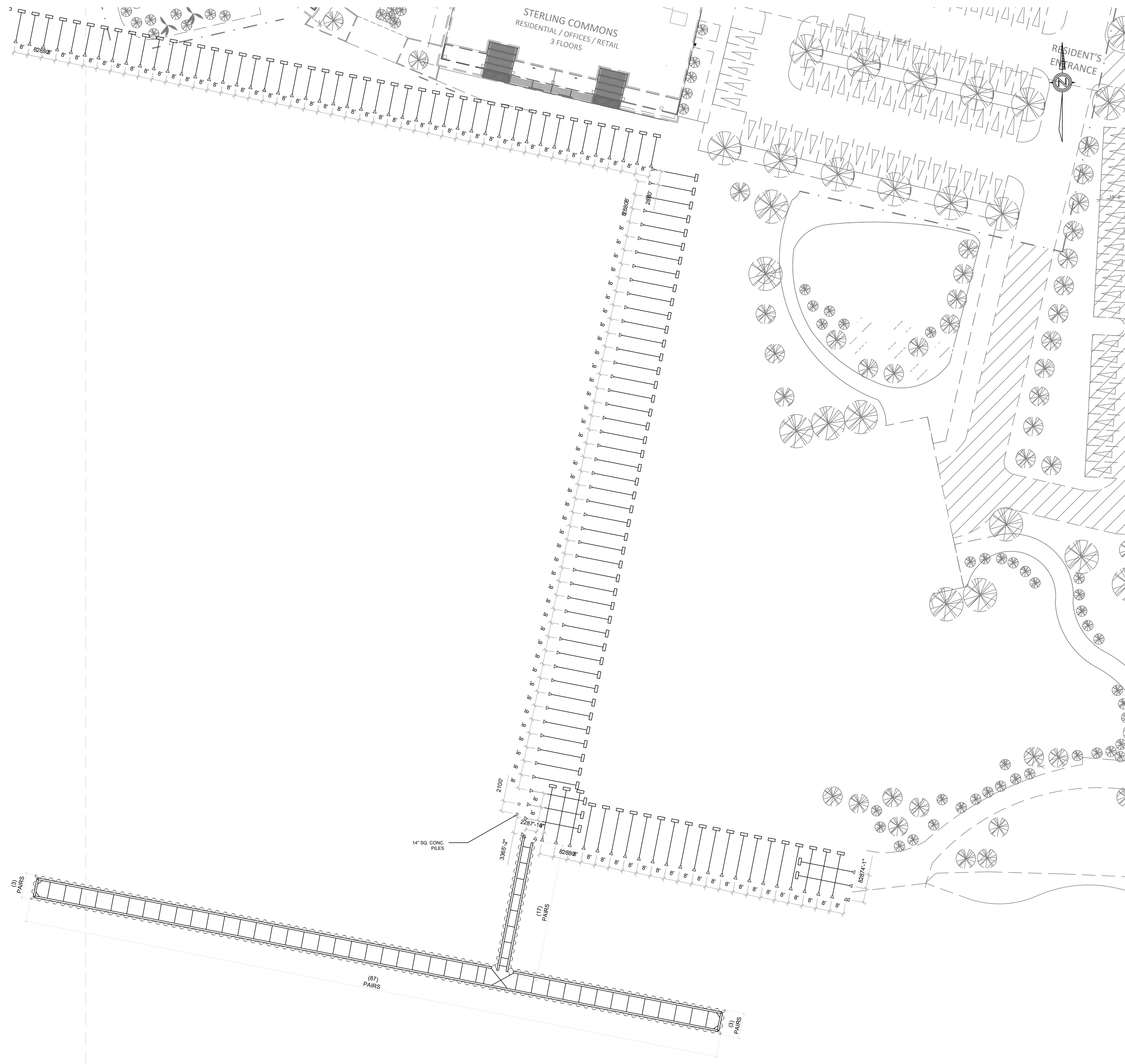
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DEC 2019

Proj. No.
1806035

Drawing No.
MA-04

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PARTIAL SITE PLAN
 SCALE: 1" = 20'-0"
 0' 20' 40' 60' 80'

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PROJECT NAME:
HURRICANE HOLE MARINA
 PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
PARTIAL PILE LAYOUT PLAN

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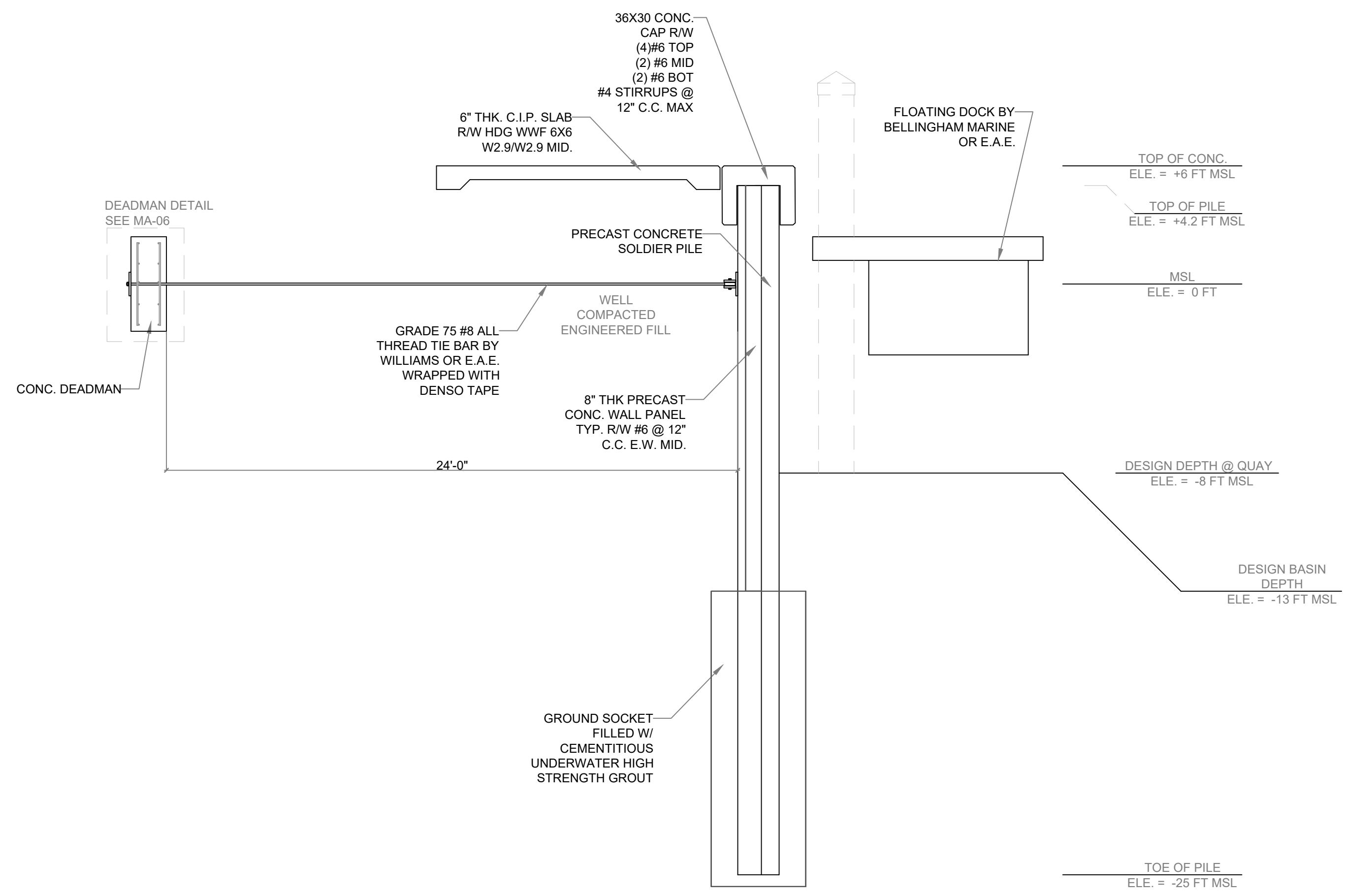
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PROJECT NAME:
HURRICANE HOLE MARINA
 PARADISE ISLAND, THE BAHAMAS

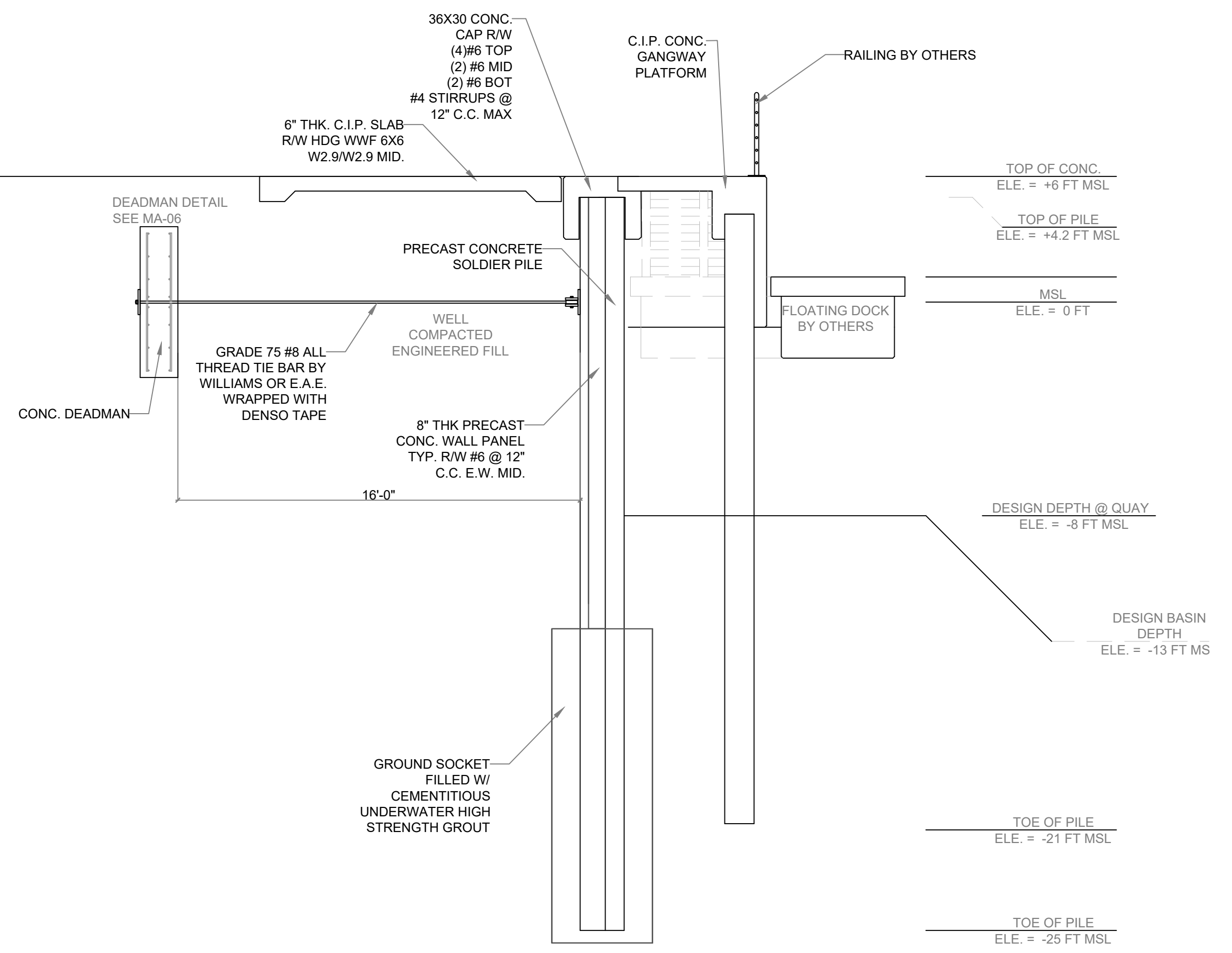
DRAWING DESCRIPTION:
SECTIONS AND ELEVATIONS

REV. NO.	DATE (dd/mm/yy)	ISSUE DESCRIPTION
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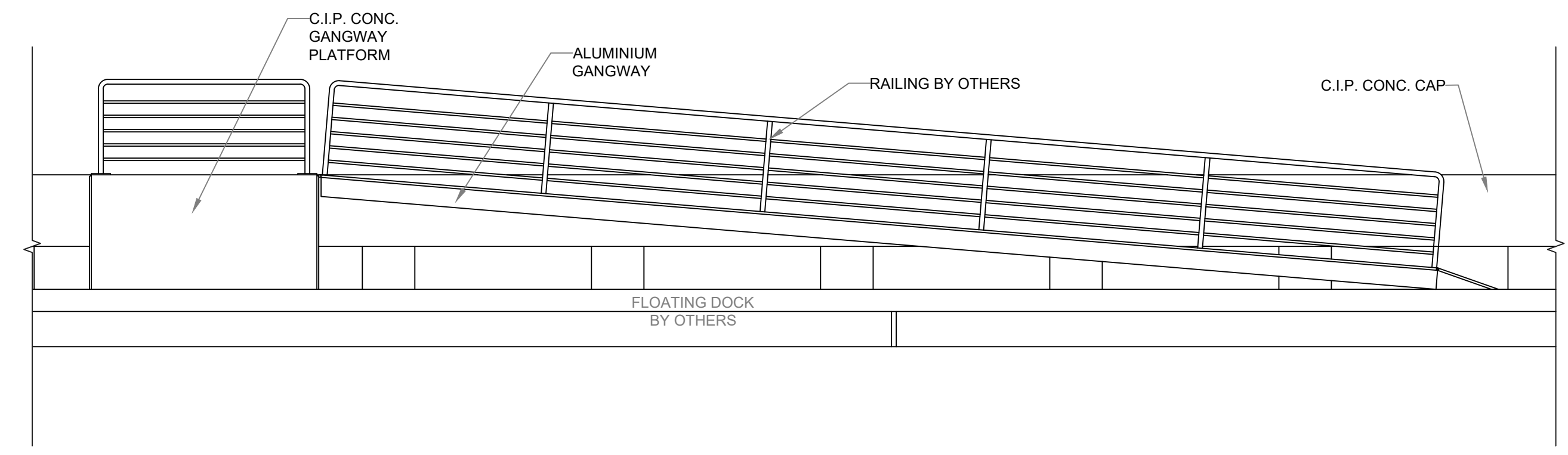
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Date DEC 2019	
Proj. No. 1806035	



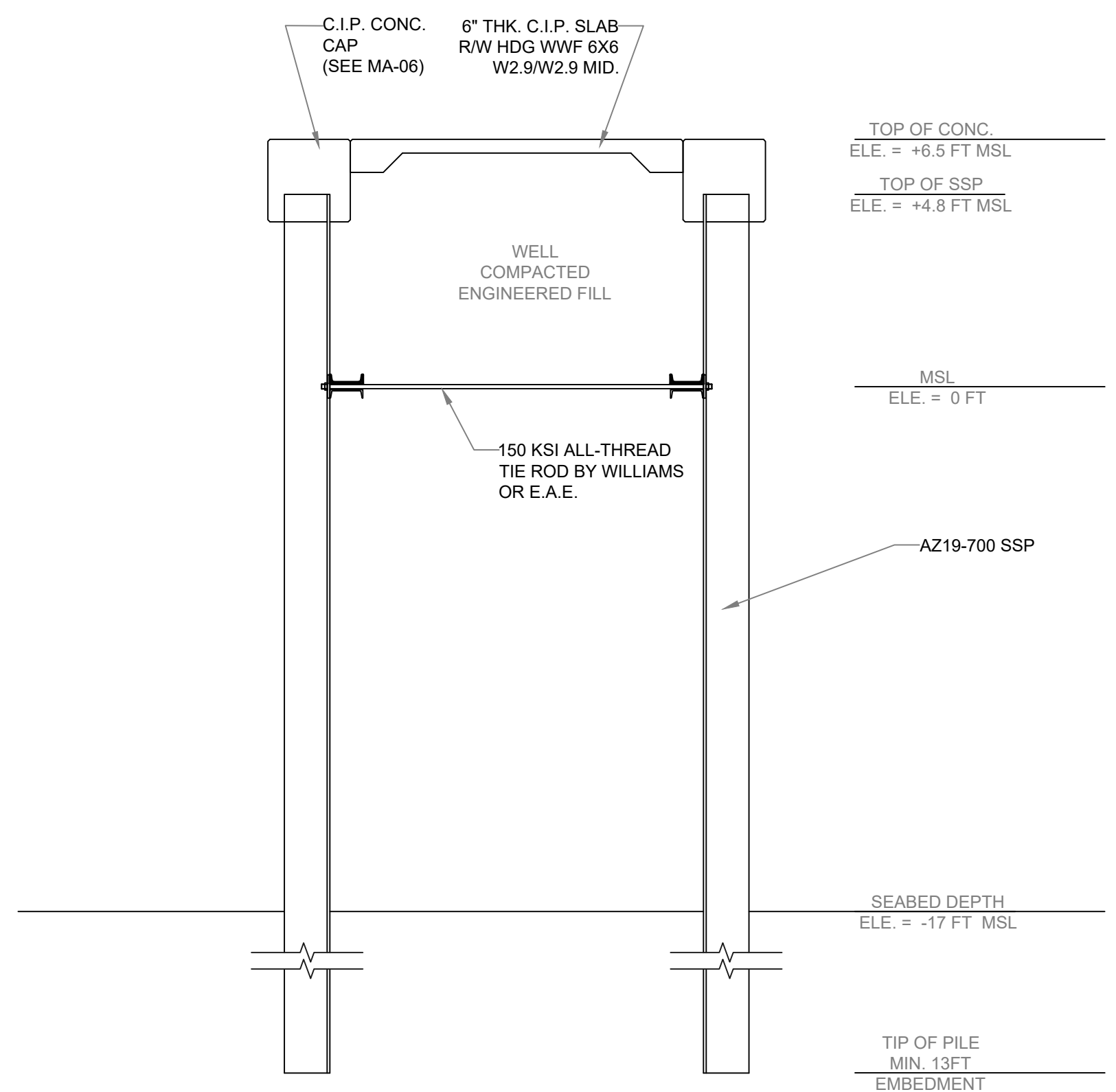
SECTION 1
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 MA-01



SECTION 2
 SCALE: 1/4" = 1'-0"
 MA-01

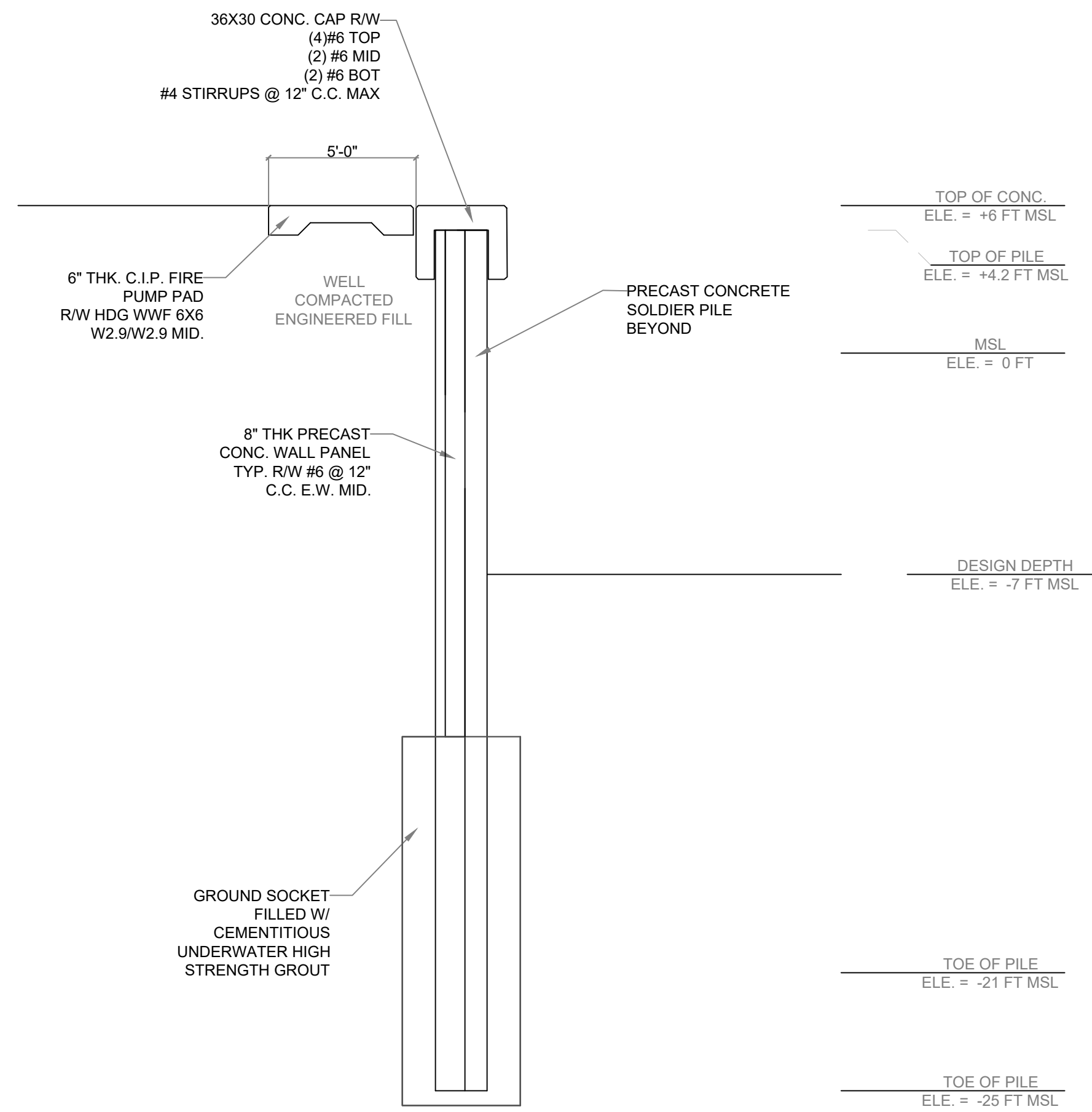


ELEVATION 1
 SCALE: 1/4" = 1'-0"
 MA-01



SECTION 3
 SCALE: 1/4" = 1'-0"
 MA-01

SCHEMATIC - NOT FOR CONSTRUCTION



SECTION
SCALE: 1/4" = 1'-0"
4
MA-01



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PROJECT NAME:
HURRICANE HOLE MARINA
PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
SECTIONS AND ELEVATIONS

REV. NO.	DATE (dd/mm/yy)	ISSUE DESCRIPTION
1	20/01/2020	30% DD - ISSUED FOR REVIEW
2	20/02/2020	75% DD - ISSUED FOR REVIEW
3	13/03/2020	ISSUED FOR PERMIT

Drawn K.S.	Drawing No. MA-07
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PROJECT NAME:
HURRICANE HOLE MARINA
PARADISE ISLAND, THE BAHAMAS

DRAWING DESCRIPTION:
DETAILS

REV. NO.	DATE (dd/mm/yyyy)	ISSUE DESCRIPTION
1	20/01/2020	30% DD - ISSUED FOR REVIEW
2	20/02/2020	75% DD - ISSUED FOR REVIEW
3	13/03/2020	ISSUED FOR PERMIT

Drawn
K.S.

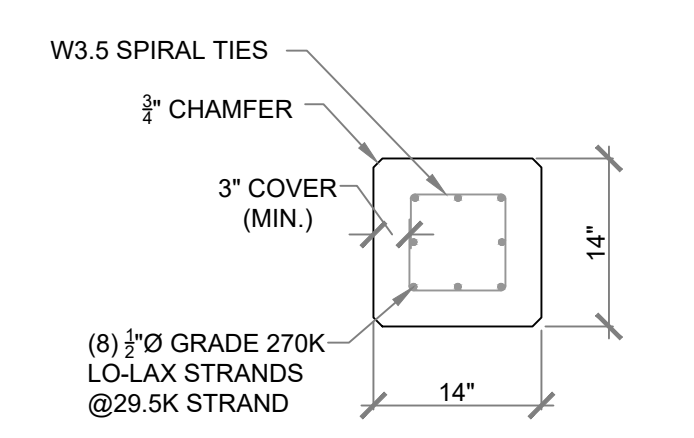
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Date
DEC 2019

Proj. No.
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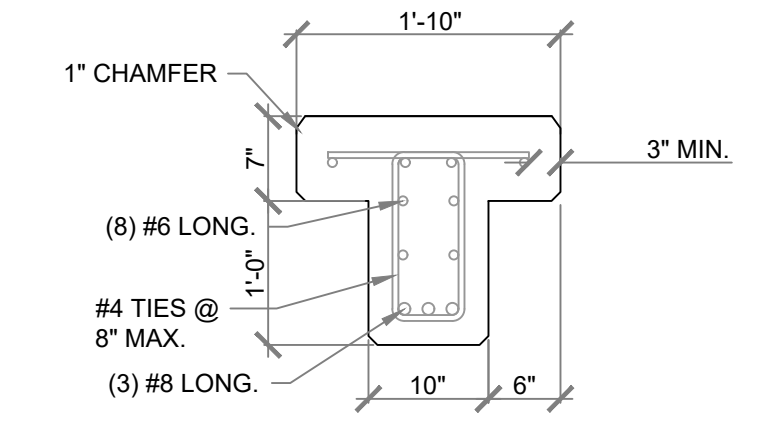
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MA-08



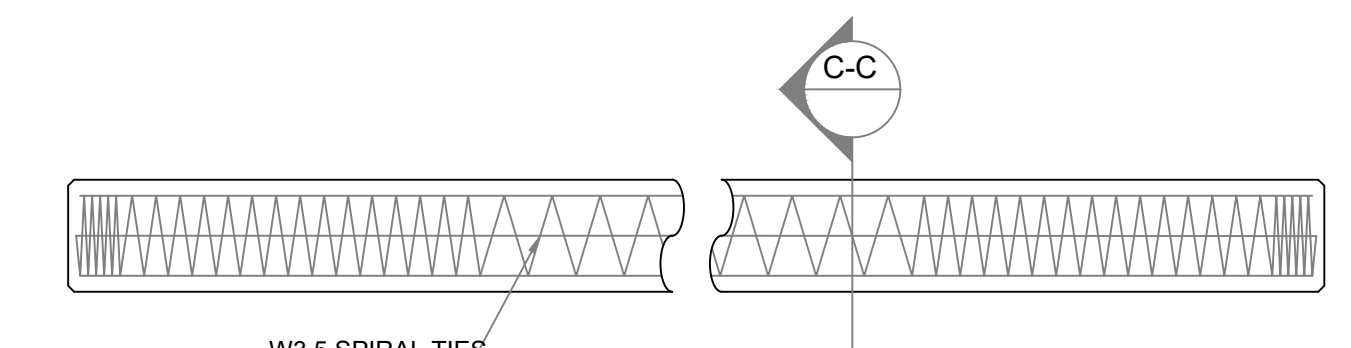
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SECTION
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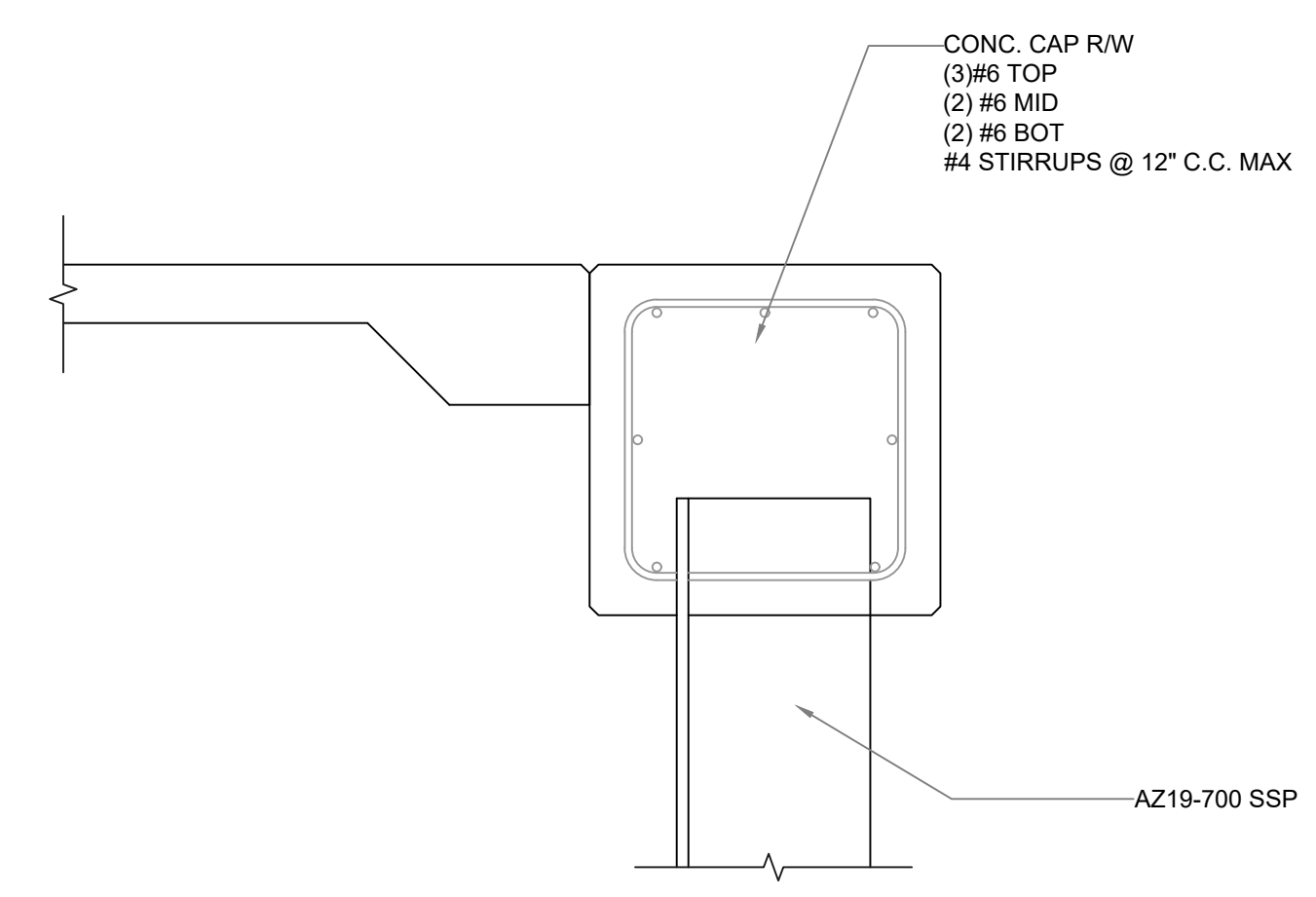


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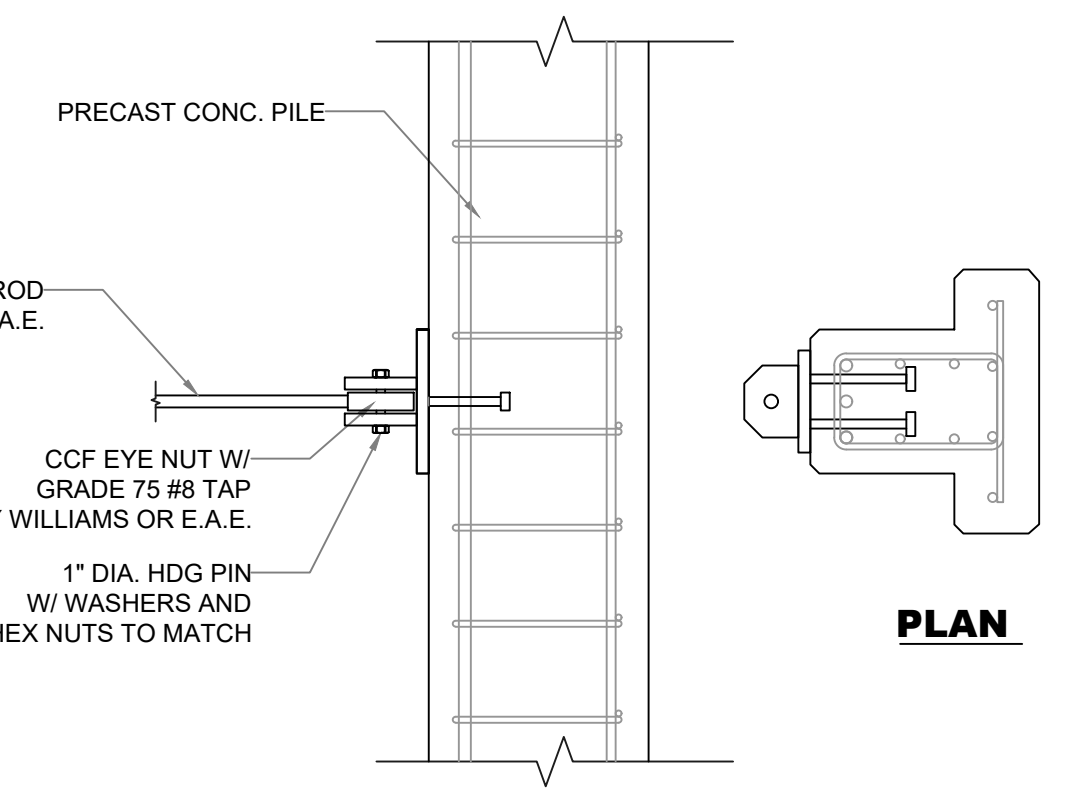


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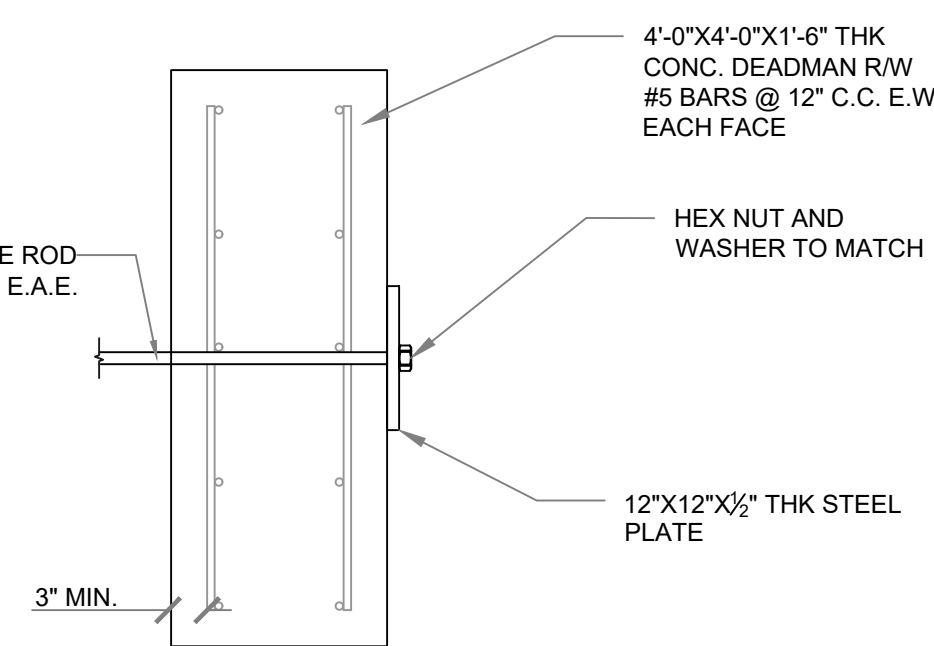
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SCALE: 1/2" = 1'-0"



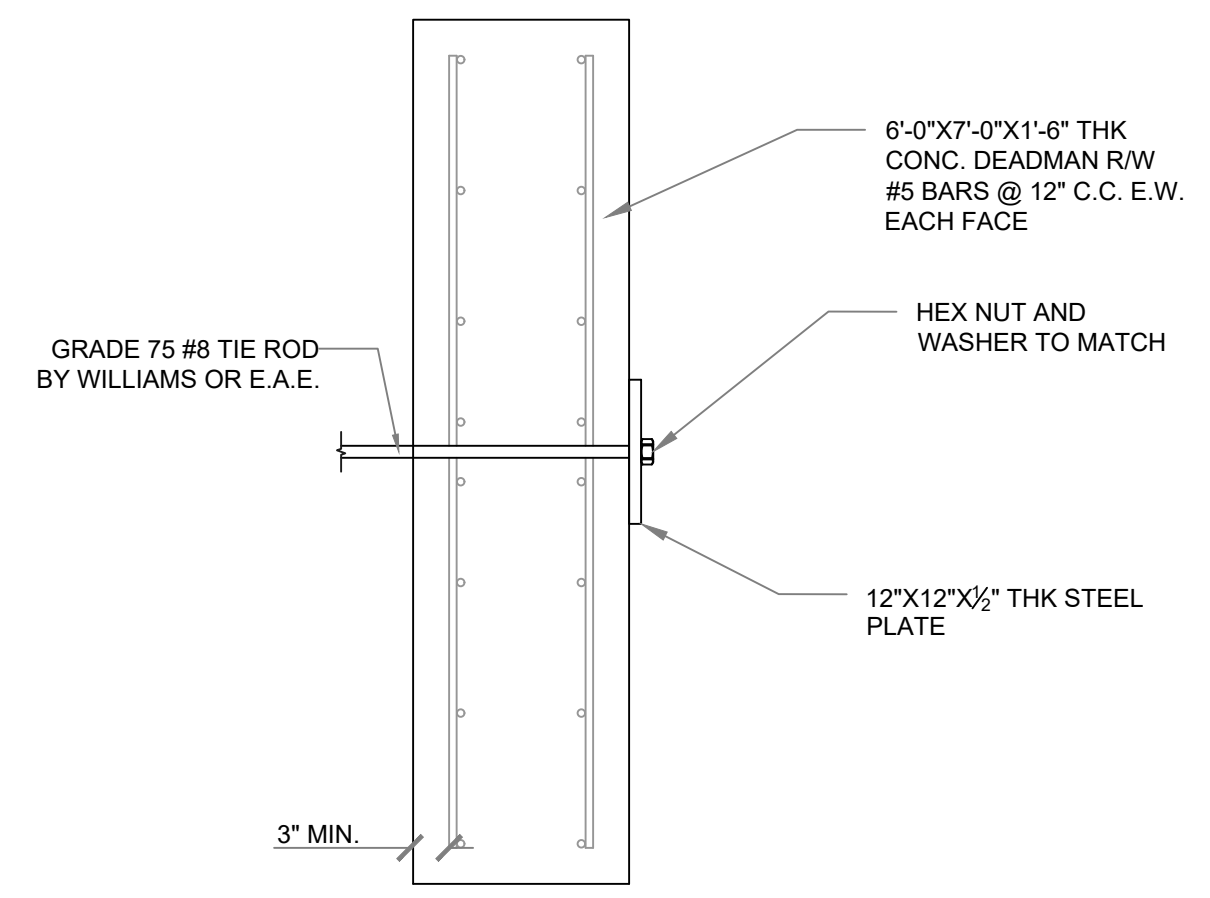
TYPICAL SSP CAP BEAM DETAIL
SCALE: 3/4" = 1'-0"



TIE ROD CONNECTION DETAIL
SCALE: 3/4" = 1'-0"



CONCRETE DEADMAN 1 DETAIL
SCALE: 3/4" = 1'-0"



CONCRETE DEADMAN 2 DETAIL
SCALE: 3/4" = 1'-0"

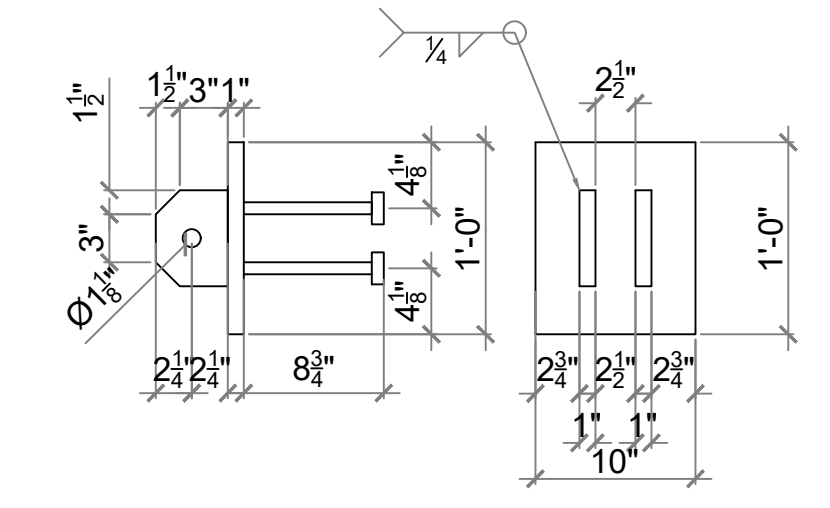
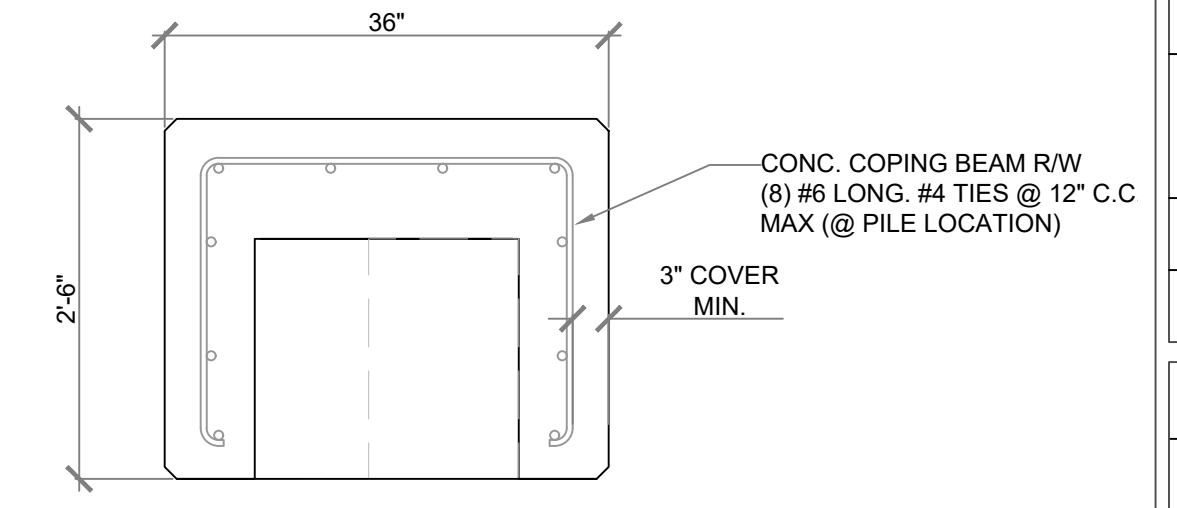
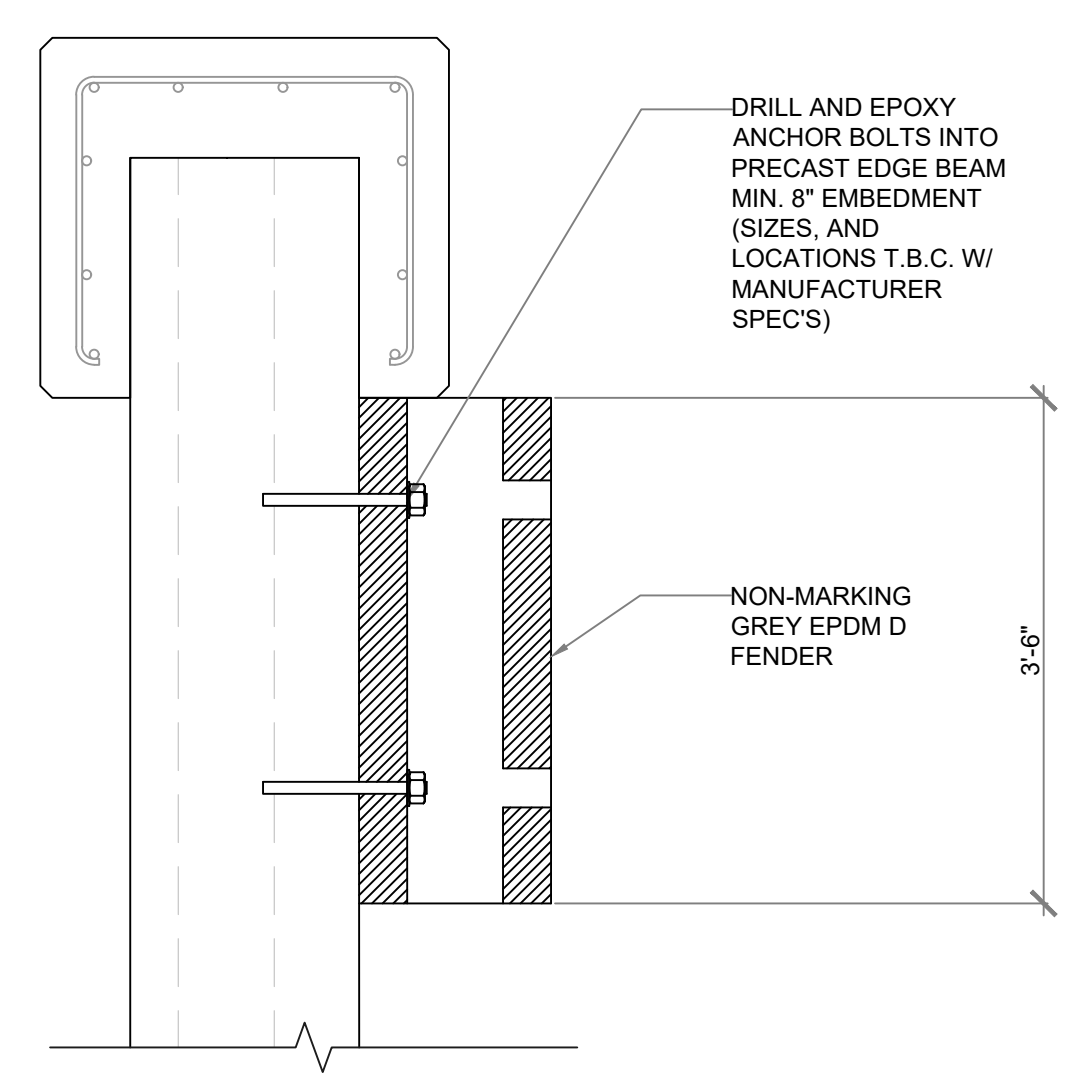


PLATE DETAIL
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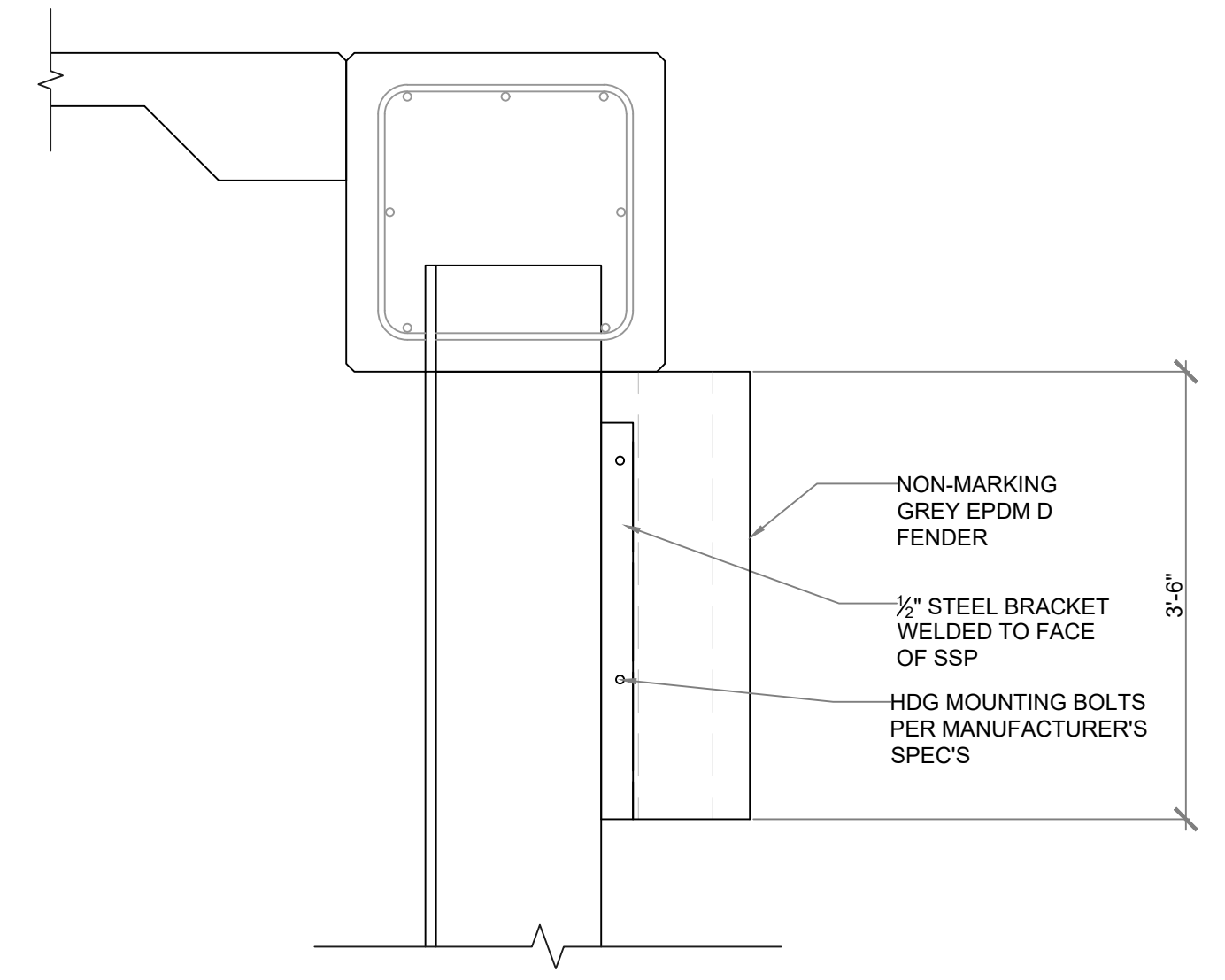


COPING BEAM DETAIL
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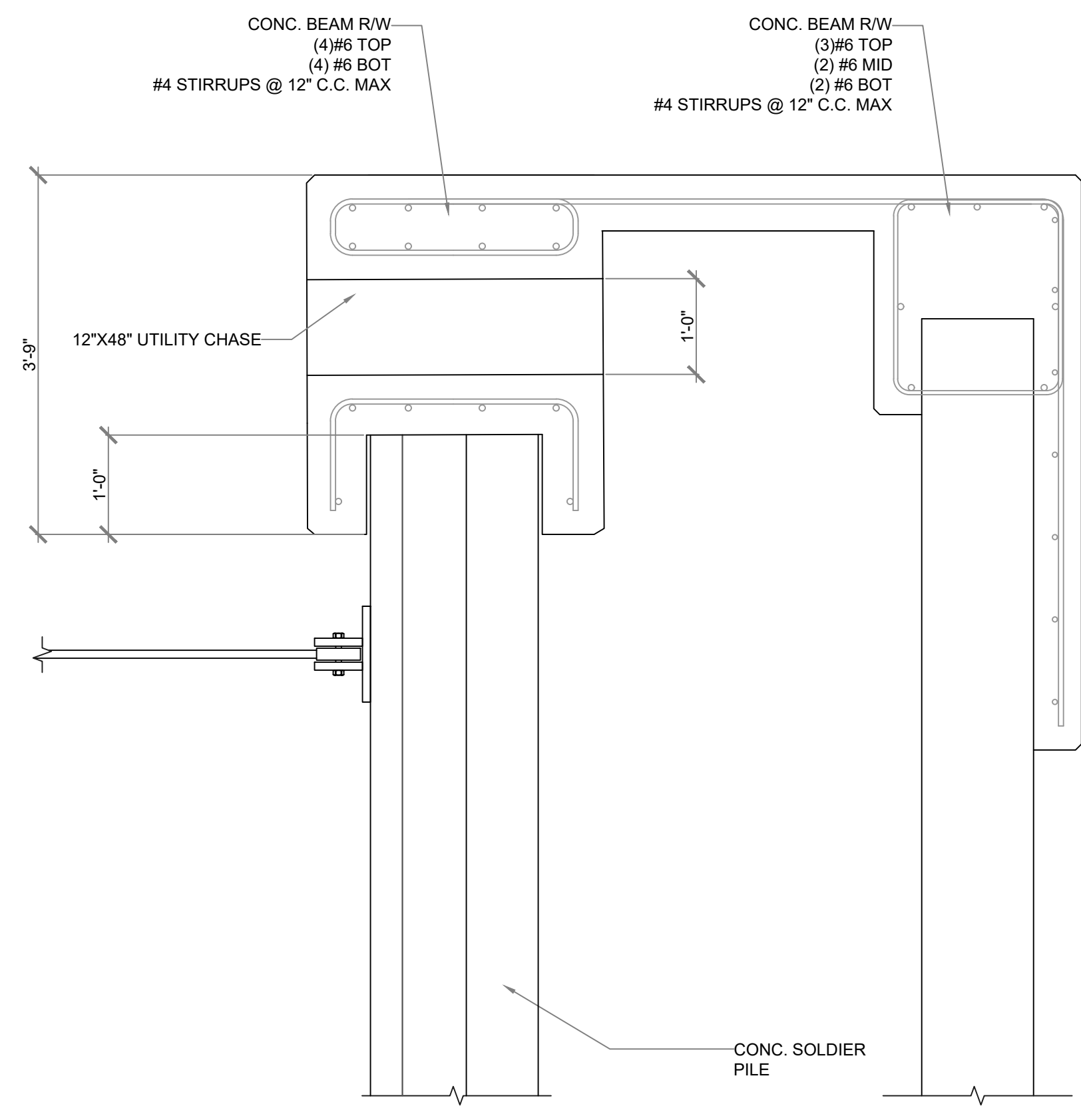
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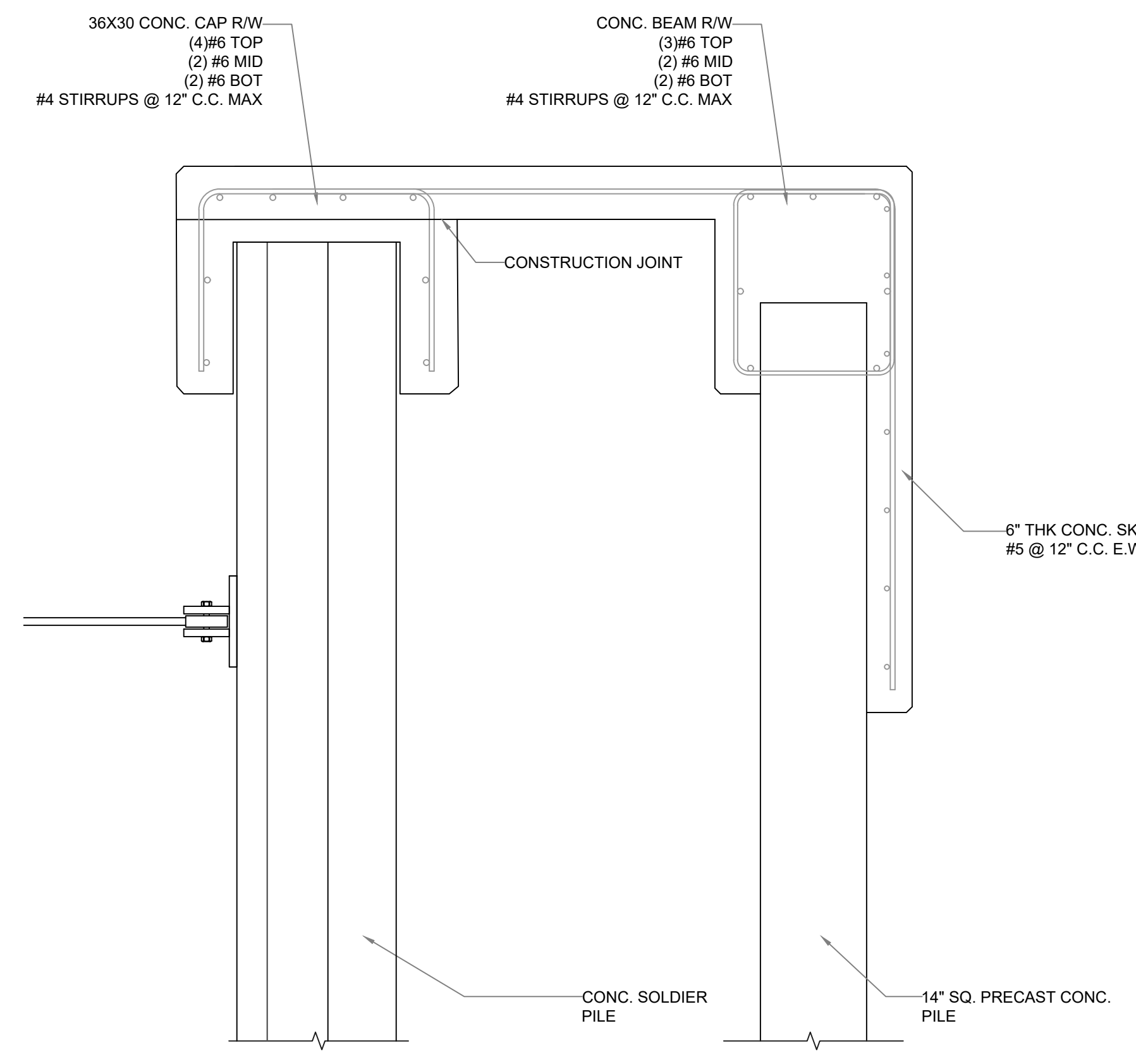
FENDER MOUNTING DETAIL (SOLDIER PILE)
SCALE: 3/4" = 1'-0"



FENDER MOUNTING DETAIL (SSP)
SCALE: 3/4" = 1'-0"



CAP UTILITY CHASE DETAIL
SCALE: 3/4" = 1'-0"



GANGWAY PLATFORM DETAIL
SCALE: 3/4" = 1'-0"

APPENDIX 2
TURBIDITY MONITORING REPORT
TEMPLATE



HURRICANE HOLE MARINA PROJECT DAILY LOG - TURBIDITY MONITORING



Report Date:

Report No.:

Rev. 0

1. TEST POINTS

1. 50 meters upstream from construction activity
2. 50 meters downstream from construction activity

2. MONITORING

Point	Time	Eastern	Western	NTU	Additional Information
1					
2					

3. METEROCEAN CONDITIONS

Point	Wind Speed (Kts)	Wind Dir	Current Dir	Additional Information
1				
2				

4. TIDE

	High	Low
Time		

5. REMARKS

Contractor's Representative:

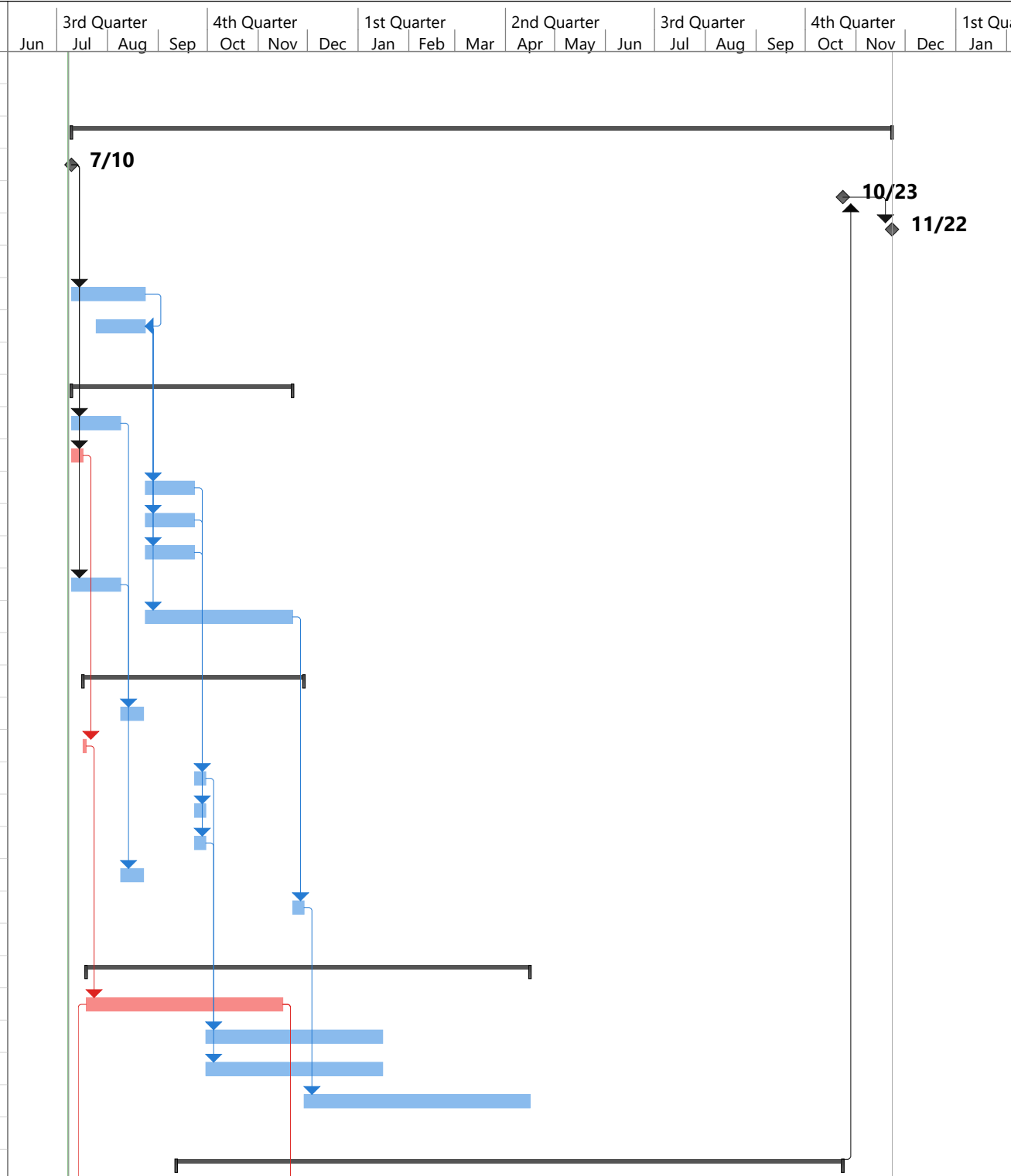
Witness Name:

Position

Position

APPENDIX 3
MARINA CONSTRUCTION SCHEDULE OF WORKS

BMC		HURRICANE HOLE MARINE CONSTRUCTION SCHEDULE																								
ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter				4th Quarter			1st Quarter			2nd Quarter		3rd Quarter			4th Quarter			1st Qu	
							Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1																										
2																										
3		Contractual Milestones	483 days	Fri 7/10/20	Mon 11/22/21																					
4		Contract Execution	0 days	Fri 7/10/20	Fri 7/10/20																					
5		Substantial Completion	0 days	Sat 10/23/21	Sat 10/23/21	35																				
6		Final Completion	0 days	Mon 11/22/21	Mon 11/22/21	5FS+30 days																				
7																										
8		Mobilization	45 days	Fri 7/10/20	Sun 8/23/20	4																				
9		Setup Site compound and office	30 days	Sat 7/25/20	Sun 8/23/20	8FF																				
10																										
11		Submittals	135 days	Fri 7/10/20	Sat 11/21/20																					
12		Environmental Management Plan	30 days	Fri 7/10/20	Sat 8/8/20	4																				
13		Sheet Pile material	7 days	Fri 7/10/20	Thu 7/16/20	4																				
14		Concrete piles	30 days	Mon 8/24/20	Tue 9/22/20	9																				
15		Concrete Mix Design	30 days	Mon 8/24/20	Tue 9/22/20	9																				
16		Reinforcement	30 days	Mon 8/24/20	Tue 9/22/20	9																				
17		Dredge Plan	30 days	Fri 7/10/20	Sat 8/8/20	4																				
18		Dock accessories	90 days	Mon 8/24/20	Sat 11/21/20	9																				
19																										
20		Engineer/Regulatory Review	135 days	Fri 7/17/20	Sat 11/28/20																					
21		Environmental Management Plan	14 days	Sun 8/9/20	Sat 8/22/20	12																				
22		Sheet Pile material	2 days	Fri 7/17/20	Sat 7/18/20	13																				
23		Concrete piles	7 days	Wed 9/23/20	Tue 9/29/20	14																				
24		Concrete Mix Design	7 days	Wed 9/23/20	Tue 9/29/20	15																				
25		Reinforcement	7 days	Wed 9/23/20	Tue 9/29/20	16																				
26		Dredge Plan	14 days	Sun 8/9/20	Sat 8/22/20	17																				
27		Dock accessories	7 days	Sun 11/22/20	Sat 11/28/20	18																				
28																										
29		Material Procurement	253 days	Sun 7/19/20	Thu 4/15/21																					
30		Sheet Piles Material	120 days	Sun 7/19/20	Sun 11/15/20	22																				
31		Concrete Piles	90 days	Wed 9/30/20	Fri 1/15/21	23																				
32		Reinforcement	90 days	Wed 9/30/20	Fri 1/15/21	25																				
33		Dock Accessories	120 days	Sun 11/29/20	Thu 4/15/21	27																				
34																										
35		Site Execution	389 days	Sat 9/12/20	Sat 10/23/21																					

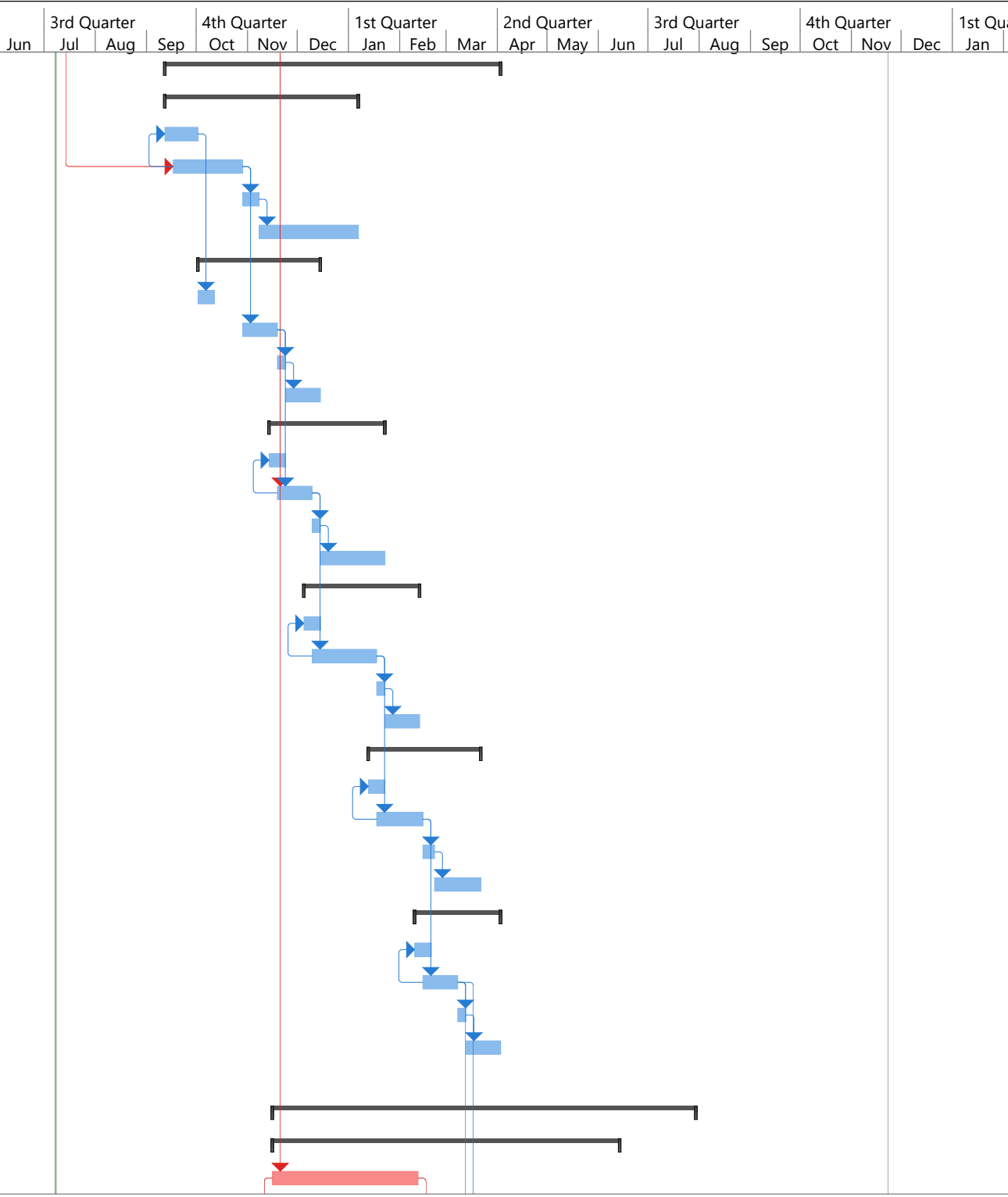


Project: HH_Marine_Schedule_B
Date: Wed 7/8/20

Task		Inactive Task		Manual Summary Rollup		External Milestone		Manual Progress	
Split		Inactive Milestone		Manual Summary		Deadline			
Milestone		Inactive Summary		Start-only		Critical			
Summary		Manual Task		Finish-only		Critical Split			
Project Summary		Duration-only		External Tasks		Progress			

BMC HURRICANE HOLE MARINE CONSTRUCTION SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter		3rd Quarter			4th Quarter			1st Qu
							Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
36	→	Bulkhead	185 days	Sat 9/12/20	Fri 4/2/21																			
37	→	North Inner Bulkhead (600 ft)	99 days	Sat 9/12/20	Wed 1/6/21																			
38	→	Initial Cut Line	20 days	Sat 9/12/20	Thu 10/1/20	39SS-5 days																		
39	→	Drive Sheet piles	42 days	Thu 9/17/20	Wed 10/28/20	30SS+60 days																		
40	→	Backfill	10 days	Thu 10/29/20	Sat 11/7/20	39																		
41	→	Coping Beam	42 days	Sun 11/8/20	Wed 1/6/21	40																		
42	→	West Inner Bulkhead (300 ft)	74 days	Fri 10/2/20	Mon 12/14/20																			
43	→	Initial Cut Line	10 days	Fri 10/2/20	Sun 10/11/20	38																		
44	→	Drive Sheet piles	21 days	Thu 10/29/20	Wed 11/18/20	39																		
45	→	Backfill	5 days	Thu 11/19/20	Mon 11/23/20	44																		
46	→	Coping Beam	21 days	Tue 11/24/20	Mon 12/14/20	45																		
47	→	South West Outer Bulkhead	52 days	Sat 11/14/20	Fri 1/22/21																			
48	→	Initial Cut Line	10 days	Sat 11/14/20	Mon 11/23/20	49SS-5 days																		
49	→	Drive Sheet piles	21 days	Thu 11/19/20	Wed 12/9/20	44,30																		
50	→	Backfill	5 days	Thu 12/10/20	Mon 12/14/20	49																		
51	→	Coping Beam	21 days	Tue 12/15/20	Fri 1/22/21	50																		
52	→	West & North Outer Bulkhead	52 days	Sat 12/5/20	Fri 2/12/21																			
53	→	Initial Cut Line	10 days	Sat 12/5/20	Mon 12/14/20	54SS-5 days																		
54	→	Drive Sheet piles	21 days	Thu 12/10/20	Sun 1/17/21	49																		
55	→	Backfill	5 days	Mon 1/18/21	Fri 1/22/21	54																		
56	→	Coping Beam	21 days	Sat 1/23/21	Fri 2/12/21	55																		
57	→	East Inner Bulkhead	68 days	Wed 1/13/21	Sun 3/21/21																			
58	→	Initial Cut Line	10 days	Wed 1/13/21	Fri 1/22/21	59SS-5 days																		
59	→	Drive Sheet piles	28 days	Mon 1/18/21	Sun 2/14/21	54																		
60	→	Backfill	7 days	Mon 2/15/21	Sun 2/21/21	59																		
61	→	Coping Beam	28 days	Mon 2/22/21	Sun 3/21/21	60																		
62	→	South East Outer Bulkhead	52 days	Wed 2/10/21	Fri 4/2/21																			
63	→	Initial Cut Line	10 days	Wed 2/10/21	Fri 2/19/21	64SS-5 days																		
64	→	Drive Sheet piles	21 days	Mon 2/15/21	Sun 3/7/21	59																		
65	→	Backfill	5 days	Mon 3/8/21	Fri 3/12/21	64																		
66	→	Coping Beam	21 days	Sat 3/13/21	Fri 4/2/21	65																		
67	→																							
68	→	Breakwaters	238 days	Mon 11/16/20	Thu 7/29/21																			
69	→	West Breakwater	192 days	Mon 11/16/20	Sun 6/13/21																			
70	→	Drive sheet piles	70 days	Mon 11/16/20	Thu 2/11/21	30																		

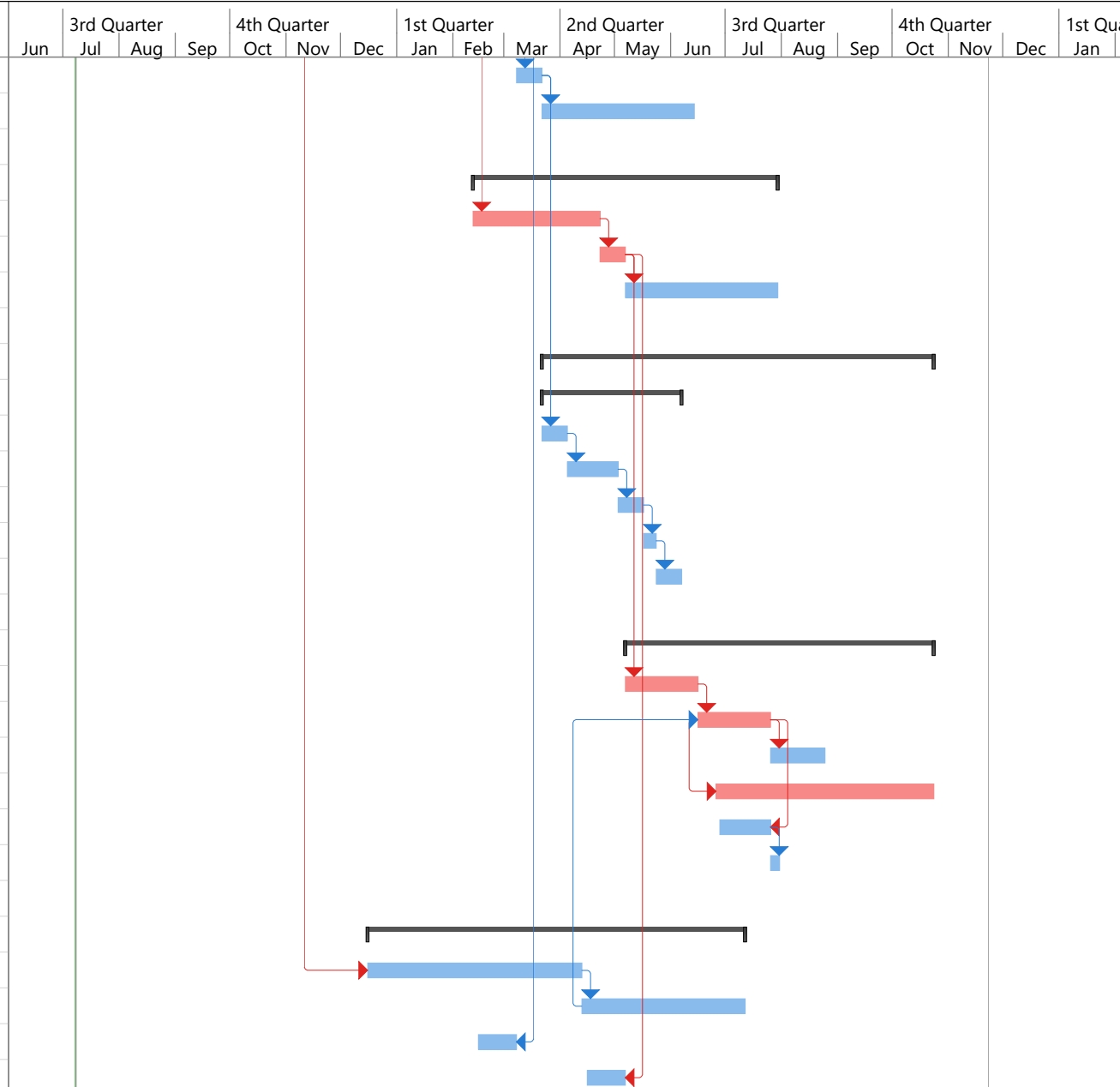


Project: HH_Marine_Schedule_B
Date: Wed 7/8/20

Task		Inactive Task		Manual Summary Rollup		External Milestone		Manual Progress	
Split		Inactive Milestone		Manual Summary		Deadline			
Milestone		Inactive Summary		Start-only		Critical			
Summary		Manual Task		Finish-only		Critical Split			
Project Summary		Duration-only		External Tasks		Progress			

BMC **HURRICANE HOLE MARINE CONSTRUCTION SCHEDULE**

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			1st Qu
							Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
71	→	Install Tie-rods and Backfill	14 days	Mon 3/8/21	Sun 3/21/21	64																			
72	→	Cope Beam & Slab	84 days	Mon 3/22/21	Sun 6/13/21	71																			
73	→																								
74	→	East Breakwater	168 days	Fri 2/12/21	Thu 7/29/21																				
75	→	Drive sheet piles	70 days	Fri 2/12/21	Thu 4/22/21	70																			
76	→	Install Tie-rods and Backfill	14 days	Fri 4/23/21	Thu 5/6/21	75																			
77	→	Cope Beam & Slab	84 days	Fri 5/7/21	Thu 7/29/21	76																			
78	→																								
79	→	Dock Works	216 days	Mon 3/22/21	Sat 10/23/21																				
80	→	Cocnrete Docks	77 days	Mon 3/22/21	Sun 6/6/21																				
81	→	Drive Concrete Piles	14 days	Mon 3/22/21	Sun 4/4/21	71																			
82	→	Install Pile Caps	28 days	Mon 4/5/21	Sun 5/2/21	81																			
83	→	Install Prefabricated deck slabs	14 days	Mon 5/3/21	Sun 5/16/21	82																			
84	→	Anchor and grout	7 days	Mon 5/17/21	Sun 5/23/21	83																			
85	→	Install Dock Accessories	14 days	Mon 5/24/21	Sun 6/6/21	84																			
86	→																								
87	→	Floating Docks	170 days	Fri 5/7/21	Sat 10/23/21																				
88	→	Install Main Walkway Docks	40 days	Fri 5/7/21	Tue 6/15/21	76																			
89	→	Install Figure Docks	40 days	Wed 6/16/21	Sun 7/25/21	88,97SS+45 days																			
90	→	Install Dock Accessories	30 days	Mon 7/26/21	Tue 8/24/21	89																			
91	→	Marina MEP (not in scope)	120 days	Sat 6/26/21	Sat 10/23/21	89SS+10 days																			
92	→	Install Landing Docks	28 days	Mon 6/28/21	Sun 7/25/21	89FF																			
93	→	Install Gangways	5 days	Mon 7/26/21	Fri 7/30/21	92																			
94	→																								
95	→	Dredging	190 days	Wed 12/16/2	Sun 7/11/21																				
96	→	Inland Excavation By Land	100 days	Wed 12/16/2	Mon 4/12/21	70SS+30 days																			
97	→	Inland Excavation By Barge	90 days	Tue 4/13/21	Sun 7/11/21	96																			
98	→	West Dredging	21 days	Mon 2/15/21	Sun 3/7/21	64FF																			
99	→	East Dredging	21 days	Fri 4/16/21	Thu 5/6/21	76FF																			



Project: HH_Marine_Schedule_B
Date: Wed 7/8/20

Task		Inactive Task		Manual Summary Rollup		External Milestone		Manual Progress	
Split		Inactive Milestone		Manual Summary		Deadline			
Milestone		Inactive Summary		Start-only		Critical			
Summary		Manual Task		Finish-only		Critical Split			
Project Summary		Duration-only		External Tasks		Progress			

APPENDIX 4
CORAL RELOCATION PLAN



CORAL RELOCATION PLAN



Prepared for: Sterling Hurricane Hole Limited

Re: Hurricane Hole Marina

Revision 2 Date: 17 September 2020

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1	INTRODUCTION	3
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1 INTRODUCTION

The 19 July 2018 biological assessment report by Design Elements indicated that there are reef building corals present in areas on the site that will be affected by construction activity. Important reef building corals present include three (3) species of *Diploria* (*Diploria strigosa*, *Diploria labyrinthiformis* and *Diploria clivosa*.). *Diadema sp.*, another important reef building species, is also present at the site in moderate abundance. The objective of this coral relocation plan is to identify areas where corals and other reef building species are present on the site, provide an understanding of the proposed activities that would affect important marine species, present options for relocation and outline relocation methodology, monitoring and reporting.

2 SITE DESCRIPTION

Hard corals are distributed along the seawall and rubble. The coral formations show no obvious signs of disease. The overall diversity observed was relatively low as there was only a single individual observed for the majority of the coral species present. Boulder corals in particular *Diploria spp.* were observed to have the highest abundance of individuals. This was observed in the area of concrete rubbles (See figure 1). *Diadema sp.* were observed within the marina basin along the dock piles.



Figure 1: Showing area of most abundances of coral species

Subsequent assessments conducted in March and August 2020 are attached in Appendix 1.

3 POTENTIAL IMPACTS & PROPOSED MITIGATION

The redesign of the marina basin will require dredging which has the potential to impact the surrounding marine environment with sedimentation (turbidity) directly associated with the dredging activity. Removal and relocation of important epifauna is proposed as a mitigation to address impacts to marine life associated with the dredging activity.

4 PROPOSAL FOR RELOCATION

4.1 Relocation timelines

Relocation will commence immediately upon approval and will take approximately seven (7) days.

4.2 Target Species

The relocation exercise will be conducted for all coral and black long spine urchin.

4.3 Relocation Methodology

4.3.1 Corals

Corals will be relocated from the HHM to the designated recipient site. Stony corals will be collected from direct and indirect impact areas within the Project site, including seawall and rubble. Corals will be collected using hand tools, such as chisels, chipping hammers, stainless steel surgical bone-cutters and needle-nose pliers.

Once removed from their current habitat, the corals will be carefully placed in large plastic baskets and allowed to remain on the sea floor while awaiting transport to recipient site. With the assistance of divers, the surface support team will lift the coral-filled containers on board the vessel, where the basket with corals will be placed in larger bins with seawater (to avoid exposure to air) before being transported to the recipient site for reattachment. While in the boat, the tubs should be kept away from direct sunlight.

To increase the overall chance of survival, the relocation sites will be selected based on similar depth, light and temperature conditions as the removal site. Recipient sites will also be selected based on wave-action, habitat type and sediment loads. Proximity to other reef systems or other structures that may attract fish will be considered during site selection.

The coral will be attached using a two-part marine epoxy. The epoxy will be mixed underwater and applied directly to the sites so that the coral can be attached. The coral will be held in place until the epoxy sets. Each coral will be positioned to allow adequate room for growth. Small corals may be affixed directly to submerged rocks or hard-bottom using only marine

epoxy. The surface of the substrate in the recipient location shall be cleaned of algae, cyanobacteria, and sediments with a wire brush prior to attachment.

4.3.2 SCTLTD Management Plan

It has been recently confirmed that the stony coral tissue loss disease (SCTLD) has been reported and confirmed on the western portions of New Providence and Paradise Island. In an effort to reduce the spread of SCTLD divers will follow the protocol set out by the Perry Institute of Marine Science (see Figure 2) which includes:

- Pumping boat water prior to leaving each site and treating bilge water with sodium percarbonate powder.
- Scuba gear will be soaked and cleaned with mild detergent prior to each dive with wetsuits rinsed separately.
- Divers will avoid direct contact with infected coral.
- Divers will also ensure that there is no direct contact between corals when being attached.



STOP THE SPREAD OF STONY CORAL TISSUE LOSS DISEASE



An aggressive disease is spreading fast in the Caribbean and is threatening our corals

Have you been in areas where stony coral tissue loss disease is present?



WATCH OUT! Your boat/gear could be contaminated

AVOID visiting healthy sites after infected ones

DISINFECT between dive sites & **USE** local gear



How to use disinfecting products?/*Suggested brands

Every
5 gallons of water



1 cup Sodium percarbonate powder
*Earthborn Elements

BILGE WATER

PUMP ON SITE
before leaving an area
with SCTLD

TREAT remaining water
by adding sodium
percarbonate

SOAK 10 MINUTES

PUMP OUT
in open water

Every
1 gallon of water
(fresh or seawater)



3-4 full caps
(bleach bottle caps)
*Blanco Chemicals

SCUBA/SNORKEL/FISHING GEAR

ADD bleach as needed
depending on the water
capacity of your rinsing
tank

SOAK gear **5 MINUTES**

RINSE with fresh water

AVOID contact/spilling
concentrated bleach

DISPOSE of dilute
bleach solution at sea

Fill a bucket
with fresh water



Add natural detergent (sodium percarbonate) following manufacturer indications
*Seventh Generation

WETSUITS

AVOID rinsing with
scuba gear

PREPARE soaking
solution

SOAK wetsuit **5 MINUTES**

RINSE with fresh water

Please **FOLLOW**
instructions on
packaging for their use
and disposal

Further dilution in open water will prevent it from killing corals or harming sensitive marine life



YOU CAN HELP US TO STOP THE SPREAD



@perryinstituteformarinescience

www.perryinstitute.org

Figure 2: SCTLD Diver Protocol

4.3.3 Black long spine Urchins

Divers wearing gloves will collect Urchins by picking them up and place them in baskets that will remain on the sea floor while awaiting transport to recipient site. At the end of the day, the urchins will be transported to recipient site in baskets filled with sea water. To avoid predation, they will be released into the relocation site at sunset when they are mobile.

4.4 Safety Precautions

The following measures will be taken to ensure diver safety while conducting the coral relocation exercise.

- Harbour patrol will be notified of the presence of divers in the water and provided with dive locations
- A boat will accompany divers at all time at the removal and recipient sites
- Accompanying boat to have a dive flag visible at all times
- A dive buoy will be installed at location
- Divers will work in teams of two persons
- Basic diver safety protocol will be followed at all times.

4.5 Relocation Team

The relocation exercise will be conducted by a team of qualified and experience divers and biologist as well as assistant divers lead by Janeen Bullard. CVs for all team members are provided in the coral assessment attached in Appendix 1.

4.6 Post relocation monitoring

Monitoring of relocated area will be conducted at one month, three months, six months, nine months, twelve months and year 2 post relocation every quarter.

Assessment will include observation on the health of the reattached coral colonies, colonization of the artificial habitat and document reef fish associated with the recipient site. Photos and measurements will be taken to document any changes over time.

Corals will be analyzed to identify the number of surviving colonies, difference in live tissue cover, rate of disease, number of recruitments in the area, bleaching, boring sponges or other invading organisms, as well as overall health. If algae or other fouling organisms (tunicates, sponges, hydroids, etc.) are found invading the coral, those organisms will be removed. Wire brushes and hand tools will be used to clean areas surrounding the corals, so that algae do not outcompete them.

4.7 Reporting

A Coral Relocation Monitoring Report will be submitted to DEPP upon completion of the relocation exercise.

Reports will be submitted to DEPP after each monitoring exercise.

5 Appendix 1: Coral Relocation Assessment

Hurricane Hole Marina

Coral Assessment



Prepared by: Janeen Bullard

Submitted to: The Bahamas Education, Science and Technology Commission

Date: 05/13/2020

Revision Date: 09/17/2020

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Introduction

On March 6th, 2020, a marine assessment was conducted at the Hurricane Hole Marina Development Project. This assessment focuses on the stony coral and *Diadema antillarum* (Black Long Spine Urchin) populations. Based on the Environmental Impact Assessment (EIA) for this project, coral relocation was suggested as a form of mitigation. This assessment provides an inventory of the stony coral species and suggests a relocation recipient site. An assessment of *D. antillarum* was included into this report, with intention to relocate along with coral individuals.

On August 19th, 2020, an additional assessment was conducted to determine the visible presence of stony coral tissue loss disease (SCTLD).

Methodology

The roving diver method was conducted for both assessments within a specific area of the project boundaries, that was identified in the baseline assessment to have the high abundance of coral and *D.antillarum*.

Map of Site



Figure 1: Satellite image showing surveyed site highlighted in yellow.

Results

Site Description

The assessment was conducted during partially clear skies with scattered clouds. The site is located at N 25° 04.738', W 077° 19.223', which is the south western waterfront of Hurricane Hole Marina. The ecosystem is made up of boulders that were installed as a revetment measure. The water depth at low tide ranges from 1ft – 15ft. Turbidity at the time of the assessment, with the high boating traffic in the main boating channel of Porter's Cay Dock and tidal flow was 12.87 NTU.



Photo 1: Image of rock revetment that corals are attached.

Coral Diversity, Abundance and Size

Coral colonies were observed on boulders near the shoreline, with *Pseudodiploria strigosa* being the most abundant. The diversity was low with seven (7) observed species.

Table 1: Listing of stony coral species observed during assessment.

Scientific Name	Common Name	Abundance (Approx.)	Length (Mean. Cm)	Width (Mean. Cm)	Height (Mean. Cm)
<i>Porities porities</i>	Finger Coral	2	18	13	9
<i>Porites astreoides</i>	Mustard Hill Coral	1	18	15	10
<i>Montastraea spp</i>	Mountainous Star Coral	14	28	18	14

Scientific Name	Common Name	Abundance (Approx.)	Length (Mean. Cm)	Width (Mean. Cm)	Height (Mean. Cm)
<i>Pseudodiploria clivosa</i>	Knobby Brain Coral	30	22	20	15
<i>Pseudodiploria strigosa</i>	Symmetrical Brain Coral	33	25	20	17
<i>Porites furcata</i>	Branched Finger Coral	1	15	12	17
<i>Agaricia agaricities</i>	Lettuce Coral	1	20	12	7



Photo 2: Image of *Pseudodiploria strigosa*.



Photo 3: Image of *Pseudodiploria clivosa*.

Coral Health

No diseases were recorded on the corals surveyed at time of the assessments. However, 14% of the corals were observed to have old dead tissue.

Coral Distribution

The distribution of stony corals was observed between 19ft – 35ft from the seawall.

D. antillarum Abundance

D. antillarum were found throughout the rock revetment.

Table 2: Listing of *D. antillarum* observed during assessment.

Scientific Name	Common Name	Abundance (Approx.)	Juvenile	Adult
<i>Diadema antillarum</i>	Black Long Spine Urchin	200	2	198



Photo 4: Image of *D.antillarum*.

Discussion

Corals

The stony corals identified in this assessment were observed to be in good health. With approximately 14% of observed corals, having old dead tissue. Two factors visually identified to affect coral individuals were competition (intraspecific and interspecific) and sedimentation.

During the assessment on August 19th one (1) hybrid coral of *Orbicella faveolata* and *Orbicella annularis* which showed signs of old dead tissue lose but not SCLTD. There was also level 1 bleaching observed. Based on this species will be relocated using additional precautionary measures such as reduced handling of coral, ensuring that transfer time between donor site and relocation is limited and monitoring temperatures at the relocation site to ensure it is not higher than the donor site.

D.antillarum

After the die-off of *D.antillarum* in the 1980s, the demand for herbivores within a reef system became high. Algae dominated the reefs, covering substrate, overgrowing on coral and hindering feed processes like photosynthesis in organism in its understory. According to researchers *D.antillarum* has the highest rate for consuming algae among reef herbivores. Thus, acting as the most important participant in the fight against algae dominated reefs. The abundance of individuals located within the impact zone, is a high priority and will be preserved.

Recommendation

Based on the data collected in this assessment, it is suggested that corals and *D.antillarum* be relocated as a mitigation measure to the proposed dredging activities. The relocation of coral species should be guided by a selection process based on coral health and size. Mature corals have a higher chance of survival as opposed to juveniles or corals less than 5cm. Assessed corals show no identifiable signs of health issues and the majority of sizes ranged from 15 cm to 28cm in length, thus, all are eligible for relocation.

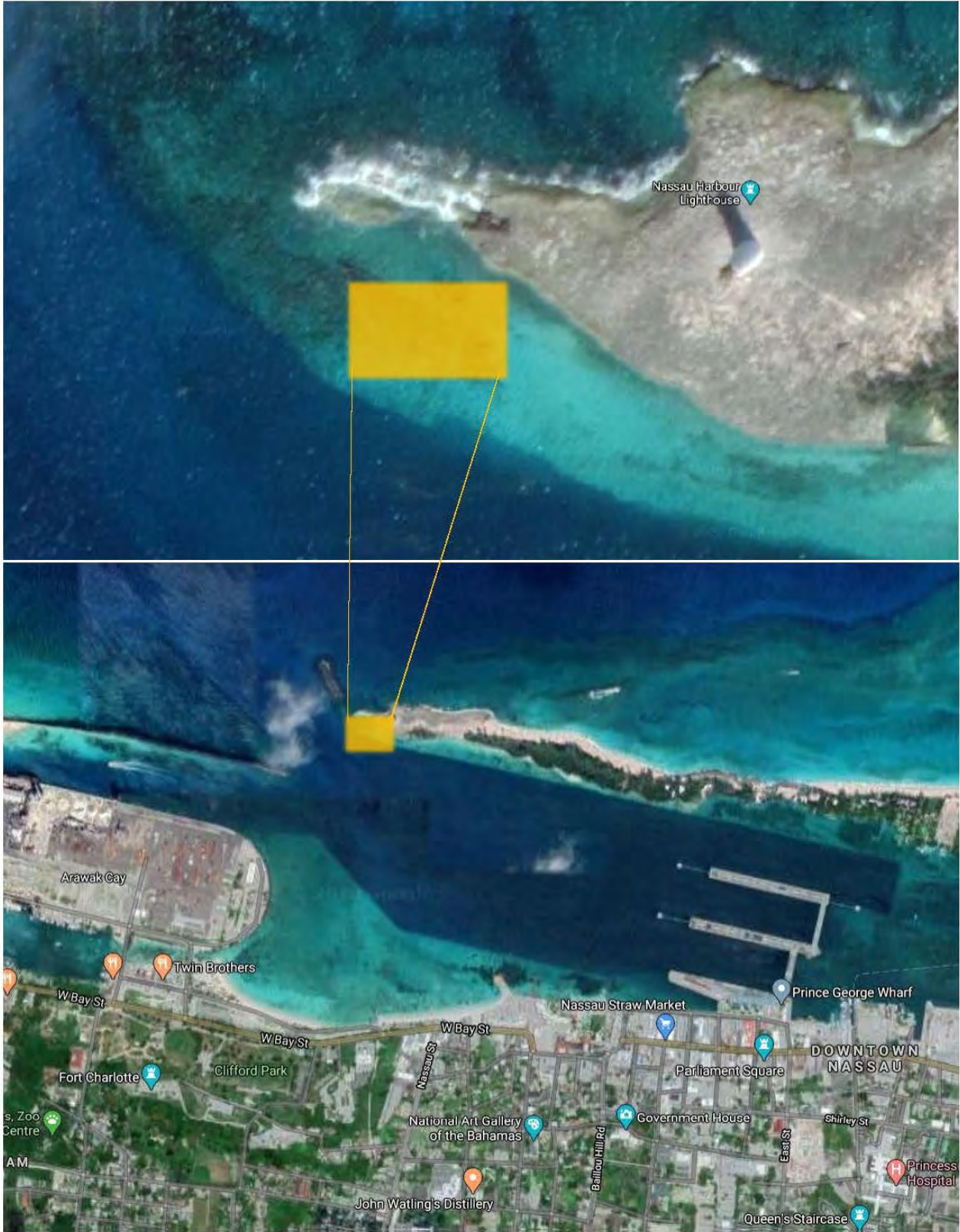


Figure 2: Satellite image showing proposed recipient site.

The recent confirmation of SCTL D around the western end of New Providence and Paradise island reduces the possible relocation sites and corals will not be placed in an area that is infection free. It is noted that although the donor corals may not appear to be infected, it is not guaranteed that this is the case. Relocation was recommended to the western end of Paradise Island to reduce the spread of SCTL D. Therefore, it is proposed that the location with GPS coordinates of N 25°05.287' W 077°21.177' (Figure 2) be the recipient site. This location was selected based of the water depth of 0 – 20ft, available hard substrate as well as existing reef community. The corals will be attached at the south side of existing breakwater boulder structures. This would allow corals to be in similar depths to donor site and allows enrichment direct through upwelling from deeper water.



Photo 5: Image of proposed site with SCTL D infected corals.

Relocation Site

A rapid habitat assessment conducted on the recipient site, revealed a community composition of soft and stony coral, freshly and calcareous algae and fish.

The proposed recipient site appears to be a safe distance from current and any future upland and marine development but is within the Nassau Harbor and near constant boat traffic. Other possible relocation sites that are in the vicinity would be in the direct footprint of future development. The possible relocation site has a wide surface area for attachment that stretches from the southern side to the northern side, with the northern side exposed to high energy waves. The recipient site and the donor site are approximately 11,000 ft apart from each other and the proximity reduces the level of stress associated with travel time once detached from the donor site and hopefully reducing its susceptibility to SCLTD (see figure 3).



Figure 3: Map showing the proximity of the donor site to the relocation site.

Relocation exercises will take approximately seven (7) days and will occur prior to dredging activities. Due to the size of the corals and for diver safety, divers will be paired with one technical diver and one assistant. To reduce the handling of coral and the exposure to the sun, once they have been detached, they will remain on the seafloor in bins until time to move to the recipient site. At the relocation site each team will be responsible for identifying an appropriate attachment site, scrubbing with a wire brush to clean the surface, applying the epoxy to the base of each coral and ensure attachment. The coral will then be tagged by attaching a plastic number to the substrate next to the coral. Each coral will be measured for

height and length then photographed using a camera quadrat and analyzed for coral monitoring.

SCTLTD Management Plan

Divers will follow the protocol set out by the Perry Institute of Marine Science (see appendix B) which includes:

- Pumping boat water prior to leaving each site and treating bilge water with sodium percarbonate powder.
- Scuba gear will be soaked and cleaned with mild detergent prior to each dive with wetsuits rinsed separately.
- Divers will avoid direct contact with infected coral.
- Divers will also ensure that there is no direct contact between corals when being attached.

Diver Roles and Responsibilities

Diver Roles will include one technical diver paired with an assistant. The assistant divers have also been included for national capacity building purposes to ensure persons in country are experienced and qualified to undertake relocation exercises in the future. Divers have also been paired for safety reasons. The assignments are as follows:

Technical Divers

Lead - Janeen Bullard, MSc

Ancilleno Davis, PhD

Tamanji Bethel, BSc

Christina McPhee (photography and runner)

Assistant Diver

Neil Peterson

Eugene Pinder

Linzi Knowles

Prior to relocation activities divers participate in a coral identification of the coral species to be relocated as well as review of the coral ecology to make decisions based on coral placement such as growth patterns, competition between species, access to light or shade etc. based on AGRR. Logistics and equipment are to be arranged by Janeen Bullard, Principal of JSS Consulting. Diver safety is also reviewed by Neil Peterson (Dive Instructor) to ensure

safe practices are used. See the appendix for team resumes and a letter of recommendation from Dr. Craig Dahlgren, Director of the Perry Institute of Marine Science.



Photo 6: Image of proposed recipient reef.



Photo 7: Image of substrate at proposed recipient reef.

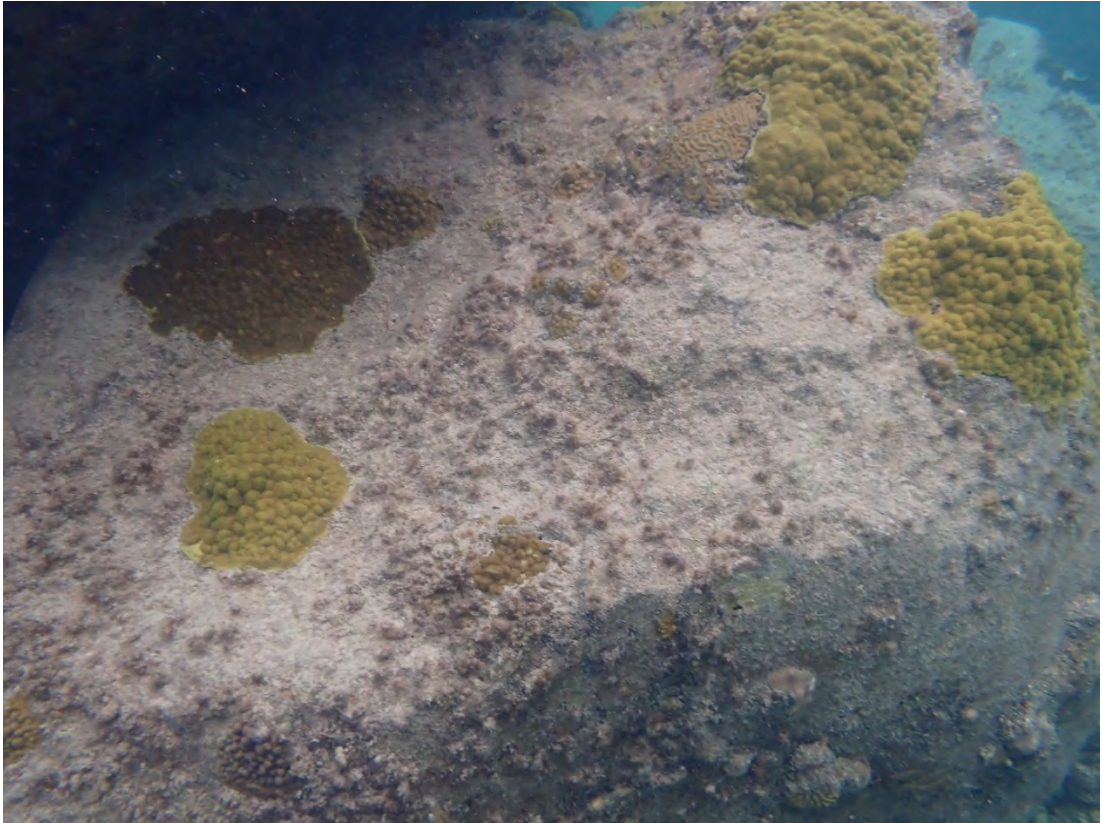


Photo 8: Image of substrate at proposed recipient reef.



Photo 9: Image of substrate at proposed recipient reef.

References

Charpin, F. Florent's Guide To The Tropical Reefs. 2019.

<https://reefguide.org/carib/index1.html>

Lessios, H.A. The Great Diadema antillarum Die-Off: 30 Years Later. 2016 Smithsonian Tropical Research Institute, Balboa, Panama.

<file:///C:/Users/Tamanji/Desktop/The%20Great%20Diadema%20antillarum%20Die-Off%2030%20Years%20Later.pdf>

The Atlantic and Gulf Rapid Reef Assessment (AGRRA). 2020. <https://www.agrra.org/>

Appendix A: Resumes and References

JANEEN MARLO BULLARD

Phone: (242) 357-9262
jmbullard2109@gmail.com

25 Turnquest Alley
Nassau, Bahamas

With over 15 years of experience in the scientific and environmental field I can bring forth a plethora of skill sets that range from multi-tasking, planning and coordination, management of personnel and time as well as confidential handling of sensitive information and resources. I am dedicated and hardworking, with a passion for excellence. I possess skills in project management, educational & public outreach and research & development.

EDUCATION

- | | | |
|------------|---|------|
| MSc | Tuskegee University, Biology (Concentration in Plant and soil Science)
Thesis: The Effects of Superoptimal CO ₂ on the Growth, Yield, Gas Exchange, Stomatal Conductance and Starch of Sweet Potato and Peanut. | 2004 |
| BSc | Tuskegee University, Marine Biology | 1999 |

EXPERIENCE

Coral Relocation Training

- AGGRA Coral Training with Phil Kramer (co-founder)
- Dauphin Island Sea Lab, Ecology of Coral Reefs Course and Technical Lab (Undergraduate studies)
- Dauphin Island Sea Lab, Marine Restoration Ecology (Undergraduate studies)
- The Nature Conservancy, Coral Reef Restoration (2013)
- The Nature Conservancy, AGRRA Coral Surveys (2013)
- The Perry Institute of Marine Science, AGRRA Benthic Survey Techniques (2013)

Coral Relocation Experience

- Approved for Briland Club Marina Relocation but not yet completed
- White Bay Cay Coral Relocation for construction mitigation
- Ocean Cay Marine Reserve Coral Relocation and Monitoring for construction mitigation
- Ocean Cay Marine Reserve Research Lab Design, Planning and Development
- The Nature Conservancy Coral Restoration Project under the Atlantis Blue Project Foundation, Diver

Environmental Specialist (2011 – Present)

Projects

- Adelaide Creek Development Project; Nassau, The Bahamas Environmental Impact Assessment (EIA) and Marine Assessment
- Exuma International Airport Infrastructure Project, Exuma, The Bahamas Environmental and Social Baseline Assessment (ESBA)

- Community Based Conch Management in the Family Islands, Establishing community-based management of a marine protected area Stakeholder Management Plan (SMP), Environmental Baseline Assessment (EBA)
- Rose Island Development; Rose Island, The Bahamas Marine Assessment EIA
- Paradise Island Benthic Assessment, Royal Caribbean, The Bahamas, EIA
- Coco Cay Island Development, Coco Cay, The Bahamas Environmental Management (EM), Botanical, Marine and Avian Assessment EIA, EBA (four separate assessments completed, Environmental Management Services)
- Ocean Cay, Bimini, The Bahamas; EMS, Coral Relocation Monitoring, Public Outreach, Rapid Ecological Assessment (REA)
- The Harbor View Marina Project, Nassau, The Bahamas EBA
- The Staniard Creek Bridge and Causeway Replacement Central Andros, The Bahamas, EMP
- Briland Residence and Marina, Harbour Island, The Bahamas, and Marine Assessment for EIA
- South Andros Water Improvement Project, EMP, EMS
- Barbuda Airport, Antigua and Barbuda, Herpetological Assessments for EIA
- North Windermere Island, Eleuthera, The Bahamas; Marine Assessment for EIA
- The Pointe Marina Development: Nassau, The Bahamas; EMP, EMS
- The Big Pond Park Development Project, New Providence, The Bahamas EMS
- Orchid Bay; Abaco, The Bahamas; Marine Assessment for EIA
- Airport Gateway Project, New Providence, The Bahamas; EMS
- White Bay Cay, Exuma Cays, The Bahamas; Marine Assessment
- Stocking Island, Exuma Cays, The Bahamas; Botanical, Avian and Marine Assessment for EIA
- February Point, Exuma, The Bahamas; Avian and Marine Assessments for EIA
- Deep Water Cay, Grand Bahama, The Bahamas; Wetland Assessment
- Matt Lowe Cay, Abaco Cays, The Bahamas; Avian Assessment for EIA
- Governor's Harbour Amy Base, Eleuthera, The Bahamas; Avian for EIA
- Abaco Forestry, Abaco, The Bahamas; Botanical Assessment for EIA
- The Pointe, New Providence, The Bahamas; Marine Assessment for EIA
- Norman's Cay, Exuma Cays, The Bahamas; Botanical and Avian Assessment for EIA
- Ocean Cay, Bimini, The Bahamas, Avian Assessment for EIA
- LNG Pipeline, New Providence, The Bahamas; Botanical Assessment for EIA
- White Bay Cay, Exuma, The Bahamas; Marine Assessment for EIA
- Old Fort Bay Town Center, New Providence, The Bahamas; Avian Assessment, EIA and EMP
- Bimini Bay, Bimini, The Bahamas, Marine Assessment for EIA
- Hurricane Hole Marina, Paradise Island, The Bahamas; Marine and Stakeholder Assessment, EBA
- Sandals, Exuma, The Bahamas, Avian Assessment for EIA
- Finley Cay, New Providence, The Bahamas; Marine Assessment EIA
- Ferguson Road, New Providence, The Bahamas; EMS
- Elbow Cay, Abaco, The Bahamas, Marine Assessment for EIA

- Hermitage, Exuma, The Bahamas; Botanical and Avian Assessment for EIA
- Governor's Harbour Army Base, Eleuthera, The Bahamas; Avian Assessment for EIA
- Bahamar Back of House, New Providence, The Bahamas; Botanical Assessment and Protected Trees Survey
- Witches Point, Abaco, The Bahamas, Benthic Assessment for EIA
- Buttonwood Reserve, Eleuthera, The Bahamas, Botanical assessment for EIA
- Master Harbor, Exuma, The Bahamas, Botanical Assessment for EIA
- Hog Cay, Exuma, The Bahamas; Botanical and Avian Assessment for EIA
- Exuma Highway, Exuma, The Bahamas; Botanical Assessment
- University of the Bahamas, New Providence, The Bahamas, Avian Assessment for EIA and EIA
- Caribbean Global Timber, Abaco and Andros, The Bahamas, EIA

Project Coordinator

- Cane Toad Eradication, Lyford Cay, Nassau, The Bahamas
- Cane Toad Eradication, Marsh Harbour, Abaco, The Bahamas

Parks Planner and Community Liaison Officer (2006-2011) Bahamas National Trust, Nassau, Bahamas

Duties

- Develop proposals to government for the establishment of new National Parks.
- Grant writing
- Develop General Management Plans for existing National Parks.
- Work with surrounding communities to gain support for the importance of establishing new National Parks.
- Project Management for the establishment of the Leon Levy Native Plant Preserve, Eleuthera, The Bahamas.
- Manage all daily details and education of staff for educational programs.
- Organize all special events for the Education Department.
- Liaise with corporate sponsors in order to further fund educational programs.
- Develop marine education lesson plans and activities (on and off site) for grade levels K-12 and college students.
- Attendance and professional presentations at events both locally and abroad.
- Development of the National High School Marine Science Curriculum.

Research Assistant (2001-2004) Tuskegee University, Tuskegee, AL

- Developed and maintained research projects in conjunction with Tuskegee University and NASA.
- Aided in the daily maintenance and running of a greenhouse.
- Organized and taught Environmental and General Biology courses.

Marine Mammal Trainer (1999-2001) Dolphin Encounters, Blue Lagoon, Bahamas

- Trained Atlantic Bottlenose Dolphins in educational and interactive programs.

- Assisted in developing marine conservation and educational programs.

AUTHOR

The Bahamas Sixth National Report on Biological Biodiversity to The Convention on Biological Diversity (present)

Zoning and Management Plan for the East Grand Bahama National Park (present)

Co-Author of the “Andros Sustainable Development Masterplan” (2014)

Author of the “Critical Situation Analysis of Invasive Alien Species for The Bahamas” (2013)

PRESENTATIONS AND INVITED LECTURES

Policies, Strategies and Best Practices for Managing Invasive Alien Species (IAS) in the Insular Caribbean March 31st – April 4th 2014 Trinidad. Port of Spain, Trinidad & Tobago. The Cane Toad Invasion: Its Origin, Status and The Bahamas’ Response to prevent spread.

Policies, Strategies and Best Practices for Managing Invasive Alien Species (IAS) in the Insular Caribbean March 31st – April 4th 2014 Trinidad. Port of Spain, Trinidad & Tobago. Developing a National IAS Strategy focused on IAS prevention – a case study of the Bahamas’ 2003 -2013 experience.

Bahamas Natural History Conference 2016 The Cane Toad Invasion: Its Origin, Status and The Bahamas’ Response to prevent spread

Bahamas Natural History Conference 2018 Citizen Science and Community Involvement can help! Invasive Cane Toads (*Rhinella marina*) control in The Bahamas continues.

PROFESSIONAL TRAINING

2019 IDB Principles of the Review of Environmental Impact Assessments

2019 The Perry Institute of Marine Science, AGRRA Benthic Survey Techniques

2018 Georgia Tech Professional Education Center – OSAHA Approved Trainer

2017 Conservation Training Introduction to Resilience for Development

2017 Inter-American Development Bank Project Management Techniques for Development Professionals

2015 IICA, Efficient use of Rainwater and Runoff in Agricultural Activities, Chitre, Panama

2015 IICA, Agro-Eco Tourism Training Workshop

2014 Commercial Training Center of Department of Commerce, Hainan Province, China
Climate Change on Tropical Island and Economic Development for Developing Countries

2013 The Nature Conservancy, Coral Reef Restoration

2013 The Nature Conservancy, AGRRA Coral Surveys

2010 The Bahamas National Trust, Business Writing

2010 The Bahamas National Trust, Public Presentation

2009 The Nature Conservancy, Bush Fire Management

2009 The Nature Conservancy, Invasive Species Management

2009 College of The Bahamas, Mangrove Forest Ecology, Management and Restoration

2008 International Fund for Animal Welfare, Certificate of Completion for Whale Watch
Guide Training

2006 National Association of Interpretation, Certified Interpretive Guide 2006 Tuskegee
University, 1st Place Graduate Oral Presentation Sigma Xi 2005 Tuskegee University,
Certificate of Effective Leadership

1995 Auburn University, NAUI Scuba Certified

PROFESSIONAL AFFILIATIONS

SEEDS-Ecological Society of America

Sigma Xi Scientific Research Society

Beta Kappa Chi Honor Society

National Association for Interpretation

National Marine Educators Association Name of Organization

REFERENCES

Available upon request

ANCILLENO ORLANDO DAVIS, PHD

P.O. Box FH14101, Nassau, Bahamas | +1 242 826-0405 (mobile) | ancilleno@scienceandperspective.com

EDUCATION

Miami University, Oxford OH, USA Ph.D. in Ecology, Evolution and Environmental Biology Dissertation: Understanding, enhancing and engaging with citizen science bird monitoring in eBird	2018
Miami University, Oxford OH, USA Graduate Certificate in Advanced Studio Art	2018
Miami University, Oxford OH, USA Graduate Certificate in College Teaching	2018
Miami University, Oxford OH, USA Graduate Certificate in Applied Statistics	2017
University of Maryland Eastern Shore, Princess Anne MD, USA M.Sc. in Marine Estuarine and Environmental Science Thesis: Epifloral and epifaunal assemblage of <i>Fucus vesiculosus</i> L. (Bladderwrack) in Indian River Inlet, Delaware, USA	2006
University of Maryland Eastern Shore, Princess Anne MD, USA B.Sc. Environmental Science Area of Concentration: Marine Science Magna cum Laude	2005
University of The Bahamas, Nassau N.P., Bahamas A.A. Biology with Chemistry	2001

AWARDS

Lavatus Powell Diversity Award – Graduate Students of All Nations (organization nomination)	January 2016 & January 2017
Lavatus Powell Diversity Award – Graduate student (individual nomination)	January 2016 & January 2017
Future Voices Sustainability Art Contest	May 2015 – December 2015
Marine Estuarine and Environmental Science Fellowship award	August 2005 – December 2006
Kirtland's Warbler Research and Training Program Scholarship	August 2003 – May 2005
Marilyn Tolo Scholarship	August 1998 – December 2001

CORAL RESTORATION

Blue Lagoon Island, Salt Cay Key Biodiversity Area, Bahamas Sustainability Coordinator and Ecologist	2019
Planning and establishment of the Blue Lagoon Coral Nursery in collaboration with the Bahamas Reef Rescue Network : collection, relocation and transplant of coral fragments into the nursery; regular cleaning and assessment of coral health in the nursery.	
Bahamas Reef Rescue Network, Bahamas Coral Nursery volunteer, Ecologist Clean and maintain coral in the coral nurseries and support, coordinate or participate in coral fragment collection, transportation, or relocation within the Bahamas including the Blue Lagoon Island, Bahamar, and BREEF Sculpture Garden Nurseries.	December 2018 - present
Science and Perspective, Bahamas CEO/OWNER, Ecologist Conduct environmental surveys and community assessments including Marine fish surveys within coral nurseries to determine effect of coral cover on marine communities.	December 2018 - present
New Providence, Bahamas	

<p>Marine ecologist/SCUBA diver - SEV consulting Cleaned silt from coral heads in marine environments for clients in the Bahamas</p>	<p>2011</p>
<p>The Bahamas National Oil Spill Response Team Logistic coordinator and Marine Survey Observer Collaborated with local and international scientists, government agencies and military personnel to conduct pre-impact ecosystem assessment of the Cay Sal Bank, in response to the Deep Water Horizon Oil Spill. Facilitated research and training meetings for oil spill response team members. Conducted the AGRRA coral and fish surveys within the Cay Sal Bank including assessing disease and damage.</p>	<p>April 2010 – May 2010</p>
<p>The Khaled bin Sultan Living Oceans Foundation (LOF) - Global Reef Expedition Bahamas Coordinator Drafted application for the Bahamas to be the first country on the Global Reef Expedition. Collaborated with The LOF, government ministries, NGO's and commercial partners to develop local itineraries, priorities and best practices for marine research. Coordinated local scientists to participate in data collection including developing training programs where necessary to develop needed capacity. Conducted data collection and entry using AGRRA protocols. Facilitated import of specialized equipment for visiting scientists for coral health and recruitment.</p>	<p>August 2010 – December 2011</p>
<p>The Bahamas First Coral Nurseries – New Providence, Bahamas Project Leader Assessed and adapted US National Oceanic and Atmospheric Administration and Coral Restoration Foundation techniques and procedures for application in the Bahamas. Used Geospatial Information Systems to determine feasible locations for coral nursery implementation. Collaborated with TNC, Kerzner Marine Foundation, BNT and Bahamas Department of Marine Resources to raise funds for training, supplies and implementation. Coordinated local and international scientists for training and nursery establishment. Maintained nursery records and assessed coral growth on the first ever, in-situ coral nurseries in the Bahamas.</p>	<p>August 2010 – August 2012</p>
<p>TEACHING EXPERIENCE</p>	
<p>Miami University, Oxford OH Laboratory Instructor – Introductory Biology Followed established procedures and format; administered grades</p>	<p>2018</p>
<p>Miami University, Oxford OH Laboratory Instructor - Ornithology Developed teaching materials and examinations, following established format, administered grades</p>	<p>2018</p>
<p>Laboratory Instructor – Introductory Biology Followed established procedures and format, administered grades</p>	<p>2017</p>
<p>Assistant Instructor – Tropical Marine Ecology Delivered ecosystem content and supported student learning and in water safety; trained students in ecosystem survey methods</p>	<p>2015</p>
<p>Instructor – Social Media 101 (Institute for Learning in Retirement) Developed syllabus and adaptive course content to introduce nontraditional students to modern social media</p>	<p>2015</p>
<p>Instructor – Photography, Conservation and Culture in the Bahamas (Study Abroad, USA – Bahamas) Developed syllabus and overall course structure in collaboration with Art faculty; planned, coordinated and lead students on multi-island study abroad workshop</p>	<p>2015</p>
<p>Teaching Assistant – Tropical Marine Ecology Delivered ecosystem content and supported student learning and in water safety; trained students in ecosystem survey methods</p>	<p>2013</p>
<p>Bahamas Reef Environment Educational Foundation, San Salvador Island, Bahamas Instructor Teacher Training Workshop 2011 – Coral Reef Ecology, Sustainability, and Water Safety Developed course content and teaching materials to meet student needs; supported student safety in water</p>	<p>2010</p>

Instructor Teacher Training Workshop 2009 – Coral Reef Ecology, Terrestrial Ecology, and Water Safety Developed course content and teaching materials to meet student needs; supported student safety in water	2008
University of the Bahamas, Nassau N.P., Bahamas Lecturer – Introductory Biology (Non-Majors) Developed course content and teaching materials to meet established curriculum requirements	2010
University of Maryland Eastern Shore, Oxford OH Lab Instructor – Marine Botany Taught practical procedures and methods for Marine Botany, administered grades	2006
Instructor - Biology Lab Followed established syllabus and format, administered grades	2005
Supplemental Instructor – Calculus Based Physics Provided alternative teaching methods for physics students	2005
Supplemental Instructor – Economics (Micro/Macro) Provided alternative teaching methods for economics students	2005
Professional Association of Dive Instructors (PADI) Open Water SCUBA Instructor/ CPR and First Aid Instructor Safely deliver and evaluate standardized, measures-based content focused on mastery	2009
ReefCheck, Tropical Western Atlantic Instructor Taught local groups how to conduct a ReefCheck coral reef ecosystem survey using SCUBA or snorkel gear	2009
Atlantic and Gulf Rapid Reef Assessment (AGRRA) Instructor Taught local groups how to conduct AGRRA marine assessments, coral and fish Identification	2011

LEADERSHIP EXPERIENCE

BirdsCaribbean, Virginia, USA; Bahamas; Caribbean Director-At-Large Promote and implement multilingual bird related education, training and conservation throughout the Caribbean; translate and review articles for the Journal of Caribbean Ornithology; Coordinate regional meetings with across political, linguistic and cultural borders with diverse partners	October 2012 – present
Bahamians Educated in Natural and Geospatial Sciences Founder – Primary Coordinator Connect Bahamian students and scientists with educational and professional opportunities in science, locally and internationally; foster an interdisciplinary network of scientists in the Bahamas	February 2011 – present
Graduate Students of All Nations, Miami University, Oxford OH, USA Founder - President Support and advocate for international students and scholars’ social, economic, and academic success through collaboration with on-campus support services and local businesses	August 2015 – present
Graduate Council, Miami University, Oxford OH, USA Graduate Students of Color/ Graduate Students of All Nations representative Support and advocate for graduate students of color and international students and scholars’ social, economic, and academic success via evaluation of graduate school petitions and discussions of university policy.	August 2015 – present
Center for American and World Cultures Advisory Council, Miami University, Oxford OH, USA Member – Graduate Student Representative Support and advocate for international students and scholars’ social, economic, and academic success through collaboration with on-campus support services and local businesses	August 2015 – present
Midwest Ecology and Evolution Conference	

Steering Committee - Social Media and Website Coordinator

Developed and coordinated digital website content and integration with social media and email publicity of the event; coordinated transfer of content to subsequent conference committee

May 2015 – May 2016

Biology Graduate Student association, Miami University, Oxford OH, USA

Graduate Student Representative to the Biology department Visibility and Web Committee

Support Biology Department use of digital media via web pages and social media, to promote student work and program offerings.

May 2014 – May 2015

Biology Graduate Student association, Miami University, Oxford OH, USA

Graduate Student Representative to the Biology department faculty meetings

Provide Graduate student perspective on topics of concern in faculty meetings and report to Biology Graduate Student Association on topics discussed in the meetings.

May 2014 – May 2015

The Nature Conservancy (TNC)

Conservation Coordinator

Coordinated conservation capacity building, outreach, and education projects in the Bahamas. Recruited or trained Bahamian researchers to collect ecosystem data in marine environments. Coordinated with National Ministries to deliver appropriate educational content to agents and schools throughout the country.

July 2008 – August 2012

The Kerzner Marine Foundation’s (KMF) “The Blue Project”

Coordinator

Established and monitored appropriate goals, timelines and budgets to improve national capacity for conservation of native coral reefs and associated ecosystems. Coordinated conservation capacity building, outreach, and education projects in the Bahamas. Recruited or trained Bahamian researchers to collect ecosystem data in marine environments. Coordinated with National Ministries to deliver appropriate educational content to agents and schools throughout the country.

July 2008 – August 2012

The College of the Bahamas Job Placement and Career Advisory Committee

Science and Environment Industry Representative – Elected Vice Chair (August 2010- June 2011)

Established student engagement and training goals, coordinated national career day for college and high school students with interdisciplinary team. Collaborated with industry and government agency leadership to determine national goals for capacity building and education.

September 2009 – June 2011

The Bahamas Million Tree Campaign

Coordinator

Collaborated with Ministry of Environment, Bahamas National Trust, The Nature Conservancy and Commercial Plant growers to develop a nationwide native plant discount program and collect volunteer data from local groups and individuals that planted native species. Coordinated tree plantings with local government and official opposition ministers in public parks nationwide.

August 2008 – December 2009

The Khaled bin Sultan Living Oceans Foundation (LOF) - Global Reef Expedition

Bahamas Coordinator

Drafted application for the Bahamas to be the first country on the Global Reef Expedition. Collaborated with The LOF, government ministries, NGO’s and commercial partners to develop local itineraries, priorities and best practices for marine research. Coordinated local scientists to participate in data collection including developing training programs where necessary to develop needed capacity. Conducted data collection and entry using AGRRA protocols. Facilitated import of specialized equipment for visiting scientists.

August 2010 – December 2011

The Bahamas First Coral Nurseries – New Providence, Bahamas

Project Leader

Assessed and adapted US National Oceanic and Atmospheric Administration and Coral Restoration Foundation techniques and procedures for application in the Bahamas. Used Geospatial Information Systems to determine feasible locations for coral nursery implementation. Collaborated with TNC, KMF, BNT and Bahamas Department of Marine Resources to raise funds for training, supplies and implementation. Coordinated local and international scientists for training and nursery establishment. Maintained nursery records and assessed coral growth.

August 2010 – August 2012

The Bahamas National Coastal Awareness Committee

Social Media Chair

January 2011 – May 2012

Represented The Nature Conservancy and scientific community on the committee. Established communication priorities around the selected theme. Developed and coordinated outreach and communication via Social Media.

The Bahamas National Biodiversity Sub-committee to the Bahamas Environment Science and Technology (BEST) Commission
Ecologist/ TNC Representative **January 2011 – May 2012**

Represented The Nature Conservancy and scientific community on the committee. Along with the committee evaluated species introductions, infractions against CITES regulations, proposed large-scale agricultural and sustainable energy developments and oil exploration regulations.

The Bahamas National Oil Spill Response Team
Logistic coordinator/Terrestrial, Avian and Marine Survey Observer **April 2010 – May 2010**

Collaborated with local and international scientists, government agencies and military personnel to conduct pre-impact ecosystem assessment of the Cay Sal Bank, in response to the Deep Water Horizon Oil Spill. Facilitated research and training meetings for oil spill response team members.

Center for American and World Cultures
Graduate Assistant **October 2014 – August 2016**

Develop and manage media database, social media and website content; develop and distribute event publicity materials to partners and public; compile and share international student feedback when appropriate

RESEARCH EXPERIENCE

Miami University, Oxford, OH, USA
Primary Investigator – Habitat, observer and bird diversity in eBird records **August 2015 – December 2019**

Generate habitat maps and analyze citizen-science bird records for the island of Grand Bahama to determine the impact of habitat, observer diversity and avian species occurrence on the biodiversity record.

USA; Jamaica; Bahamas
Study skin preparation **2001-present**

Prepared ornithological specimen skins for scientific study, including species, gender and reproductive state of specimen and teaching students correct mounting procedure.

Community Conch – Berry’s Conch Project - Berry Islands, Bahamas
Field Technician **June 2009**

Conducted towed snorkeler and SCUBA transect surveys for conch (*Lobatus gigas*) along with biometrics to determine conch population size, distribution and demographics

Kerzner Marine Foundation – August 2008 REA of Coral Reef Communities around New Providence and Rose Island
AGRRA coral survey scientist **August 2008**

Completed training in field identification of native coral and fish. Conducted surveys of benthic communities while on SCUBA following the AGRRA methodology.

University of Maryland Eastern Shore, Indian River Inlet, DE and Princess Anne, MD
Researcher - Epifauna and epiflora of *Fucus vesiculosus* in Indian River Inlet. **August 2005 – December 2006**

Conducted water quality analysis and taxonomic identification of macroalgae, microalgae, and crustaceans associated with *Fucus vesiculosus* (Bladder wrack) in the Delmarva Peninsula.

Field and Lab Technician – UMES Precision Agriculture Project **August 2005 – December 2006**

Conducted drone flights using fixed wing and helicopter style remote controlled aircraft to collect visual data on agricultural fields. Used ArcGIS to orthorectify and classify images for use in precision agriculture studies. Trained graduate and undergraduate students in the use of Unmanned Aerial Vehicles and digital imaging equipment and software. Developed procedure manuals for common lab activities.

Abaco Parrot Project – Abaco Island, Bahamas
Field and GIS Technician **May 2003 – August 2004**

Worked closely with the endangered, endemic Bahama Parrot (*Amazona leucocephala bahamensis*). Searched for and monitored nests, conducted surveys of nesting activity and assessments of nesting habitat. Used ArcGIS to view maps and plan research activities with lead investigators. Supported

international researchers in the identification of native plants and Spanish-English translation of written materials and verbal communication with partners from Puerto Rico.

Kirtland’s Warbler Recovery Effort – Andros and Eleuthera Islands, Bahamas

Field Technician

May 2003 – August 2004

Observation, capture, identification, banding and measurement of native/migrant bird species, specifically the endangered Kirtland’s warbler (*Dendroica kirtlandii*) Identification and measurement of native plant species. Data analysis and presentation. Recruitment of new students into the program

United States Fish and Wildlife Service (USFS) – Huron Manistee National Forest, Mio, MI, USA

Summer Intern

June 2002 – August 2002

Delivered public lectures on the ecology of the Bahamas. Assisted researchers in radiotelemetry and capture of Massasauga rattlesnakes (*Sistrurus catenatus*) and Box turtles (*Terrapene* sp.). Survey endangered Kirtland’s Warblers as part of annual census. Enter survey data into Arc View GIS database.

OTHER EMPLOYMENT EXPERIENCE

Blue Lagoon Island, Salt Cay, Bahamas

Sustainability coordinator

January 2019 – Present

Assess and evaluate organizational sustainability to establish targets, develop and implement training to achieve multi-level sustainability goals.

Dolphin Cay, Atlantis, Paradise Island, Bahamas

Dolphin Trainer

July 2008 – August 2008

Observe and report on dolphin and sea lion behavior. Prepare food according to animal needs and veterinary staff recommendations.

SCUBA diver

April 2007 – July 2008

Maintain safe, hygienic environment in dolphin and sea lion habitats. Small engine maintenance and repair. Forklift operation.

Bahamas Humane Society, Bahamas

Kennel Care Technician/ Veterinary Assistant

July 2008 – August 2008

Dog and cat obedience training using positive reinforcement and Least Reinforcing Stimuli. Kennel cleaning and maintenance. Inspect animals for injury and administration of medication. Humane and ethical care of animals was the priority.

PUBLICATIONS

Davis, A. (2018). Changing Perspectives on Citizen Science Using eBird Data on Grand Bahama Island, The Bahamas.. (Electronic Thesis or Dissertation). Retrieved from <https://etd.ohiolink.edu/>

Davis, A., McCarty J.(2018). Combining citizen science and open source geospatial techniques improves habitat knowledge for Bahamian birds. Submitted to Journal of Caribbean Ornithology.

Rivera-Milán, F. F., Collazo, J. A., Stahala, C., Moore, W. J., Davis, A., Herring, G., ... Bracey, W. (2005). Estimation of density and population size and recommendations for monitoring trends of Bahama parrots on Great Abaco and Great Inagua. Wildlife Society Bulletin, 33(3). [https://doi.org/10.2193/0091-7648\(2005\)33\[823:EODAPS\]2.0.CO;2](https://doi.org/10.2193/0091-7648(2005)33[823:EODAPS]2.0.CO;2)

Davis, Ancilleno. 2006. Epifloral and epifaunal assemblage of Fucus vesiculosus L (bladderwrack) in Indian River Inlet, Delaware, USA. Master’s Thesis Currie, D., J.M. Wunderle, Jr.,

D.N. Ewert, M. Anderson, A. Davis, and J. Turner. 2005. Winter habitat distribution of birds in central Andros, The Bahamas: implications for management. Caribbean Journal of Science 41:75-87.

Currie, D., J.M. Wunderle, Jr., D.N. Ewert, A. Davis, and Z. McKenzie. 2005. Winter avian distribution in six terrestrial habitats on southern Eleuthera, The Bahamas. Caribbean Journal of Science 41:88-100.

Bahamas Reef Environment Educational Foundation. “Take Care of the Coral Reefs!” (translator/voice actor)

INVITED TALKS AND PRESENTATIONS

Davis, Ancilleno (July 29th 2019) *Social media 101 for Conservation engagement. BirdsCaribbean Regional Meeting, July 25th to July 29th 2019, Gosier, Guadeloupe.*

Davis, A., Tossas, A. (July 27th 2019) *Mentorship workshop. BirdsCaribbean Regional Meeting, July 25th to July 29th 2019, Gosier, Guadeloupe.*

Davis, A., Meister, K. (July 26th 2019) *Private Island Partnerships for Conservation: Blue Lagoon Case Study. BirdsCaribbean Regional Meeting, July 25th to July 29th 2019, Gosier, Guadeloupe.*

Davis, A., Eneas, K. (July 26th 2019) *ABC'S of Engagement with Conservation Data: Dubstep Remix. BirdsCaribbean Regional Meeting, July 25th to July 29th 2019, Gosier, Guadeloupe.*

Davis, Ancilleno (June 3rd 2017) *Changing Faces of International Bird Conservation. The Kirtland's Warbler Festival, Roscommon, MI.*

Davis, Ancilleno (2017) *Keynote presentation: Preserving "Our Michigan" Birds in the Bahamas, an Overview of Bahamian and Caribbean Conservation and the Importance of Citizen Science. Detroit Audubon Annual Earth day Celebration and Teach-In: "Soaring to New Heights" April 22nd 2017.*

Davis, Ancilleno (2017) *Lost in transition: Studying working and living across boundaries. 14th annual Miami English Graduate and Adjunct Symposium, Friday March 10 2017. Miami University, Oxford, OH.*

Davis, Ancilleno (2016) *Transitions: How International Students Experience and Survive American Academia. Race Class Gender and Sexuality Symposium, Wright State University, Dayton, OH.*

Davis, A., Loring, G. (2015) *Cornucopia, Utopia, Dystopia: public sculpture and interactive experience. Miami University, Oxford, OH.*
<https://www.facebook.com/MUcornucopia>; <https://twitter.com/MUcornucopia>

Davis, Ancilleno (2015) *The Caribbean Birding Trail: Local Experts Lead the Way. Miami Valley Audubon, May 11th 2015, Oxford, OH*

Palmeri, J., Kashtan, A., Mina, L., Hasan, A., Bui, H., **Davis, A.** and Cimasko, T. (2015). *Dead Weight? Addressing On-Campus Racial Politics in the Class room in the Wake of the 'Concerned Faculty Member' Letter. Race Class Gender and Sexuality Symposium, Miami University, Oxford, OH.*

Davis, Ancilleno (2014) *A Birder's Migration (Talk March 7th and Photography Exhibit March 3rd-28th) MacMillan Hall, Miami University, Oxford, OH.*

Davis, Ancilleno (2014) *Local Science, Internationally: Something for Nothing. 11th Annual Miami English Graduate and Adjunct Symposium, March 14th, 2014, Miami University, Oxford, OH.*

Davis, A., The Kerzner Marine Foundation, The Nature Conservancy (2012) *The Blue Project: Coral Conservation, Monitoring and Capacity Building. Poster presentation at the International Coral Reef Symposium, Cairns Australia, 2012*

LANGUAGES

English – native language
Spanish – speak, read and write fluently
American Sign Language – basic
Python programming language – intermediate
R programming language – advanced
JavaScript – intermediate

SOFTWARE

Adobe Suite: Acrobat Pro XI; Photoshop CS6; Adobe Illustrator
ENVI 5.4
ESRI Arc Suite: ArcGIS; ArcMap
Google: Blogger; Docs; Fusion Tables; Google Earth Pro; Hangouts; Sheets; Sites; Slides
Microsoft Suite: Access; Excel; Outlook; PowerPoint; Publisher; Word
QGIS

MEMBERSHIPS

Bahamians Educated in Natural and Geospatial Sciences - Founder

BirdsCaribbean – Director-at-Large
Graduate Students of All Nations – Founder/ President
PADI – Professional Association of Dive Instructors – Open Water Instructor

CERTIFICATIONS

PADI – Open Water SCUBA instructor
Emergency First Response First aid and CPR instructor
Reef Resilience Trainer
ESRI ArcGIS certificate
Rotomotion UAV pilot certificate
BirdsCaribbean certified Bird Guide

TAMANJI

BETHEL

NASSAU, BAHAMAS

P.O.Box N-10001

Phone: (242) 361-1291 (Hm), (242) 474-0189 (Cell)

Email: Tamanjibethel@hotmail.com

Demonstrated skills in improving environmental compliance, reducing waste and minimizing impact on the surrounding areas through careful planning and monitoring. Experienced trainer, team leader and environmental officer, specializing in Environmental Consultancy, Education and Research. With over nine (9) years experience and growth within the field.

Skills

- Microsoft Office (Word, Excel, Access and PowerPoint)
- Atlantic and Gulf Rapid Reef Assessment (AGRRA) protocol- Benthic & Coral
- PADI Advance Open Water
- Coral Point Count with excel (CPCe)
- Occupational Safety and Health Administration (OSHA)
- SPSS Statistics Software
- Data Analysis

Education

UNIVERSITY OF THE WEST INDIES (UWI)

Mona, Jamaica • 2017

Bachelor of Science: Marine Biology, minor Sign Language

Island School

Eleuthera, Bahamas • 2010

Bio-diesel Research, Shark Research, Ecology, Open water Certification

Government High School

Nassau, Bahamas • 2010

High School Diploma

7 Bahamas General Certificate of Secondary Education (B.G.C.S.E.): English Language, Mathematics, Biology, Religious Studies, Chemistry, Physics, Combined Science.

Work History

Independent Services - Environmental Consultant

Nassau, Bahamas • 2017-Current

Biological Assessments and Reports

- Light House Point Project
- Briland Residences and Marina
- Windermere Island Development Project
- Elbow Cay Club Development Project
- Mann Island Development Project
- Hurricane Hole Development Project
- White Bay Cay Development Project
- Adelaide Village Development Project
- Finley Cay Birds Sanctuary and Development Project
- Coco Cay Project
- Rose Island Development Project
- Paradise Island Development Project
- Grand Lucayan Hotel Development Project
- South Andros Water and Sewage Project
- Harbourview Marina Redevelopment Project

Stakeholder Engagement and Plans

- Exuma Airport Expansion Project
- East Grand Bahama Community Conch Project

Design Elements - Environmental Officer

Nassau, Bahamas • 01/2018- 11/2019

- **Assist in preparing Environmental Impact Assessments and Environmental Management Plans**
- **Stakeholder Engagement**
- **Environmental Officer/ Health, Safety and Environmental (HSE) - Officer for Ocean Cay Reserve Project:**
 - Marine assessments
 - Coral Reef Monitoring
 - Rapid Ecological Assessment
 - Environmental Management
 - Supervise On-site Wardens/officers
 - Site Inspections
 - Environmental Monthly Report
 - Environmental Audits

TAMANJI

BETHEL

NASSAU, BAHAMAS

P.O.Box N-10001

Phone: (242) 361-1291 (Hm), (242) 474-0189 (Cell)

Email: Tamanjibethel@hotmail.com

Affiliations

- JSS Consultants
- Waypoint Consulting
- Design Elements

Work History

Cape Eleuthera Institute - Education Officer

Eleuthera, Bahamas • 2014

- Research dive.
- Data collection.
- Local Outreach.
- Manage summer camps and stay over groups (local/international).

SEV Consulting Group- Roving Diver

Berry Island, Bahamas • 2012-2014

Roving Diver for coral reef assessments in the Berry Island Marine Protected Area.

Bahamas National Trust- Environmental Education Assistant

Nassau, Bahamas • 2011-2013

- Organize and assist with field trips, after-school programs, summer camps,
- Conduct Environmental Outreach.
- Manager Interns.
- Assist with library duties.

Internship

Dental Polyclinic- Deaf Facilitator

Kingston, Jamaica • 2016

- Jr. Interpreter
- Deaf Clients Record Manager

Ardastra Zoo & Conservation Center - Education & Animal Care Assistant

Nassau, Bahamas • 2015

- Tourist tour guide.
- Planning and organization of school groups.
- Animal encounters (cleaning, feeding, training and parading of animals).
- Summer camps.

Department of Marine Resources – Intern

Nassau, Bahamas • 2013

- Conch (*Lobatus gigas*) research.
- MTIASIC project (Lionfish).

LINZI KNOWLES BELTON

EXPERIENCE

2019 – Present Caves Village Veterinary Hospital Nassau, Bahamas

Practice Manager

- Managing daily operations of a veterinarian hospital
- Responsible for the day to day managing and supervision of veterinarian technicians
- Human Resources responsibilities/staff relations
- Daily, monthly & yearly financial reports
- Maintaining and tracking par levels of medical supplies and ordering
- client relations

2018 - Present Bahamas Mermaids Nassau, Bahamas

Owner – Mermaid Linzi

- First Bahamian Professional Mermaid
- Mermaid training
- Underwater performances
- On land and in water interactions
- Informal educator
- Beach cleanups
- Marine education/conservation volunteering throughout the community

2017 – 2019 Palmdale Veterinary Clinic Nassau, Bahamas

Operations Manager - Trainee

- Managing two veterinarian hospitals (Caves Village & Palmdale)
- Coordinating daily operations of both hospitals
- Responsible for the day to day managing and supervision of junior staff
- Staff training & development
- Managing ambulance driver
- Human Resources responsibilities/staff relations
- Creating new standard operating procedures
- Daily, monthly & yearly financial reports
- Maintaining and tracking par levels of medical supplies and ordering
- client relations

2015 – 2017 Assistant Director - Marine Education

Promoted to Assistant Director of Marine Education

- Staff training (departmental and interdepartmental)
- New staff orientation and on boarding process
- Maintaining and tracking par levels of departmental supplies and ordering
- Creating and updating departmental reports and statements
- Development, implementation & staff training for our New Segway Blue Lagoon Program
- Development, implementation & staff training for our New [Eco Nature Walking Tour](#)
- Conditioning a wild rescued raccoon “Barefoot”

2012 – 2015 Marine Education Supervisor

Promoted to Marine Education Supervisor which involved increased responsibilities and skills

- Responsible for the day to day managing and supervision of the Education department staff
- Overseeing the organization, placement and monitoring of work study/government placed employees including local and foreign interns.
- Orientation training and evaluations for animal trainers
- Assessing staff performance and conducting routine appraisals for education and animal training staff alike.
- Supervising annual summer camps for kids ages 4 through 14
- Printing and assembling signage for the island
- Ordering/storing departmental supplies and distributing them to other business units
- Liaison to all required departments for education programs
- Organizing Class Fun Day programs of up to 200 plus persons
- Marketing and advertising of all education programs
- Tracking and organizing reservations and processing payments for all education programs on and off island
- Maintaining touch tank which is included, but not limited to, replacement of filters, monitoring thermostat, cleanliness and overall presentation.
- Organizing beach cleanups on family islands for the Ministry of Tourism’s Coastal Awareness Committee
- Creator of Blue News – Project B.E.A.C.H. Newsletter
- Representing the company at the Annual Alliance of Marine Mammal Parks and Aquariums Educators Meeting (4 years)

2010 – 2012 Marine Education Coordinator/ Animal Trainer

- Educating students ages 3-16 on various Marine/Conservation topics
- Conducting [Marine Assembly Programs](#) in local schools
- Organizing Marine Resource Seminars for Educators
- Conducting animal interactive education programs
- Organizing and participating in beach clean-ups
- Presenting touch tank sessions for guests and students
- Participating in Public Service Announcements on television and the radio
- Organizing and coordinating The Annual International Coastal Clean-up
 - Securing sponsorship
 - Requesting donations for clean-up supplies (trash bags, glove, trucks,etc.)
 - Acquiring bus transfer donations for over 400 participants
- Training Sea Lions
- Intermediate application of animal training and husbandry
- Facilitating animal interactions with guests
- Assisting with Dolphin necropsies

2009-2010 Palmdale Veterinary Clinic Nassau, Bahamas

Animal Caretaker – Part Time

- Animal Care
- Assisting with distribution of medications, x-rays and check-ups
- Assisting with surgeries

2009-2010 Palmdale Service Station Nassau, Bahamas

Office Assistant – Part Time

- Assisting in the accounts department
- Posting of bills to charge accounts and managing said accounts
- Printing and distributing bills
- Payroll
- Balancing day sheets
- Deposits

2008-2009 Sunsplash Events (DMC) Nassau, Bahamas

Account Executive

- Responsible for planning incentive programs
- Organizing tours and excursions for guests (groups of 300 plus)
- Ensuring all staff are in place and prepared for the program
- Overseeing the program from start to finish which includes, but is not limited to, transfers, tours and activities, dinners and specialty room drops.

2006-2008 Atlantis Nassau, Bahamas

Marine Mammal Specialist II

- Animal care
- Intermediate application of animal training and husbandry for dolphins, sea lions and parrots
- Shallow water interactions with guests
- Assisting with Dolphin and Sea Lion necropsies
- Aiding the planning of daily and weekly animal training goals
- Assisting with daily reports and schedules
- Developing staff recognition incentives and promoting employee engagement

2001-2006 Dolphin Encounters Nassau, Bahamas

Animal Trainer – Part Time

- Animal Care
- Basic application of animal training and husbandry
- Assisting with education programs
- Guest orientations
- Shallow water interactions with guests
- Deep water training
- Participating in conservation programs
- Daily pool checks
- Detecting possible aggression and other negative animal behaviors

2004-2006 Florida Fish & Wildlife Conservation Commission Jacksonville, FL

Volunteer

- Research Data Entry
- Marine mammal carcass photo identification
- Assisting with dolphin necropsies
- Animal transportation

1999-2001 Palmdale Veterinary Clinic

Nassau, Bahamas

Animal Caretaker - Volunteer

- Animal Care
- Assisting with distribution of medications, X-rays and check-ups.

1997-1999 Bahamas Humane Society

Nassau, Bahamas

Assistant - Volunteer

- Animal Care
- Assisting with distribution of medications, X-rays and check-ups.

EDUCATION

2003-2006 Jacksonville University

Jacksonville, FL

- Bachelor's Degree, Marine Science.
- Graduated "Outstanding Student in Marine Science"
- Founder of the Caribbean Students Association
- SCUBA Open Water Certified - 2003

Christina S. McPhee

#5 Montreal Lane, Southern Heights, Nassau Bahamas. | (242)-552-2693 | christys.mcphee@gmail.com

Education

Auburn University, Auburn AL.

Bachelor of Science in Marine Biology, Magna Cum Laude

GPA: 3.71

Job Experience

Auburn University Marine Ecology Lab- Dr. Chadwick.

Research assistant- 2019

- Assisted in tank care
- Care for organisms in the tanks

Department of Marine Resources: Quality Control of Food and Beverages.

Summer Intern- 2018

- Assisted in testing seafood and beverages
- Assisted in the Microbiology Lab

Auburn University Ecology Lab-Dr. Wolak

Research Assistant--2018- 2019

- Assists in carrying out controlled mini experiments
- Record and Mate adult beetles
- Record emergence and death data
- Performs fecundity counts

Bahamas National Trust

Intern-Summer 2018

- Conducted research for the Bahamas Oriole Project
- Studied local flora and fauna
- Facilitated Mangrove restoration

Atlantis Paradise Island

Intern- Summer 2017

- Assist Husbandry Staff with aquarium care and food preparation
- Aided in facilitation of guided tours
- Assisted in water sampling
- Provided care for quarantined animals

Bahamas Reef Education and Environmental Foundation, New Providence, The Bahamas

Supervisor- July 2014

- Supervised program participants
- Organized and led group activities

Activities

Marine Biology Club, Auburn AL.

Member-August 2016 – present

- Conservation and Coastal clean-ups

Skills:

- Proficiencies in biological research
- Knowledge of the R-Studio coding software
- Strong interpersonal and communication skills
- Detailed knowledge in Microsoft Word and Excel

Neil Gregory Peterson

Fire Trail Road, Nassau Bahamas | 242-8077503 | Clearstone100@yahoo.com

Education

Government Highschool, Nassau Bahamas

Highschool diploma

Job Experience

Cable Beach Dental Care

Office clerk - 1997-1998

- Filing
- Book appointments

Splash Limited/ Divers Haven

Pool Attendant/ divemaster- 1998-2000

- Divemaster at Divers Haven

Nassau Scuba Centre

Dive Instructor/Boat Captain – 2000-2005

- Dive manager
- Boat captain
- Dive instructor

Stuarts Cove

Dive Manager/ Lyford Cay Watersports – October 2005- February 2018

- Dive Instructor
- Boat Captain

Five Cays Spirt Fishing Yacht

First mate- 2019-present

- Scuba diving
- Fishing
- Tour Guide
- Boat Maintenance

Kijana Mentoring Group

Directors- 2018-present

- Youth development

Skills

- Massage Therapist
- Scuba Dive Instructor
- Coral Reef restoration
- Specialties instructor
 - Deep dive
 - Navigation
 - Wreck
 - Nitrous diving
 - Shark Awareness
 - Stingray awareness
- Emergency First Responder Instructor- 2000-presently
- Boat Captain class “B” - 2000-presently

Activities

- Professional Boxing

Skills

- Scuba Certified
- CPR certified
- Personal Training

EUGENE K. PINDER

#25 PENNY SAVING BANK LANE, NASSAU BAHAMAS

E-MAIL EUGENEKPINDER@YAHOO.COM

242-677-0077 / 242-525-4479

OBJECTIVE

To obtain a position that will enhance my skills in my chosen profession
and the growth of your organization.

WORK EXPERIENCE

2017- Present Adastr Gardens and Zoo

Zookeeper

- Maintain and enhance the health and well-being of the animals in my care by way of daily husbandry and observations
- Distribution and preparation of food for animals
- Assist and execute animal training sessions
- Execute Interactions
- Assist and Interact with guest
- Assist and aid in the medical treatment of animals.

2015-2016 Esso Bargain City Plaza

Operations Manager

- Oversee the daily & weekly activities of employees.
- Ensured employees were paid correctly and timely in accordance with company policy.
- Performed all purchasing & inventory duties for gas station.
- Trained all new employees in compliance with company policy.
- Responsible for hiring & firing of employees.

2014 – 2014 Aquaventure Water Park Atlantis Paradise Island, Bahamas

Assistant Manager of Lifeguards

- Operate pool according to hotel guidelines
- Enforce pool rules and regulations for the safety and convenience of the public
- Perform rescues and administers artificial respiration, CPR, and first aid as needed
- Schedule lifeguards.
- Teach and explain to the other lifeguards how to be better lifeguards.
- Verify that all opening and closing procedures are followed and that the pool is secured every night.

2007 – 2013 Dolphin Cay Atlantis Paradise Island, Bahamas

Marine Mammal Specialist I- Manager

- Maintain and enhance the health and well-being of the animals in my care by way of daily husbandry, hydration and recording of respirations

- Plan and execute animal procedures
- Distribution and preparation of food for animals
- Assist and execute animal training sessions
- Execute Deep Water Interactions and Shallow water Interactions
- Assist and Interact with guest
- Recording Animal records after sessions
- Assist and aid in the medical treatment of animals
- Assist in the transport of animals
- Participation in Animal Rescue Procedures
- Participate in the mentoring programme as a mentor
- Manage the all staff and animals directly under my care

2005 – 2007 Dolphin Cay Atlantis Paradise Island, Bahamas
Marine Mammal Specialist II

- Train new employees
- Schedule staff based on operational needs of the team
- Maintain and enhance the health and well-being of the animals in my care by way of daily husbandry, hydration and recording of respirations
- Distribution and preparation of food for animals
- Assist and execute animal training sessions
- Execute Deep Water Interactions and Shallow water Interactions
- Assist and Interact with guest
- Recording Animal records after sessions
- Assist and aid in the medical treatment of animals.
- Assist in the transport of animals

2004 – 2005 4C's Trading Nassau, Bahamas
Sales Associate

- Sales and Delivery of products to various stores

2000 – 2004 Dolphin Encounters Blue Lagoon Island, Bahamas
Animal Trainer

- Maintain and enhance the health and well-being of the animals in my care by way of daily husbandry, hydration and recording of respirations
- Distribution and preparation of food for animals
- Assist and execute animal training sessions
- Execute Interactions
- Assist and Interact with guest
- Assist and aid in the medical treatment of animals.

2000 – 1999 Royal Bank of Canada Nassau, Bahamas
Bank Teller

EDUCATION

- | | |
|-------------|--|
| 1999 – 1995 | Florida Air Academy |
| 1995–1994 | Nassau Christian Academy |
| 1994-1988 | Temple Christian Academy |
| 1988-1985 | Saint Francis & Joseph Catholic Primary School |



PO Box 435 5356 Route 100, Suite 1 Waitsfield VT, 05673
802 496-2700 | email: contact@PerryInstitute.org | web: PerryInstitute.org

Today's Science for Tomorrow's Oceans

September 16, 2020

Department of Environmental Planning and Protection
Nassau, The Bahamas

Dear Department of Environmental Planning and Protection

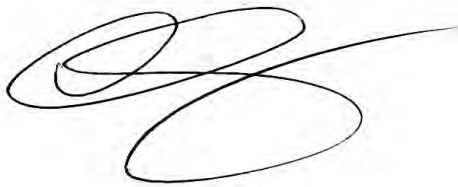
Subject: Janeen Bullard Reference

I am writing this letter on behalf of Ms. Janeen Bullard. I have worked with Ms. Bullard in a number of different capacities for over a decade on projects related to mangrove restoration, conch stock assessments and rapid ecological assessments of marine areas. In this work, Ms. Bullard has demonstrated a high level of scientific knowledge and aptitude and operational competency. She has also shown a high level of professionalism and completion of tasks in a timely manner. In fact, she has been instrumental in the completion of these projects.

While I have not done coral relocation work with Ms. Bullard, I know that she received training in coral outplanting from TNC about 5 or 6 years ago and I am aware of two projects where she translocated corals. One was from White Bay Cay and the other from Ocean Cay prior to marine construction in each area. I had the opportunity to observe these corals translocated from Ocean Cay on several occasions from several months to about a year or so after their translocation and the vast majority of these corals appeared to be healthy on the translocation reef. AGRRA surveys of the translocation reef did not show any difference in disease prevalence, bleaching, or partial mortality from other reefs in the area.

Based on my work experience with Ms. Bullard and my observations of the Ocean Cay coral translocation efforts, I believe that Ms. Bullard is qualified to conduct this line of work. I am also willing to assist her with project planning or in any other way appropriate.

Regards,

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke extending to the right.

Craig Dahlgren
Executive Director

Appendix B: SCLTD Diver Protocol



STOP THE SPREAD OF STONY CORAL TISSUE LOSS DISEASE

An aggressive disease is spreading fast in the Caribbean and is threatening our corals

Have you been in areas where stony coral tissue loss disease is present?



WATCH OUT! Your boat/gear could be contaminated

AVOID visiting healthy sites after infected ones

DISINFECT between dive sites & **USE** local gear



How to use disinfecting products? /*Suggested brands

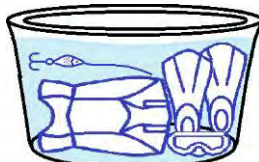
Every
5 gallons of water



1 cup Sodium
percarbonate powder
*Earthborn Elements

BILGE WATER

Every
1 gallon of water
(fresh or seawater)



3-4 full caps
(bleach bottle caps)
*Blanco Chemicals

SCUBA/SNORKEL/FISHING GEAR

Fill a bucket
with fresh water



Add natural detergent (sodium
percarbonate) following
manufacturer indications
*Seventh Generation

WETSUITS

PUMP ON SITE

before leaving an area
with SCTLD

TREAT remaining water
by adding sodium
percarbonate

SOAK 10 MINUTES

PUMP OUT

in open water

ADD bleach as needed
depending on the water
capacity of your rinsing
tank

SOAK gear **5 MINUTES**

RINSE with fresh water

AVOID contact/spilling
concentrated bleach

DISPOSE of dilute
bleach solution at sea

AVOID rinsing with
scuba gear

PREPARE soaking
solution

SOAK wetsuit **5
MINUTES**

RINSE with fresh water

Please **FOLLOW**
instructions on
packaging for their use
and disposal

Further dilution in open water will prevent it from killing corals or harming sensitive marine life



**HURRICANE HOLE MARINA EMP
APPENDIX 3
STAKEHOLDER ENGAGEMENT PLAN**



STAKEHOLDER ENGAGEMENT PLAN



HURRICANE HOLE MARINA PROJECT

Prepared for:
Sterling Hurricane Hole Ltd.

Prepared By:
Design Elements Ltd.

Date:
18 September 2020

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1.0 INTRODUCTION

Hurricane Hole Marina is located on the southern shore of Paradise Island, The Bahamas. The property is comprised of a 3.0 acres marina basin and 8.5 acres with support facilities. The site which has been operational as a marina for decades was previously owned by Brookfield Asset Management and acquired by Sterling Hurricane Hole Limited – SHHL (The Developers) in early 2018. The Developers intend to expand the marina and improve the existing amenities by increasing food and beverage options and shopping opportunities.

An Environmental Management Plan (EMP) was required for the project. To this end, SHHL engaged Design Elements to prepare an EMP inclusive of a Stakeholder Engagement Plan (SEP).

Stakeholder Engagement is an integral component of informed decision-making and responsible development. The Hurricane Hole Marina (HHM) SEP has been developed to facilitate and manage engagement during construction and operations and serves as a guide for the developer and the contractor during the construction phase.

2.0 PURPOSE AND SCOPE

The purpose of this plan is to define the project approach to consultation and disclosure. Specifically, this plan aims to:

- Meet the regulatory requirements for obtaining a certificate of environment clearance
- Identify key stakeholders that are affected and or influence the project
- Identify the most effective methods to disseminate project information
- Ensure regular, accessible, transparent, and appropriate consultation
- Provide opportunities to effectively engage all stakeholders to voice their opinions and concerns of the project
- Build mutually respectful, beneficial, and lasting relationships with stakeholders
- Create an atmosphere of understanding
- Establish formal grievance/resolution mechanisms
- Define roles and responsibilities for the implementation of the SEP
- Define reporting and monitoring measures
- Improve and facilitate decision making

3.0 AREA OF INFLUENCE

An area of approximately one thousand (1000) feet radius around the project site has been established as the primary area of influence (See Figure 1: Primary Area of Impact). The criteria for establishing the primary area of impact is based on the extents of potential environmental and social impacts such as noise, light, traffic, visual and water quality. Stakeholders in this area are among the most heavily impacted by the development due to their proximity.

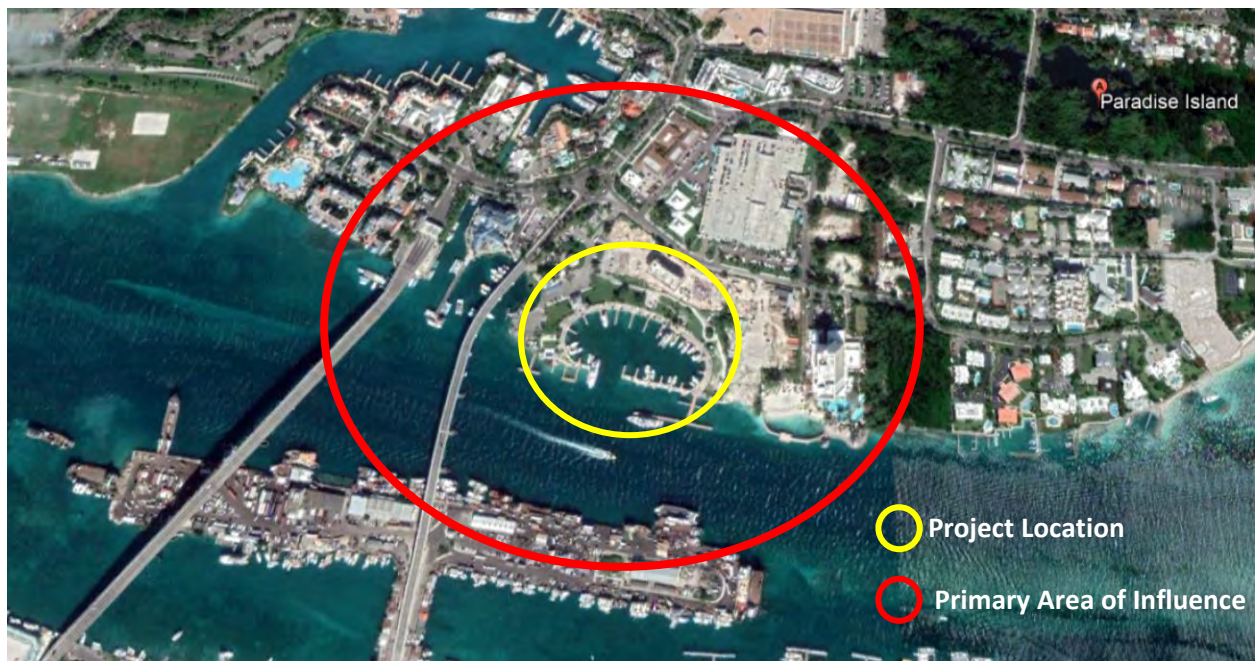


Figure 1: Primary Area of Influence

The greater Paradise Island would be considered as the secondary area of influence and the island of New Providence has been established as a tertiary area of influence.

4.0 STAKEHOLDER IDENTIFICATION

Stakeholders are persons or groups who are directly or indirectly affected by the project, as well as those who may have interests in the project and/or the ability to influence its outcome, either positively or negatively.

Internal Stakeholders

An Internal stakeholder is any person within the organizational structure of a business or a project. Internal stakeholders for the HHM Project include SHHL staff and construction employees.

External Stakeholders

External Stakeholders are individuals, groups or business that are impacted by the company or project but does not contribute to the internal operations. Key External Stakeholders for the project include:

Government Agencies

This group includes Government Ministries and Departments that are responsible for approvals and permits required for the project to progress. The government departments that will be consulted include:

- Office of the Prime Minister
- Ministry of Works
- Ministry of Environment, Department of Environmental Planning and Protection
- Ministry of Environment, Department of Environmental Health
- Ministry of Tourism
- Ministry of Agriculture and Marine Resources, Department of Marine Resources
- Port Department
- Bahamas Power and Light

Non-governmental Organizations (NGO)

NGO and Conservation organizations which may have interest in the project include:

- Bahamas National Trust
- Perry Institute of Marine Science

The following external stakeholders have been identified within the primary area of impact:

Hurricane Hole Marina

As the project will be phased, the Hurricane Hole Marina will remain operational for a period of the construction thus marina patrons are identified as key stakeholders.

Businesses

The commercial buildings and businesses immediately surrounding the site can be directly or indirectly (positively or negatively) affected by the project, either by natural or social impacts, at varying degrees throughout the lifespan of the project. The following are examples of businesses are within primary area of influence of the Hurricane Hole Marina Project:

Commercial Buildings

There are a number of commercial buildings in the area providing a range of services including Banks and offices.



Office Complex



Scotia Bank

Hotels

Several hotels are located in close proximity to the project site.



Comfort Suites Hotel



Warwick Hotel

Retail Shopping and Restaurants

Retail shopping near the project site is primarily within the Paradise Island Shopping Village which houses a variety of stores including Pharmacy, Souvenir stores and a food store. There are a few restaurants in the area that are located in the complex and other nearby locations.



Paradise Island Shopping Village



Margaritaville Restaurant

Craft & Souvenir vendors

There are two (2) groups of craft & souvenir vendors with the primary area of influence. These include vendors that operate within the Bahamas Craft Center building and street vendors that operate under the northern end of the eastern bridge.



Bahamas Craft Center



Bridge Vendors

Paradise Island Ferry Terminal

The Paradise Island Ferry terminal is located under the northern end of the eastern bridge servicing water taxis between Downtown and Paradise Island as well as a numerous Tour Operators.



Ferry Terminal Ticket Office
Ferry Boat office



Ferry boat operating from terminal



Sandy Toes Tour Boat

General public

Members of the general public are considered stakeholders at all levels within the areas of influence and include employees and patrons of businesses, residents of Paradise island and all members of the public accessing Paradise Island or utilizing the waters around the project site.

Bridges

All motor vehicular access and exit points for Paradise Island is via two (2) bridges that connects the island to New Providence. The easternmost exit bridge is located within the primary area of influence.



Bridge Toll Booth



Bridges between New Providence & Paradise Island

Waterway

Hurricane Hole Marina borders on a major boating thoroughfare utilized by ferry boats, mailboats and private vessels.



A comprehensive stakeholder contact list should be developed and maintained through the life of the project. A draft list is provided in Appendix 1.

5.0 METHODS OF ENGAGEMENT

There are a variety of engagement techniques used to build relationships with stakeholders, gather information from stakeholders, consult with stakeholders, and disseminate project information to stakeholders. A list of common consultation techniques and the most appropriate application of these techniques are provided in Table 1. Consultation Techniques to be used for specific stakeholder groups are outlined in Table 2.

The following criteria is taken into consideration in determining the appropriate and most effective form of communication to be used for a stakeholder:

- The proximity of the stakeholder to the project
- The number of persons impacted
- The degree of impact (positive or negative)
- The magnitude of impact (how significant the impact is)
- The extent of influence of the stakeholder on the project
- The purpose of for engagement
- The audience to be addressed

Table 1: Consultation techniques and appropriate application

ENGAGEMENT TECHNIQUE	MOST APPROPRIATE APPLICATION OF TECHNIQUE
Poster / Signage	<ul style="list-style-type: none"> • Establish information posters to display project details. • Post at site entrance and or in high traffic area.
Correspondence by phone/email/text/WhatsApp	<ul style="list-style-type: none"> • Distribute project information to government officials, organizations, agencies and companies • Invite stakeholders to meetings
Print media and radio announcements	<ul style="list-style-type: none"> • Disseminate project information to large audiences,

ENGAGEMENT TECHNIQUE	MOST APPROPRIATE APPLICATION OF TECHNIQUE
	<p>and illiterate stakeholders</p> <ul style="list-style-type: none"> • Inform stakeholders about consultation meeting • Advertise jobs
One-on-one interviews	<ul style="list-style-type: none"> • Solicit views and opinions • Enable stakeholders to speak freely and confidentially about controversial and sensitive issues • Build personal relations with stakeholders • Address grievances
Formal meetings	<ul style="list-style-type: none"> • Present project information to a group of stakeholders • Allow the group of stakeholders to provide their views and opinions • Build impersonal relations with high level stakeholders • Distribute technical documents • Facilitate meetings using power point presentation • Record discussions, comments / questions raised and responses
Public Meetings	<ul style="list-style-type: none"> • Present project information to a large audience of stakeholders, • Allow the group of stakeholders to provide their views and opinions • Distribute non-technical project information • Facilitate meetings using PowerPoint presentations, posters, models, videos and pamphlets or project information documents • Record discussions, comments / questions raised and responses
Surveys (See Appendix 6: Stakeholder Consultation)	<ul style="list-style-type: none"> • Gather opinions and views from individual stakeholders

ENGAGEMENT TECHNIQUE	MOST APPROPRIATE APPLICATION OF TECHNIQUE
Form-Businesses)	<ul style="list-style-type: none"> • Gather baseline data • Use WhatsApp to distribute survey • Use Survey Monkey to analyze responses • Develop a baseline database for monitoring impacts

Table 2: Stakeholder group consultation methods

STAKEHOLDER GROUP	CONSULTATION METHODS
Government officials	<ul style="list-style-type: none"> • Phone / email • One-on-one interviews • Formal meetings
Neighboring communities and businesses	<ul style="list-style-type: none"> • Print media, radio announcements, WhatsApp messages • Public meetings • Focus group meetings • Surveys • Information Centre • Postage / Signage
NGO's and conservation organizations	<ul style="list-style-type: none"> • Phone/email/text • One-on-one interviews • Focus group meetings • Information center

6.0 GRIEVANCE MECHANISM

A grievance is a concern or complaint raised by an individual or group affected by the project's activities. Grievances do not include a question or suggestion on the company or project or request for assistance.

The Objectives of this grievance mechanism is to:

- To provide stakeholders with a clear process for providing comment and raising grievances;
- To allow stakeholders the opportunity to raise comments/concerns anonymously;

- To structure and manage the handling of comments, responses and grievances, and allow monitoring of effectiveness of the mechanism; and
- To ensure that comments, responses and grievances are handled in a fair and transparent manner.

SHHL's Roles and Responsibilities

All SHHL employees and/or contractors are responsible for collecting and appropriately responding to any comments, and grievance as needed.

The Stakeholder Liaison (Nadia Riley) will be responsibility for receiving and handling comment responses and grievances and will coordinate the investigation and response to grievances as well as on-going monitoring and review of the effectiveness and efficiency of the grievance process.

Procedure for Comment Response and Grievances

The steps taken by the company for receiving and handling any comments pertaining to the Project are outlined below:

STEP 1: Submitting a comment to SHHL

A comment can be submitted to the company by any of the following ways:

- During regular meetings held between stakeholder and SHHL;
- During informal meetings with SHHL;
- Through communication directly with management – for example a letter addressed to site management, or other operational offices;
- Directly by e-mail to nriley@sterlingglobaltd.com;
- Telephone contact 1-242-603-1936;
- Via website link <http://www.hurricaneholemarina.com/>

For comments that have been submitted informally, the liaison will arrange for a meeting

where the comment can be explained in full and written down on a grievance and comment logging form (Appendix 8). For all comments the liaison will be the main point of contact, responsible for responding to the commenter.

STEP 2: Logging the comment/grievance

Once a comment/grievance has been received it must be logged in the comments and concerns register.

STEP 3: Providing the initial response

The stakeholder that lodged the initial comment will then be contacted within 7 days to acknowledge that SHHL has logged the comment or grievance and provide feedback on how the matter has been or will be addressed.

STEP 4: Investigating a grievance

If a comment or grievance requires further investigation, SHHL will aim to complete investigation within two weeks of the grievance first being logged.

Depending on the nature of the grievance, the approach and personnel involved in the investigation will vary. A complex problem may involve external experts for example. A simpler case may be easier, and quicker to investigate. SHHL will involve the aggrieved in this investigation, where possible, to ensure participation.

The liaison will continually update the aggrieved on the progress of the investigation and the timeline for conclusion.

STEP 5: Concluding/resolving the grievance

The grievance should be concluded and closed out.

SHHL will outline the steps taken to ensure that the grievance does not reoccur. If the grievance has been satisfied, then senior management should be included on the response.

If, however, the grievance still stands the liaison will initiate further investigation and determine the steps for further action.

The liaison will continue to update the commenter and seek to find a satisfactory resolution.

Record Keeping

All comment responses and, grievances are to be recorded into the stakeholder engagement log. This includes details of the comments/grievance, the commenter/aggrieved, the steps taken to resolve the grievance and reference to any accompanying documentation e.g. written statements, photographic evidence, or investigation report.

7.0 DOCUMENTATION

To ensure that an accurate and detailed record of information and views are gathered at formal meetings, minutes will be recorded by the developer's lawyers (New Providence Law Chambers – Jonnell Rigby Knowles).

All activities associated with the stakeholder engagement process will be recorded and tracked in a stakeholder engagement log to be maintained by the project's stakeholder liaison. The stakeholder engagement log shall record all stakeholders, contact details, dates of engagement with comments and include follow up requirements (See Table 3 below for stakeholder engagement to date).

Additionally, the Project's Environmental Manager will capture stakeholder engagements in the project's environmental reporting to be submitted to the Department of Environmental Planning & Protection (DEPP) on a bi-monthly basis. Environmental reports to DEPP will also include comments and relative responses associated with the grievance

mechanism. At the request of the Government of The Bahamas, Sterling will also make relevant environmental documents available to the public through its website or other appropriate online forum.

Table 3: Stakeholder Engagement for the Hurricane Hole Marina Project

Date	Consultation	Details
February 2018	Hurricane Hole Marina Staff	Staff Meeting to discuss new ownership. Topics discussed included Sterling organization, improvements to facility, employment contract and benefits.
9 May 2018	Ministry of Works	Meeting to discuss Project Plans.
15 May 2018	BEST Commission	Meeting to discuss Project Plans.
10 August 2018	Government Agencies including - Bahamas Investment Authority Ministry of Tourism Ministry of Public Works BEST Commission Department of Physical Planning Department of Marine Resources Ministry of the Environment Department of Lands and Survey Harbour Patrol Port Controller	Site visit at Hurricane Hole. Presentation of the project was given, and questions asked by audience. (See Appendix 2 Meeting Minutes)
31 August 2018	Ministry of Works, Town Planning	Meeting for pre-submission consultation.
14 September 2018	General Public	Newspaper Advertisement of Public Meeting (See Appendix 4)
15 October 2018	General Public	Town Hall Meeting (See Appendix 3 Meeting Minutes)
2018	General Public	Information on redevelopment and link to register contact to receive information posted on website. See http://www.hurricaneholemarina.com/ and Appendix 5.

8.0 CONCLUSION

The SEP is a living document that will be refined and modified throughout the life of the project and should be updated as needed by the stakeholder liaison.

Information derived from stakeholder feedback should be taken into consideration in construction design, methodology and operational management.

Appendix 1: Hurricane Hole Marina Stakeholder Contact List

Company Name	Phone	Website
NON-GOVERNMENT ORGANIZATIONS		
Bahamas National Trust	1-242-393-1317	bnt.bs
Perry Institute for Marine Science	1-802-496-2700 +1 561-741-0192	perryinstitute.org
HOTELS		
Atlantis	1-242-363-3000	atlantisbahamas.com
Comfort Suites	1-242-363-3680	choicehotels.com
Warwick Paradise Island	1-242-2560	warwickhotels.com
COMMERCIAL BUILDINGS & RESTAURANTS		
Scotia Bank	1-242-363-2591	
Margaritaville Bahamas	1-242698-0624	margaritavillebahamas.com
Anthony's Seafood and Ribs	1-242-363-3152	
TOUR & CHARTER OPERATORS		
Sandy Toes	1-242-363-8637	
Bahama Bites Fishing Charters	1-242-363-2483	bahamabite.com
Exuma escapes	1-242-677-6860	swimmingpigsbahamas.org
Reel Dreams Sport Fishing Charters	1-242-376-1458	reeldreamsbahamas.com
Hidden Beaches Bahamas	+1 754-216-4832 1-242-376-9100 1-242-676-1572 1-242-376-9600 (WhatsApp)	hiddenbeachesbahamas.com
Touriffic Rides	1-242-424-2844	Jsscooterbahamas.com
Paradise Shopping Plaza		practicalparadiseisland.com
RETAIL STORES		
The Village Grocery Store	1-242-363-0495	bahamaslocal.com

Appendix 2: Meeting Minutes- Government Agencies Site Visit



memo

New Providence Law Chambers (NPL)

To: David Kosoy, Stephen Tiller, Khaalis Rolle, Bill Green
From: Jonnell Rigby Knowles
Date: 10th August, 2018
Re: Site Visit at Hurricane Hole (HH) with Governmental Agencies – 10th August, 2018

Attendees: **Government:**

Carol Young and Shenique Boodansingh (BIA)
Kristal Bethel (Ministry of Tourism)
Craig Delancy (Ministry of Public Works)
Arana Pyfrom and Larissa Cartwright (BEST Commission)
Charles Zonicle (Department of Physical Planning)
Indira Brown (Department of Marine Resources)
Ebony Blyden and Lyndie Bowe (Ministry of the Environment)
Theodore Bain (Department of Lands and Survey)
Rihanna Delaney
Andrew Bowe (Harbour Patrol)
Commander Raymond King (Port Controller)

SHHL:

Khaalis Rolle (KR), Nadia Riley, Drew McCartney, Stephen Smith, Jonnell Rigby Knowles
Tanya Ferguson (Design Elements)

Khaalis made a presentation with respect to the proposed HH development which consists of 300,000 sq. foot of buildable land and the marina and outlined the following points:

- the marina will be expanded from 4000 linear square feet to approx. 6000 linear sq. ft.
 - will excavate to make the marina more functional to accommodate larger size boats. The Bahamas has long been recognized as a premium destination for boats. It has been observed that mega yachts came here after last hurricane season hit other Caribbean islands
 - the expansion will involve longer docks and excavation to consist of 12 feet below low tide for excavation; it is expected that 42000 cubic yards of fill to be eventually used on site
 - the exterior of marina has curves and the proposal involves squaring it up; adding a bulkhead and backfill
 - development to take place in 3 phases
 - o Phase 1 - Starting in January 2019 - Supermarket and sterling commons
 - o Phase 1b/2 – Starting in April 2019 - One marina place and the restaurants
 - o Phase 3 - One paradise island
-

- Total development is expected over a 5 year period/ self financed/ pre-sales/ go to market with inventory

Question and Answer Period:

Q. When is dredging expected to take place?

A. Dredging should start in what was described as phase 1b late March early April

Q. What area do you plan on using the backfill?

A. It will be used where there is disturbed land.

Q. Which direction will the dock be extended?

A. Mostly further east and west. There is a most westerly dock that will be extended south by approx. 20 ft.

Q. Has any flushing analysis been done?

A. There is a flushing study that has been conducted and the same will be enclosed in the application packages.

Q. Will the development would have short or long term rentals (30 days condo hotel)? What about owner occupied rentals?

A. Advised that some of the residences will be entered into the pool. At this time we are unable to identify how many of the units will be entered.

Q. What is the maximum number of units anticipated?

A. We are currently planning for 161.

Q. Will there be permanent housing?

A. Yes some will be (sales are driven by investment and permanent residency)

Q. What are the plans for run off for fertilizer because the proposal calls for an increase amount of grass?

A. This will be addressed in the EMP.

Q. What about non- native trees?

A. There is no plan to use non-native trees in the development. It is planned to use native trees to reduce the need for fertilizers. Protected trees have been tagged for removal and re-use.

Q. Will the Civil drawings have on site drainage?

A. It is expected to once we have the civil drawings in hand.

Q. What about Water quality?

A. This will be addressed in the bathymetric study which will also be in the package.

Q. Have you given any thought to a venue for a public meeting because it must include PI and New Providence?

A. We will consider all options.

Q. Asked how many stories compared to the Warwick?

A. We will be 7 stories versus Warwick 9 stories.

Q. What are the Warwick setbacks?

A. Possibly 35-50 feet and there is a 10 ft. easement between Warwick and HH.

Q. Seabed lease

We will be making application waiting on surveyors to confirm square footage required

Q. What considerations have been given to green design?

A. We have engaged a consultant and the architects are now reviewing the consultant's recommendations.

Zonicle wants the Site Approval application to include:

- Survey plan
- Restrictive covenants as he is concerned about neighbors.
- Full detail phasing
- Existing site conditions
- Wants to see basic elevation relative to Warwick show relevant location to the Warwick Setbacks on Eastern boundary
- TIA because Traffic informs parking and exit and entry requirements
- Indicated that he is open to a meeting pre-submission to ensure we have addressed all of his concerns

General concerns:

- The comment "lots of glass" regarding sterling commons was made – they want to ensure that hurricane windows are used
- Neighbors
- On-site parking adequacy
- Public access to the beach
- High traffic area for animals – should be considered and addressed in the EMP as needed (Gave an example of a development that had a man on site specifically responsible for identifying when dolphins or manatees were in the area when dredging so that all work could stop for a time period)
- Legal definition of condo-hotels – must be in the pool for a minimum of 9 months

BIA raised the prospect of liaising with Atlantis to fulfil our civic duty by rebuild or facilitating the renovation of the police building

Additional issues raised during the physical site visit.

- Asked about raising elevation and land reclamation
- Asked about the beach - if it is shared
- Access rd on eastern boundary will remain not for public access only for Warwick
- Asked if we met with Docks Committee. While there was preliminary discussion with docks committee, there hasn't been any further discussions since we had the more detailed master plan proposal

- Need to see existing footprint to make comparisons to where the dock expansion is coming out about 20 ft; the western dock will go out south
 - Asked about plans for boardwalk by the beach area
 - Asked what would be the maintenance on the dredged areas – advised that they shouldn't be concerned because there is no beach to fill them in
-

Appendix 3: Meeting Minutes – Public Meeting



memo

New Providence Law Chambers (NPL)

To: David Kosoy, Stephen Tiller, Khaalis Rolle, Bill Green
From: HURRICANE HOLE MARINA, STAKEHOLDER ENGAGEMENT PLAN,
24 AUGUST 2020
Date: 15th October, 2018
Re: Town Hall Meeting – 15th October, 2018

Attendees: **Chair - Department of Physical Planning:**

Charles Zonicle (Department of Physical Planning) (CZ)
GeAnn Wallace (Department of Physical Planning)
Diane Holowesko Dunkley (Chairman of the Town Planning Committee)
(DP)

SHHL:

Presentation conducted by Khaalis Rolle (KR)
David Kosoy (DK)

Public:

Jonathon Pendlebury (JP)
TC Symonette (TC)
Kevin Sweeting (KS)
Michael Shea (MS)
Ben Davis
Tamanji Bethel
Other Members from the General Public
Other Members from the Ministry of Works

KR made a presentation with respect to the proposed HH development which consists of a mixed-use development: 300,000 sq. foot of buildable land and the marina and outlined the following points:

- Breaking ground in January 2019 is anticipated
 - HH's current proposal is not as dense as the previous Atlantis development plan which was approved
 - Consultation with the requisite governmental agencies such as the Ministry of Works, Ministry of Environment, etc. has taken place
 - The proposal is environmentally friendly focus and the Environmental Management Plan will address all mitigation efforts with respect to dredging and excavation. The development plan is geared to making the marina more functional to accommodate larger size boats
-

-
- It has been observed that mega yachts came here after last hurricane season hit other Caribbean islands
 - the expansion will involve longer docks and excavation to consist of 12 feet below mean low water for excavation; it is expected that 47115.81 cubic yards of fill to be eventually used on site
 - Development to include a 15,000 sq. ft of restaurant space; Sterling commons retail office residential; One marina place residential two and three bedroom; Townhomes in the Two towers
 - The Towers that are closest to the Warwick property line are 80 ft away
 - the exterior of marina has curves and the proposal involves squaring it up; adding a bulkhead and backfill
 - development to take place in 3 phases
 - o Phase 1 - Starting in January 2019 - Supermarket and sterling commons
 - o Phase 1b/2 – Starting in April 2019 - One Marina Place and the restaurants
 - o Phase 3 - One Paradise Island
 - Total development is expected over a 5 year period/ self financed
 - Economic impact expected to be \$250,000,000.00 and should reinvigorate and revitalize Paradise Island (PI) product

CZ emphasized to those present that no approvals had been granted and this was a part of the preliminary application procedure prior to the Committee considering the matter.

Question and Answer

DK emphasized the proposal is geared towards PI residents in offering services that are currently missing such as blow bars, dry clean drop off and hair salon.

JP also stated that Sterling's focus is on hiring local subcontractors.

DK reaffirmed that there was a strong Bahamian source of employees and investors directly involved with the project.

TC of Warwick inquired as to the proposed 7 stories as he views it as an obstruction to guests' views. KR advised that while it is difficult to address, Sterling did different elevation drawings to take into consideration any potential obstructions and Warwick still has higher stories, twelve (12) in fact. Sterling sees the proposal as improving the site which is currently desolate. KR also emphasized that the particular phase of the development which TC is concerned about is actually 4 years away. The buildings themselves will also have an attractive façade.

TC also raised concerns about:

- Significant environment impact
 - Nuisance
 - Noise pollution
-

-
- Traffic flow on land and water

KR advised that these are matters that have been addressed in the EMP and will be considered by the Committee.

Enquiries regarding capacity of the marina: 200 footer boats and draft 10-12 ft

TC enquired about the fuel dock and it was restated that the fuel dock is remaining where it is so there are no issues anticipated with the fuel dock.

TC enquired on Sewage and waste. KR confirmed that we are required to tie in to paradise island utilities.

KS, civil engineer on behalf of Sterling advised that it would be dealt with in the same way as Warwick.

DP suggested that Sterling's development would add to the appeal of staying at Warwick given the additional amenities.

MS of Warwick advised that they support the project because they do like more amenities on the island but their concern is development time and they would ask that the building setbacks be moved further from 80ft to 100 ft.. He is also concerned of the quality of water; and potential reduction of the area on the beach that they are currently leasing from Sterling.

DK responds by saying we can't go any higher due to restrictions by Atlantis so we go wider and that Sterling has also turned the building away from being directly facing Warwick. In fact, only about 20% of Warwick rooms will be affected because the majority of rooms do not face the building.

Sterling has advised that there are currently no plans to touch the beach with respect to eliminating actual beach area.

TC asked for assurance about 80 ft away and was advised by CZ that they are guided by the property restrictions and covenants with respect to setbacks and any approval issued by Physical Planning will stand. CZ further advised that whatever decision town planning makes they must share with all who have made enquiries.

The matter is scheduled to be on the agenda of the Town Planning Committee Tuesday of the following week. The Chairman then made a further appeal to members of the public to voice any other concerns regarding the development prior to said Town Planning Committee meeting.



GN 2094

PUBLIC NOTICE
MINISTRY OF PUBLIC WORKS
DEPARTMENT OF PHYSICAL PLANNING

The public is hereby notified that an application for Site Plan Approval (SPA/7/2018) on behalf of Sterling Hurricane Hole Limited is presently being reviewed by The Department of Physical Planning for presentation to the Town Planning Committee.

The development is located on approximately 13 acres of land on the southern shore of Paradise Island along Harbour Drive and Marina Way. The proposed project includes the redevelopment, renovation, refurbishment of the existing structures on the site and the expansion of The Marina itself. The Master Plan includes the expansion of the marina to approximately 6,000 linear feet and construction of 300,000 square feet of buildable real estate with buildings dedicated to residential, retail, office and commercial space. Buildings on the site will not exceed 7 storeys or 89 feet above existing grade. The development is broken down into three phases over the next five years.

A public meeting will be held on October 15, 2018 at 7:00 p.m. in the Town Planning Hearing Room at The Department of Physical Planning John F. Kennedy Blvd.

Preliminary plans for the proposed development are available for viewing at The Department of Physical Planning, located in the Aventura Plaza on John F. Kennedy Drive, during working hours of 9 a.m. – 5 p.m.

Interested persons and organizations are invited to review the information on file and provide written comments prior to the meeting. Comments should be directed to the Acting Director of Physical Planning within twenty-one (21) days of the date of this notice. Submissions can be made via P.O Box N-1611, Nassau Bahamas or fax (242) 328-3206. Further inquiries can be made to the Acting Director via Tel. (242) 322-7550/1/2 OR (242) 328- 3202 or CHARLESZONICLE@BAHAMAS.GOV.BS

Signed
Charles B. Zonicle
Acting Director of Physical Planning

Appendix 5: Hurricane Hole Marina Website Page

Welcome to Hurricane Hole

The Hurricane Hole Marina enjoys one of the best locations on Paradise Island, within walking distance of restaurants, shopping, a casino, nightclubs, and the Atlantis resort. In addition, boaters can expect to enjoy all the amenities of one of the Bahamas' most famous full-service marinas. Available amenities include a swimming pool, waterfront restaurant and bar, tennis, fitness facilities and a wide variety of concierge services.


Hurricane Hole is being re-developed as a walkable mixed-use neighbourhood which will include:

- Restaurants
- Convenience retail including a grocery store, wine & liquor store, pharmacy, dry cleaner and others
- Office space
- A gym with fitness and multifunction space
- A redeveloped, expanded and improved marina
- Membership Access to the Ocean Club beach club and golf club
- Waterfront residential in a variety of sizes, prices and configurations

We are working with an international team of architects, designers and experts from Bahamas, the United States and Canada. Our goal is to create an integrated pedestrian-scale and highly livable environment with emphasis upon renewable energy and responsible environmental management. Sales will begin in fall 2018 and construction will begin in January 2019.

Please register your contact information with us so that we can keep you informed!

[CLICK HERE TO REGISTER](#)



Stay up-to-date with Hurricane Hole news

Email Address

First Name

Last Name

Marketing Permissions

Hurricane Hole will use the information you provide on this form to be in touch with you and to provide updates and marketing. Please let us know all the ways you would like to hear from us:

Email

You can change your mind at any time by clicking the unsubscribe link in the footer of any email you receive from us, or by contacting us at no-reply@hurricaneholemarina.com. We will treat your information with respect. For more information about our privacy practices please visit our website. By clicking below, you agree that we may process your information in accordance with these terms.

Appendix 6: Stakeholder Consultation Form - Businesses



Hurricane Hole Marina (HHM) Project Stakeholder Consultation Form - Businesses

Date: _____	Time: _____
Interviewer(s): _____	
SECTION I: INTERVIEWEE PERSONAL INFORMATION	
1. Name: _____	2. Age: _____
3. Relationship to HHM Project: _____	4. Gender: _____
SECTION II: HHM PROJECT KNOWLEDGE	
1. Have you heard of the HHM Project? If yes, how did you learn of the project? _____	
2. What have you heard about the HHM Project? _____	
3. Did you receive a pamphlet on HHM during this interview? _____	
SECTION III: SECTOR VIEWS	
1. What type of business do you operate? _____	
2. How do you see the HHMP benefiting your sector? _____ _____	
SECTION V: CONTACT OPTIONS	
How do you prefer to find out information on the project?	
<input type="checkbox"/> Social Media <input type="checkbox"/> WhatsApp <input type="checkbox"/> Email <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Community Meetings	

Appendix 7: Stakeholder Consultation Form - Complaints



Hurricane Hole Marina (HHM) Project Stakeholder Consultation Form - Complaints

Name of Person Making Complaint:

DETAILS OF COMPLAINT

State: What happened? When did it happen? Who did it happen to? What is the result of the problem? Source and duration of the problem.

DATE OF INCIDENT / GREIVENCE

- One-time incident/grievance (date _____)
- Happened more than once (how many times? _____)
- On-going (currently experiencing problem)

Signature: _____

Date: _____

Please return this form to:

Nadia Riley

nriley@sterlingglobaltd.com

Direct: 1-242-603-1936

Sterling Global Financial Limited

1-242-677-1900

PO Box N1812, 81 East Bay Street Nassau, Bahamas

<http://www.sterlingglobaltd.com>

**HURRICANE HOLE MARINA EMP
APPENDIX 4
EMERGENCY RESPONSE PLAN**



EMERGENCY RESPONSE PLAN



HURRICANE HOLE MARINA PROJECT

Prepared for:
Sterling Hurricane Hole Ltd.

Prepared By:
Design Elements Ltd.

Date:
18 September 2020

R1

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1. Introduction

Hurricane Hole Marina is located on the southern shore of Paradise Island, The Bahamas. The property is comprised of a 3.0 acres marina basin and 8.5 acres with support facilities. The site which has been operational as a marina for decades was previously owned by Brookfield Asset Management and acquired by Sterling Hurricane Hole Limited – SHHL (The Developers) in early 2018. The Developers intend to expand the marina and improve the existing amenities by increasing food and beverage options and shopping opportunities.

An Environmental Management Plan (EMP) was required for the project. To this end, SHHL engaged Design Elements to prepare an EMP inclusive of this Emergency Response Plan. Potential emergencies on the construction site for which a detailed response plan is needed include Fuel Spills and Fires, Hurricanes and Medical emergencies.

2. Purpose

The purpose of this plan is to:

1. define the potential emergencies that are likely to occur during construction,
2. outline procedures to decrease the likelihood and severity of emergencies, and
3. identify control, containment and clean-up measures in the event of an incident.

3. Definitions

Environmental emergency: Any event that causes or has the potential to cause environmental damage.

Hazards: Events that are potentially dangerous to human health or property.

4. Management Strategy

4.1 Fuel Spill Prevention and Control Plan

Fuel will be needed during the construction phase for operation of equipment needed to carry out works. The presence of fuel on site introduces the potential for fuel spills and by extension fires.

4.1.1 Purpose

The purpose of the fuel spill prevention and control plan is to:

- Implement measures to prevent a spill from occurring
- Install control measures to prevent a spill from reaching the environment
- Identify countermeasures to contain, clean up and mitigate the effects of a fuel spill

4.1.2 Potential Impacts

A potential fuel spill can occur during fuel storage and or fuel handling on a construction site. Fuel spills on the site can negatively impact the environment by:

1. Groundwater contamination:

The Bahamas' calcium carbonate geological make up and the typical thin layer of soil make it especially vulnerable to groundwater contamination from oil spills that can travel through the porous bedrock and into the groundwater supply. Groundwater contamination may occur with refueling equipment on site and storage of fuel on site.

2. Pollution of coastal waters:

Fuel spills in the sea can adversely impact and even kill marine life and ecosystems. There is a potential for pollution of coastal waters with the use of equipment for dredging in and near water edge and storage of fuel on site.

3. Fires:

Fuels are highly flammable and result in fires. Common ignition sources on construction sites include smoking and open flames.

4. Employee health & safety:

In addition to environmental impacts associated with fuel storage and spills there are risk to employee health & safety such as slips and falls that can injure workers. Also, breathing small amounts of gasoline vapours can lead to nose and throat irritation, headaches, dizziness, nausea, vomiting, confusion and breathing difficulties. Clothes soiled during fuel spills can lead to prolonged exposure to fumes and improper handling of fuel exposed clothing which are transferred indoors to small, poorly ventilated areas can have a greater impact.

4.1.3 Definitions

For the purposes of this plan the following definitions apply:

Fuel: any hydrocarbon-based liquid included but not be limited to both new and used hydraulic oils, motor oils, gasoline, diesel and other similar products.

Rainwater waste: rainwater that has accumulated within a secondary containment area.

Polluted rainwater waste: rainwater waste that contains fuel contamination.

Unpolluted rainwater waste: rainwater waste that does not contain any fuel contamination.

Secondary Containment: refers to a secondary container used as backup to a primary container for the purpose of providing adequate volume capacity to contain a spill from the primary container.

Primary Container: any container that is used to store fuel for the purpose of dispensing for refuelling vehicles and equipment at a construction site.

Secondary Container: a container that provides backup containment to a primary container by providing storage capacity in the amount of 110% of the volume of the largest primary container stored within.

4.1.4 Management Strategy

4.1.4.1 Fuel Storage

Improper storage of fuel increases the risk of leaks or spills. These risks of fuel spill can be minimized through the implementation of the following best management practices:

- Fuel storage is to be located on fuel containment pad.
- Fuel containment pad to be established on an existing asphalt surface (See Figure 1).
- A berm is to be installed around the existing surface for fuel spill containment.



Figure 1: Equipment Storage Location

- Fuel storage area to be fitted with fire extinguisher, spill kits and No Smoking signage.
- All fuels stored within primary containers must be provided with secondary containment.

Secondary Containment Requirements:

- Secondary containment shall provide adequate backup storage capacity that would effectively contain a spill from a primary container.
- Secondary containment shall provide a barrier between the primary storage container and the environment, thereby reducing the potential for soil, surface water and groundwater contamination.
- The secondary containment should be constructed of materials that are capable of adequately containing those fuels stored within (such as concrete, concrete block, plastic and steel).
- Rainwater shall not be allowed to collect within the secondary container.
- To prevent the ingress of rainwater into the secondary container it should be properly and adequately covered.
- Adequate cover could include a tarpaulin, fitted lid or roof.



Figure 2: Barrel dispenser containment system



Figure 3: Barrel storage containment system



Figure 4: Fuel tank storage containment system

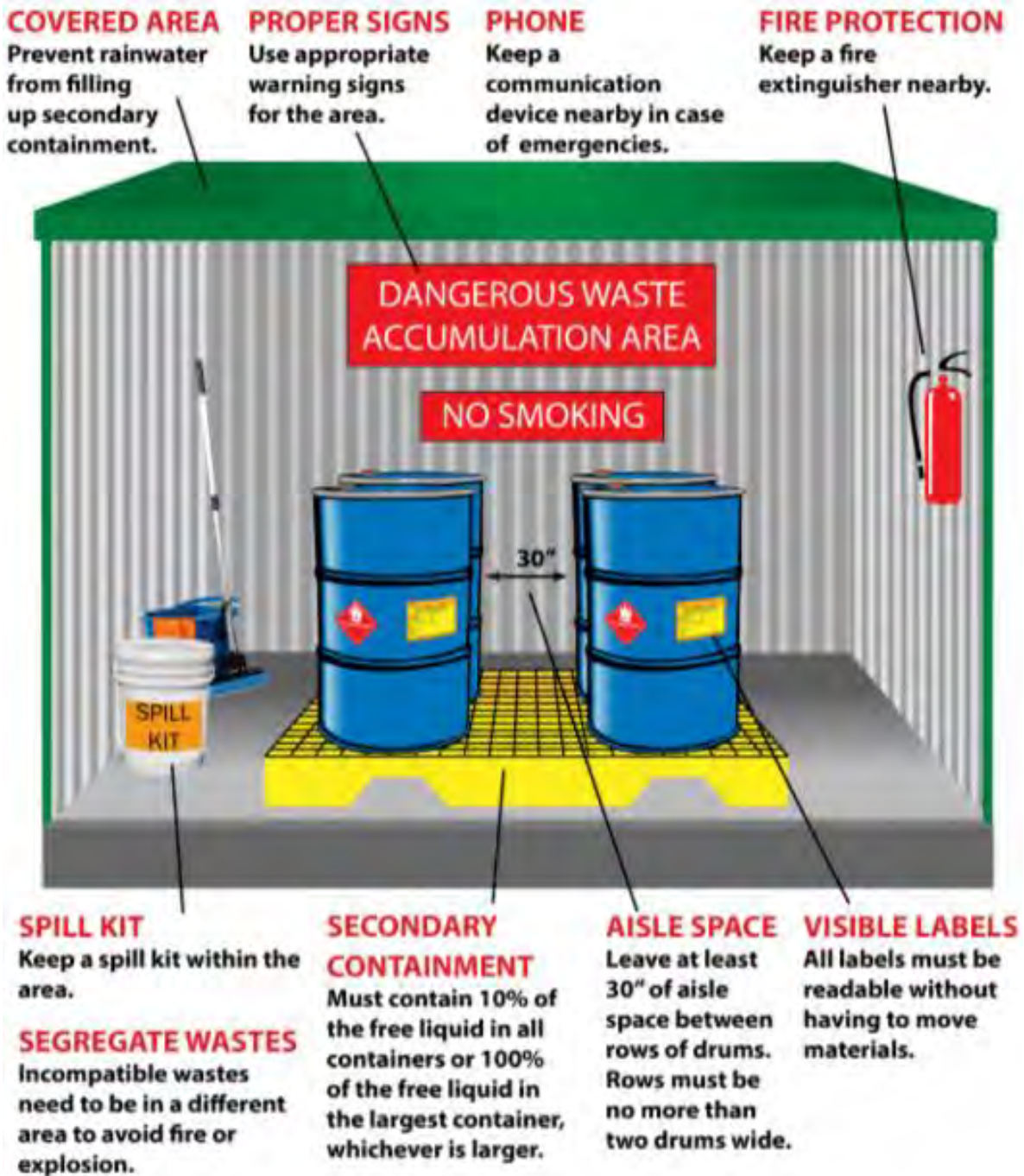


Figure 5: Example of roof cover secondary containment

- In the case of temporary cover such as a tarpaulin or fitted lid it must, be securely fastened so as to remain effective during inclement weather.
- Temporary covers shall be in place during all rain events, overnight, and during any extended period of time when the site will be left unattended, such as weekends, long holiday breaks and site closure for health outbreaks (e.g. Covid 19).

- Any rainwater waste that does collect within the secondary containment structure must be removed immediately so that it does not reduce the capacity of the secondary container to contain fuels that may subsequently be spilled within.
- Any drainage valve provided to a secondary container must remain closed and locked at all times when not in use and should only be opened to drain a spill or polluted rainwater waste.

Rainwater Waste:

- All rainwater waste must initially be handled as if it were polluted and must be assessed to determine if it is polluted.
- To be considered unpolluted rainwater waste, must not contain any visible pollution on the surface of the water such as oil sheen/oil slick.
- Rainwater waste shall be drained in a controlled manner to a collection tanker in the case of polluted rainwater or to allow unpolluted rainwater waste to escape on fill containment pad which will be disposed of as hazardous material upon demobilization from site.
- Only employees who have undergone training on this fuel spill prevention and control plan will be authorized to unlock and open the valve to rainwater waste.

4.1.4.2 Fuel Handling

Fuel spills on site can occur by various means during fuel handling including:

- a. Lack of due care and attention when refueling or leaving the fuel pump unattended which can result in an overflow of fuel.
- b. An increase in temperature can cause fuel to expand and overflow if equipment is overfilled (“topped-off”).

To minimize the likelihood of any accidental fuel leak or spill on the construction site, general guidelines to be followed for safe practice in fuel usage include:

WHERE TO FUEL?

1. A staging area will be designated for equipment fueling on-site (See figure 1).
2. Refueling will be restricted to the designated area. There will be NO mobile fueling of construction equipment around the site or on the barge during dredging works.
3. Equipment is to be transported to the designated staging area for refueling.
4. This area will be located at least one hundred (100) feet away from coastline to prevent the runoff of spills.
5. Refueling area to be fitted with fire extinguisher, spill kits and drip pans.
6. Refueling safety instructions to be posted within the staging area.

HOW TO REFUEL?

1. Always concentrate on the task at hand. Never leave fuel tank unattended.
2. Do not overfill the fuel tank (“topping-off”) to allow for fuel expansion on hot days.
3. Drip trays will be used as a secondary containment to catch fuel spill/leaks.

HOW TO PROPERLY MAINTAIN EQUIPMENT?

1. Equipment maintenance will be performed on the designated staging area on containment pad.
2. Preventative maintenance program to include oil change; inspection of hydraulic hoses and seals and oil and air filters; and replacement of parts where needed.
3. A secondary containment, such as a drain pan or drop cloth, will be used to catch spills or leaks when removing or changing fluids.
4. Used fluids will be promptly transferred to the proper waste storage drums. Do not leave full drip pans or other open containers lying around.
5. Grease, oil, antifreeze, brake fluid, cleaning solutions, hydraulic fluid, batteries, transmission fluid, worn parts, filters, and rags shall be disposed of as hazardous waste and will be stored in a bin designated and label as such.
6. Used and damaged batteries should be stored in a secondary container and disposed of as hazardous waste.

WHAT TO DO IF THERE IS A SPILL?

Despite all of the prevention methods in place, spills can happen. If a fuel spill occurs, the following actions should be taken:

1. Classify:

In the event of a spill, employees should be trained to quickly assess and identify the following:

- Type of fluid /spill?
- How much leaked, and how fast?
- What is the location and direction of the spill?
- Is the spill contained?
- Is it incidental or hazardous?

Occupational Safety and Health Administration (OSHA) defines an incidental release or spill as “a release of a hazardous substance which does not pose a significant safety or health hazard to employees in the immediate vicinity or to the worker cleaning it up, nor does it have the potential to become an emergency.” Incidental spills may be cleaned up by employees and do not require an emergency response. Employees should know what they can and cannot clean up in the case of a spill.

2. Communicate:

Notify the supervisor immediately. Then use signage and cones stored nearby to isolate the area so that others are aware of the spill and do not slip or fall.

The supervisor should advise the Environmental Manager (EM) immediately. In the event of spills over 5 gallons, the EM will notify the Department of Environmental Health Services immediately via telephone, log the incident into the BESTPROTECT242 APP and contact the Department of Environmental Planning & Protection (DEPP) via telephone.

3. Control and Contain

Stop the spill at the source when safely possible. Turn off the pump, plug the leak or do what is needed to stop the amount of material being spilled from growing even larger and spreading by using absorbent socks, mats or other material in the spill kit.

4. Clean -up and decontaminate

Once the spill has been contained, personnel should put on spill clean-up PPE stored nearby and begin clean-up immediately using appropriate spill clean-up material which may include oil absorbents and/or a liquid pump. Used clean-up material should be placed in a fireproof container and oil pumped into waste oil container. Contaminated soil should be excavated to a depth where the soil appears visually clean and back filled with clean material. Contaminated soils should be placed into an adequately sealed and secure container. All containers should be properly labelled. Photographic evidence of the clean-up should be captured for reporting purposes. All waste from clean-up should be disposed of in the new Providence Ecological Park (NPEP) disposal site as hazardous waste and a ticket provided as proof.

Personnel involved in the spill or responsible for clean-up should thoroughly wash the fuel from their body at the wash station provided nearby. Any clothing that has absorbed hydrocarbons should be removed and washed immediately.

5. Critique

The Contractor is to perform a root cause analysis and reassess control measures to prevent another spill of that nature. Document the details of the spill including cause, response and any actions to be taken as a result, in an incident report which will be included in the environmental reporting for the project (see Appendix 1 for Spill Report template).

Clean-up supplies should be replenished to ensure an adequate amount is on site at all times.

A visual aided poster of the Spill Response Plan (see Figure 6) will be displayed in the fuel storage and refuelling area.

SPILL RESPONSE PLAN



Figure 6: Spill Response Plan Poster

4.2 Hurricane Preparedness Plan

4.2.1 Introduction

The islands of The Bahamas lie in the hurricane belt and are subject to hurricanes and tropical storms during the hurricane season which is officially between 1 June to 30 November. Hurricanes can cause significant damage to the environment, property and human life. As construction activities will be conducted near and in the water, potential impacts are likely to amplify during a hurricane or period of heavy rains and should be managed to reduce impacts during and after storm events.

4.2.2 Purpose

The purpose of the Hurricane Preparedness Plan is to efficiently prepare for an approaching storm by identifying means to safely secure the project site during construction to minimize potential impacts. It serves as a guideline for contactors before, during and after the hurricane. The goal is to minimize loss of life, property and environmental damage which may result from a Hurricane.

4.2.3 Definitions

The following definitions relating to terminology associated with storms have been adopted from the National Oceanic and Atmospheric Administration (NOAA).

Advisory: Officially information issued by tropical cyclone warning centers describing all tropical cyclone watches and warnings in effect along with details concerning tropical cyclone locations, intensity and movement, and precautions that should be taken. Advisories are also issued to describe: (a) tropical cyclones prior to issuance of watches and warnings and (b) subtropical cyclones.

Center: Generally speaking, the vertical axis of a tropical cyclone, usually defined by the location of minimum wind or minimum pressure. The cyclone center position can vary with altitude. In advisory products, refers to the center position at the surface

Direct Hit: A close approach of a tropical cyclone to a particular location. For locations on the left-hand side of a tropical cyclone's track (looking in the direction of motion), a direct hit occurs when the cyclone passes to within a distance equal to the cyclone's radius of maximum wind. For locations on the right-hand side of the track, a direct hit occurs when the cyclone passes to within a distance equal to twice the radius of maximum wind. Compare indirect hit, strike.

Eye: The roughly circular area of comparatively light winds that encompasses the center of a severe tropical cyclone. The eye is either completely or partially surrounded by the eyewall cloud.

Eyewall / Wall Cloud: An organized band or ring of cumulonimbus clouds that surround the eye, or light-wind center of a tropical cyclone. Eyewall and wall cloud are used synonymously.

Hurricane / Typhoon: A tropical cyclone in which the maximum sustained surface wind (using the U.S. 1-minute average) is 64 kt (74 mph or 119 km/hr) or more. The term hurricane is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. The term typhoon is used for Pacific tropical cyclones north of the Equator west of the International Dateline.

Hurricane Season: The portion of the year having a relatively high incidence of hurricanes. The hurricane season in the Atlantic, Caribbean, and Gulf of Mexico runs from June 1 to November 30. The hurricane season in the Eastern Pacific basin runs from May 15 to November 30. The hurricane season in the Central Pacific basin runs from June 1 to November 30.

Hurricane Warning: An announcement that sustained winds of 64 knots (74 mph or 119 km/hr) or higher are expected somewhere within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities

become difficult once winds reach tropical storm force, the warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds. The warning can remain in effect when dangerously high water or a combination of dangerously high water and waves continue, even though winds may be less than hurricane force.

Hurricane Watch: An announcement that sustained winds of 64 knots (74 mph or 119 km/hr) or higher are possible within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical storm force winds.

Indirect Hit: Generally refers to locations that do not experience a direct hit from a tropical cyclone, but do experience hurricane force winds (either sustained or gusts) or tides of at least 4 feet above normal.

Inundation: The flooding of normally dry land, primarily caused by severe weather events along the coasts, estuaries, and adjoining rivers. These storms, which include hurricanes and nor'easters, bring strong winds and heavy rains. The winds drive large waves and storm surge on shore, and heavy rains raise rivers. (A tsunami — a giant wave caused by earthquakes or volcanic eruptions under the sea or landslides into the sea — is another kind of coastal inundation but should not be confused with storm surge.)

Landfall: intersection of the surface center of a tropical cyclone with a coastline. Because the strongest winds in a tropical cyclone are not located precisely at the center, it is possible for a cyclone's strongest winds to be experienced over land even if landfall does not occur. Similarly, it is possible for a tropical cyclone to make landfall and have its strongest winds remain over the water. Compare direct hit, indirect hit, and strike.

Major Hurricane: A hurricane that is classified as Category 3 or higher.

Maximum Sustained Surface Wind: standard measure of a tropical cyclone's intensity. When

the term is applied to a particular weather system, it refers to the highest one-minute average wind (at an elevation of 10 meters with an unobstructed exposure) associated with that weather system at a particular point in time.

Maximum Sustained Surface Wind: The standard measure of a tropical cyclone's intensity. When the term is applied to a particular weather system, it refers to the highest one-minute average wind (at an elevation of 10 meters with an unobstructed exposure) associated with that weather system at a particular point in time.

Saffir-Simpson Hurricane Wind Scale: The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 categorization based on the hurricane's intensity at the indicated time. The scale provides examples of the type of damage and impacts in the United States associated with winds of the indicated intensity. The following table shows the scale broken down by winds.

Category	Wind Speed (mph)	Damage
1	74 - 95	Very dangerous winds will produce some damage
2	96 - 110	Extremely dangerous winds will cause extensive damage
3	111 - 129	Devastating damage will occur
4	130 - 156	Catastrophic damage will occur
5	> 156	Catastrophic damage will occur

Storm Surge: An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the cyclone. Storm surge is usually estimated by subtracting the normal or astronomic high tide from the observed storm tide.

4.2.4 Priority construction & Potential Impacts

Potential impacts from hurricane during the construction phase include:

- High waves and tides can damage docks, pilings and the boats attached to them and can cause drowning.
- Damage to marine environment from fuel spills from boats damaged during storm.
- Fuel spills upland that reach marine environment as a result of floods.
- Construction material and debris that can become airborne and end up as marine debris.
- Injury and or loss of life of personnel.

4.2.5 Management Strategy

4.2.5.1 Preparedness Procedures

During hurricane season, the Project Manager (PM) will be responsible for checking weather reports on a daily basis. The following measures should be in place at the beginning of the hurricane season:

When an advisory has been issued indicating that there is a storm in the area, hurricane preparedness activities will commence 48 hours before the predicted time of impact. The following actions will be taken under the supervision of the PM and confirmed by the EM:

- All marina works will be suspended.
- All fuel storage, equipment, hazardous chemicals and portable toilets shall be removed from the site.
- Used oil should be removed from the site and disposed of at NPEP dumpsite as hazardous material and a ticket provided as proof. Waste tickets will be cross referenced with pay applications for consistency.
- Trash cans should be emptied into dumpsters and dumpsters removed from site by waste management subcontractor.
- Construction material that can become airborne and end up as marine debris or projectiles should be securely covered with tarp or removed from the site.

- All fill stockpiles should be placed more than one hundred feet from open water and silt fencing installed around the perimeter for wash out control during heavy rains.
- Silt fencing should be installed as per the detail outlined in figure 7 below.

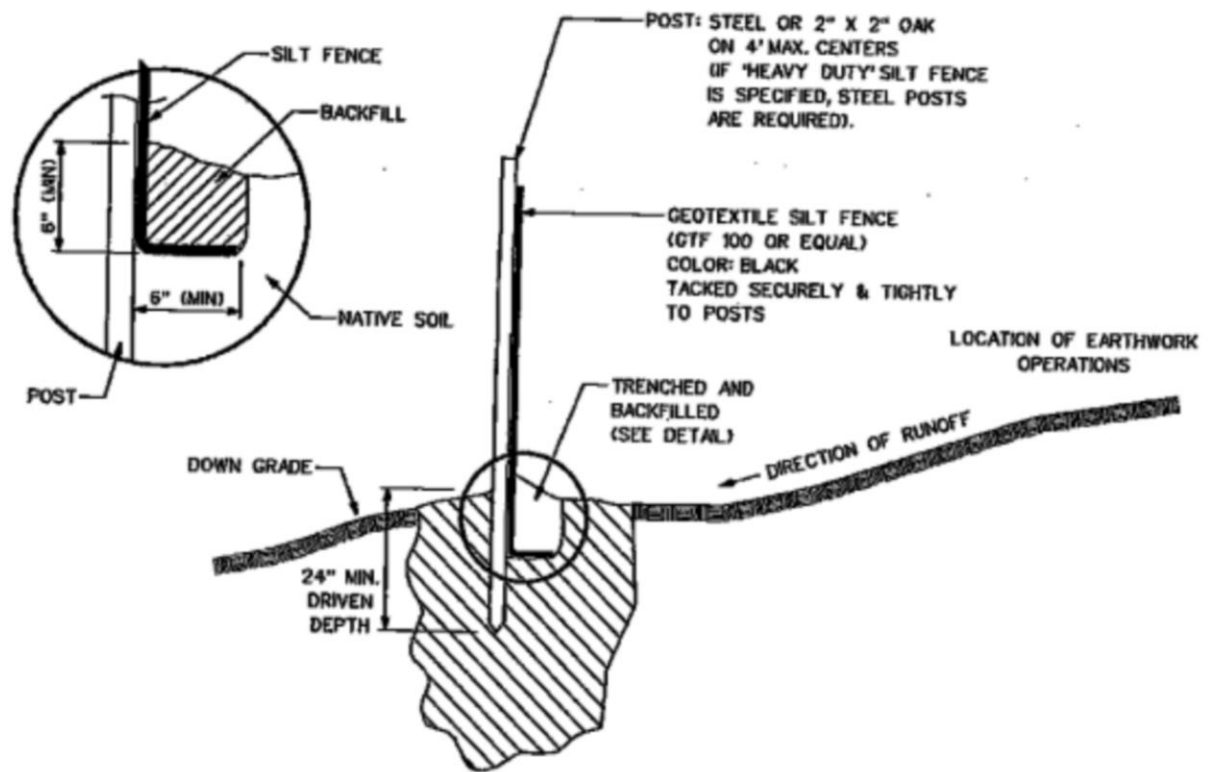


Figure 7: Silt fencing installation details

- After the storm has passed and the all clear has been given, the following steps will be taken:
 - A team, led by the project manager, will be mobilized to the site to conduct an assessment to identify if there are any downed electricity lines or damages to other utilities.
 - If damage utilities are noted the relevant utility provider will be notified.
 - The site shall remain closed until all electrical repairs are made and the provider has indicated that it is safe to access the site.
 - When it is safe to access the site, cleanup efforts will commence to remove any debris or harmful objects that might have been blown onto the site or became unsecured during the storm.

- Debris from clean up exercise shall be deposited in the NPEP and a waste ticket as proof. Waste tickets will be cross referenced with pay applications for consistency.
 - The EM shall conduct a post storm assessment and report any incident of environmental concern to DEPP.
 - The EM shall collaborate with DEPP on actions to be taken to mitigate incidents of environmental concern.
 - The EM shall collaborate with the PM to execute actions to be taken to mitigate incidents of environmental concern.
 - The site will be opened for construction activities to recommence. When it is determined that it is safe.

4.2.6 Relevant Agencies

Department of Meteorology

Department of Meteorology is responsible for reporting and recording the weather and climate for The Bahamas.

Ministry of Disaster Preparedness, Management & Reconstruction

Ministry of Disaster Preparedness, Management & Reconstruction is mandated to focus efforts on disaster preparedness, response, relief and recovery; and coordination with NEMA and family island committees & administrators.

National Emergency Management Agency

The National Emergency Management Agency (NEMA) is a government agency operating under the Ministry of Disaster Preparedness, Management & Reconstruction that is mandated with Disaster Management in the Commonwealth of The Bahamas.

Bahamas Air Sea & Rescue Association

The Bahamas Air Sea Rescue Association (BASRA) is a non-profit organization dedicated to assisting seamen and airmen in distress in The Bahamas. The air pilots of the Nassau Flying Club, The Royal Bahamas Police Force and their radio room, the Royal Bahamas Defense Force, Drug Enforcement Administration (DEA), Atlantic Undersea Test and Evaluation Center (AUTEC) and the United States Coast Guard(USCG), and a group of volunteers all help with air and boat searches and rescues. The agency is available 24 hours.

Royal Bahamas Defense Force

The Royal Bahamas Defense Force (RBDF) is primarily an armed service, whose roles also encompass aspects of coast guard as well as a disaster relief agency. These roles require RBDF personnel to assume the duties of naval and infantry personnel, Police Officers (Peace Officers), Customs Officers, Immigration Officers, Fisheries InspectorT, Emergency rescue personnel, Search and rescue, Sentry, Detention Center Security and Maintenance of Navigational Aids.

Royal Bahamas Police Force

The Royal Bahamas Police Force is the national law enforcement agency of the Commonwealth of The Bahamas. It operates within the portfolio of the Ministry of National Security.

[4.2.7 Emergency Contacts](#)

[4.2.7.1 Contact list](#)

The following is a list of contacts for agencies that can provide information or assistance in the event of an emergency. This list should be posted at key locations including site office and laydown area.

Table 2: Emergency Contact list

Agency	Phone Contact
Search & Rescue	
Bahamas Air Sea Rescue Association (BASRA)	242-325-8864
Royal Bahamas Defense Force (RBDF)	242-362-2926
Protection	
RDBP Paradise Island Police Station	242-363-3011 242-363- 4766
RBPD Fire Service	242-322-1225 242-302-8404
Weather Information	
Department of Meteorology	242-702-5250
National Emergency Management Agency (NEMA)	242-3226081 242-322-6085
Medical Support	
Princess Margret Hospital (PMH)	242-322-2861
Doctors Hospital	242-302-4600

4.2.7.2 Contact Cards

The emergency Contact cards provide below details contact information for all agencies on the Emergency Contact list.

Search and Rescue

Bahamas Air Sea Rescue Association



Company: Bahamas Air Sea Rescue Association (BASRA)
Address: East Bay Street
Town: Nassau
P.O. Box: P.O. Box 55-6247
Island: Nassau / Paradise Island, Bahamas
Phone: [242-325-8864](tel:242-325-8864)
Fax: 242-325-2737
Website: <http://www.basra.org/>

Royal Bahamas Defence Force



Company: Royal Bahamas Defence Force (Headquarters)
Address: Coral Harbour
Town: Nassau
P.O. Box: P.O. Box N-3733
Island: Nassau / Paradise Island, Bahamas
Phone: [242-362-2926](tel:242-362-2926)
Website: <http://www.rbdf.gov.bs>

Hurricane Information

National Emergency Management Agency (NEMA)



GOVERNMENT OF THE BAHAMAS

Company: National Emergency Management Agency (NEMA)
Address: Gladstone Road south of Aquinas College
Town: Nassau
P.O. Box: N-7147
Island: Nassau / Paradise Island, Bahamas
Phone: 242-322-6081
Phone 2: 242-322-6085
Fax: 242-326-5456
Website: <http://www.bahamas.gov.bs/nema>

Department of Meteorology

JL Center Blake Road: 1-242-702-5250

Forecast Office: 1-242-377-3327/1-242-377-5275

P.O. Box N-8330

Nassau, Bahamas

<https://www.bahamasweather.org.bs>

Email: meteo@batelnet.bs

Medical Support

The Princess Margaret Hospital (PMH)



Company: The Princess Margaret Hospital (PMH)
Address: Shirley Street
Town: Nassau
P.O. Box: P.O. Box N-3730
Island: Nassau / Paradise Island, Bahamas.
Phone: [242-322-2861](tel:242-322-2861)
Fax: 242-326-8804
Website: <http://www.phabahamas.org>

Doctors Hospital



DOCTORS HOSPITAL
Isn't Your Health Worth it?



Company: Doctors Hospital
Address: Collins Avenue & Shirley Street,
Town: Nassau
P.O. Box: P.O. Box N-3018
Island: Nassau / Paradise Island, Bahamas
Area: DownTown
Phone: [242-302-4600](tel:242-302-4600)
Fax: 242-322-3284
Website: <http://www.doctorshosp.com>

Protection

Paradise Island Police Station



Company: Paradise Island Police Station
Address: Paradise Island
Town: Nassau
Island: Nassau / Paradise Island, Bahamas
Phone: [242-363-4766](tel:242-363-4766)



Fire Services Royal Bahamas Police Force

East Street
P O Box N 458
Nassau, N.P., The Bahamas

Web Site: <http://www.royalbahamaspolice.org>
Email: info@royalbahamaspolice.org
Phone: (242) - 322-1225/302-8404
Fax: (242) - 326-8107

4.3 Health & Safety Precautions and Response Plan

The appointed contractor will be required to submit a detail health and safety precautions and response plan in accordance with their company's procedures. The plan should include but should not be limited to the following information.

4.3.1 Roles & Responsibilities

The Contractor will appoint a designated Site Safety Officer with an acting safety officer always appointed in his absence. Basic first aid training of these persons shall be required.

4.3.2 Best Management Practices

The Contractor's Site Safety induction addressed the following topics: Best practices for working:

- With hazardous materials
- At heights
- Manual Handling of Material (including proper lifting)
- With heavy equipment
- Fire Precautions
- First Aid

The following topics should also be included in safety induction:







- Working in confined spaces (if applicable)
- Works in water (diver safety precautions)

4.3.3 Personal Protective Equipment

PPE shall be worn as appropriate for tasks undertaken (see PPE chart below). When working alongside or over water; where there is a risk of drowning; rescue equipment shall be readily available on hand (e.g. use of life jackets, life lines/rings and a safety boat). For works at heights, the Contractor shall take appropriate measures to prevent falling (e.g. use of harnesses and rails). At all times work sites shall be maintained in an orderly, safe and tidy state. Precautions against fire accident shall be taken and appropriate fire safety equipment supplied and clearly indicated at work sites.

Table 3: Personal Protective Equipment Chart

PPE	Description	Illustration	Construction Activity
Safety Vest and Hi visibility clothing	Apparel designed to enhance visibility of workers on site. Use hi-vis colors like orange and yellow/lime and may also incorporate reflective tape used to ensure that you can be seen when you are in an environment with poor lighting and obstructed views.		At all times, in all areas on site.
Hard Hat	A hard hat is a type of helmet predominantly used in workplace environments such as industrial or construction sites.		Used to protect the head from injury due to falling objects, impact with other objects, debris, rain, and electric shock,
Steel toe shoes	A durable boot or shoe that has a protective reinforcement in the toe.		Protects the foot from falling objects or compression.
Goggles	Protective eyewear that usually enclose or protect the area surrounding the eye in order to prevent particulates, water or chemicals from striking the eyes.		Offers protection from flying debris and particles like dust and saw dust.
Gloves	Personal protective equipment worn during work projects that cover and protect the hands from the wrist to the fingers.		To save the user's hands and fingers from unnecessary wounds such as cuts, blisters, splinters, skin punctures or heat and chemical burns.

PPE	Description	Illustration	Construction Activity
Dust mask	A dust mask is a flexible paper pad held over the nose and mouth by elastic or rubber straps.		Personal comfort against non-toxic nuisance dusts.
Respirator	A mask or device worn over the mouth and nose.		To protect the wearer from inhaling hazardous atmospheres, including fumes, vapours, gases and particulate matter.
Ear Muffs	Earmuffs are objects designed to cover a person's ears for hearing protection.		Equipment operation Pile driving
Welding helmet	Headgear made of metal with a tinted u/v lens to protect welder's eyes, face and neck from flash burn, ultraviolet light, sparks, infrared light, and heat.		Welding
Life vest	A life vest (also called Personal flotation device, lifejacket, or cork jacket) is a special type of clothing. The vest makes people float in water.		Works near water.
Harness	A safety harness is a form of protective equipment designed to protect a person, animal, or object from injury or damage. The harness is an attachment between a stationary and non-stationary object		Works at heights.

4.3.4 Safety Procedures for working in a pandemic condition (Covid 19)

The following tasks are to be undertaken by the Contractor to ensure that there are no negative health impacts related to the COVID 19 Pandemic, during the construction works for the Hurricane Hole Marina Project.

In addition to all the safety requirements already outlined, the Contractor will practice the following requirements in order to prevent any individual involved in the project and any member of the public from contracting or contributing to the spread of the COVID 19 virus.

1. Maintain a distance of six (6) feet between workers unless it is absolutely impossible for an individual to complete his assignment without help from other staff members (for instance when lifting heavy items).
2. Wear approved face mask at ALL times; disposable mask shall be discarded at the end of each work shift; reusable cloth masks shall be washed at the end of each workday; each employee to be issued two reusable masks
3. Have on site an appropriate hand wash down station charged with chlorine or other disinfectant solution.
4. Avoid contact and social interaction with the public.
5. Body temperature to be measured every morning prior to start working; in case a temperature higher than 100°F is recorded, the employee will be instructed to abandon immediately the workplace and return home.
6. Workers shall avoid touching their mouth, nose and eyes with unwashed hands.
7. Workers shall cover mouth and nose when coughing or sneezing, or they shall use the inside of their elbows, especially when other person might be close by (even if at a greater distance than 6 ft).

8. Workers shall report to Project Manager any situation which might lead to any kind of connection to the COVID 19 virus (for instance if they accidentally come into contact with a person showing any of the infection symptoms).
9. Site supervisors should also be responsible for monitoring and ensuring compliance and report to Project Manager as appropriate.
10. Every episode of a potential contagion amongst staff shall be immediately reported to local authorities.
11. Each piece of equipment will be operated by the same person; when a different person needs to operate a piece of equipment not assigned to himself, he shall wipe the wheel, door handle and all the controls prior to start operating that piece of equipment with disinfecting wipes.
12. Each laborer will be issued his own personal rake and shovel.
13. Disinfecting wipes will be available on site, and shared site facilities to be wiped prior to each use.
14. These COVID-19 preventative procedures and the COVID-19 hotline numbers listed below in figure 8 are to be visible to all staff and visitors upon entering the work site.



Figure 8: Covid 19 Hotline Numbers (Source: Ministry of Health)

4.3.5 General Requirements

- There shall be a fully equipped First Aid Box at all work sites at all times.
- A list of local emergency telephone numbers shall be posted in case of accident.
- Minor and major accidents shall be recorded in an accident log book.
- Method Statements shall include health and safety precautions.
- Works shall be conducted in accordance with method statements at all times.
- Health and safety considerations to be included in monitoring regime.

Appendix 1: Spill Report Form



Hurricane Hole Marina Project SPILL REPORT FORM

Project		Location	
Date of Incident		Notification time	
Name & Title of Observer			
Agency Notified			
Type of Material Spill		Quantity Spilled	
Details of spill			
Response to Spill			
Measures to prevent reoccurrence			
Name:		Position:	
Signature:		Date:	

**HURRICANE HOLE MARINA EMP
APPENDIX 5
ENVIRONMENTAL REPORT TEMPLATE**



HURRICANE HOLE MARINA PROJECT

ENVIRONMENTAL REPORTING TEMPLATES



Hurricane Hole Marina Project

BI-MONTHLY ENVIRONMENTAL REPORT TEMPLATE

1.0 OVERVIEW

Indicate report period and construction activities during period.

2.0 SITE INSPECTION

Summarize observations made during site inspections for each monitoring parameter indicated on the site inspection sheet. Include site inspection sheets for the period as an appendix to this report.

3.0 REPORTS & COMMUNICATION

Provide details on reports submitted during this period including and NCR, Incident Report, Fuel Spill Report and Turbidity Monitoring Reports. Attach copies of reports as an appendix to this report.

Summarize communication with relevant agencies including Department of Environmental Planning & Protection, Department of Environmental Health, Department of Marine Resources and Incidents logged into the BESTPROTECT242 APP.

4.0 MEETINGS

Record any meeting during this period where environmental management matters were discussed including construction progress meetings, meetings with the contractor to address specific environmental matters and meetings with government officials. Minutes of meeting should be included as an appendix to this report.

5.0 TRAINING

Provide details on all training exercises conducted during this period including site inductions and toolbox talks. Register of individuals undergoing training should be included as an appendix to this report.

6.0 STAKEHOLDER ENGAGEMENT

All stakeholder engagement activities during the period should be included and the update stakeholder engagement log attached as an appendix to this report.



Hurricane Hole Marina Project NONCONFORMANCE REPORT FORM

SECTION 1: COMPLETED BY THE ENVIRONMENTAL MANAGER			
NCR No.	Specific: <input type="checkbox"/> Site Safety <input type="checkbox"/> Groundwater Management <input type="checkbox"/> Sediment control <input type="checkbox"/> Vegetation <input type="checkbox"/> Marine Environment <input type="checkbox"/> Waste Management <input type="checkbox"/> Air Quality <input type="checkbox"/> Other		
Contractor:			
Activity:			
Non-Compliance: <input type="checkbox"/> Environment <input type="checkbox"/> Health & Safety			
Details: <div style="text-align: center; padding: 20px 0;"> <i>Details of Nonconformance observation (attach photos on separate page)</i> </div>			
Recorded by:			
Signature:		Date:	
SECTION 2: COMPLETED BY THE CONTRACTOR (returned to Environmental Manager)			
<i>Contractor's response, intended method and date of repair</i>			
SECTION 3: CLOSE OUT			
Correction Completed and Report Closed Out:			
Environmental Manager		Date:	
Contractor's Representative		Date:	



Hurricane Hole Marina Project

INCIDENT REPORT FORM

Date of Incident				Time of Incident			
TYPE OF INCIDENT							
	Chemical Spill		Excessive air emission		Sediment		Excessive vegetation clearing or damage
	Sanitary Spill		Excessive Noise		Flood		Protected vegetation damage
	Waste Management		Excessive Odor		Fire		Fauna Injury
Details of Incident							
Response to Incident							
Measures to prevent reoccurrence							
Name:				Position:			
Signature:				Date:			



Hurricane Hole Marina Project SPILL REPORT FORM

Project		Location	
Date of Incident		Time of Incident	
Name & Title of Observer			
Agency Notified		Notification Time	
Type of Material Spill		Quantity Spilled	
Details of spill			
Response to Spill			
Measures to prevent reoccurrence			
Name:		Position:	
Signature:		Date:	



Hurricane Hole Marina Project - Environmental Monitoring Checklist

Site description		Weather Conditions			
Location		GPS Coordinates			
1	Site Safety and Health	YES	NO	Comments/ Prescribed Corrective Actions	
a	Is personal protective equipment used appropriately?				
b	Are there proper safety requirements for work sites near water?				
c	Are there proper safety requirements for works at heights?				
d	Are open pits secured with caution tapes and or cones?				
e	Is there adequate freshwater drinking available?				
2	Waste Management				
a	Is good housekeeping practiced on site?				
b	Are appropriate storage containers being used and properly labelled?				
c	Are litter bins conveniently placed throughout the site?				
d	Is waste collection needed?				
e	Is hazardous waste separated in laydown area?				
f	Is spill response equipment on site and easily accessible?				
g	Are there solid waste ticket receipts for landfill disposal of onsite waste?				
3	Air Quality Management				
a	Are speed restrictions of 15mph adhered to?				
b	Are equipment properly maintained to reduce emissions?				
c	Are dust suppression mechanisms implemented?				

4	Material Storage	YES	NO	Comments / Prescribed Corrective actions	
a	Are material in storage area secured to prevent airborne debris?				
b	Are fill stockpiles located more than 100 feet from open water?				
c	Is silt fencing installed around the perimeter of fill stockpiles?				
5	Groundwater Management				
a	Is refueling on concrete apron or lined fuel pad in case of spillage?				
b	Are fuel and oil storage on concrete apron or lined containment pad in case of spillage?				
c	Are fuel and oil storage containers appropriate, free from leaks or signs of corrosion?				
d	Is there adequate secondary containment for fuel and oil storage units?				
e	Are secondary containment covered to prevent ingress of rainwater?				
f	Are mobile machine repairs and maintenance on concrete apron or lined containment pad in case of spillage?				
g	Are all mobile machinery in use free from engine lubrication and oil leaks?				
h	Is cement storage on concrete apron or lined containment pad?				
i	Is concrete washout established and appropriate with liner installed?				
j	Are there any excavations with exposed groundwater?				
k	Is fuel and oil storage a minimum of 100 feet from any excavations with exposed groundwater?				
l	Is refueling operations a minimum of 100 feet from any excavations with exposed groundwater?				

6	Portable Potties			Comments / Prescribed Corrective actions	
a	Are facilities conveniently located?				
b	Are units clean and stocked with supplies?				
c	Are there proper disposal bins for feminine sanitary waste?				
d	Are the units on concrete apron or lined containment pad in case of spillage?				
e	Are units a minimum of 100 feet from any excavations with exposed groundwater?				
f	Are units a minimum of 100 feet from waterbody?				
7	Protection of Waterbodies & Sediment Control	YES	NO		
a	Is silt fencing adequately placed, properly installed and maintained?				
b	Are turbidity curtains adequately placed, properly installed and maintained?				
c	Is there any turbidity observed outside turbidity curtain containment area?				
d	Is there any oil or grease observed?				
e	Are there poor water quality indicators, i.e. algae growth, dead marine life?				
f	Is fuel and oil storage, a minimum of 100 feet from waterbody?				
g	Is refueling operations a minimum of 100 feet from waterbody?				
h	Is there any plastic or other solid waste in water?				
i	Is marine organism spotter in place during dredging work?				

8 Vegetation				Comments / Prescribed Corrective actions	
a	Has protected trees been maintained or relocated?				
b	Are invasive species removed?				
c	Is native vegetation used in landscaping?				
d	Is there buildup of dust on vegetation?				
9 Noise					
a	Is there excessive noise on site?				
Inspected by:			Signature:		
			Date:		
I, the Contractor's Representative, have read, understood, and affirm to the conditions and remarks cited by the above Environmental Manager.			Signature:		
			Date:		



HURRICANE HOLE MARINA PROJECT DAILY LOG - TURBIDITY MONITORING

Report Date:

Report No.:

Rev. 0

1. TEST POINTS

1. 50 meters upstream from construction activity
2. 50 meters downstream from construction activity

2. MONITORING

Point	Time	Eastern	Western	NTU	Additional Information
1					
2					

3. METEROCEAN CONDITIONS

Point	Wind Speed (Kts)	Wind Dir	Current Dir	Additional Information
1				
2				

4. TIDE

Time	High		Low	

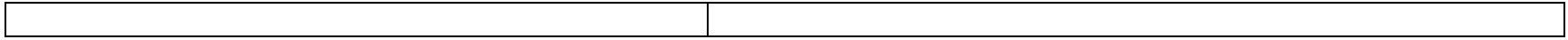
5. REMARKS

Contractor's Representative:

Witness:

Position:

Position:



**HURRICANE HOLE MARINA EMP
APPENDIX 6
CONTRACTOR'S SITE SAFETY INDUCTION**

STAR Construction



Site Safety Induction

Sterling Commons & One Marina Place, Nassau,
Bahamas



Sterling Commons & One Marina Place

Our Expectations

Welcome to Sterling Commons, Paradise Island – a unique development consisting of two 3 Storey Mixed Residential and Retail. Two additional 7 Storey Residential Blocks and a increase in size to existing Marina due to commence in September 2019

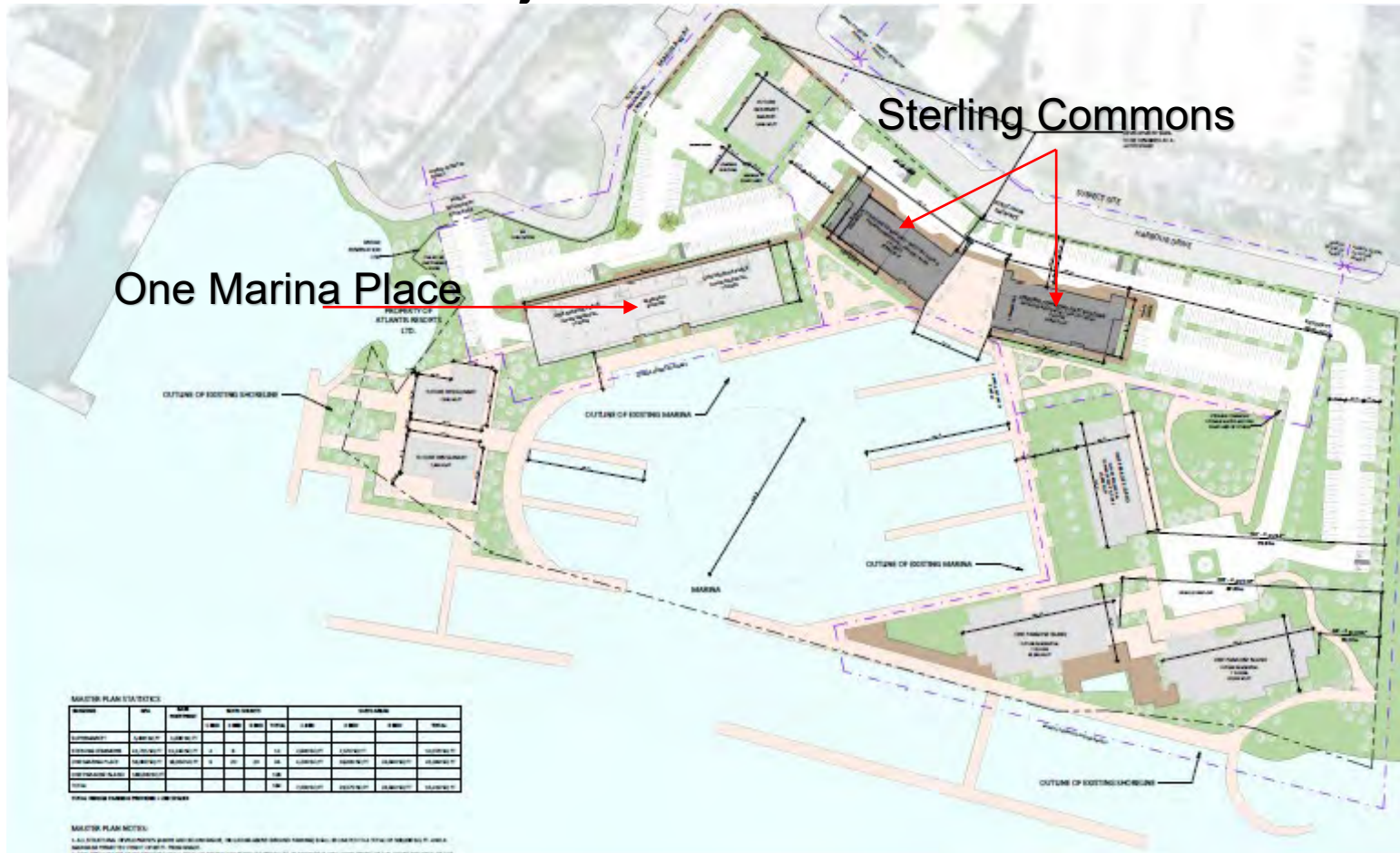
1. First and foremost, we all want you to work safely and stay safe
2. Secondly, there is no such thing as a daft question so ask if you are unsure
3. We want to ensure work is properly assessed, planned and executed
4. Always wear the appropriate PPE (boots, hi-viz, hard hat, eye protection, gloves)
5. Please only do tasks that you are competent and trained to do
6. We operate an open challenge policy so if you see something unsafe – stop it
7. The STAR Team are here to help with any issues or concerns that you may have

Please pay attention to the full induction – it is there for both your own protection, and for the protection of those around you.



Sterling Commons & One Marina Place

Project Introduction



Sterling Commons & One Marina Place

Project Details

- **Client :-** Sterling Hurricane Hole Ltd
- **Principal Contractor :-** STAR Construction Ltd
- **Package Contractor :-**
- **Contract Duration :-** 85 Weeks
- **Completion Date :-** December 2020



Sterling Commons & One Marina Place

STAR Construction Ltd – Staff & Site Hours

- **Construction Manager:** - Gregory Van Der Riet
- **Commercial Manager:** - Sam True
- **Project Engineer :-** TBC
- **HS Manager :-** TBC
- **Site Hours :-** Monday to Thursday 07h00 – 17h00
Friday 07h00 – 15h00
Saturday 07h00 -12h00
- **Breaks :-** 12h00 – 12h30



Sterling Commons & One Marina Place

Staff – Client Team



Sterling Commons & One Marina Place

Logistics/Access to Site



Sterling Commons & One Marina Place are located on Paradise Island and situated on Harbour Drive and can be accessed via the Sidney Poitier Bridge



Sterling Commons & One Marina Place

Delivery Vehicle Edge Protection

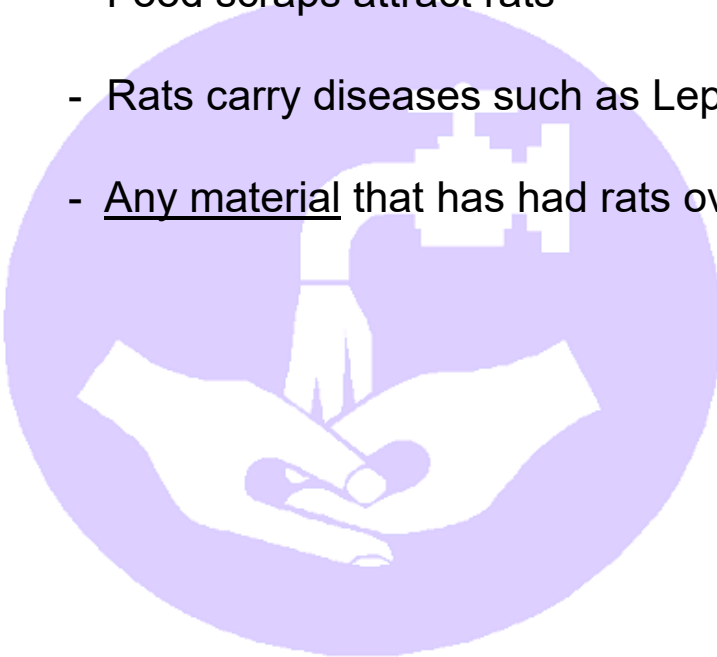
- All regular reinforcement delivery trailers should be equipped with Handrails System
- The trailer safe system will be fitted to every site delivery vehicle which does not have a permanent fixed handrails attached..



Sterling Commons & One Marina Place

Welfare Arrangements

- The welfare facilities are for your use, take care of them
- No clothes to be stored in canteen facilities – use the areas provided
- Food **must** be eaten within the canteen and not on site
 - Place all food scraps and rubbish in the waste bins
 - Food scraps attract rats
 - Rats carry diseases such as Leptospirosis - **Weil's Disease Can Kill !!**
 - Any material that has had rats over it may be contaminated



Sterling Commons & One Marina Place



Smoking, Alcohol and Non Prescribed Drugs

- No smoking is permitted on site or within building(s)
 - Designated smoking area is in front of canteen
 - Remember to dispose of the cigarette butt appropriately
 - Consumption of alcohol is not permitted at any time
 - Taking non-prescription drugs is not permitted at any time
- IF IN DOUBT ASK !!



**ANYONE DEEMED TO BE UNDER THE INFLUENCE
WILL BE IMMEDIATELY REMOVED FROM SITE !!**



Sterling Commons & One Marina Place

Personal Protective Equipment (PPE)



The minimum Mandatory requirements:-

Safety Footwear
Hard Hat (Induction Sticker)
Hi-Viz Vest
Gloves
Eye protection

You may also be required to wear:-

Safety Harness
Dust Mask
Ear Protection



Sterling Commons & One Marina Place

First Aid and Reporting Procedures

- First Aid station is located in the STAR Site Offices
- Qualified First Aiders are :- Nick Mamo / Greg Van Der Riet
- If you have an accident, contact your Supervisor immediately and enter the details in the site accident book
- It is important you also report all incidents/near misses and safety concerns to your Supervisor immediately



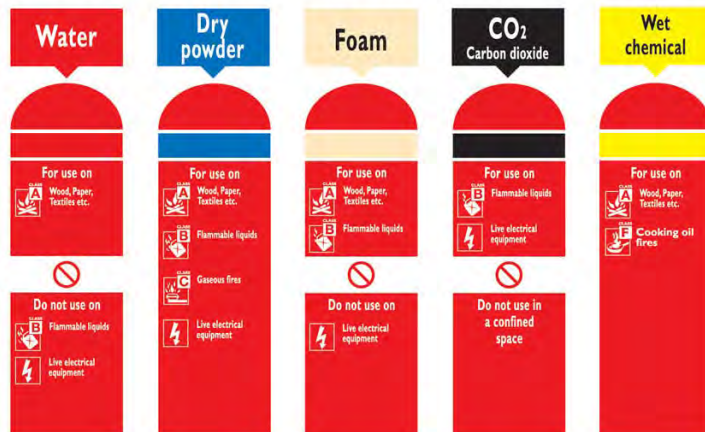
Sterling Commons & One Marina Place

Fire Precautions

- All hot work on site requires a daily 'permit to work. Ensure you obtain one before you start
- If you discover a fire :- Attempt to extinguish the fire without endangering yourself or others
Call the Fire Brigade if you cannot extinguish fire
Use fire extinguishers in accordance with the instructions shown
Do not direct water extinguishers onto electrical fires

REFER TO THE SITE FIRE PLAN FOR LOCATION OF FIRE POINTS & EXTINGUISHERS

KNOW YOUR FIRE EXTINGUISHER COLOUR CODE



Fire Emergency 919/911



Sterling Commons & One Marina Place

Manual Handling



- A specific assessment is required for heavy items over 40lbs
- If possible use mechanical means, pallet trolley or barrows
- Use a good lifting technique and maintain an upright posture
- Always ask for help with heavy or awkward loads
- No bombing of materials from heights



Sterling Commons & One Marina Place

COSHH

- Before using chemicals, cutting, grinding or mixing materials make sure that you obtain your COSHH Assessment & Safety Data Sheet

- A formal assessment is a legal requirement

- Comply with all relevant safe handling and use requirements

- Ensure you wear and maintain the correct PPE

- Good personal hygiene is essential to prevent dermatitis and other diseases



IF IN DOUBT

ALWAYS ASK PRIOR TO USE !



Sterling Commons & One Marina Place

Plant and Equipment



- Never use plant or equipment that you have not been trained to use
- Approved cards must be produced, as required, before permission can be given to operate plant or equipment
- Mobile phones **must not** be used when operating plant or equipment and must only be used in designated **mobile phone safe areas** on site.



Sterling Commons & One Marina Place High Rise Working

Foreign Object Debris (FOD)

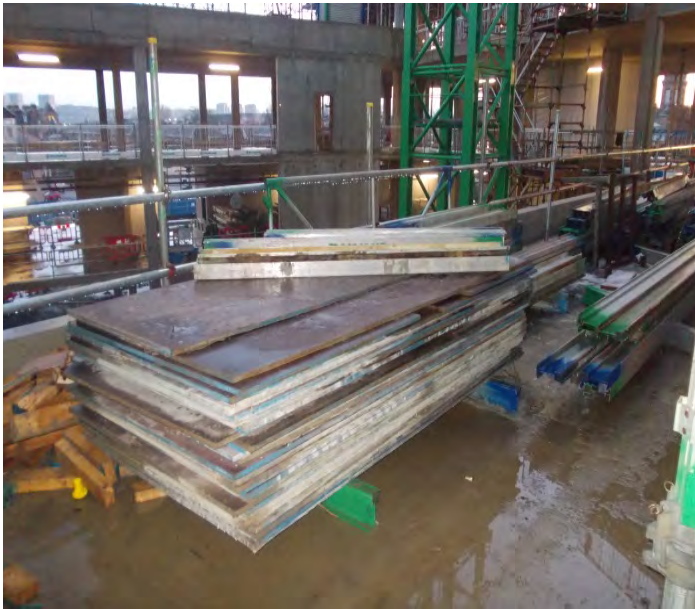


No items permitted in pockets



Sterling Commons & One Marina Place High Rise Working

FOD - Materials



Sterling Commons & One Marina Place High Rise Working

FOD - Tethered Tools



Sterling Commons & One Marina Place High Rise Working

FOD – Secure PPE



Sterling Commons & One Marina Place High Rise Working

FOD - Materials



Sterling Commons & One Marina Place High Rise Working

Good Practice – Signing in / out



Sterling Commons & One Marina Place High Rise Working

Good Practice – Use of MEWP's



Sterling Commons & One Marina Place High Rise Working

Good Practice – Ladder Points



Sterling Commons & One Marina Place High Rise Working

Good Practice – Harness Management



Sterling Commons & One Marina Place High Rise Working

Good Practice – Inertia Reels



Sterling Commons & One Marina Place

Environmental Issues

- Keep noise to a minimum and switch off machines when not in use
- If equipment is noisy always wear appropriate hearing protection
- All fuel and chemical drums must be stored within a bund or trip tray
- Spillages – if ignored, can quickly pollute soil and water courses
Take corrective action immediately
- Only dispose of waste in the designated area or skip
- Always store materials in the correct place and never mix different products
- Keep roads and paths clear of mud at all times
- Use water suppression to keep dust levels down
- All work areas **must** be tidied at the end of each shift



Sterling Commons & One Marina Place

Safe Working



- For Low Risk work on this site there must be a specific task sheet
- For High Risk work on this site there must be a relevant Safety Method Statement

Both of the above must be:-

- Explained to you by your Supervisor
- Specific and easily understood

These are legal requirements !!

A RISK ASSESSMENT OR SAFETY METHOD STATEMENT IS ONLY A SAFE WORKING METHOD IF IT IS DISCUSSED AND AGREED BEFORE THE WORK BEGINS AND THEN FOLLOWED BY THOSE CARRYING OUT THE WORKS



Sterling Commons & One Marina Place

Site Specific Hazards

- Work within live construction site
- *Safety induction – Signing in/out – induction stickers*
- Site Access
- *Pedestrian access route through site is clearly delineated*
- Movement of site vehicles and traffic
- *Trained plant operators - segregation of persons & plant – banksman*
- *Striking of Falsework*
- *Permit to strike must be obtained from the site supervisor and the necessary exclusion zones and signage in place before striking commences.*



Sterling Commons & One Marina Place

Specific Precautions



- Manual handling of potential heavy and awkward materials
 - *Use of mechanical means to lift – assessments for loads – team work*
- Crane lifting equipment and materials overhead within site area
 - *Planned lifting operations – lifting zones – trained slingers – correct equipment*
- High Risk operations at height
 - *Safe means of access – double guardrails/toeboards – boarded platforms*
 - *Working at height training course attended*
 - *Permit to work on Jumpform Rig*



Sterling Commons & One Marina Place

Site Rules

1. Hard hats, safety footwear, hi-visibility vests, gloves & eye protection **must** be worn on site
2. Mobile phones are **only** to be used within designated areas
3. Smoking **only** allowed in the designated areas
4. **Do not** open any windows in building(s) unless authorised to so do
5. Tools and materials **must** be kept in tidy order to prevent tripping hazards
6. All scaffolding **must** be correctly erected and tagged 'safe to use'
7. **No** unsafe working at heights will be allowed at any time
8. All excavations > 1.2m **must** be shored, stepped or sloped
9. Barriers or secured covers **must** be provided around all openings
10. On no account must any attempt be made to lift heavy or awkward loads
11. Any person deemed under the influence of alcohol or drugs will be removed from site
12. Any health conditions which could affect your safety or any others **must** be reported immediately on a confidential basis
13. If you deem any task to be unsafe you **must** stop immediately and report it
14. You have a legal duty to behave in a manner which ensures your safety and that of your workmates and those affected by your work



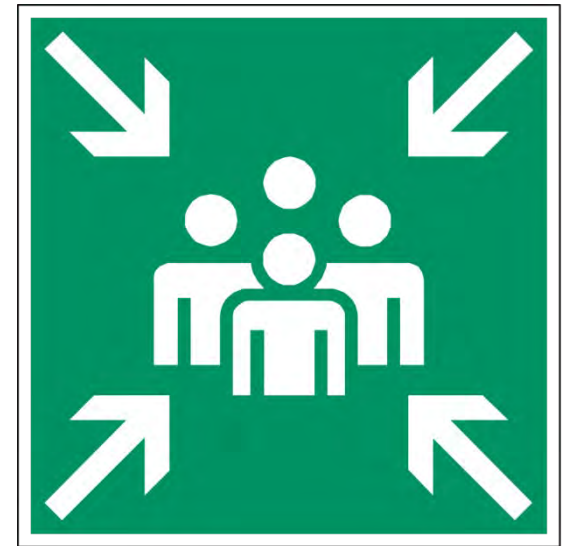
Sterling Commons & One Marina Place

Emergency Procedures

- In the event of any major incidents occurring, a verbal instruction and/or warning alarm will be given

You must :-

- Shut down plant and equipment
- Park vehicles clear of access points
- Ensure personnel working adjacent are aware of this instruction
- Proceed to the Muster Point at Site Entrance Gate
- Do not leave this point until the head count is taken and you are instructed to do so



Sterling Commons & One Marina Place

Finally

“.....The vast majority of accidents occur to an employee within their first two weeks on site..”

DO NOT LET IT BE YOU !!



Site Fire Plan

INTRODUCTION

Star Construction has been appointed as the general contractor for the Hurricane Hole Marina on Paradise Island, Bahamas. The probability of fire hazards normally associated with the construction industry can be anticipated.

MANAGEMENT OBJECTIVES

The objective of this Construction Fire Safety Plan is to eliminate the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration's (OSHA) standard on fire prevention, 29 CFR 1926.24. Additionally, it provides employees and the public with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards during construction.

ASSIGNMENT OF RESPONSIBILITY

Fire safety is everyone's responsibility. All employees should know how to prevent and respond to fires and are responsible for adhering to company policy regarding fire emergencies.

A. Project Management

The Project Manager (PM) determines the fire prevention and protection policies. The PM will provide adequate controls to provide a safe workplace and will provide adequate resources and training to its employees to encourage fire prevention and the safest possible response in the event of a fire emergency. In responding to fire emergencies, employees shall not fight fires beyond the incipient stage.

B. Plan Administrator

The Construction Supervisor (CS) shall manage the Fire Prevention Plan for Star Construction and shall maintain all records pertaining to the plan. The Plan Administrator shall also:

1. Develop and administer the Star Construction fire prevention training program.
2. Ensure that fire control equipment and systems are properly maintained.
3. Control fuel source hazards.
4. The CS shall be responsible for posting fire rules visible to employees.

C. Employees

All employees shall:

1. Complete all required training before working.
2. Conduct operations safely to limit the risk of fire.
3. Report potential fire hazards to their supervisors.
4. Follow fire emergency procedures.

RISK CONTROL

A. Good Housekeeping

To limit the risk of fires, employees shall take the following precautions:

1. No Smoking except in designated safe smoking areas which include cleared area with no combustible vegetation or materials and approved butt receptacles.
2. Minimize the storage of combustible materials.
3. Make sure that all exits are kept free of obstructions.
4. Dispose of combustible waste in accordance with the solid waste management plan.
5. Use and store flammable materials in areas away from ignition sources.
6. Keep incompatible (i.e., chemically reactive) substances away from each other.
7. Perform "hot work" (i.e., welding or working with an open flame or other ignition sources) in controlled areas.
8. Keep equipment in good working order (i.e., inspect electrical wiring and appliances) regularly and keep motors and tools free of dust and grease.
9. Ensure that heating units are safeguarded.

10. Report all fuel leaks immediately. The Site Mechanic shall ensure that all leaks are repaired immediately upon notification.
11. Repair and clean up flammable liquid leaks immediately.
12. Keep work areas free of combustible materials.
13. Do not rely on extension cords if wiring improvements are needed and take care not to overload circuits with multiple pieces of equipment.
14. Turn off electrical equipment when not in use.

B. Maintenance

The Site Mechanic will ensure that equipment is maintained according to manufacturers' specifications. Fire extinguishers should be inspected once a year.

TYPE OF RISK

The following sections address the major workplace fire risks and the procedures for controlling those risks.

A. Electrical Fire Hazards

Electrical system failures and the misuse of electrical equipment are leading causes of workplace fires. Fires can result from loose ground connections, wiring with frayed insulation, or overloaded fuses, circuits, motors, or outlets.

To prevent electrical fires, employees shall:

1. Make sure that worn wires are replaced.
2. Use only appropriately rated fuses.
3. Never use extension cords as substitutes for wiring improvements.
4. Check cords and equipment in hazardous locations where the risk of fire is especially high.
5. Check electrical equipment to ensure that it is either properly grounded or double insulated.

B. Office Fire Hazards

Fires in offices have become more likely because of the increased use of electrical equipment, such as computers and fax machines. To prevent office fires, employees shall:

1. Avoid overloading circuits with office equipment.
2. Turn off nonessential electrical equipment at the end of each workday.
3. Keep storage areas clear of rubbish.
4. Ensure that extension cords are not placed under carpets.
5. Ensure that trash and paper set aside for recycling is not allowed to accumulate.
6. Equipment that indicates that it is beginning to malfunction, such as a noisy cooling fan on a computer or similar on copy machines and other office equipment, will result in replacement of the equipment in a timely fashion.

D. Cutting, Welding, and Open Flame Work

Supervisors will ensure the following:

1. Cutting and welding are done by trained personnel in designated cutting and welding areas whenever possible.
2. Torches, regulators, pressure-reducing valves, and manifolds are good working condition.
3. Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure-relief devices.
4. Cutters, welders, and helpers are wearing eye protection and protective clothing as appropriate.
5. Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapors, or dusts could develop from residues.
6. Small tanks, piping, or containers that cannot be entered are cleaned, purged, and tested before cutting or welding on them begins.

E. Flammable and Combustible Materials

The CS shall regularly evaluate the presence of combustible materials at all jobsite locations.

Certain types of substances can ignite at relatively low temperatures or pose a risk of explosion if ignited. Such substances obviously require special care and handling.

1. Class A combustibles.

These include common combustible materials (wood, paper, cloth, rubber, vegetation and plastics) that can act as fuel and are found in non-specialized areas such as offices.

To handle Class A combustibles safely:

Site Fire Plan

- a. Empty waste receptacles daily.
- b. Keep trash in metal-lined receptacles with tight-fitting covers (metal wastebaskets that are emptied every day do not need to be covered).
- c. Keep work areas clean and free of fuel paths that could allow a fire to spread.
- d. Keep combustibles away from accidental ignition sources, such as hot plates, soldering irons, or other heat or spark-producing devices.
- e. Store rags in metal bins with self-closing lids.
- f. Do not order excessive amounts of combustibles.

2. Class B combustibles.

These include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers), flammable gases, and flammable aerosols.

To handle Class B combustibles safely:

- Use only approved pumps, taking suction from the top, to dispense liquids from tanks, drums, barrels, or similar containers (or use approved self-closing valves or faucets).
- Store, handle, and use Class B combustibles only in approved locations where vapors are prevented from reaching ignition sources such as heating or electric equipment, open flames, or mechanical or electric sparks.
- Do not use a flammable liquid as a cleaning agent inside a building or tool van (the only exception is in a closed machine approved for cleaning with flammable liquids).
- Do not use, handle, or store Class B combustibles near areas normally used as exits.
- Do not weld, cut, grind, or use unsafe electrical appliances or equipment near Class B combustibles.
- Water should not be used to extinguish Class B fires caused by flammable liquids.
- Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude air around the burning liquid.
- Do not generate heat, allow an open flame, or smoke near Class B combustibles.

F. Fuel Storage Refueling Area

Class B fuel storage:

1. See Fuel Spill Prevention Plan for details on fuel storage.
2. No smoking signs shall be posted on each tank and smoking prohibited within 20 ft. of the storage/refueling area.
3. All engines shall be shut off during refueling operations.
4. No portable electrical generators shall be operated within the storage area.

G. Smoking

With approval of the Project Manager certain outdoor areas may be designated as smoking areas.

PROTECTION CAPABILITY

Protection capability and response times are limited to the following factors:

1. The project will be equipped with a water truck. Each truck will be equipped with hose.
2. Additionally, first-aid kits, fire extinguishers and shovels shall be made available.
3. The laydown area will serve as the project muster point. Signage will be installed indicating the area as a muster point.
4. Personnel are not trained firefighters and are not to fight fires beyond the incipient or initial stages. Personnel will be trained to summon professional help and evacuate to designated zones of safety.
5. Personnel have not been equipped with or trained in the use of professional firefighting equipment.
6. During hot work operations, a fire watcher equipped with a fire extinguisher will be in position whose sole job will be to watch for fire during hot work operations. The fire watcher shall maintain watch for 1 hour after hot work stops.

IMPLEMENTATION OF PLAN

In the event of any fire incident the 919 or 322-1225 Emergency System will be activated and professional assistance summoned.

EVACUATION

Routes for Evacuation:

Dependent upon the degree of emergency, weather and/or localized site conditions roadways, the laydown on the site map will be used as a muster point for evacuation. Once assembled an account of all staff should be conducted by the CS.

TRAINING

Site Safety Coordinator and/or Field Engineers shall present basic fire prevention training to all employees upon employment, and shall maintain documentation of the training, which includes:

2. This Fire Prevention Plan;
3. Good housekeeping practices;
4. Proper response and notification in the event of a fire;
5. Instruction on the use of portable fire extinguishers;
6. Recognition of potential fire hazards.

PROGRAM REVIEW

The Site Safety Coordinator shall review this Fire Prevention Plan annually or in response to changes in site conditions and/or lessons learned for necessary changes.

Construction Fire Safety Plan

**HURRICANE HOLE MARINA EMP
APPENDIX 7
BMC HEALTH AND SAFETY PLAN**



HEALTH AND SAFETY

MANAGEMENT PLAN

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Policy

SECTION 1

Site Induction and Training

1.1 Site Induction

Health and safety induction training will be carried out by the Project Site Agent or his nominee for all employees and contractors on arrival at the site.

Some or all of the following topics may be discussed during the site induction:

1. Outline of the requirements of the Company's Health & Safety Policy Statement
2. Emergency procedures and contact numbers
3. Accidents, dangerous occurrences, damage and near misses – reporting procedures
4. Buried services
5. Confined spaces
6. Cranes / other lifting operations and lifting equipment
7. Demolition work
8. Electricity at work / portable electric tools
9. Excavations – safe digging practices
10. First aid – equipment, first aiders
11. Hazardous operations identified
12. Hand and power tools
13. Company permits-to-work system
14. Housekeeping requirements
15. Hygiene and welfare facilities
16. Manual handling operations
17. Noise – hazards and control measures
18. Plant, vehicle and equipment – checking procedures
19. Personal protective equipment – issue, use of, care of and maintenance
20. Scaffolding
21. Site / road traffic rules and requirements
22. Site security arrangements
23. Vehicles – safe driving practices and checklists

1.2 Tool Box Talk – Site Training

At the Site Agent's discretion regular "Tool Box Talks" will be conducted, after the initial site induction, which will include information on some or all of the topics listed above depending upon the site-specific conditions:

A tool box talk form / site induction register form shall be completed for each talk and shall contain the following information: -

- Supervisors Printed Name & Signature

- Date
- Site/Project Name
- Topics of Talk
- A record of any relevant questions raised and any answers given.
- Printed name and signature of each operative attending

Copies of these forms shall then be forwarded to the Company's Head Office, reviewed and recorded.

Supervisors and managers will receive general and specific inductions as agreed in advance of the Project start.

Site Rules

Site-specific rules will be posted within the canteen / office and copies will be given to all personnel working on the site. They will contain, for example, details of No Smoking requirements, consumption of food, emergency arrangements etc.

A copy of these Site Rules is contained within this section of the health and safety plan (please see following page).

Site Rules

On Entering the Site

1. All visitors and members of the design and construction teams to report to the site offices on entering the Project site works.

Personal Protective Equipment

2. All works personnel and visitors must wear hard hats when required on site.
3. High visibility jackets or waistcoats to be worn at all times by all works personnel and visitors.
4. All site personnel must wear the appropriate foot protection with built in steel toecaps.

Smoking, Hot Works and Housekeeping

5. No smoking in any designated 'No Smoking' area.
6. No unauthorized welding cutting or burning – refer to the Permit-for-Hot Works.
7. No fires / burning of waste material on site.
8. Put all waste and rubbish in the containers provided and think of the safety of others on the site.

Hygiene and Welfare

9. Food is only to be eaten in the mess/canteen.
10. Wash your hands, face and neck thoroughly before eating, drinking and smoking and before going home.
11. Do not abuse the welfare facilities provided for you.

Pedestrians, Vehicles, Plant and Equipment

12. Only the designated site access routes are to be used for access and egress and these must be kept free from obstructions.
13. Speed limit restrictions and all warning and directional signs must be adhered to.
14. No unauthorized vehicles or personnel are permitted onto the site – if in doubt, consult the Site Agent.
15. Site workers car parking is restricted to the contractor's compound.
16. All vehicle and plant safety checks and inspections must be carried out daily and the associated logbook completed – report defects immediately to the Site Agent.

17. No seriously defective plant or machinery is permitted to be operated on site – unless under strict controls to enable repairs.
18. Guards must be in place before operating plant machinery – report defects immediately to the Site Agent.

Permits-to-Work

19. Permits to work are required for:
 - (i) any work on live electrical equipment
 - (ii) hot works
 - (iii) deep excavations
 - (iv) entry into confined spaces
 - (v) roof work and working at heights; and
 - (vi) work with asbestos

Accidents

20. Report all accidents, dangerous occurrences, damage incidents and near misses and to the Site Agent. Every incident is important – so report it!
21. No horseplay.

***Additional Site Rules may be added, or further safety guidance given, as the works develop.**

Use of Personal Protective Equipment

Protective clothing must be suitable for the purpose intended, i.e. bright, fit correctly and protect the operative.

The frequency at which clothing is changed will depend on the individual and how quickly it becomes soiled. Soiled clothing may either be laundered and re-issued, or disposed of. Operatives are to be advised not to launder their own protective clothing in domestic washing machines.

All operatives are to be issued with the following:

Hard Hat

To be replaced when damaged or beyond manufacturer's life span. Hard hats are to be worn when required where operatives are at risk of injury from falling materials or on a site where there is moving plant and equipment etc.

Hearing Protection

When working in designated noise zones and also when using rock breakers and excavators.

Steel Toe-capped Safety Boots

One pair issued at start of season and subsequent steel toe-capped pairs issued when worn out or defects reported. Choice of types required: - Doc martens, Chukka, Rigger, Wellingtons etc.

Rigger Gloves or Gauntlets

These are to be replaced as necessary – site agent is to keep a small stock on site.

High Visibility Clothing

`Class A' type required – this must be replaced when dirty. Waistcoat to be to BS6629 standard.

Eye Protection

Full face visor / goggles must be worn by personnel using cutting discs, power saws, jack hammers etc. Dust masks will also be required to be worn throughout these processes.

Working in Storm / Foul Drainage Pipes, Contaminated Land & Confined Spaces

The following will be required to be worn: - Boots / Wellingtons, waterproof coveralls, gauntlets, hard hats, PVC gloves / gauntlets and goggles. For entry into confined spaces, gas monitoring will be conducted before works commence, to determine what, if any, breathing apparatus will be required (please refer to the site-specific risk assessment and method statement).

Site Induction Register

COMPANY:	BAHAMAS MARINE CONSTRUCTION
PROJECT:	
TALK GIVEN BY: (NAME & TITLE)	

TALK ATTENDED BY:	EMPLOYEE (Please Tick)	SUBCONTRACTOR (Please Tick)	SIGNATURE OF ATTENDEE	DATE OF TALK

TOPIC	TALK GIVEN		TOPIC	TALK GIVEN	
	YES	NO		YES	NO
Outline of ISD Policy Statement			Permits-to-Work Systems		
Emergency Procedures & Numbers (Fire, Injury, Explosion etc.)			Housekeeping Requirements		
Accidents / Near Misses – Reporting Requirements			Hygiene & Welfare Facilities		
Buried Services			Manual Handling – Good Practice		
Confined Spaces			Noise – Hazards & Control Measures		
Plant & Equipment Check Procedures					
Cranes / Other Lifting Operations and Lifting Equipment			P.P.E.	Issue	
Demolition Work				Use of	
Electricity at Work / Portable Electric Tools				Care	
Excavations				Defect Reporting	
			Roadworks		
			Scaffolding		
First Aid	Equipment Location		Site / Road Traffic Rules and Requirements		
	First Aiders on Site				
	Electrocution				
	Burns				
Hazardous Operations Identified			Site Security Arrangements		
Hand & Power Tools			Vehicles	Safe Driving Practices	
				Checklists	

Protective Clothing Issue Form

COMPANY:	BAHAMAS MARINE CONSTRUCTION
PROJECT:	
EMPLOYEE'S NAME:	
JOB TITLE:	
WORK UNIT:	

ITEM & SPECIFICATION	YES	NO	DATE RECEIVED	SPECIAL REQUIREMENTS
EYE PROTECTION				
Goggles				
Safety Spectacles				
Full Face Shield				
Welder's Face Shield				
HEARING PROTECTION				
Ear Muffs				
Ear Plugs				
CLOTHING				
Reflective Coat				
Reflective Waistcoat				
Overalls				
Waterproofs				
Laboratory Coat				
GLOVES				
Rigger Gloves				
Leather Gauntlets				
Vinyl Gloves				
PVC Gauntlets				
Other: Please specify				
HARD HAT / BUMP CAP				
Please Specify:				
RESPIRATORY PROTECTION				
Dust Masks (Disposable)				
Filter Mask (canistertype)				
SAFETY BOOTS				
Steel toe-capped boots				
Anti-corrosion soles				
High temperature resistance soles				

EMPLOYEE: I have received the protective clothing as listed above. I have been instructed in its use, care and maintenance. I know what this protective clothing should help protect against.

NAME _____ SIGNED _____ DATE _____

LINE MANAGER: I have instructed this employee as to the use, care and maintenance of the PPE listed above and have explained what hazards the PPE helps to protect against.

NAME _____ SIGNED _____ DATE _____

SECTION 2

Emergency Telephone Number

COMPANY:	BAHAMAS MARINE CONSTRUCTION	
PROJECT:	Sterling Hurricane Hole	
SITE AGENT:		
CONTRACTS MGR:	CHRIS LECLERC (242) 422-4445	
MAIN OFFICE (NASSAU):	(242) 328-2025	
Emergency Services Number: 911 (Fire, Police, Ambulance)		
NAME	TELEPHONE	ADDRESS
Princess Margaret Hospital	242-322-2861	Shirley Street
Doctor's Hospital	242-302-4600	Shirley Street
RBDF FIRE STATION	242-322-1225 242-302-8404	East Street
RBPF PARADISE ISLAND POLICE STATION	242-363-3011 242-3634766	Paradise Island
BAHAMAS POWER AND LIGHT	242-302-1000	Blue Hill Road
WATER AND SEWERAGE	242-302-5500	University Drive
BTC	242-302-7827	JFK Drive
CABLE BAHAMAS	242-601-2200	Marathon
DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES (DEHS)	242-323-2295	Farrington Road

SECTION 3

Weekly Health & Safety Site Inspection Report.

COMPANY:	BAHAMAS MARINE CONSTRUCTION				
PROJECT:					
WEEK ENDING:		INSPECTION DATE:			
INSPECTION NUMBER:		LAST INSPECTION DATE:			
INSPECTION CARRIED OUT BY:					

Tick Items found in good order	Number Items requiring attention, e.g. 1 etc.	Mark Items not applicable N /A
Statutory Notices displayed		Statutory Registers up to date
Previous remedial actions dealt with.		Health & Welfare facilities
Temporary Signs being displayed		Road or site conditions
Temporary Works		Scaffolding & Access Platforms
Excavations		Lifting Appliances inspected
Lifting gear, chains, slings, hoists.		Hand held power tools
Woodworking Machinery		Electrical services (above/below)
Demolition		Housekeeping & Waste Disposal
Training Requirements		Noise and Dust controlled
Fire Prevention		Method Statements/Risk Assessments
HSE Reportable Accidents		Permits to Work – Hot Work, Confined Spaces, Electricity, etc.

No	Results of Inspection	Action Proposed or Taken	Date	Risk Rating

SHEET OF SIGNATURE DATE

Refer Copies To:	Date:	Refer Copies To:	Date:
Health & Safety Plan / Site Office		Health & Safety Officer	
Contracts Manager		Main Contractor	

Receipt of Report Copy Signature..... Date.....

SECTION 4

Weekly Equipment Inspection Checklist

COMPANY	BAHAMAS MARINE CONSTRUCTION		
PROJECT:		OPERATOR:	
SITE SUPERVISOR:		PLANT NUMBER:	
INSPECTION DATE:		HOUR READING:	

If any defects are noted, please tell your Site Supervisor immediately

EQUIPMENT: _____	OK	NEEDS ATTENTION
Engine Coolant Level		
Engine Oil Level		
Transmission Oil Level		
Hydraulic Oil		
Fuel Level		
Screed		
Ground Engaging Tools		
Tyres		
Wheel Nuts Security Checked		
Fire Protection		
Seat Belt		
Gauges		
Brakes		
Steering		
Oil Leaks		
Back up alarm		
Lights		
Wipers & Washers		
Horn & Mirrors		
HAVE PREVIOUS DEFECTS REPORTED BEEN RECTIFIED? Please comment: -	YES	NO
COMMENT ON CURRENT DEFECTS: -		

Do not use the vehicle if it is unsafe

SIGNATURE OF OPERATOR _____ DATE _____

SITE SUPERVISOR SIGNATURE _____

SECTION 5

AR – Accident Reporting Procedure

Instructions to all supervisory / managerial staff:

Who reports accidents?

Internal Accident Report should be completed by the Site Supervisor responsible for the work / activity being performed when the accident took place.

Who are accidents reported to and when should they be reported?

- In cases of accidents that have caused serious injury (requiring hospitalization etc.) and / or serious damage, notification should be made immediately to the Health and Safety Officer (see telephone number below) and the Contracts Manager, before written reports are completed.
- A completed Internal Accident Report and completed Witness Statement forms (AR1a) should be completed and forwarded to the Group Health and Safety Department within 24 hours of the accident occurring.
- A copy of the completed Internal Accident Report form should be given to, and discussed with your senior line manager.

What accidents should be reported?

ALL accidents, including 'near misses' / dangerous occurrences and regardless of severity must be reported immediately to your senior line manager and the Group Health and Safety Officer at:

Bahamas Marine
Construction
21st Century Rd.
P.O. Box SP63796
Nassau, Bahamas

Phone: 1 (242) 328-2025
Fax: 1 (242) 328-2125
Cell: 1 (242) 422-0125 Meredith Johnson (Safety Officer)

Accident investigations:

The relevant senior line manager should assist the Group Health and Safety Department in gathering information, e.g. physical facts, measurements, photographs, work plans, records, interviews and statements where applicable.

Accidents which require immediate investigation are:

- those which require hospitalization or prolonged medical treatment;
- those that may result in 3 days or more absence from work;
- serious damage to property, machinery or the environment;
- 'near misses' and dangerous occurrences e.g. where serious injury or damage may have occurred but for good fortune.

Please note:

- Under-reporting of "near misses" provides a false picture of the efficiency of safe systems of work and may allow dangerous work practices to continue unchecked.
- Internal Accident Reports should include facts and NOT impressions.
- Prompt factual reporting will greatly assist in our accident prevention programme.

AR2 - Weekly Record of Accidents, Injuries, Dangerous Occurrences & Near Misses

COMPANY:	BAHAMAS MARINE CONSTRUCTION			
PROJECT:				
SITE SUPERVISOR:				
WEEK ENDING:		This week	Previous weeks	Total to date
Accidents & Incidents				
Number of Reportable Accidents	Direct Employees			
	Subcontract Employees			
	Labour only Employees			
Total Number of Reportable Accidents:				
No. Minor Accidents	Direct Employees			
	Subcontract Employees			
	Labour only Employees			
Total Number of Minor Accidents:				
No. Dangerous Occurrences:				
No. Near Misses:				
Accident Severity Rate				
Total days lost in period				
Total person hours worked in period				
Accident Frequency Rate				
Total reportable accidents				
Total persons hours worked in a year				
Accident Incidence Rate				
Total reportable accidents				
Total number employees in a year				
Signed:			Date:	
Job Title:				

AR3 – RETURN TO WORK FORM

COMPANY:	BAHAMAS MARINE CONSTRUCTION					
PROJECT:						
ACCIDENT DETAILS:	Day:		Date:		Time:	
2. PERSONAL DETAILS:						
Full Name:						
Date of Birth:						
Job Description: (if appropriate)						
Employer's Name:						
3. INJURY DETAILS:						
Nature of Injury (e.g. cut/ strain/ fracture/ bruise etc.)						
Part of body injured:						
4. MEDICAL DETAILS:						
Date left work:						
Time left work:						
Date returned to work:						
State reason if not returned to work:						

The details in this report are true to the best of my knowledge.

Signed.....

Date.....

Please complete this form when the injured party returns to work and forward to
Island Site Development Main Office

SECTION 6

D1 - Group Policy on Employee and Owner Drivers

ALL DRIVERS

Issue all drivers and Managers with comprehensive Transport Safety Guidelines. Both drivers and Managers must sign these for on receipt.

EMPLOYEE DRIVERS

1. All new employee vehicle drivers, before being engaged to do work, must:
 - (a) have a current driver license for the class of vehicle to be driven
 - (b) complete the `Authorized Driver Record Form` and return this to the Health and Safety Officer (see attached)
 - (c) be prepared, for all drivers, to complete, during a 3-month probation period, a driver assessment. Continued employment as a driver will only be possible with a favorable assessment
2. Employed drivers who are involved in serious road traffic accidents are required to undergo a driver's assessment test.
3. Employed drivers who continue to have minor incidents, i.e. collisions or endorsements to their license will also be required to undergo a driver's assessment test.

In the case of both points 2 and 3 above, failure to achieve a pass in the driver's assessment test will indicate a lack of the necessary capability and will result in the termination of employment as a vehicle driver.

OWNER DRIVERS

1. All new owner-drivers, before being engaged to work, must:
 - (a) Have a current driver's license for the class of vehicle to be driven
 - (b) Complete the `Authorized Driver Record Form` and return this to the Group Insurance Manager or on-site Health and Safety Officer
 - (c) Be prepared to undergo training / instruction and assessment to obtain recognized competence as a driver. Employment as a driver will only be possible with a favorable assessment.
2. All owner-drivers involved in serious road traffic accidents are required to under and pass a driver's assessment test.
3. Owner drivers who continue to have minor incidents, i.e. collisions or endorsements to their license will also be required to achieve an acceptable assessment.

In the case of both points 2 and 3 above, failure to achieve a pass in the driver's assessment test will indicate a lack of the necessary capability and will result in the termination of the owner driver's contract.

Note: Minimum age for drivers is 25 years with 2 years' experience.

*** AGENCY / TEMPORARY DRIVERS**

Such drivers engaged on short term or relief work are required to have a current drivers license indicating that the driver is entitled to drive the class of vehicle required AND have a minimum 2 years' experience of driving the class of vehicle required to be driven.

I the undersigned have read and understood the above and agree to all the terms and conditions therein.

Signed.....

Date.....

Status Employee Owner Driver

All drivers are to complete the `Authorized Driver Record Form`

D2 - Authorized Driver Record Form

COMPANY:	BAHAMAS MARINE CONSTRUCTION		
SECTION 1: DRIVER'S DETAILS			
Full name:			
Address:			
Tel #. (Home/ Cell etc.)		Date of Birth:	
Job Title:			
SECTION 2: EMPLOYMENT DETAILS			
Are you employed solely & permanently by ISD			
How long have you been employed by ISD? (Please state commencement date)			
SECTION 3: LICENCE DETAILS			
Authorized vehicles driven: (License Plate #. & make / model)			
How long have you been driving?			
When did you pass your driving test?			
When does your license expire?			
Driver's License number:			
Dates of accidents in the last 3 years:			
Details of any motoring convictions: (Charge / Date / Penalty)			
Details of any physical defect, infirmity, defective vision / hearing, heart problems, diabetes, epilepsy or mental illness:			
SECTION 4: INSURANCE DETAILS			
Do you hold any motor vehicle policies in your own name?			
Have you ever been declined / refused motor insurance? (Please detail):			
<i>I DECLARE THAT ALL OF THE INFORMATION I HAVE GIVEN ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT I HAVE NOT WITHHELD ANY INFORMATION MATERIAL TO THE INSURANCE</i>			
.....Signed.....Date			
<u>IMPORTANT NOTE:</u> APART FROM COMPANY CARS, COVER IS ONLY PROVIDED FOR USE ON COMPANY BUSINESS AND NOT FOR PRIVATE USE I HAVE READ AND UNDERSTOOD THE ABOVE STATEMENT			
..... Signed.....Date			

SECTION 7



Safety Bulletins

- No. 1** All Drivers and Plant Operators
- No. 2** The Personal Protective Equipment at Work
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Bulletin No. 1

All Drivers and Plant Operators

The driver or operator is responsible for ensuring that his vehicle or equipment is in a safe condition for work before use.

Every day, before starting work drivers must check:

- Brakes
- Steering
- Cleanliness of all windows
- Conditions & setting of mirrors
- Tyres
- Lights
- Horn
- Reversing signal
- Seat belts
- Windscreen washers & wipers.

Any defects must be reported to the Site Supervisor. During work the driver must:

- Operate at a safe speed consistent with road and weather conditions, and the road gradient.
- Always be alert for pedestrians, particularly at blind spots such as parked vehicles.
- Always take extra care when starting off from a parked position.
- Never move off in reverse unless you are certain it is safe to do so, and that you reversing signal is operating.
- Always park your vehicle safely before leaving the vehicle.
- Switch engine off
- Disengage gears
- Apply parking brake
- Park on level ground
- Pull back from vertical faces
- Do not obstruct access roads
- Shovels, Excavators - rest the bucket on the ground.
- If a wheeled vehicle must be parked on a gradient **ENGAGE FIRST OR REVERSE GEAR - CHOCK THE WHEELS**
- Never carry unauthorized passengers.
- Take care when the vehicle is being towed.
- Wear your seat belt, where fitted.
- Mount and dismount carefully.
- Ensure that there is sufficient overhead clearance.

Bulletin No. 2

Personal Protective Equipment at Work

Plant & Equipment Check Procedures

Personal Protective Equipment (referred to from now on as PPE) must be used when it is detrimental to the user's health and/or safety to perform a task without it. PPE falls into two categories:

1. Clothing to protect against hazardous working conditions, e.g. gloves, safety footwear, protective headgear, and high visibility clothing.
2. Goggles, face masks, ear defenders, respirators, safety harnesses and protective breathing equipment. (Other specialist items must be available to match the job on hand e.g. welders face shields for welding work).

The employer is obligated to draw up a risk assessment plan, and then choose the applicable PPE to protect employees. Following consultation with the employees and safety groups, the employer must supply the correct PPE for the task, i.e. it must be comfortable, able to be adjusted and suitable for the task in hand. The said PPE should be supplied free of charge. The employer must give adequate information and training for the maintenance and use of the PPE supplied.

It is the duty of the PPE manufacturer to supply information about the use of the product and the correct arrangements for storage, cleaning and maintaining of same. Also, the PPE manufacturer must supply other information on the protection levels, the availability of replacement parts and how long it is reasonably expected to last.

It is the employee's duty to use PPE in a safe and proper manner, and to report back to the employer if it is not suitable to the task or is broken.

Note: It is the duty of all self-employed persons to ensure that they provide themselves with adequate PPE.

All employees and Plant Operatives to be instructed in the use, care and maintenance of PPE and the different types of PPE, suitable types of PPE e.g. Heat resistant boots, wearing of vests in hot weather conditions.

How long should PPE last and when should the company replace PPE? Obviously, all items of PPE will have a different life span depending on usage etc. Individual markings of PPE to ensure proper maintenance and records are kept. Levying charges to be made against individuals for improper use or care leading to premature wear and damage.

Bulletin No. 3

Working Near or Under Overhead Electricity Cables

Contact with live overhead lines is the cause of many serious personal injuries every year. Approximately one third of these inadvertent line contacts prove fatal. Most of the fatalities have occurred when overhead lines have been touched by tipping lorries, low loaders or by metal equipment such as scaffold tubes or even hand tools. High voltage current can jump or arc as far as 3½ meters.

We have listed below some guidelines for your own safety and the safety of others:

- a) Always assume all overhead lines are live.
- b) Always follow the advice of the site or works foreman who may have already erected signs, "goal posts" and other barriers to warn of the dangers of overhead conductors. Only drive your vehicle along pre-determined safe routes and never be tempted to go inside the barriers.
- c) Carefully note the location of all overhead lines before commencing to position your vehicle for offloading.
- d) Keep the overhead lines in view when moving your vehicle about the site or works.
- e) Do not drive your vehicle below an overhead line if an alternative route is available.
- f) Do not approach or touch any broken or fallen overhead lines.
- g) Do not, under any circumstances, raise your vehicle body beneath or close to an overhead line.
- h) If in doubt always ask the site or works foreman for clarification.
- i) **NEVER** put your own safety or the safety of others at risk.
- j) If your vehicle comes into contact with an overhead cable take the following action:

- **STAY INSIDE THE CAB - You are safe**
- **If you cannot get clear or if the cable is broken, stay in the cab and shout to someone else to phone Bahamas Electricity Company (BEC). DO NOT LEAVE THE CAB.**
- **If you have to dismount, jump well clear. DO NOT TOUCH THE GROUND AND ANY PART OF THE VEHICLE AT THE SAME TIME.**

WARN OTHER PEOPLE TO STAY WELL CLEAR. ON NO ACCOUNT MUST ANYONE TOUCH THE VEHICLE.

Bulletin No. 4

Quarry Vehicle Safety Guidance

1. General

Never ride on any vehicle as a passenger unless the vehicle is suitably equipped for this purpose.

Do not drive unless authorized.

Ensure, at all times, your vehicle is in efficient working order and in good repair. Report any defects immediately.

Do not leave your vehicle unattended with the engine running.

Before driving off, make sure your load is secure and the load does not interfere with the safe driving of your vehicle.

Never reverse your vehicle without assistance if your rear view is in any way restricted.

Always drive with care and consideration for others.

2. Quarry Vehicle Safety

Almost half the accidents in quarries involve the operation of quarry vehicles and that is why our Company strictly controls their use.

Listed below are some guidelines which you should adhere to when operating vehicles or mobile plant in Company owned quarries:

a) Daily Checks

Company drivers must not drive plant or vehicles without carrying out daily checks to see that their vehicle is road worthy.

The following should be checked daily:

- horn
- lights
- indicators
- mirrors
- reversing beepers and beacons (if fitted)
- tires for sufficient tread depth, check walls for cuts or bulges
- wheel nuts
- steering
- brakes

If the check shows that any of these items are in an unsatisfactory condition, you must report it to your supervisor.

Drive at speeds that reflect road and weather conditions - Do not speed.

b) Before You Start

At the beginning of your shift:

- take care when climbing into the vehicle cab, and use the steps provided
- use the seat belt if it is provided
- only carry passengers when authorized to do so, and on a seat provided

NEVER CARRY PASSENGERS:

- in open back vehicles, outside the cabs of loading shovels, dump trucks etc. or let them get in and out while the vehicle is moving
- do not carry unsecured loose equipment in the cab such as batteries or tool boxes (as these can cause severe injury if there is an accident)
- know the limits of your vehicle's design and capabilities especially its braking capacity and limits of vision.

c) While Driving

- don't drink and drive
- obey all traffic signs in the quarry
- if driving a wheeled loader, travel with the bucket lowered
- observe the speed limits
- drive slowly along a haul road and avoid sudden changes of speed or direction to minimize spillages
- report immediately all instances where haul roads appear to be slippery or giving way
- avoid harsh braking
- take care when driving close to hoppers or other structures
- be alert to pedestrians in the vicinity of your vehicle
- select the correct gear at the top or bottom of slopes

d) When Reversing

- make certain alarms / warning lights and other reversing aids are in working order and operating properly. Mirrors should be in place and adjusted.
- make certain, as far as you can, no one is in your path. If you cannot be sure, be guided by another person.

e) Parking

Do not park:

- under overhead power lines
- within the radius of the swing of an excavator unless being loaded
- near a railway track
- near the top or bottom of the face
- always park on level ground where possible
- remember to chock your wheels if parking on a slope
- always park parallel to the face
- always apply the handbrake, the gear in neutral and engine stopped
- where possible park in approved parking areas where provided.

f) Tipping

When tipping material

- tip well back from the edge of the stockpile or against an approved tipping block
- ensure the body is lowered before driving away
- do not tip over the edge unless there is an appropriate block in position

g) Maintenance

If you carry out maintenance to your vehicle:

- keep the maintenance area clean and dry
- keep your tools and equipment in good condition
- be sure to tag the controls, before working under a machine, so no one else will start it
- remove pressure caps carefully
- relieve hydraulic pressure before working on your machine
- make certain a raised body is secured by wooden chocks, pins or a manufactured installed system.

If you carry out work on the **tires** of your vehicle **REMEMBER:**

- before you place a jack in position, chock the wheel on the other side of the vehicle
- always use a tire cage where possible, safety cables or chains when removing tire lock rings or inflating tires
- check your tires only when the vehicle is empty
- never cut or weld on the rim of an inflated tire.

3. Pedestrian Safety

Accident statistics show that pedestrians in quarries are at much greater risk of injury than drivers.

There are many instances of people being killed by reversing vehicles. Listed

below are some useful guidelines which could save your life one day.

- **NEVER** climb on or off a vehicle when it is in motion
- **ALWAYS** be on the lookout for vehicles when on foot.
- Keep your distance from loaded quarry vehicles in case stone falls from the load.
- When approaching a vehicle attract the driver's attention before going too close.
- **NEVER** pass between stationary vehicles
- When passing to the rear of a vehicle, take care. It may reverse.
- Wear high visibility outer clothing at all times as provided by the Company.

Bulletin No. 5

Truck Driving Instructions

1. General

Never ride on any vehicle as a passenger unless the vehicle is suitably equipped for this purpose.

Do not drive unless authorized. Report any defects immediately.

Ensure, at all times, your vehicle is in efficient working order and in good repair. Do not leave your vehicle unattended with the engine running.

Do not leave keys in an unattended vehicle.

Before driving off, make sure your load is secure and the load does not interfere with the safe driving of your vehicle.

Never reverse your vehicle without assistance if your rear view is in any way restricted.

Drive at speeds consistent with road or site and weather conditions.

Always drive with care and consideration for others.

Always carry out routine daily checks of the vehicle and make good or report defects

2(a) Daily Checks

Company drivers and owner drivers must not drive without first carrying out daily checks to see that their vehicle is road worthy. In all cases the vehicle pre-start inspection check sheet, i.e. the vehicle inspection log book must be completed, signed and dated by the driver.

The following should be checked daily:

- ✓ windows clean
- ✓ horn
- ✓ lights
- ✓ indicators
- ✓ wipers
- ✓ mirrors
- ✓ reflectors cleaned and free from defects
- ✓ reversing beepers (if fitted)
- ✓ flashing beacons (if fitted)
- ✓ reversing camera (if fitted)

- ✓ tyres for sufficient tread depth, check walls for cuts or bulges
- ✓ wheels
- ✓ wheel nut tightness (re-tighten as required)
- ✓ access steps – hand holds
- ✓ steering
- ✓ brakes
- ✓ cab free from debris and rubbish and loose objects

If the check shows that any of these items are in an unsatisfactory condition, you must report it to your Manager or Supervisor / Foreman as appropriate. I

In all cases the vehicle pre-start inspection checklist must be completed and signed by the vehicle driver before you start.

2(b) Before You Start

At the beginning of your shift:

- take care when climbing into the vehicle cab, and use the steps and hand rails provided
- use the seat belt if it is provided
- only carry passengers when authorized to do so, and on a seat provided
- NEVER CARRY PASSENGERS in open back vehicles
- do not carry unsecured loose equipment in the cab such as bars, batteries or tools and tool boxes (as these can interfere with the floor controls and can also cause severe injury if there is an accident)
- know the limits of your vehicle's design and load capacity and its capabilities especially its braking capacity and limits of vision.

2(c) While Driving

- don't drink and drive
- obey all traffic signs and signals
- observe the speed limits
- drive slowly along a haul road and avoid sudden changes of speed or direction to minimize spillages
- report immediately all instances where haul roads appear to be dangerous or unsafe
- avoid harsh braking
- take care when driving close to edges of slopes or other structures
- be alert to pedestrians in the vicinity of your vehicle
- select the correct gear at the top or bottom of slopes

2(d) When Reversing

- make certain alarms / warning lights and other reversing aids are in working order and operating properly. Mirrors should be in place and adjusted.
- make certain, as far as you can, nothing is in your path. If you cannot be sure, be guided by another person.

2(e) Parking

Do not park:

- under overhead power lines
- within the radius of the swing of an excavator unless being loaded
- near or on a railway track or crossing

To avoid causing a hazard on a public highway:

- park on level ground where possible
- remember to chock your wheels if parking on a slope
- always park parallel to the open edges / faces

When parking:

- always apply the handbrake, the gear in neutral and engine stopped
- where possible park in approved parking areas where provided
- park with your tail reflectors facing the flow of traffic and off the live traffic lane.

Note: make sure all reflectors, lights and plates are clean

2(f) Maintenance

If you carry out maintenance to your vehicle:

- keep the maintenance area clean and dry
- keep your tools and equipment in good condition
- be sure to tag the controls, before working under a machine, so no one else will start it – remove keys
- remove pressure caps carefully
- relieve hydraulic pressure before working on your machine
- make certain a raised body is secured by robust body props or pins or the approved manufacturer's system if installed.

Tyres:

If you carry out work on the tyres of your vehicle **REMEMBER:**

- before you place a jack in position, chock the wheel on the other side of the vehicle
- always use a tyre cage where possible, use safety cables or chains when removing tyre lock rings or inflating tyres
- check your tyres only when the vehicle is empty
- never cut or weld on the rim of an inflated tyre
- wheel nuts are to be tightened or re-tightened as per manufacturers' and Company instructions – where disc lock nuts have been fitted to your vehicle the safety disc lock nut procedure must be followed. Refer to Safety Bulletin No.23 on 'Disc Lock Nuts'.

3. Delivery to Sites which involves driving over potentially unsafe ground

The lorries you drive, when loaded, weigh many tonnes and as such it is imperative that you consider the stability of your vehicle when delivering to sites where the ground may be unsafe.

We have listed below some guidelines for your own safety and that of others when delivering to sites:

- a) Before driving onto a site, check it for soft patches, excavations, manholes and excessive gradients or cross slopes.
- b) Watch out for timber offcuts and metal objects protruding from the surface of the ground.
- c) Never offload / tip too close to the edge of excavations, foundations or open cuts as this could cause a collapse.
- d) Do not drive over ground if you think it cannot withstand the weight of your vehicle. If in any doubt seek clearance from the site foreman.
- e) Where possible, ask for someone to guide you into position to discharge your load.
- f) Request the assistance of a banksman to maneuver your vehicle or when unloading.

Note: Get into the habit of putting on your high visibility vest and safety helmet before leaving the cab of your vehicle on every site you visit.

4. Tipper Truck Safety Reminders

- a) Reverse carefully and slowly especially in areas where other men may be at work – reverse with the aid of a banksman.
- b) Make sure no one is endangered when you tip or lower the body.
- c) Don't drive away until the body has been lowered to the chassis and the tailboard is secured.
- d) Mind your fingers when clearing loose stones etc. from under a tailboard.
- e) Ensure reversing beepers are fitted and secure.
- f) Check for overhead powerlines or obstructions, i.e. trees, adjacent structures.

5. Pedestrian Safety

Accident statistics show that pedestrians are at much greater risk of injury than lorry drivers. Drive with due care and attention at all times.

6. Personal Safety

Listed below are some useful guidelines which could save your life one day.

- **NEVER** climb on or off a vehicle when it is in motion
- **ALWAYS** be on the lookout for vehicles when on foot.
- Keep your distance from loaded vehicles in case stone falls from the load.

- When approaching a vehicle attract the driver's attention before going too close – wait for their acknowledgement and signal to approach.
- **NEVER** pass between stationary vehicles
- When passing to the rear of a vehicle, take care. It may reverse.
- When on site wear high visibility outer clothing, steel toe-capped boots and hard hats.

7. In the Event of a Road Traffic Accident:

You should:

1. Call the emergency services, e.g. ambulance, fire, police, as necessary.
2. Take the names and addresses of those in the third-party vehicle.
3. Take a note of the names and addresses of any independent witnesses.
4. Identify the make, model and registration number of the third-party vehicle.
5. Exchange insurance details with the third-party driver. Obtain the names of the third party's:
 - Insurance Company
 - Certificate Number
6. Identify any attending Police Officers and the relevant Police Station.
7. Report the incident immediately to your manager who will make the necessary arrangements with Head Office and recovery services.

! Failure to report accidents immediately and failure to provide adequate information may result in disciplinary action.

Bulletin No. 6

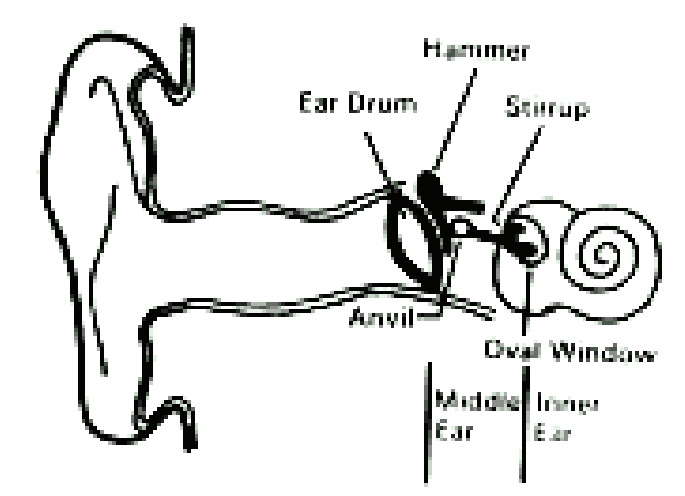
Noise and Hearing Conservation

THE EAR IS A VERY DELICATE ORGAN:

How do you hear?

Hearing starts with the part of the ear you can see. This is called the outer ear and it collects sound waves which pass through a narrow canal into a tightly stretched membrane called the ear drum. This membrane vibrates when the sound waves reach it and these vibrations are transmitted to the middle ear. The middle ear consists of the three smallest bones in your body – the hammer, the anvil and the stirrup – and they pass on the vibrations from one to the other and also act as shock absorbers.

The stirrup is connected to another membrane – the oval window – linking the middle and inner ears. The inner ear is a tiny snail-shaped organ containing fluid and something like 25,000 nerve endings, rather like hairs. The vibration of the oval window and the consequent movement of fluid stimulates the nerve endings which telegraph sounds to the brain via the auditory nerve so bringing meaning to the sound vibrations. It takes only 1,000th of a second for the sound wave to pass through this complete process and record in your brain as hearing.



What causes deafness?

Among the varying causes of deafness, noise exposure is one that can be guarded against. Investigations have shown that exposure to high noise levels at work, at home or at play can cause damage and consequent deafness. This kind of deafness is often temporary but constant exposure to such noise can produce permanent deafness unless precautions are taken.

YOUR HEARING CAN BE DAMAGED:

As a rough guide it is probable that a noise hazard exists if normal conversation is difficult to hear. If you are working with a noisy machine use ear protectors. By doing so you will be safeguarding your hearing future.



What is a safe level of noise?

Sound is measured in decibels and like many other measurements we have to get used to the scale before this means anything to us. We know a foot or yard or a hundred yards, but it took many years to get used to this. We can walk three miles in one hour or run 100 yards in say 12seconds (at 17 miles per hour). Similarly, we can put up with sounds up to 85 decibels all day without our hearing being affected, but if we work in noisier conditions then our hearing is temporarily reduced to protect us, just as our lungs and muscles need time to recover after fast running.

Here are some examples:

A quiet part of a forest	40 decibels
Normal conversation	65 decibels
Shouting	90 decibels
A tractor operating	95 decibels

The problem is that temporary deafness can make us used to the noise and continuing daily exposure will gradually reduce our ability to hear.

This will happen naturally as we get older but our work should not hasten this. To safeguard our hearing the sound level should not normally exceed 85 decibels.

Measuring Noise

To determine the risk of noise at work it is necessary to measure the various sound levels AT THE OPERATOR'S EAR and for how long each sound level is occurring during an average day.

Most machines are unfortunately too noisy for the unprotected ear.

Where the sound level / usage time exceeds the equivalent of 85 decibels (referred to hereafter as decibels per day) then suitable ear protectors must be worn, or the equipment must be fitted with better silencing or sound proofing for the operation.

An operator must wear suitable ear protectors if he / she is exposed to noise levels in excess of 85 decibels per day.

Suitable Ear Protectors

Ear plugs and ear valves are not suitable for dirty or dusty conditions because hygiene is critically important to avoid risk of ear infection with possible damage to hearing from the infection itself. Ear muffs are at present the only practical alternative to ear plugs and these can be fitted to safety helmets or have neckband / head-band fittings.

Some people, however, experience great difficulty in wearing ear muffs and often complain of excessive perspiration or headaches. In other circumstances it is better to use a disposable ear plug rather than nothing at all but because of the hygiene

problem and possible disorders in the outer ear, ear plugs should only be used on the advice of a doctor.

Some ear muffs are more effective at the lower frequency range of sounds and some at higher frequencies. It is important that the ear muff selected gives the reduction of sound which is required for the particular machine.

Use of Ear Muffs

The pads of muffs become ineffective if the plastic cover is cracked and so spare pads should be available. The foam insert can become saturated with sweat and spares should be issued with the muffs. The safety helmet is held on the head with a slacker harness if the muffs have a safety helmet attachment.

Bulletin No. 7

Accident Reporting

At work we cannot guarantee absolute safety. We all work within guidelines and frameworks where hazards are present. Some hazards are:

- (1). unforeseen
- (2). caused by set procedures not being followed; or
- (3). distorted or misunderstood.

Whatever the reason, all accidents, which include all cases of dangerous occurrences / near misses (where injury or damage was not sustained), point to a deficiency in our Safety Management System.

Therefore, like any other aspect of good business practice, it is important that our safety management system has an in-built method of assessing its own failures. All accidents and their causes must be investigated, in order to determine whether there are any faults in our systems and / or how such accidents can be avoided in future.

The investigation should not be seen as a means of apportioning blame, as people may become reactive rather than proactive. Which it becomes depends on:

- (1). The support it is given and the standard of the investigation
- (2). The level of follow-up on the causes and recommendations identified by the Accident Report.

Our Safety Management system must utilize accident reports for the prevention of further accidents and the safety of our employees and the general public.

Remember an accident is the result of a mistake
Doing nothing about that mistake means you have made a second mistake

For further details on how, when and who to report accidents to, please refer to our Internal Accident Report and Reporting Procedure.

Bulletin No 8

AR – Accident Reporting Procedure

Instructions to all supervisory / managerial staff:

Who reports accidents?

Internal Accident Report should be completed by the Site Supervisor responsible for the work / activity being performed when the accident took place.

Who are accidents reported to and when should they be reported?

- In cases of accidents that have caused serious injury (requiring hospitalization etc.) and / or serious damage, notification should be made immediately to the Health and Safety Officer (see telephone number below) and the Contracts Manager, before written reports are completed.
- A completed Internal Accident Report and completed Witness Statement forms (AR1a) should be completed and forwarded to the Group Health and Safety Department within 24 hours of the accident occurring.
- A copy of the completed Internal Accident Report form should be given to, and discussed with your senior line manager.

What accidents should be reported?

ALL accidents, including 'near misses' / dangerous occurrences and regardless of severity must be reported immediately to your senior line manager and the Group Health and Safety Officer at:

Island Site Development 21st Century Rd.
P.O. Box SP63796
Nassau, Bahamas

Phone: 1 (242) 328-2025
Fax: 1 (242) 328-2125
Cell: 1 (242) 422-0125 Meredith Johnson (Safety Officer)

Accident investigations:

The relevant senior line manager should assist the Group Health and Safety Department in gathering information, e.g. physical facts, measurements, photographs, work plans, records, interviews and statements where applicable.

Accidents which require immediate investigation are:

- those which require hospitalization or prolonged medical treatment;
- those that may result in 3 days or more absence from work;
- serious damage to property, machinery or the environment;
- 'near misses' and dangerous occurrences e.g. where serious injury or damage may have occurred but for good fortune.

Please note:

- Under-reporting of "near misses" provides a false picture of the efficiency of safe systems of work and may allow dangerous work practices to continue unchecked.
- Internal Accident Reports should include facts and NOT impressions.
- Prompt factual reporting will greatly assist in our accident prevention programme.

Bulletin No. 9

Instruction for the Safe Use of Chain Slings

This bulletin is issued in accordance with the requirements of Section 6 of the Health and Safety at Work etc. Act 1974, amended March 1988. It outlines the care and safe use of general purpose CHAIN SLINGS and is based on Section 2 of the LEEA Code of Practice for the Safe Use of Lifting Equipment. It should be read in conjunction with the requirements for general purpose slinging practice, given overleaf, which form an integral part of these instructions.

This information is of a general nature only covering the main points for the safe use of chain slings. It may be necessary to supplement this information for specific applications.

ALWAYS:

- Store and handle chain slings correctly.
- Inspect chain slings and accessories before use and before placing into storage.
- Follow safe slinging practices as given overleaf.
- Fit slings carefully, protect them from sharp edges and position hooks to face outward from the load.
- Apply the correct mode factor for the slinging arrangement.
- Back hook free legs onto the master link.

NEVER:

- Attempt to shorten a sling leg other than by means of an integral chain clutch.
- Force, hammer or wedge chain slings or their fittings into position.
- Lift on the point of a hook.
- Expose chain slings to chemicals, particularly acidic conditions without consulting the supplier.
- Use chain slings at temperatures above 200°C or below minus 40°C without consulting the supplier.
- Shock load chain slings.

Selecting the Correct Sling

Chain slings are available in a range of material grades, sizes and assemblies. Select the slings to be used and plan the lift taking the following into account:

Type of sling to be used - endless, single, two, three or four leg.

Capacity - the sling must be both long enough and strong enough for the load and the slinging method.

Apply the mode factor for the slinging method.

If adjustment of the leg length is necessary select a sling with chain shortening clutches.

For use at temperatures exceeding 200°C or below minus 40°C refer to the supplier's instructions.

Where slings may come into contact with chemicals, particularly acids or acidic fumes, consult the supplier.

In the case of multi-leg slings the angle between the two legs should not be less than 30° or exceed the maximum marked.

Multi-leg slings exert a gripping force on the load which increases as the angle between the legs increases and this must be taken into account.

Storing and Handling Chain Slings

Never return damaged or contaminated slings to storage. They should be dry, clean and protected from corrosion.

Store chain slings on a rack and not lying on the ground. The storage area should be dry, clean and free of any contaminants which may harm the sling.

Do not alter, modify or repair a chain sling but refer such matters to a competent person.

Never galvanize or subject a chain sling to any other plating process without the express approval of the supplier.

Using Chain Slings Safely

Do not attempt lifting operations unless you understand the use of the equipment, the slinging procedures and the mode factors to be applied.

Do not use defective slings or accessories.

Do not force, hammer or wedge chain slings or fittings into position; they must fit freely. Check the correct engagement of fittings and appliances.

Position hooks of multi-leg slings facing outward from the load. Do not lift on the point of the hook and ensure that the chain is not twisted or knotted.

Back hook free legs to the master link to avoid lashing legs which might accidentally become engaged or otherwise become a hazard.

Take the load steadily and avoid shock loads.

Do not leave suspended loads unattended. In an emergency cordon off the area.

In-Service Inspection and Maintenance

Maintenance requirements are minimal. Keep chain slings clean and protected from corrosion.

Regularly inspect chain slings and, in the event of the following defects refer the sling to a competent person for thorough examination: illegible markings; distortion of fittings; worn, stretched, bent or twisted links; ineffective safety catches; cuts, nicks, gouges, cracks, corrosion, heat discoloration or any other defect apparent to the chain or fittings.

General Purpose Slinging Practice

The following information is based on Section 1 - Appendix 1.5 of the LEEA Code of Practice for the Safe Use of Lifting Equipment. It should be read in conjunction with the instructions for the safe use of which it forms an integral part and with any specific instructions issued by the supplier.

This information is of a general nature only covering the main points for the safe use of various types of slings for general lifting purposes.

ALWAYS:

- Plan the lift, establish the weight of the load and prepare the landing area ensuring that it will take the weight.
- Check slings and equipment are free of damage, use slings / slinging methods suitable for the load and protect slings from sharp edges and corners.
- Attach the sling securely to the load and appliance and position hooks to face outwards.
- Ensure the load is balanced and will not tilt or fall.
- Keep fingers, toes etc. clear when tensioning slings and when landing loads.
- Ensure that the load is free to be lifted.
- Make a trial lift and trial lower.

NEVER:

- Use damaged slings or accessories.
- Twist, knot or tie slings.
- Hammer slings into position.
- Overload slings due to the weight of the load or the mode of use.
- Trap slings over floors etc. or attempt to pull trapped slings from under loads.
- Allow personnel to ride on loads.

Sling Configuration and Rating

Slings are available in single, two, three and four leg or endless form. In practice it will be found that chain, wire rope and fibre rope slings are available in any of these configurations but that flat woven webbing is limited to single leg and endless whilst round slings are only supplied in endless form. The maximum load that a sling may lift in use will be governed by the slinging arrangement (mode of use) and may vary from the marked SWL. In the case of textile slings the SWL for the various modes of

use is usually given on the information label. In other cases, it is necessary to multiply the marked SWL by a modefactor.

The following three simple rules will ensure that the sling is not overloaded. In some cases, this will mean that the sling will be underutilized although this is unlikely to hinder the user unduly. Where the maximum utilization is required reference should be made to a competent person who understands the factors involved and who can perform the necessary calculations.

- (1) For straight lift never exceed the marked SWL and in the case of the multi-leg slings the specified angle or range of angles.
- (2) When using slings in choke hitch multiply the marked SWL by 0.8 to obtain the reduced maximum load the sling may lift, i.e. reduce the safe working load by 20%.
- (3) With multi-legged slings, when using less than the full number of legs, reduce the maximum load in proportion to the number of legs in use. Simply multiply the marked SWL by the number of legs in use expressed as a fraction of the total, thus:
one leg of a two-leg sling = $\frac{1}{2}$ marked SWL, three legs of a four-leg sling = $\frac{3}{4}$ marked SWL and so on.

Operative Training

Slings should only be used by trained operatives who understand the methods of rating and application mode factors.

Safe Use of Slings

Good slinging practice must ensure that the load is as safe and secure in the air as it was on the ground and that no harm is done to the load, lifting equipment, other property or persons.

Establish the weight of the load, ensure the lifting method is suitable and inspect the sling and attachments for obvious defects. Prepare the landing area making sure the floor is strong enough to take the load. Follow any specific instructions from the supplier.

Ensure the lifting point is over the centre of gravity. Any loose parts of the load should be removed or secured. Secure the sling firmly to the load by hooks onto lifting points or shackles etc. The sling must not be twisted, knotted or kinked in any way. Use packing to prevent damage to the sling from corners or edges and to protect the load.

Do not exceed the SWL or rated angle. Any choke angle must not exceed 120° and any basket angle must not exceed 90° .

Do not hammer, force or wedge slings or accessories into position; they must fit freely.

When attaching more than one sling to the hook of an appliance use a shackle to join the slings and avoid overcrowding the hook.

Make a trial lift by raising the load a little to ensure it is balanced, stable and secure and if not lower it, and adjust the slinging arrangement.

Use an established code of signals to instruct the crane driver. Ensure the load is free to be lifted and not, for example, bolted down. Check that there are no overhead obstacles such as power lines.

Where appropriate use tag lines to control the load. Except where special provision is made, do not allow anyone to pass under or ride upon the load. The area should be kept clear.

Keep fingers, toes etc. clear ensuring they do not become trapped when lifting, lowering or controlling loads.

Make a trial set down, ensure the sling will not become trapped and the load will not tip when the slings are released. Use supports which are strong enough to sustain the load without crushing.

Never drag slings over floors etc. or attempt to drag a trapped sling from under a load.

Never use a sling to drag a load.

Place the hooks of free legs onto the master link and take care to ensure that empty hooks do not become accidentally engaged.

Never use slings in contact with chemicals or heat without the manufacturer's approval. Never use damaged or contaminated slings.

On completion of the lift return all equipment to proper storage.

Bulletin No. 10

Safe Operation of Lift Trucks – Dos and Don'ts

DOs

- Lift trucks must only be driven by authorized operators.
- On completion of the work, park the Lift Truck in the designated parking area with the fork arms lowered to the ground, parking brake applied and engine switched off. Disconnect the battery on battery-powered lift trucks. Turn off gas on LPG-powered lift trucks. Return the keys to their place of safe keeping.
- Be particularly careful when operating where there are pedestrians. Observe the quarry rules and take all precautions to avoid pedestrians.
- As a general rule, when operating, keep to the left. However, when driving between rows of blocks it may be safer (if a clear view can be obtained) to keep to the centre of the gangway or aisle.
- Sound the horn in short sharp blasts at every potential danger spot. Remember, the horn does not give automatic right of way.
- Stop before doorways. Sound the horn and proceed slowly if clear to do so.
- Avoid violent braking or sudden change of direction which may cause the load to fall off or the lift truck to tip.
- Where possible, travel with the fork arms lowered to within 150mm (6 in) of level ground and mast tilted slightly back. With some attachments, e.g. barrel clamps, the mast should be kept vertical. Always follow the instructions for use of the attachment.
- Always look in the direction of travel. When loaded travel down or up slopes with the fork arms facing uphill. When unloaded travel up or down slopes with fork arms facing downhill. It may be necessary to raise the fork arms slightly at the bottom of slopes to avoid grounding the load or fork arms. Where it is impossible or hazardous to turn the lift truck to comply with the above, e.g. when loading containers using a portable ramp, operate with the fork arms facing uphill for both directions of travel. In this case keep the lift truck in line with the incline and do not attempt to turn until on a level surface. Do not turn on or travel across a ramp or incline.
- Travel slowly when descending slopes.
- When leaving the lift truck, even for a few seconds, apply the parking brake, make sure that it is in neutral and the fork arms are tilted and lowered to the ground. If the lift truck is to be out of sight or remote, shut off the power and remove the key.
- Before raising a load ensure there is sufficient clearance to do so and that objects which could fall and injure people nearby will not be dislodged.
- When mounting or dismounting from the lift truck use the steps and handholds provided for the purpose. Before dismounting, check that it is safe to do so and the lift truck is parked safely.

DON'TS

- Any operator who consumes alcohol at work will be dismissed.
- An operator who appears unfit through drink or drugs will not be allowed to operate a lift truck (a person who would be unfit to drive a vehicle on the public road will be considered unfit to operate a lift truck).
- Do not pick up a load if someone is standing close to it.
- Do not allow people to walk underneath the load.
- Do not move a load that appears unsuitable. Mark it as such and report its condition to the supervisor.
- Do not leave a lift truck unattended on a gradient except in an emergency, in which case chock the wheels.
- Do not carry passengers unless the Lift Truck is designed and equipped to do so.
- Do not run over cables or flexible pipes etc. that are on the floor unless they are suitably protected.
- Do not operate with the load raised, because of the risks of overturning, except at creep speed as part of a stacking or de-stacking maneuver.
- Do not carry a load that blocks forward visibility. If it is absolutely necessary to carry a bulky load which blocks visibility, then the lift truck should be driven in reverse. If this is not possible, for example when travelling up a slope, a banksman should be used to assist the operator.
- Never leave the keys in the ignition of an unattended lift truck.

Bulletin No. 11

Fire Precautions

WHAT YOU SHOULD DO... ...IF FIRE BREAKS OUT

Raise the alarm at once by:

- BREAKING THE GLASS IN THE NEAREST FIRE ALARM BREAK GLASS CALL POINT; or
- IF IT IS SAFE TO TACKLE THE FIRE - Call for assistance and attack the fire with the fire extinguishing equipment provided.

NOTE: If the fire should get out of control or if your escape is threatened, leave the building at once.

...WHEN FIRE ALARM SOUNDS

- Co-operate with Fire Marshalls.
- Do not stop for personal belongings.
- Leave the building.
- DO NOT USE LIFTS.
- When clear of the building report to your head of department at the assembly area so that a roll can be made.
- Do not return until the all clear is given.

If you suspect that there is a fire on the other side of a door, keep the door shut.

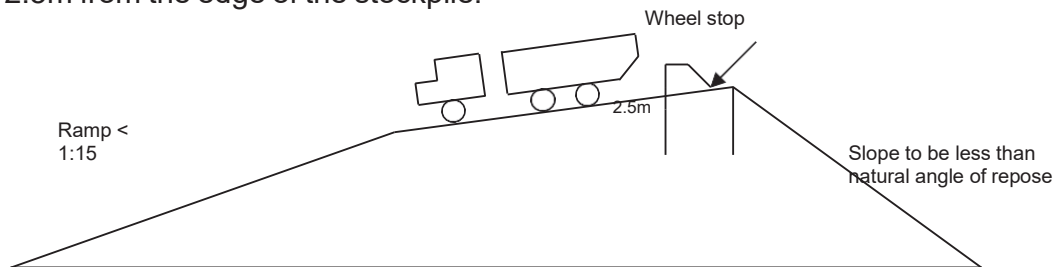
If you are caught in a smoke-filled area, crawl on your hands and knees, keeping your face as close to the floor as possible where the air will be clearer.

If escape is cut off, go into a room with a window, closing the door behind you. Stand by the window, call for help and await rescue. The fire brigade will usually arrive in a matter of minutes.

Bulletin No. 12

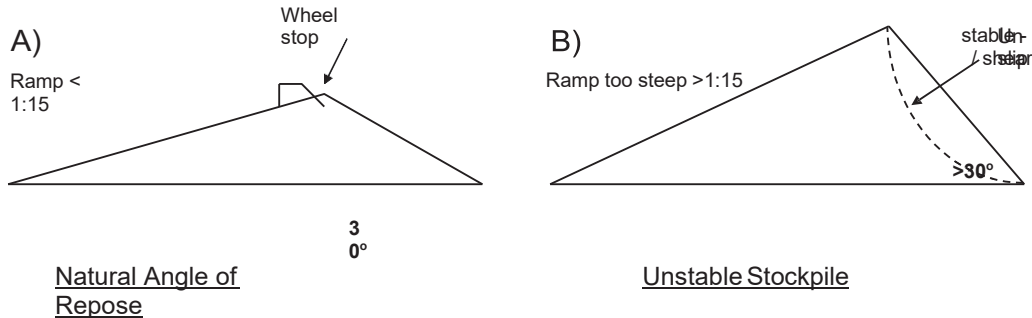
Tipping @ Stockpiles and Maintenance of Stockpiles

1. No rigid dump truck, i.e. RD30 or similar with two axles shall tip over the edge of any stockpile. Any loads to stockpile required to be carried by these shall be tipped at ground level only.
2. Drivers on stockpiling duties should check tops of every stockpile on a daily basis for cracks, subsidence, step faces and undermining.
3. All loads shall be tipped at the free edge of stockpiles so as to leave a backstop on the edge of the stockpile. Minimum height of backstop should be at least 2/3 wheel diameter of largest wheel. Backstop should be a minimum of 2.5m from the edge of the stockpile.



4. LOADING SHOVELS

As far as possible do not remove materials below where fresh material is being tipped. If it is necessary to fill at such a point, ensure that material is taken evenly around the stockpile to prevent the edge from being undermined. A gradual slope should be maintained at all times as in sketch A below:



Should a stockpile obtain a profile as drawn in sketch B, particularly with a crusher run, quarry rubble, blinding or dust then the top of the stockpile should be pushed over to restore profile shown in sketch A.

A banksman should be sought if necessary.

5. Shovel drivers should be vigilant not to create unstable stockpiles.

If a stockpile becomes unstable, immediate action should be taken to remove the risk of slippage / collapse, either by pushing the top of the stockpile to restore a safe angle of repose or using a berm of material to block the ramp to the stockpile. Note: this operation may require the use of a tracked excavator to make safe the stockpile.

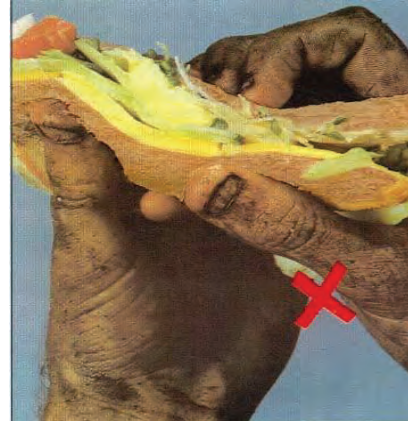
Drivers and the quarry manager / foreman should be informed immediately should a stockpile become unsafe.

EXTRA CARE AND ATTENTION SHOULD BE TAKEN IN HEAVY RAIN.

Heavy and consistent rain can make stockpiles unstable – stockpiles must be checked during and after heavy rain.

Bulletin No. 13

Weil's Disease - Leptospirosis



Weil's Disease is an infectious disease caused by bacteria transmitted to man by animals and characterized by jaundice, meningitis, kidney failure primarily caused by rats.

Where the location of the work requires that staff work in areas where evidence of rat infestation is recognizable, the following precautions must be adhered to.

- To avoid contracting Weil's Disease, it is necessary to adhere to a rigid hygiene policy.
- Staff should wear personal protective clothing, especially gloves, in the area.
- Cuts, scratches or abrasions should be covered with a waterproof dressing.
- Staff should avoid touching their mouth or nose.
- Foodstuffs should not be consumed on site without washing hands, forearms and face.
- When the job is interrupted or complete, staff should thoroughly wash hands, forearms and face with soap and water before eating or drinking.
- If heavily contaminated tools and other equipment used during the operation should be cleaned and disinfected using a solution of disinfectant and warm water.
- If illness occurs following work, medical advice should be sought immediately.

Don't forget - the presence of rats may not always be evident, so it is very important to use protective clothing and to wash thoroughly afterwards. Good hygiene practice makes sense.

Bulletin No. 14

Use of Hydrochloric Acid for Wash Down of Ready-mix Delivery Vehicles

To All: Hydrochloric Acid is toxic and highly corrosive and will cause serious eye, skin & respiratory tract damage.

Warning: The following Health & Safety Procedures must be adhered to when handling Hydrochloric Acid.

1. Hydrochloric Acid must be kept under lock and key in a secure and well-ventilated compound or lock up away from lakes, wells, streams or fire source.
2. The key to the lock up or compound will be held at the depot managers office.
3. The following safety procedures must be followed:
 - key kept at concrete depot managers office.
 - key to lock up / pound collected from depot managers office and returned to the depot managers office immediately on completion of wash down of vehicle.

Note: On issue of key the driver will be issued with the following items of protective apparel.

- full face shield with head band
- heavy duty neoprene or UPVC gauntlets

The visor and gauntlets must be worn before handling Acid containers, dispensing acid & diluting acid and when applying acid/water and hosing down vehicles.

4. On completion of task the face visor and gauntlets must be returned in a clean condition to the depot manager.

Note: Any damage or defects to the protective equipment must be immediately brought to the attention of the Depot Manager.

5. **Caution:** When opening acid container allow gases to escape by slowly opening lid at arm's length while unwind from the container.
6. When diluting hydrochloric acid **NEVER add water to acid -ONLY add acid to water**. Extreme care must be taken when handling and pouring acid to avoid airlocks and gulping at the nozzle of the acid container.

7. In the event of contact with eye/skin, wash down with copious amounts of water for at least 15 minutes - seek medical attention immediately, phone 999 - Hospital - accident & emergency unit stating name of acid.

Note: Remove any contaminated clothing immediately.

8. Do not smoke or have naked flames or carry out hot works in the vicinity of acid.
9. Acid container must be kept in an upright position with lids securely closed. Lock up / compound kept under lock and key.

Acid containers must never be used to store any other products other than Hydrochloric Acid and must be returned to the supplier when empty.

10. Failure to abide by the above procedures will evoke company disciplinary procedures.

Bulletin No. 15

Crane Lifting Operations Checklists – Pre-lift

COMPANY:	BAHAMAS MARINE CONSTRUCTION	Sheet No:	
		Date:	
PROJECT:			
Package Title:			
Subcontractor / Works Contractor / Trade Contractor:			
Check:		Details / Answer:	
1. Proposed lifting company / hire company			
2. Name of Heavy Lift Coordinator			
3. Name of Appointed Person			
4. Date of agreed Method Statement – also check crane hire company has all Risk Assessments and Method Statements in place			
5. Start date and duration of operation			
6. Details of crane hire company's Employers and Public liability insurance cover – keep copies if appropriate			
7. Details of lift: a) Maximum load b) Maximum height c) Maximum radius			
8. Details of where crane is to be sited (attach sketch if appropriate) Check for 600mm clearance			
9. Ground bearing capacity (permissible) and provision of spreaders (indicate loads required)			
10. Area free of overhead and underground powerlines			
11. Sufficient lighting is provided			
12. Evidence of notification to Police and Highways department (if applicable)			
13. Details of type of crane(s) to be used: a) Capacity b) Working length of boom c) Maximum working radius and capacity d) Maximum allowable wind speed			
14. Crane drivers / operators / banksmen training certification – keep copies			
External Distribution:		Internal Distribution:	
<input type="checkbox"/> Planning Supervisor <input type="checkbox"/> Project Manager		<input type="checkbox"/> Director <input type="checkbox"/> Quantity Surveyor	
<input type="checkbox"/> Design Manager <input type="checkbox"/> Civil Engineer		<input type="checkbox"/> Construction Manager <input type="checkbox"/> Site Manager	
<input type="checkbox"/> Architect <input type="checkbox"/> Client		<input type="checkbox"/> Safety Coordinator <input type="checkbox"/> Project Manager / Site Agent	
		<input type="checkbox"/> Other	

Signature of Appointed Person _____ Date _____

Crane Lifting Operations Checklists – Lift

COMPANY:	BAHAMAS MARINE CONSTRUCTION	Sheet No:	
		Date:	
PROJECT:			
Package Title:			
Subcontractor / Works Contractor / Trade Contractor:			
Check:		Details / Answer:	
1 Name of crane driver			
2 Registers and test certificates to be produced by the Crane driver a F91 Pt2 #G (14 month test) b F91 Pt1#C (weekly inspection) c F96 (four year test)			
3 Other test certificates required: a F97 (chains etc) b F87 (wire ropes) c F91 Pt2 #J (sling inspection)			
4 Provide slinger / banksman and note suitable method of communication (Note: ensure banksman clearly distinguishable if hand signals used).			
5 Provide warning notices, bollards, barriers			
6 Provide temporary lighting			
7 Check outriggers fully extended			
8 Check crane level			
9 Check safe load indicator working and any computer input set up correctly			
10 Check Method Statement being complied with fully			
11 Ensure load correctly slung			
12 Check tag lines fitted to control load. For contract lifts, the subcontractor must answer all the above questions and ensure the answers are implemented on site. Failure to do so will result in operations not being allowed to proceed.			
13 Check load after lifting 150mm.			
14 Check no-one is or can get under load being lifted.			
15 Check load is landed on batons to prevent damage to slings and to allow their removal.			
External Distribution: <input type="checkbox"/> Planning Supervisor <input type="checkbox"/> Project Manager <input type="checkbox"/> Design Manager <input type="checkbox"/> Civil Engineer <input type="checkbox"/> Architect <input type="checkbox"/> Client		Internal Distribution: <input type="checkbox"/> Director <input type="checkbox"/> Quantity Surveyor <input type="checkbox"/> Construction Manager <input type="checkbox"/> Safety Coordinator <input type="checkbox"/> Site Manager <input type="checkbox"/> Project Manager / Site Agent <input type="checkbox"/> Other	

Signature of Appointed Person _____ **Date** _____

Bulletin No. 16

Recommended Contents of First Aid Boxes and Kits

Materials	First Aid Travel Kit Contents	First Aid Box Contents		
		1-5 Persons	6-25 Persons	26-50 Persons
Adhesive Plasters	12	12	20	40
Sterile Eye Pads (Bandage attached)	-	-	2	4
Individually Wrapped Triangular Bandages	2	2	6	6
Safety Pins	2	2	6	6
Medium Individually Wrapped Sterile Unmedicated Wound Dressings (approximately 10cm x 8 cm)	-	-	6	6
Large Individually Wrapped Sterile Unmedicated Wound Dressings (approximately 13cm x 9 cm)	1	1	2	4
Extra Large Individually Wrapped Unmedicated Wound Dressings (approximately 28cm x 17.5 cm)	-	-	3	4
Individually Wrapped Wipes	8	8	8	10
Paramedic Wrapped Wipes	1	1	1	1
Pairs of Latex Gloves	1	1	2	2
Additionally, where there is no clear running water. Sterile Eye Wash	1	1	2	2

NOTES

Where more than 50 persons are employed pro rata provision should be made.

Where mains tap water is not readily available for eye irrigation, sterile water or sterile normal saline (0.9%) in sealed disposable containers should be provided. Each container should hold at least 300 ml and should not be re-used once the sterile seal is broken.

Eye bath / eye cups / refillable containers should not be used for eye irrigation.

The above table provides a general guide on the recommended contents of first-aid boxes and first-aid kits based on numbers employed. The appropriate number of boxes or kits required in any particular place of work will depend on the particular circumstances.

Bulletin No 17

Fire Checklist

This checklist is designed to assist Fire Marshalls and Site Safety Officer to carry out a fire safety appraisal. If the answer to any question is `no`, corrective action should be taken.

COMPANY:	BAHAMAS MARINE CONSTRUCTION			
DATE OF INSPECTION:				
INSPECTION COMPLETED BY:		JOB TITLE:		
FIRE – Prevention of Fire:				
Are all parts of the premises kept clear of waste and rubbish particularly:				
<small>*Please tick if inspected</small>	Area	Yes	No	Comments
	Storerooms and cupboards?			
	Attics and basements?			
	Boiler rooms and other plant rooms?			
	Bottoms of lift shafts?			
	Staircases and understairs?			
	Fuses and switchboard areas?			
	All exits and entrances?			
FIRE – Smoking:-		Yes	No	Comments
Are substantial ashtrays provided in all areas where smoking is permitted?				
Are staff warned to use the ashtrays and not throw cigarettes or matches into waste paper receptacles, through gratings or out of windows? (Note: waste paper receptacles should be metal, with closed sides and bottoms).				
FIRE – Electricity:-		Yes	No	Comments
Do all parts of the electrical installation comply with the Electricity Rules for Electrical Installations?				
Is the electrical installation inspected and tested at least every 3 years?				
Are electrical appliances checked every six months by a competent person?				
Are staff trained to report frayed leads and faulty plugs and sockets?				
Are staff warned to keep combustible materials away from heaters?				
If you do not have central heating, are heating appliances fixed rather than portable?				
FIRE – If Fire Breaks Out:-		Yes	No	Comments

Are there instructions for detailing the action to be taken by staff on discovering a fire and when warning of a fire is given?			
Do the staff know these instructions?			
Have regular fire drills been carried out?			
Are there means for warning the entire staff and other occupants of the building when a fire is discovered?			
Has a responsible person (Fire Marshal) been appointed in each office or on each floor to supervise the action to be taken when fire breaks out?			
Are emergency exits kept clear and unlocked during normal working hours?			
Are internal fire doors kept shut at all times?			
FIRE – Escape:			
	Yes	No	Comments
Are fire exits and special fire escapes clearly marked?			
Are staff familiar with all the escape routes out of the building?			
Are the escape routes open at all times when the building is occupied?			
Are escape routes well lit?			
Are smoke / fire detectors present on fire escape routes?			
Are escape routes and entrances and exits kept free from obstruction and in good structural condition?			
FIRE – Fire Fighting:			
	Yes	No	Comments
Are portable fire extinguishers provided in clearly visible and readily accessible places throughout the premises?			
Are they maintained at regular intervals?			
Are staff familiar with their use?			
Are fire alarm systems regularly tested and maintained?			
Do you know how to operate the fire alarm system?			
FIRE – When Work Ceases:			
Are checks made to ensure:			
	Yes	No	Comments
Electric, gas and oil equipment not required to operate overnight is switched off?			
Equipment in use overnight is safe?			
Electric typewriters, computers, copying machines and other equipment having flexible cables, are unplugged?			
Kitchen cooker, kettles, toasters etc. are switched off?			
No cigarettes are left smoldering?			
FIRE – When Work Ceases Continued:			
Are Checks made to ensure:			
	Yes	No	Comments

Areas to which the public have access are checked for signs of careless or malicious sources of ignition (cigarettes, incendiary devices etc.)?			
Fire doors and smoke stop doors are closed?			
Windows are closed?			
Outside doors are locked?			
Premises are secure against intruders?			
MAIN POINTS FOR ACTION:			
Signature of Assessor:		Date:	

Bulletin No. 18

Disc-Lock Wheel Nuts

To: All Large Goods Vehicle Drivers

Disc lock nuts are fitted to help prevent wheels from coming adrift from the vehicle.

THE FOLLOWING PROCEDURES APPLY:

1. Daily check on wheel, wheel nut and tyre inspections
2. The attached manufacturer's instructions must be followed at all times
3. Following a wheel or tyre change – re-torque the disc lock nuts to the vehicle manufacturers recommended torque after 80km/50 miles.
4. To re-torque the disc lock nuts on a weekly basis.
5. **Warning:** Air guns can seriously damage the disc lock nuts.

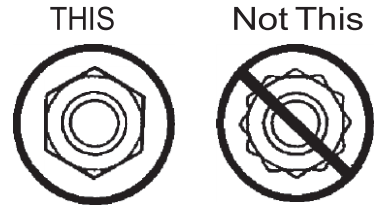
If an air gun is used it is required that on both slackening and tightening the nuts, the hexes in the nut are correctly lined up to avoid burring the hexes. (Fitter should be informed of this requirement).

NOTE:

It is required that the torque bar be used to finish tightening nuts and for the first two turns when loosening the disc-lock nuts prior to use of an air gun.

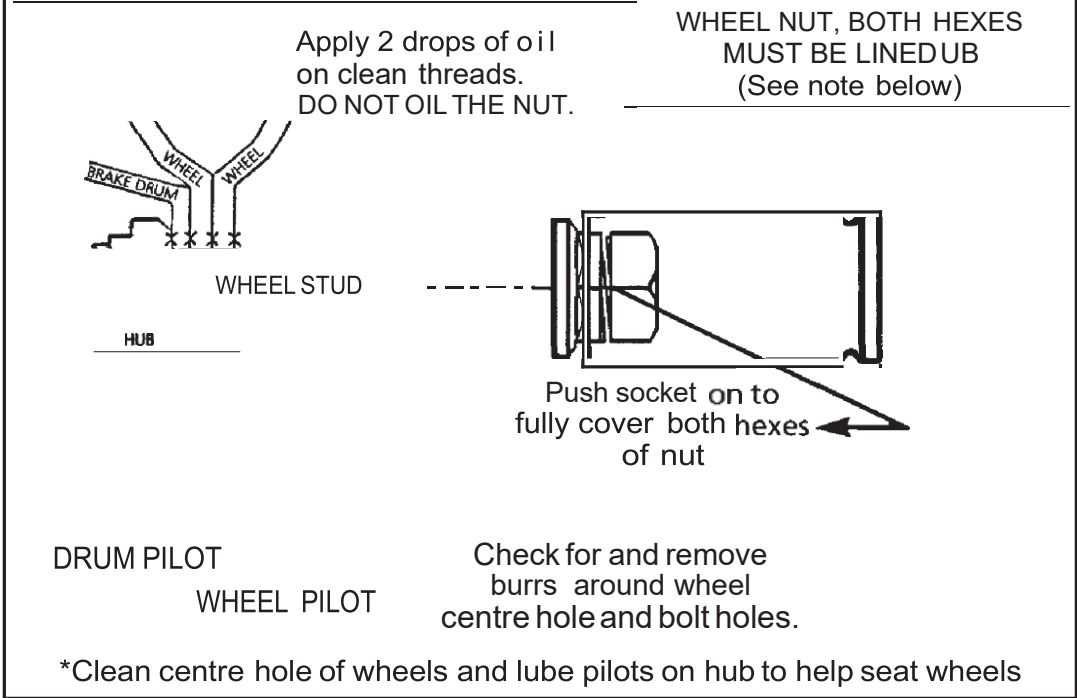
DISC-LOCK WHEEL NUT INSTALLATION

IMPORTANT: Be sure to keep nut flange face and wheel and drum mating surfaces free from lubricant*, dirt, rust, excess paint and other foreign material. Replace damaged parts.

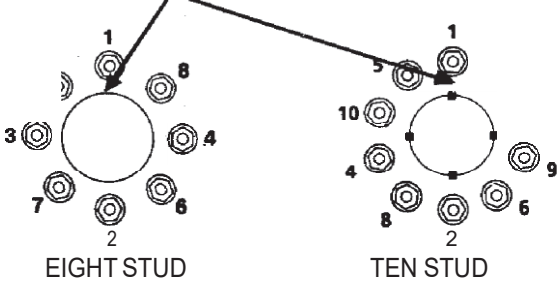


THIS **Not This**

TO REMOVE OR REPLACE WHEEL NUT, BOTH HEXES MUST BE LINED UP
(See note below)



NUT TIGHTENING PATTERN (Pilot at 12 o'clock)



IMPORTANT

- *DISC-LOCK WHEEL NUTS MUST BE FITTED IN COMPLETE SETS*

- **REFER TO AXLE MANUFACTURERS INSTRUCTIONS FOR TORQUE SETTINGS.**

NOTE: When a 6-point socket is used to install the DISC-LOCK Wheel Nut, the two hexes will automatically line up as the socket is pushed over both hexes. When a 12-point socket is used, make sure the two hexes are lined up before pushing socket over both hexes.



**DISC-LOCK EUROPE P.O. Box 134
Sittingbourne, Kent ME9 8BZ, England
Tel: 01795 844332 • Fax: 01795 843986**

Bulletin No. 19

Working with Sewage – The Health Hazards

Introduction

Several work activities bring workers into contact with sewage and sewage products. Each year, some workers will suffer from at least one episode of work-related illness. The majority of illnesses are relatively mild cases of gastroenteritis, but potentially fatal diseases such as leptospirosis (Weil's Disease) and hepatitis, are also reported to HSE.

Who is at Risk?

If you work in one of the following areas, your health, or that of your employees, may be at risk.

- Local Authority employees involved in sewer inspection and maintenance work.
- Construction workers who repair or replace live sewers.
- Water company employees who work with sewage treatment plant.
- Agricultural and forestry workers who may be exposed to sewage sludge.
- Sludge tanker drivers/operators and associated maintenance staff.
- Plumbers.

What this leaflet is about

This leaflet describes some of the risks and the ways in which they can be either eliminated or reduced. It follows the principles of the Control of Substances Hazardous to Health Regulations 1994. This leaflet does not set out or interpret the law – it has been produced simply to help you.

What is Sewage?

The term may be used to mean raw sewage, sewage sludge or septic tank waster.

Raw sewage is mainly water containing excrement, industrial effluent and debris, such as sanitary towels, condoms, plastic, etc.

Excrement is the major source of harmful micro-organisms, including bacteria, viruses and parasites.

Sewage treatment reduces the water content and removes debris, but does not kill or remove all the micro-organisms.

What are the Health Risks?

Exposure to sewage or its products may result in a number of illnesses. These include:

- Gastroenteritis, characterized by cramping stomach pains, diarrhea and vomiting.
- Weil's disease, a flu-like likeness with persistent and severe headache, transmitted by rat urine. Damage to liver, kidneys and blood may occur and the condition can be fatal.
- Hepatitis, characterized by inflammation of the liver, and jaundice.
- Occupational asthma, resulting in attacks of breathlessness, chest tightness and wheezing, and produced by the inhalation of living or dead organisms.
- Infection of skin or eyes.
- Rarely, allergic alveolitis (inflammation of the lung) with fever, breathlessness, dry cough, and aching muscles or joints.

How do Micro-organisms enter into the Body?

- The most common way is by hand-to-mouth contact during eating, drinking and smoking, or by wiping the face with contaminated hands or gloves, or by licking splashes from the skin.
- By skin contact, through cuts, scratches, or penetrating wounds, i.e. from discarded hypodermic needles. Certain organisms can enter the body through the surfaces of the eyes, nose and mouth.
- By breathing them in, as dust, aerosol or mist.

Protecting workers from risks to health

Since micro-organisms are an inherent part of sewage, the hazard cannot be eliminated.

However, a proper assessment of risk is required, but this should not include analysis of sewage for micro-organisms as they can constantly change.

Exposure to sewage should be eliminated or minimized by, for example, using remote-controlled robotic cameras for sewer inspection; drying sludge before disposal; incineration of sludge; injection of sewage into land rather than spreading; damming and bypass pumping of sewer sections prior to reconstruction.

The following measures can further reduce risk of infection and illness:

- Ensure that employees and line management understand the risks through proper instruction, training and supervision;
- Provide suitable personal protective equipment, that may include waterproof/abrasion-resistant gloves, footwear, eye and respiratory protection. Face visors are particularly effective against splashes.

Equipment selection and a proper system for inspection and maintenance are important.

- Provide adequate welfare facilities, including clean water, soap, nailbrushes, disposable paper towels, and where heavy contamination is foreseeable, showers. For remote locations, portable welfare facilities should be provided.

Areas for storage and contaminated equipment should be segregated and separate from eating facilities.

- Provide adequate first aid equipment including clean water or sterile wipes for cleansing wounds and a supply of sterile waterproof adhesive dressings.
- Make effective arrangements for monitoring the health of staff.

Bulletin No. 20

All Employees and Owner Drivers – In the Event of a Road Traffic Accident

You should:

- a. Take the names and addresses of all those in the third-party vehicle
- b. Take a note of the names and addresses of any independent witnesses
- c. Identify the make, model and registration number of the third-party vehicle
- d. Exchange insurance details with the third-party driver. Our details are as follows:

Insurance Company

Certificate Number Private Car

Certificate Number Commercial

Certificate Number Mechanical Plant

- e. Identify the attending Police Officer and the relevant Police Station
- f. Report the incident immediately to your manager who will make the necessary arrangements with Head Office
- g. **Managers:** Send all communications you receive to ISLAND SITE DEVELOPMENT

! Failure to report accidents immediately and failure to provide adequate information may result in disciplinary action.

I have read and understood what to do in the event of a Road Traffic Accident:

Driver

Signature: _____

Date: _____

! It is recommended that all employees and owner drivers keep a copy of this form in their vehicle at all times.

Bulletin No. 21

Plant & Machinery Safe Access and Egress

General

- Access and egress should allow for a person to have 3 points of contact with the machinery or plant at all times, when mounting, dismounting or gaining access to carry out servicing, maintenance or repair work, e.g. two hands and one foot in contact with plant / machinery at any one time or, two feet and one hand in contact at any one time when climbing is done.

Steps

- The maximum height of the first step above ground level should not be greater than 450mm (18”), thereafter footsteps should not be greater than 250mm (10”) apart. Note this is a good guide, with care taken to ensure that steps do not foul machine movement.
- Note: Steps should be non-slip and have sufficient surface area to accommodate the length of one foot and the breadth of two feet.
- Note: Tracks on vehicles can be utilized as a foot platform or stepping point. These should be made with non-slip surfaces or sole grips

Hand-grips / Handrails

- Provide at least two hand-grips.
- Note: Handrails must be within hand / arm’s length.
- Note: The hand-grips / handrails must be within reach from the lowest point of access.

Compliance

- Management / supervisors should make arrangements to fix / fit appropriate access and egress points to all equipment under their respective areas of control, should present access / egress points not meet these basic standards.
- Consultation may be required with users of the plant, machinery or vehicles requiring modification, to ensure the best possible location of access / egress points.

Bulletin No. 22

Trolley Jacks

Controls

- Read instructions before use.
- Check vehicle manual for correct weight of lift.
- Never exceed jack rated capacity.
- Never work under load without additional supports, i.e. fully rated jack stands.
- Always work on a solid level surface with the vehicle's brakes on and wheels chocked.
- Failure to comply with all cautions may result in serious injury.

Instructions

To Lift:

- Place vehicle in park position, apply handbrakes and block wheels.
- Turn jack valve in cylinder clockwise until tight – use jack handle as a wrench.
- Place jack handle in housing and pump jack up-down to lift load.
- Always centre the load on the saddle of the jack – Note – off-centre load can be unstable resulting in possible load collapse.

To Lower:

- Use handle as a wrench turn – release valve SLOWLY

Maintenance:

- Lower lift to lowest position.
- Remove air vent valve – fill with hydraulic jack oil only – DO NOT use brake fluid.
- Fill to correct level.
- Release air from system, i.e. pump jack 5-6 times with air valve open – then tighten air vent valve.
- Always ensure trolley jack wheels are in good condition – replace immediately if defective.
- NEVER use a defective jack.

Bulletin No. 23

Safety Harnesses

Pre-use Checks

- Read instructions before use.
- The webbing is free from burns, cuts, broken stitches or excessive wear.
- The buckles and rivets are not defective (bent, loose) or missing.
- The harness should be discarded if it does not pass inspection and replaced with a new one.

Never:

- Attach more than one snap hook onto a D-ring.
- Modify the harness in any way.
- Work without independent fall arrest systems if there is a risk of falling.

Care and Use:

- Harnesses should only be used by thoroughly trained personnel.
- Used with compatible double locking connectors.
- Destroyed if subject to impact loading.
- Not exposed to chemicals that may damage the fabric or the buckles.
- Protected from sharp edges and abrasion.
- Used with an anchorage point based above the position of the user if possible.
- Allow to dry naturally without being exposed to direct heat sources (e.g. direct sunlight, radiators etc.)
- Store harnesses away from direct sources of heat.
- Wash harnesses, using only those products recommended by manufacturers.

SECTION 8



Operative Safety Guidelines Contents

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No. 3	Working Dress
No. 4	Housekeeping
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1. General Safety Guidelines

1. Give extra care to young persons.
2. Stop all running and horseplay.
3. Stop the use of boxes in place of stepladders.
4. Stop the carrying of objects while climbing.
5. Insist on the use of handrails on stairs and working platforms.
6. Stop the wearing of unsafe clothing and footwear.
7. See that goods are stacked safely and clear of gangways.
8. See that all guards are in place on machines.
9. Watch for wet, oily, slippery or damaged floors.
10. Report all unsafe conditions in your area.
11. Ensure that all minor injuries receive first aid attention.
12. Give careful instructions and make certain they are understood.

2. Personal Safety

1. Don't take chances - carry out instructions.
2. If you don't know - ask.
3. Rectify or report all unsafe conditions to your line manager.
4. Use correct tools and equipment.
5. Help to keep the work place clean and tidy.
6. Have all injuries, however slight, properly attended to.
7. Don't horseplay or distract others.
8. Wear or use any protective clothing or equipment provided.
9. Don't start machinery unless authorized or without guards being in place.
10. Obey all safety rules and signs.
11. Use only those tools you are authorized to use.
12. Don't leave tools on the floor or where they can fall on people below.

YOU MAY BE RIGHT -
BUT THINK OF YOUR WORK COLLEAGUES

3. Working Dress

1. Wear the right clothing for the job.
2. Always keep clothes clean. Dirty clothes can offer a fire or dermatitis risk.
3. Loose ends of sleeves, ties or scarves can become entangled.
4. Long hair can get caught and result in scalping.
5. If protective equipment is provided wear it.
6. Finger rings or bracelets are dangerous near moving machinery.
7. A safety helmet will protect your head - and perhaps save your life.
8. Safety shoes save toes.
9. Danger can strike upwards. Be sure your boots or shoes have strong soles.
10. Remove contaminated clothing immediately and WASH.
11. Remember, cotton burns easier than wool.
12. It is worth dressing properly, even for a short job.

PROPER CLOTHING MEANS
SAFER WORKING

4. Housekeeping

1. Don't leave rubbish lying about.
2. Keep all gangways, aisles and stairways clear.
3. Wipe all spilt oil, grease or liquids.
4. Clear up turnings, chips, or off-cuts.
5. Use metal containers for oily or greasy rags and waste.
6. Stack goods and materials clear of gangways.
7. Stow your tools safely when not in use.
8. Keep benches and worktops uncluttered.
9. Don't accumulate scrap or waste.
10. Don't leave loose tools on running machines.
11. Ensure that access to fire extinguishers is not obstructed.
12. Keep all fire doors and exits clear of obstructions.

A CLEAN WORKPLACE MEANS
FEWER ACCIDENTS

5. Fire Safety

1. See that you know what to do in case of fire.
2. Make certain you know your escape route.
3. Keep fire doors and shutters clear and unobstructed.
4. Don't obstruct access to fire extinguishers; learn how they operate.
5. Don't hang clothing over or near heating equipment.
6. Don't let paper, oily rags or other rubbish accumulate.
7. Do not smoke in forbidden areas.
8. Use proper containers for flammable liquids, not open tins or buckets.
9. Handle flammable liquids at a safe distance from possible sources of ignition.
10. Check before and after using blowlamps, welding and cutting equipment.
11. Crucibles, soldering irons and gas rings must be on non-combustible stands.
12. Switch off from mains any electrical equipment when not in use.

PLAN IN ADVANCE - YOU WON'T
HAVE TIME WHEN FIRE BREAKS OUT

6. Manual Handling

1. Where possible gloves should be worn to protect against cuts, scratches or punctures.
2. Wear safety boots or shoes to protect toes from falling loads.
3. Size up the load and, if necessary, make a trial lift of a few inches.
4. Do not attempt to lift alone any load that is too heavy, too large or awkward.
5. See that there are no obstructions in the direction you will be going.
6. Take up position, feet hip breadth apart, one foot slightly advanced pointing in direction it is intended to move.
7. Bend the knees, back muscles should be relaxed.
8. Get a secure grip of the load.
9. Lift, keeping the back straight, arms close to body, leg muscles taking the strain.
10. Step off in direction advanced foot is pointing, load held close to body.
11. Do not carry a load which obscures your vision.
12. When lifting to a height from the floor do it in two stages.

7. Care of your Skin

1. The most important factor is personal cleanliness.
2. Barrier cream appropriate to the exposure should be used if gloves cannot be worn.
3. Gloves should be worn for handling rough or sharp materials. But not on drilling machines.
4. Cuts or punctures can turn septic - get first-aid at once.
5. Change soiled dressing on wounds.
6. Rings on fingers can be dangerous.
7. Use safeguards installed or provided.
8. Wash before eating, drinking or smoking - there may be harmful chemicals on your hands.
9. Do not use solvents to remove oil or material from the skin.
10. Do not use a pumice stone or abrasives for cleaning skin.
11. At the end of the day or shift wash hands with warm water and soap or cleaning cream - dry well.
12. Clean habits prevent diseases.

8. Handling Sheet Materials

1. Sheet materials should, where practicable, be stored flat. Keep stacks low.
2. Vertical storage should only be done in suitable racking to prevent collapse.
3. The corners of stacked sheet materials should be suitably guarded against physical contact.
4. When removing steel strapping from sheet materials, wear goggles and gloves. Remove strapping immediately to a safe place.
5. ALWAYS use suitable hand protection, and arm protection where necessary.
6. Before moving sheet materials, ensure that your route is free from obstruction.
7. Large sheets should be either handled mechanically or by an organized team.
8. When lifting sheets manually, bend the knees and keep the back straight.
9. When moving sheets by crane, use only sound and suitable slings or straps.
10. Be careful when you have to handle sheet materials out of doors in windy conditions, particularly above ground.
11. NEVER attempt to manhandle sheet materials up or down ladders.
12. When processing sheet materials - such as on guillotines, a leather apron or other suitable protective clothing should be worn.

CUTS NEED CARE - GET FIRST A I D

9. Hand Tools

1. Use the right size spanner to fit the nut.
2. See that every file has a handle.
3. Chisels and punches with mushroomed heads should be ground.
4. Keep hammer heads tightly wedged on their shafts.
5. Renew wooden handles that are split.
6. Keep the edges of cutting tools sharp.
7. Keep hands behind the cutting edges when working.
8. Don't use screwdrivers on work held in the hand.
9. Keep tools in boxes or racks when not in use.
10. Protect sharp edges of tools that are to be stored or carried.
11. Scrap tools that are worn or damaged beyond repair.
12. Always use the correct tool for the job.

GOOD TOOLS MEAN FASTER
AND SAFER WORKING

10. Noise

1. Wear ear protectors at all times if exposed to a noise hazard.
2. Do not use cotton wool as ear protection: it is not effective.
3. Make sure that ear plugs are a good fit in each ear and are correctly inserted.
4. Regularly clean re-usable ear plugs to the manufacturer's instructions.
5. Hands should be clean when handling all types of ear plugs.
6. Ear muffs should be a good fit to the head all-round the seal.
7. Ensure that ear muffs are worn the correct way around.
8. See that muff seals are always in a serviceable condition.
9. Do not alter the pressure of ear muffs by bending the head band.
10. If you have difficulty in wearing any type of hearing protector provided, report it.
11. There is no satisfactory treatment for noise-induced hearing loss.

PROTECT YOUR HEARING

11. Ladders

1. Use clear varnish to protect a ladder; paint may cover a defect.
2. Never use an unsound ladder.
3. Be sure the ladder is set on a firm level base.
4. Have a man at the foot or lash the top.
5. Make certain the ladder reaches at least 3ft. 6in. (1.070m.) above landing platform.
6. The correct pitch of a ladder is 1 foot (300mm.) out at the base for every 4 feet (1.210m.) vertical height.
7. Use the right length ladder for the job. Never lash two short ladders to make a longer one.
8. Do not carry loads on ladders - use a hoist line.
9. Do not lean sideways from a ladder - it's safer to move the ladder.
10. Face the ladder when climbing or ascending.
11. Beware of wet, greasy or icy rungs.
12. Inspect ladders before use and regularly when stored.

ON BUILDING SITES BURY FOOT OF
LADDER IF GROUND IS UNEVEN

12. Roof Work

1. Only workmen who are physically and mentally suitable should work on roofs.
2. Suitable crawling boards or ladders to be used for any work on sloping roofs, or where a roof is of fragile material, or is used for access or egress.
3. Crawling boards or ladders to be properly supported and securely fixed or anchored.
4. The falling of materials or articles from roofs must be prevented by suitable and sufficient means.
5. Extensive work on sloping roofs to be done only from a suitable platform, or a barrier must be provided at lower edge of the slope.
6. For work near fragile roof materials, a guard-rail must be erected or the surface suitably demarcated / covered.
7. Covering or other protection may be removed for the passage of workmen, materials, other purposes of the work, or for filling in the opening.
8. Any ladder used for temporary access to the roof must be sound and placed on a firm level base.
9. Until a ladder is lashed in position, it must be footed by a person at its base.
10. When ladders rise to over 30ft. an intermediate platform equipped with guard-rails and toe-boards must be erected.
11. A ladder must reach at least 3ft. 6in. above a landing platform.

13. Electricity

1. Don't carry out make-shift repairs on electrical equipment. Repairs are an electrician's job.
2. Always check for defective cables, plugs or sockets.
3. Never overload electrical equipment.
4. If a fuse blows, report it. Do not fit makeshifts.
5. Switch off and disconnect any equipment that sparks or stalls.
6. Don't let cables trail across portable tools.
7. Don't use lighting circuits for portable tools.
8. Disconnect equipment when not in use, but don't pull cable to disconnect; pull the plug.
9. Avoid kinking, twisting, binding or crushing cables.
10. Keep all electrical equipment clean and dry.
11. Don't use portable tools near flammable vapors or gases.
12. Don't stand on a wet area when using electrical equipment.

**ELECTRICAL REPAIRS ARE
AN ELECTRICIAN'S JOB**

14. Portable Electric Tools

1. Before using a portable electric tool check to see it is properly earthed, unless it is an approved type that does not require earthing.
2. Before using an electric tool, make sure that the casing is undamaged. If it is damaged, don't use the tool.
3. Make sure that all cables, plugs or connectors are sound and properly wired up.
4. Use tools only on the correct power supply as instructed on the maker's label.
5. Make sure that the power cable is long enough to reach your working place without straining it.
6. Keep power cables off the floor. They may get damaged or trip somebody.
7. Never stand on a damp or wet surface when using electrical equipment, and keep the equipment clean and dry.
8. Portable electric tools should only be used for their designed purpose.
9. Never connect a portable electric tool to a lighting socket.
10. Never use worn, blunt or damaged bits or other accessories.
11. Disconnect tools when not in use.
12. Electric power tools should be regularly inspected and maintained by a competent electrician.

REPORT ALL DEFECTS IMMEDIATELY

15. Electric Arc Welding

1. Make sure that your shield, helmet or goggles contain the correct filter glasses.
2. Wear adequate protective clothing, including leather gauntlet gloves and clear goggles for chipping.
3. When necessary, use screens to protect neighboring workers and passers-by from the arc.
4. Ensure that cables and connections are in good condition and firmly attached.
5. Make certain that the welding equipment, bench or workpiece is properly earthed.
6. Check that the electrode holder is fully insulated and always place it on an earthed surface when not in use.
7. Stand on an insulated mat when the ground is damp.
8. Arrange good ventilation in the welding area, but do NOT use oxygen to ventilate confined spaces.
9. Avoid welding near flammable materials.
10. Never weld enclosed vessels, drums or tanks which have contained flammable materials unless they have been purged by steaming or boiling, or filled with inert gas, and tested and certified that they are safe to work on.
11. Do not weld INSIDE enclosed vessels unless all precautions have been taken for your safety.
12. Keep trailing welding cables clear of roads and walkways. Secure to overhead fixtures where possible.

BEWARE OF ARC EYE - PROTECT YOUR EYES

16. Slings

1. Find out the weight to be lifted.
2. Check the safe working load marked on the sling; do not use it for any load in excess of the safe working load.
3. Do not use fibre or wire rope slings for hot loads and keep them away from welding or flame cutting operations.
4. Examine all slings before use; reject any that are defective.
5. Slings should be protected by suitable packing from sharp edges or corners of the load.
6. Rope slings should not be dragged along the floor.
7. A sling doubled around a shackle has a S.W.L. equivalent to that of a single part of the rope.
8. Take your hands away before the crane takes the load and stand clear.
9. Ensure that load is free before lifting.
10. Use only recognized signals to the crane driver.
11. Lower loads on to adequate battens to prevent damage to the slings.
12. Return slings to store after the job is completed.

ALWAYS WORK SAFELY

17. Chains

1. Select the right chain for the job. If in doubt - ask.
2. Check chains before using. Report any chain with deformed, corroded, cracked or cut links and don't use it.
3. Make sure that the chain is marked with its safe working load; don't exceed it.
4. Make sure that the chain is not kinked or twisted.
5. Immediately after use, return chains to store so they can be properly stored.
6. Use packing for chain slings when lifting anything with sharp edges.

DO NOT

7. Shorten a chain by knotting it.
8. Lengthen a chain by joining pieces together.
9. Hammer a chain down on to a load.
10. Drop chains on hard surfaces.
11. Leave chains where they can be run over or otherwise ill-treated.
12. Expose chain to acids or other corrosive substances.

**REMEMBER - A CHAIN IS ONLY AS
STRONG AS ITS W EAKEST LINK**

18. Hooks and Eye Bolts

Hooks

1. Check for distortion. If in doubt, check dimensions against standard tables or drawings.
2. If a hook has opened by more than 1/5th of its original dimension, destroy it.
3. Examine carefully for cracks, cuts, dents and corrosion pits.
4. Swivel hooks should rotate freely. Nut securing hook to trunnion should be split-pinned or otherwise secured.
5. If swivel hook is welded in trunnion, check shank for excessive wear and the weld for deterioration.
6. Always mouse hooks unless fitted with safety catch. Make sure the catch operates freely.

Eye bolts

1. Examine for damaged threads. If in doubt, check with thread gauge.
2. Check thread. Only metric eye bolts in metric thread holes.
3. Shoulder or collar should be flat, free from damage, and at right angles to threaded portion.
4. Check that centre line of eye is central with threaded portion.
5. Examine for cracks, cuts, dents and corrosion pits.
6. Check eye for wear; if 1/10th or more of original diameter, destroy it.

NEVER USE HOME-MADE HOOKS OR EYE BOLTS

19. Shackles

1. Use the right type of shackle for the job in hand.
2. Check the safe working load of the shackle before use.
3. Don't use any shackle which is not marked with the safe working load.
4. Examine bow and pin for damage or distortion. Destroy if doubtful.
5. Check bow and pin for excessive wear. Destroy when wear is 1/10th or more of original diameter.
6. Make sure pin is free, but not loose, in tapped hole.
7. Threads should be undamaged and without flats or appreciable wear.
8. Check alignment of holes. The untapped hole should not be too large or worn.
9. When using a shackle with "nut and bolt" pin, the pin should be free to rotate when the nut is tight.
10. Sound shackles should have a clear ring to test, suspend and tap lightly with a hammer.
11. To prevent pins unscrewing, secure with a split pin if possible. Alternatively, mouse with spun yarn.
12. Don't use a shackle where the pin can unscrew by "rolling" under the load.

NEVER USE HOME-MADE SHACKLES

20. Abrasive Wheels

1. Wear goggles when using an abrasive wheel.
2. Adjust the guard to expose the minimum wheel surface necessary for the operation.
3. The speed of the machine must not exceed the maximum permissible speed of the wheel.
4. Adjust the tool rest as close as possible to the face of the wheel.
5. Keep your fingers below the tool rest level.
6. Take care work does not slip off rest.
7. Use the correct grade of wheel for the work in hand.
8. Keep the face of the wheel evenly dressed.
9. Never use the side of the wheel unless it is designed for it.
10. Do not exert heavy pressure on the wheel.
11. Run a replacement wheel for a full minute before using. Make sure everyone is standing clear during the test.
12. Stop the wheel when not in use.

**PROTECT YOUR EYES
FROM FLYING FRAGMENTS**

21. Cartridge Hammers or Rivet Guns

1. Read makers' instructions carefully before using a gun.
2. Before handling gun make sure it is NOT LOADED.
3. Load gun with barrel pointing in safe position - away from you.
4. Never place your hand over the end of the barrel.
5. Never walk around with a loaded gun - load at site.
6. Check material into which bolt is to be fired.
7. Allow at least 3 in. (76mm) from edges of concrete or brickwork.
8. Hold gun at right angles to the job when firing.
9. Wear goggles when using the gun.
10. In the event of a misfire wait a minute before unloading.
11. Keep the gun clean and well oiled.
12. Never leave gun loaded when not in use.

TREAT CARTRIDGE HAMMERS
WITH RESPECT - ALWAYS

22. Excavations

1. Always use ladders to get into and out of excavations. Don't climb on the timbering and never jump across.
2. Before digging, make sure that the location of water, gas, electricity and telephone services is known.
3. Keep spoil heaps well away from the edges of excavations.
4. Do not place materials, including tools, on or near the edges of excavations - remember the people working below.
5. Never work in an unshored excavation unless the slope of the sides is sufficient to prevent a dangerous fall of earth.
6. Always wear your hard hat when working in an excavation.
7. Remember to keep all gangways clear.
8. Do not drive vehicles close to or along the edges of an excavation.
9. If you are using a dumper to tip into an excavation make sure that stops are provided to prevent it overrunning the edge.
10. Barriers must be provided around any excavation deeper than 6'6" (1.980m) and they must be as close as practicable to the edge.

A CUBIC METRE OF EARTH WEIGHS AT LEAST
A TON - THE ONLY BODY THAT CAN SUPPORT A
TON OF EARTH IS A DEAD ONE

23. Fork Lift Trucks

1. Take the weight and test your steering before lifting a load.
2. Do not move with insecure loads.
3. Keep clear view and look in direction you are travelling.
4. Travel with load low and fully tilted back.
5. Travel at safe speeds consistent with conditions.
6. Stop and start smoothly.
7. Stop at face of stack and raise load to stacking height still tilted back.
8. Move load over stack, bring mast to vertical, and lower until forks are free of load.
9. Withdraw and lower forks just clear of floor before travelling away.
10. Descend slopes with load behind you.
11. Drive uphill with load in front of you.
12. When truck is to be left unattended set the parking brake with forks on the ground. Remove starter key.

LOOK OUT FOR PEDESTRIANS

24. Hoists

1. Never ride on materials hoists.
2. Never exceed the safe working load (SWL) of a hoist.
3. Landing place gates must be kept clear at all times except to allow the passage of materials or people, and always close landing place gates immediately after use.
4. Keep landing places clear of materials, tools and rubbish.
5. Do not operate a hoist unless you have been trained to do so.
6. Never place loose materials on a hoist platform unless it is enclosed or there is some other means of preventing the materials from falling.
7. Never allow unsecured trucks or wheel -barrows to be carried on a hoist and never allow loaded trucks or wheel-barrows to be carried on open platforms unless the load is secured.
8. Always position the handles of a wheel-barrow so that it can be removed at landing place without walking onto the hoist platform.
9. When signaling to the hoist operator, always make sure your signals can be easily seen or heard.

REPORT ALL DEFECTS IMMEDIATELY

25. Crane Drivers

1. Before starting see cab windows are clean and controls in neutral.
2. Test that safe load indicator is working correctly and that brakes are satisfactory.
3. Check all round visibility for possible hazards or obstructions. If overhead power lines are near ensure that current has been switched off.
4. Make sure that any load to be lifted is within the safe working limit of the crane, which must not be exceeded; lifting tackle is part of the load.
5. Work only on the signals of the authorized slinger or, where he cannot be seen, the signaler.
6. Loads must be straight lifted and not slewed over personnel. Loads must be correctly slung.
7. Loads must not be left suspended on the hook and they must not be dropped freely or snatch lifted.
8. Make sure cut-outs are working correctly but do not depend entirely on their automatic operation.
9. Make sure at all times that it is safe to commence lifting and personnel are clear of the load.
10. Where any doubt exists, test the load before making a lift. For unequal loads test for level slinging.
11. Avoid over winding or allowing the hoist rope to be run too far off the drum.
12. Comply with crane makers instructions and any additional ones issued by your company.

26. Compressed Air

1. Do not use compressed air for any other purpose than that for which it is intended.
2. Never direct compressed air at yourself to blow dust off clothes or hair. This can rupture your eardrums.
3. Do not clean down machines and benches with compressed air. Use a brush or special vacuum cleaner.
4. Horseplay with compressed air is FORBIDDEN. This can cause agonizing injury or death.
5. Make sure that your compressed air tool, hose and fittings are working properly. If not, report the fault to your supervisor.
6. When connecting a tool to the air line keep a firm hold on the tool in case it whips.
7. Before changing tools make sure that the supply line is closed or has an automatic shut-off valve.
8. Always close a hose by the valve. Never kink the hose.
9. Do not leave hoses lying around for others to trip over.

DO NOT MISUSE COMPRESSED AIR

27. Compressed Gas Cylinders

1. Treat every cylinder as “full” and handle carefully.
2. Always use a carrier and secure the cylinder into it.
3. Always secure acetylene cylinders in an upright position both in use and in storage.
4. Store ALL cylinders so that they cannot fall or roll.
5. Keep them away from sun, artificial heat, flammable materials, corrosive chemicals and fumes.
6. Avoid damage to valves and fittings. Do not use them for lifting or carrying.
7. Keep valves and fittings of oxygen cylinders free from oil and grease.
8. Do not use cylinders as rollers for moving equipment.
9. Open cylinder valves slowly, and close sufficiently to shut off gas - never use force.
10. Always lift cylinders from trucks - do not drop or slide them.
11. Keep hose lines clear of traffic lanes.
12. In case of fire keep cylinders cool with waterspray.

REPORT ANY DAMAGE
OR DEFECTS IMMEDIATELY

28. Oxygen

1. Oxygen is not a flammable gas, but it will enrich the air when released into it and cause combustible materials to burn.
2. Oxygen can cause oil or grease to ignite spontaneously, so these must not be used on threads or couplings on cylinders.
3. Do not handle oxygen cylinders, valves or any other fittings with greasy hands, gloves or rags.
4. Close down equipment when not in use to prevent tubes and regulators being under unnecessary pressure.
5. Do not store cylinders of oxygen and combustible gases together.
6. Cylinders, valves and outlets must not be damaged.
7. Do not use cylinders as rollers for moving materials or equipment.

OXYGEN MUST NOT BE USED TO:

8. Ventilate confined spaces.
9. Cool yourself down when hot.
10. Clear flammable or other vapors from containers or areas.
11. Remove dust from personal clothing.
12. Drive compressed-air tools.

COMBUSTIBLES OR CLOTHING
ENRICHED BY OXYGEN
WILL BURN LIKE A TORCH

29. Workshops

1. Keep overalls buttoned or fastened. Loose or torn cuffs are also dangerous.
2. Do not use petrol in open containers or mix it with other liquids for cleaning clothes or equipment. Always carry petrol in a safety can.
3. Clean up spilt oil or grease on the floor immediately.
4. Do not stand between two cars or a car and a fixed object while someone is at the wheel.
5. Parts, tools and other objects on the floor are hazards. Keep benches tidy too.
6. When using a pit, leave room at either end for emergency exit; when work is complete clean up and replace pit guards.
7. Vehicles jacked up or supported on chain falls must be securely blocked before working underneath.
8. Keep entire body under the vehicle when working. Do not leave creepers where someone can step on or trip over them.
9. Before working under a raised bonnet ensure it is properly supported and place chocks under front and rear wheels.
10. Keep hand tools in good condition and use the right tool for the job.
11. Only "approved" portable extension lamps or tools should be used. Leads must be sound and properly connected to plug, tool or lamp.
12. Do not try to lift or carry alone anything too heavy or bulky; get help.

30. Cleaning with Hot Water and Steam

1. Concentrate on your job and keep the jet directed towards the work.
2. Do not get a steam jet too close to the work because blowback steam can cause severe burns.
3. Take care not to squirt steam or hot water over your legs and feet. Wear your trousers over your boots and wear an extra-long waterproof apron.
4. Make sure that you know which valves operate the steam and water so that you do not turn the wrong one by mistake.
5. When using mixer valves start from cold and raise the temperature to that required.
6. Do not use a cold-water hose for steam or hot water.
7. Do not have a steam or hot water hose running unattended. It is not only wasteful, it is dangerous.
8. Never indulge in horseplay. Clothing is not protection against steam and hot water.
9. Make sure there is no-one near the area to be cleaned. If necessary place signs to warn passersby.

31. Dangerous Liquids

1. Don't touch - liquid may be HOT.
2. Don't touch - liquid may be ACID.
3. Don't touch - liquid may be CORROSIVE.
4. If you get burnt or splashed, flush copiously with cold water AT ONCE.
5. Don't smoke near it - liquid may be FLAMMABLE.
6. Don't smell it - liquid may be POISONOUS.
7. Don't drink it - liquid maybe POISON.
8. Always replace the stopper, cork or bung.
9. Wash spills and splashes away with running water.
10. Never add water to acid; always add ACID TO WATER.
11. Be especially careful with bottles which have LABELS MISSING.
12. Treat all liquids as DANGEROUS until you know they are safe.

IF YOU DON'T KNOW -
LEAVE LIQUIDS ALONE

32. Synthetic Resins, Glues and Lacquers

1. Dermatitis is a risk with epoxy and polyurethane resins. Instructions for use must be followed.
2. Exposed skin should be protected with a suitable barrier cream.
3. Any resin on the skin should be washed off at once, using a skin cleanser.
4. Solvents such as acetone should not be used for removing skin contamination.
5. Special detergent cleaners (not flammable solvents) should be used to remove partially cured resins from tools.
6. If hardener gets in the eyes, flush liberally with water and get medical attention.
7. Catalysts (hardeners) and accelerators should be kept in separate stores. These materials should never be mixed directly together.
8. Hardeners should be stored in vented containers away from flammable materials and any source of heat or ignition.
9. If paper cups are used for resin mixes, they should be destroyed to prevent further contamination, preferably by incineration.
10. Wooden stirrers should be used for mixing resin and hardener.
11. Surplus or waste catalyzed resin should be spread over a large safe area to harden before disposal.
12. Rags or mops used for wiping up spillages must be removed at once and burnt in the open.

33. Ionizing Radiations (Sealed Sources)

1. Protective equipment and film badge or dosimeter must always be worn.
2. Sources must not be handled with bare hands. Handling tools, clamps or remote-control devices must be used.
3. Only classified workers may enter radiation areas which must be isolated and warning notices displayed.
4. Sources not in use or transit must be suitably and securely stored.
5. Sources must be withdrawn from store only for the minimum time necessary and only by or under the supervision of an authorized person.
6. Sources must always be transported in their protective containers.
7. The amount of radiation to working positions must not exceed permissible levels.
8. Any useful beam must be directed away from adjacent occupied areas.
9. Any useful beam must be limited to the minimum necessary for the work.
10. Adjustments must not be made to radiographic equipment while such equipment is energized.
11. Report immediately any breakage of or suspected leakage from a sealed source.
12. If you think a source has been lost or mislaid, report the matter immediately.

34. Drivers and Plant Operators

The driver or operator is responsible for ensuring that his vehicle is in a safe condition for work, before use.

Every day, before starting work, drivers must check:

- brakes
- steering
- cleanliness of all windows
- condition and setting of mirrors
- tyres
- lights
- horn
- reversing signal
- seat belts
- windscreen washers and wipers.

Any defects must be reported to your supervisor.

During work the driver must:

- Operate at a safe speed consistent with road and weather conditions, and the road gradient.
- Always be alert for pedestrians particularly at blind spots.
- Always take care when starting off from a parked position.
- Never move off in reverse unless you are certain it is safe to do so, and that your reversing signal is operating.
- Always park your vehicle safely.
- Before leaving the vehicle:
 - switch engine off
 - disengage gears
 - apply parking brake
 - rest the bucket on the ground
 - park on level ground
 - pull back from vertical faces
 - do not obstruct access roads
- If a wheeled vehicle must be parked on a gradient - ****ENGAGE FIRST OR REVERSE GEAR - CHOCK THE WHEELS****
- Never carry any unauthorized passengers
- Take care when the vehicle is being towed.
- Wear your seat belts, where fitted.
- Mount and dismount carefully
- Ensure that there is sufficient overhead clearance.

35. Environmental Compliance

The Contractor will appoint a designated Site Safety Officer with an acting safety officer always appointed in his absence. Basic first aid training of these persons shall be required. There shall be a fully equipped First Aid Box at all work sites at all times and a list of local emergency telephone numbers in case of accident. Minor and major accidents shall be recorded in an accident log book.

Basic personal protective equipment (PPE) such as boots, hard hat and vest are to be worn at all times. Specialized equipment shall be worn in areas designated for their use for example when working alongside or over water, where there is a risk of drowning, the Contractor shall take appropriate measures to prevent falling (e.g. use of harnesses) and rescue equipment shall be readily on hand (e.g. use of life jackets, life lines/rings and a safety boat). At all times work sites shall be maintained in an orderly, safe and tidy state. Precautions against fire accident shall be taken and appropriate fire safety equipment supplied and clearly indicated at work sites.

The Client will inspect sites for compliance with approved working methods and contractual requirements. The Bahamas labour laws and occupational health and safety policies shall be applied at all times.

36. Site Emergency Response Plans

In the event of any emergency the Site Manager must be contacted to ensure the appropriate action is taken.

POTENTIAL EMERGENCY	WHAT TO DO?	RELEVANT AUTHORITIES & PERSONS
Injury caused by: <ul style="list-style-type: none"> • Fire • Explosion • Machinery accidents • Minor injuries 	<ul style="list-style-type: none"> • For serious injuries call an ambulance. You should also have the contact details of the nearest doctor, Medical Centre and Hospital. • Immediately inform the site First Aid Officer. • Follow the procedures as detailed in the Site Safety plan. • For major injuries contact the SM or PM 	<ul style="list-style-type: none"> • Emergency Services • Nearest Doctor • Medical Centre • SM • PM
Fire <ul style="list-style-type: none"> • Fire at the diesel tank • Fire at any of the machineries • Fire caused by vandalism 	Evacuate all personnel to a safe area immediately. <ul style="list-style-type: none"> • Call the Fire Department (Emergency Services). • If the fire is likely to damage neighboring property inform the adjacent residents. • Follow the procedures as detailed in the Site Safety plan. • For major fire emergencies, contact the Site Manager or Project Manager • Inform site security (Note: Fire Extinguishers are available).	<ul style="list-style-type: none"> • Emergency Services • SM • PM • Adjacent residents
Explosion	<ul style="list-style-type: none"> • Evacuate all personnel to a safe area immediately. • Call the Emergency Services immediately. • Contact the neighboring residents. • If utilities related, call the relevant service provider (e.g. BEC) • Follow the procedures as detailed in the Site Safety Plan • Contact the SM or PM 	<ul style="list-style-type: none"> • Emergency Services • Relevant agency or company • Site Manager • Project Manager • Adjacent residents
Spills Management, Contaminated Soils & Major Spills: <ul style="list-style-type: none"> • Spill or release of diesel fuel or oil • Spill or release of other hazardous chemicals or material 	<ul style="list-style-type: none"> • For major spills, (defined as a spill that is likely to have direct environmental consequences.) refer to Spill Plan in EMP. • Immediately call the Fire Department and notify SM. • Identify the source of the spill. 	<ul style="list-style-type: none"> • Emergency Services (fire department) • DEH • SM & PM • DEHS • ER

<ul style="list-style-type: none"> • Minor Site Spills • Acid Sulphate Soils 	<ul style="list-style-type: none"> • If the material is dangerous or unknown, evacuate the site immediately and notify all neighbors. • If it is safe, halt the source of the spill immediately. • Contain the spill and control its flow. • Block storm water drains downstream of the spill. • DEHS must be notified about any spills that are likely to threaten the environment. • Minor spills (defined as spills which can be contained and rectified correctly without the need of external services), shall be contained and rectified with the site spill kit and disposed of correctly. SM to be notified via incident report. • Where Acid Sulphate Soils are discovered, the spoils shall not be removed from site and subsequent notification & testing will follow. 	
<p>Heavy rainstorm, flood and hurricane</p>	<ul style="list-style-type: none"> • Contain/minimize the flow. • Contact SM immediately. • Investigate reasons for failure and prepare an incident report. (Refer to Hurricane Policy) 	<ul style="list-style-type: none"> • SM • PM • EM
<p>Rupture of Utility pipelines (water pipes, sewerage pipes, electrical pipes and cable pipes)</p>	<ul style="list-style-type: none"> • Contain/minimize the flow Contact Relevant Agency or company • Ensure all spilled materials are contained onsite or if running off site are directed through sediment control measures • Block storm water drains downstream of the spill. • DEHS must be notified about any spills that are likely to threaten the environment. 	<ul style="list-style-type: none"> • Relevant Agency or company • SM • PM • EM • Neighboring residents.
<p>Site security breach or public safety issue</p>	<ul style="list-style-type: none"> • Notify security and/or police immediately. • Where public safety issue exists, barricade to restrict egress and address issue immediately. 	<ul style="list-style-type: none"> • SM • PM

SECTION 9

USING THIS MANUAL

Introduction

The development and maintenance of a safe working culture can only be effective if everyone is included and actively involved. The use of “toolbox talks” is an invaluable means of involving those most at risk, the employees, sub-contractors and self-employed, without incurring any significant time or financial penalty.

Thus, the Construction Employers Federation have produced this “Toolbox Talks Manual” to assist companies, and in particular the likes of contracts managers, site managers, foremen, chargehands, etc., in implementing an efficient system of conducting regular toolbox talks with minimum effort, whilst hopefully achieving maximum gain.

Format

Whilst a standard format has been adopted throughout the toolbox talks contained in the manual, there remains considerable flexibility enabling users to adapt the content to their specific requirement.

The standard format used comprises the following:

- (a) A Talk Number and Title: Purely for reference purposes.
- (b) An introduction: A few lines that can be used to introduce the particular talk, most including why it is important.
- (c) Main points: Three to five primary points that it is recommended are included in the toolbox talk.
- (d) Discussion points: A list of other points to choose from. All can be covered and the format used like a script if required, or particularly relevant points can be selected. The site scale, activities and available time may determine the best option.
- (e) A quote: Each toolbox talk ends with a quick quote by way of summary. In the main, these are deliberately “catchy” in the hope that they will be remembered.
- (f) Notes: There is a space for individual notes, which can include specific site conditions and activities, site rules, company policy points, etc., as required.
- (g) The flip side of each toolbox talk has deliberately been left blank to allow for the inclusion of pictures if required. This will depend on individual approaches and requirements, but possibilities worth considering might include photographs of the effects of industrial dermatitis, good or bad scaffold, or types of fire extinguisher (though the latter may be better demonstrated by having the actual site fire extinguishers present!).

Frequency

Again, this will depend upon individual requirements and approaches, and also on the site conditions. On larger sites it may be necessary to give the same toolbox talk several times in order to ensure all sub-contractors etc, are addressed, or it may be more practicable to give the same toolbox talk at different locations on site, ie a different floor/level each day. On smaller sites, it may be simple enough to address all site personnel at once.

Whilst there is no set frequency or method, it is recommended that companies aim to give a toolbox talk to every employee, sub-contractor and self-employed person once a week. Ideally, where practicable, this should be implemented as a set routine, ie every Wednesday morning starts with a 10-15 minute toolbox talk.

CONSTRUCTION EMPLOYERS FEDERATION TOOLBOX TALKS SERIES

Which talks?

Included in the manual are toolbox talks covering most construction site activities, and there are sufficient, allowing for holidays etc, to give a different one each week for a year. Thus, if suitable, users can simply work their way through the manual for a year, and then start again! Alternatively, users can select talks based upon primary company or site activity, or maybe on areas of concern. Additional toolbox talks can also be added as and when r e q u i r e d .

Summary

Toolbox talks provide a convenient and effective method of communicating and reinforcing the safety message throughout the workforce, and, used properly, can significantly enhance the development of a safe working culture .

The cost of implementing a regular toolbox talk system is minimal, 10-15 minutes a week! The benefits will include greater awareness, with the potential to reduce accident rates, and possibly e v e n save a life.

The question is not “can you be bothered?” - it’s “can you afford not to be?”

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

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NOTE

These toolbox talks are provided purely for use as an aid in promoting safety awareness in construction. They are not a substitute for the statutory regulations and may not address all the safety issues on a specific site.

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 1	Title: EMPLOYEE'S DUTIES
-------------------	--

Introduction: Under Health and Safety legislation all have duties, including employees. You cannot comply with your duties unless you understand them, and a safe working environment cannot be properly maintained without employee co-operation.

Main points:

There are three main employee responsibilities:

- To co-operate with employers to help them comply with their legal duties, i.e. following safety procedures, site rules, etc.
- Not to interfere with or misuse anything provided for health and safety, ie discharging fire extinguishers, willful abuse of PPE, etc.
- To safeguard your own safety and that of others, including the public, who may be affected by your actions, i.e. by reporting or eliminating any hazards seen.

Discussion points:

- Importantly these duties are not confined to your specific activity or area, but to all site activities.
- Do not hesitate to tackle colleagues, or report to line management, wherever any unsafe activity, procedure or equipment is seen or suspected.
- Employ the “buddy buddy” system and look after your workmates as well as yourself.
- Site managers/foremen can only cover a limited area – employee awareness and assistance is vital if site health and safety is to be effectively maintained.
- Employees are the most likeliest to be injured.
- These duties include the wearing of provided PPE.

SAFETY IS EVERYONE'S BUSINESS – ESPECIALLY YOURS!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 2	Title: SITE HOUSEKEEPING
-------------------	---------------------------------

Introduction: The Construction (Health, Safety & Welfare) Regulations require that sites be maintained in good order. Poor housekeeping is a common, but easily preventable, cause of accidents.

Main points:

- There should be a place for everything, and everything should be in its place.
- Do not rely on others to clean up – they won't.
- Put tools away when not in use, as well as reducing a trip hazard it will keep them safe.
- If working with oils/lubricants then have some means of cleaning up any spillages at hand.
- Suspend power/light cables where practicable. Where not practicable avoid trailing them across walkways if possible.

Discussion points:

- Remove all nails from dismantled/unused timber – where not possible then hammer flat.
- Stack both stores and waste neatly – ensure that walkways/escape routes are not obstructed.
- Clean up waste as it is created; small waste can be bagged, larger waste stacked and then skipped as soon as is practicable.
- Use racks when storing lengths of pipe or timber. Where pallets are used then do not stack too high.
- If working at height then loose objects must not be left on walkways, platforms, etc, where they could fall and injure persons below.
- Beware muddy sites - these will greatly increase risk of slips. Keep footwear as clean as is reasonably practicable; ensure loose mud is removed prior to climbing ladders, etc.
- Try and allocate a set period each day to general housekeeping (possibly at the end of the day?)

**IF YOU THINK AND ACT SAFELY,
THE NEXT LIFE YOU SAVE COULD BE YOURS!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 3	Title: CLOTHING
-------------------	------------------------

Introduction: Suitable and sensible clothing is a pre-requisite of site safety and can provide effective protection against a wide range of hazards.

Main points:

- Wear head protection – it can save your life!
- Wear safety shoes/boots that provide protection to your toes and to the soles of your feet.
- Wear gloves where there is any risk to your hands.
- Wear hi-visibility clothing/vests – be seen.
- Keep clothing reasonably clean to protect against dermatitis, fire, etc.
- Avoid loose clothing – especially loose ends that can get in machinery, etc.

Discussion points:

- Skin cancer is deadly – keep skin covered when working in sunny conditions.
- Avoid exposed skin when working with substances such as cement, tar, insulation, etc.
- If clothing you are wearing becomes contaminated then remove it and get it washed.
- If working with hazardous substances consider use of suitable coveralls.
- Wear any PPE provided, and look after it so that it can look after you.
- Consider fire hazards: cotton burns easier than wool; is fire retardant clothing required?
- Jewellery, including rings, chains, etc, can be hazardous near machinery and when working on plant – consider taking off or taping up (also reduces wear and tear).
- Always dress properly, even for short jobs, and be prepared to swap or add clothing as required for specific tasks.

DRESSING SAFELY ISN'T BEING SILLY – IT'S BEING SENSIBLE

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 4

Title: EYE PROTECTION

Introduction: It only takes a small fragment or splinter to cause irreparable damage to the eye, but most risks can be significantly reduced, if not eliminated, by simply wearing suitable eye protection.

Main points:

- You have a legal obligation to use eye protection provided in accordance with the regulations, and you should never enter an area where eye protection is required unless wearing such.
- Ensure eye protection provided fits you comfortably and is suitable for the job.
- Look after any eye protection provided. Keep them clean and report any damaged, lost or unserviceable eye protection immediately.

Discussion points:

- Even if not carrying out a task with an obvious eye hazard, you may be at risk from others nearby. Always have your eye protection with you and if any doubt – wear it!
- Eye protection only works when worn over the eyes – it is useless worn over the head or around the neck.
- Never watch any welding processes unless wearing suitable eye protection.
- Should you get something in your eye, or receive any sort of eye injury, then get a trained first aider to look at it.
- Always consider eye protection when compressed air, hazardous substances, cartridge-fired tools, power tools, power washers, hand tools such as chisels, etc, are in use.

EYE PROTECTION IS REPLACEABLE – EYES ARE NOT!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 5	Title: EAR PROTECTION
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Introduction: Noise induced hearing loss is the most common occupational health hazard there is, and it is incurable. Once you're deaf, you stay deaf.

Main points:

- Compressors, concrete mixers, circular saws, breakers, etc, can all damage your hearing.
- You do not have to be using noisy equipment to be affected by it, just be in the vicinity.
- If you have to shout to be heard then the noise level can be regarded as high enough to warrant the wearing of ear protection.

Discussion points:

- Wear ear protection at all times when exposed to a noise hazard (obey noise hazard warning signs).
- Wear proper ear protection and wear it properly (ie cotton wool is no good for ear protection and ear muffs are no good worn over a balaclava).
- If ear plugs are used ensure they are a good fit, are fitted properly, and are kept clean.
- Use disposable ear plugs only the once.
- Keep reusable ear plugs clean.
- Ear muffs must be a good fit, particularly where the seal fits the head, and must be worn the correct way around.
- Ensure hands are clean when handling all types of ear protection, and store ear protection in a clean environment.
- Do not alter pressure of ear defenders by bending the band.
- Report any damaged, lost or unserviceable ear protection immediately.
- Consider options for reducing noise in the workplace, ie turn off unused machinery, keep cement mixer and compressor covers closed, ensure air lines do not leak, fit mufflers to tools where applicable, move noise source away, shield noise source, etc.

**YOU COULD PAY THE PRICE FOR GETTING IT WRONG
FOR THE REST OF YOUR LIFE!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 6	Title: SKIN PROTECTION
-------------------	-------------------------------

Introduction: Occupational dermatitis is a common health problem within the construction industry. Potential causes include cement, pitch, tar, paints, varnishes, brick, stone and plaster dust, mineral oils, organic solvents, thinners, petrol, and white spirit, to name but a few.

It most commonly affects the hands, forearms and legs, but in dust, mist and/or fume form it can also affect the face, neck or chest, etc, (any exposed area of the body). Some types of dermatitis, if untreated, can result in cancer.

Main points:

- Look for the hazard warning signs on substance containers.
- Avoid contact with potential causes so far as is reasonably practicable, where contact is unavoidable wear suitable PPE.
- Report any rashes, warts and/or skin complaints to the site manager, nurse or family doctor as soon as possible.

Discussion points:

- Get first aid for any cuts and grazes and keep them covered.
- Keep your workplace clean.
- Keep your skin clean and use after wash cream.
- Use barrier creams where appropriate.
- Don't use abrasives or solvents to clean your skin.
- Don't wear oil contaminated clothes next to your skin.
- Don't let synthetic resins or glue harden on your skin.
- Don't work with irritant/allergic substances if you suffer from eczema or allergic rashes.
- Regularly inspect your skin for any possible signs – if in any doubt seek advice from a professional.

**THE PURPOSE OF THE SKIN IS TO
KEEP THE OUTSIDE OUT AND THE INSIDE IN**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 7	Title: SUBSTANCE ABUSE
-------------------	-------------------------------

Introduction: Substance abuse includes alcohol and/or drugs. In a high risk industry such as ours, drink/drugs and work don't mix; both impact on brain function reducing levels of awareness and alertness, and slowing down reaction times.

Main points:

- If you are suspected of being under the influence of drink or drugs at work you will sent off site and face the possibility of disciplinary action.
- Ultimately you could lose your job, and a reputation of having a drink/drug problem could make finding other employment difficult.
- Those under the influence of drink or drugs are not only a risk to themselves but to every employee on site – do not let them put you at risk.

Discussion points:

- Don't get drunk the night before and expect to work safely on site the next day. Alcohol takes time to work its way out of the system. As a rough guide a single unit of alcohol (a single spirit or glass of wine, or ½ a pint of beer) will take one hour to leave your body.
- Be aware of the signs of drug use which include watery eyes, pin-point or dilated pupils, running nose, constant sniffing, tight lips, sores, ulcers, trembling, fatigue and irritability. If you see such signs then report it and help eliminate a serious risk – ignore it and it could be you that gets hurt!
- Be aware of prescribed drugs as well as illegal drugs. Some prescribed drugs can cause drowsiness, etc – be responsible. If you are on prescribed drugs advise your site manager.
- Confine your drinking to social occasions where there is suitable recovery time, and if offered drugs just say "no!". As well as creating a risk in the workplace, drink and drug abuse will damage your body.

**35% OF ALL FATAL ACCIDENTS ARE RELATED TO DRINK/DRUG ABUSE
– DON'T BECOME A STATISTIC!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 8	Title: WORKING AT HEIGHTS
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Introduction: Falling from height is the major cause of fatalities in the construction industry. More than half of falls from a height of over 2 metres result in death or serious injury. All such deaths and serious injuries are preventable.

Main points:

- Can work at height be avoided and the risk eliminated?
- Plan work at height to include safe access/egress, edge protection (for people and materials), PPE and suitable training as applicable.
- Any work above 2m requires guard-rails, intermediate guard-rails and toe-boards to be fitted.
- Where impracticable to fit guard-rails, intermediate guard-rails and toe-boards (short duration) then personal suspension equipment/fall arrest equipment must be utilised as required.

Discussion points:

- If roof work is involved identify any fragile areas and/or openings and implement suitable protective precautions.
- Access ladders must be secured and extend sufficiently beyond working platforms to allow for safe access/egress.
- Where access ladders run for more than 9m then suitable intermediate platforms must be provided.
- Consider weather conditions – wet, windy and/or icy conditions can have a serious impact on safety at height.
- Ensure operatives are suitably trained and physically capable for tasks being undertaken.
- If guard-rails, fragile surface covers, void protections, etc, are removed for any reason then they must be replaced as soon as possible, and in the interim should be physically guarded.
- Use crawling boards/roof ladders where applicable.

IT'S NOT THE FALLING THAT HURTS – IT'S THE LANDING!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 9	Title: SCAFFOLDING
Introduction: Falls of both persons and objects from scaffolding are a major cause of accidents in the construction industry, and in some cases the scaffold itself falls! All are preventable.	
Main points: <ul style="list-style-type: none">• Scaffolding must be planned according to requirements including loads, platforms, safe passage, access/egress, etc.• Scaffolding should only be erected, adjusted and dismantled by, or under the supervision of, a competent (properly trained) person.• Scaffolding must be maintained and this is the responsibility of all employees. Do not tamper with scaffolding and report any faults or concerns immediately.	
Discussion points: <ul style="list-style-type: none">• Safe access/egress must be provided, which will normally comprise ladders. These must be secured and extend sufficiently beyond platforms for safe mounting/dismounting. On no account should employees be climbing scaffold.• Scaffold platforms must be fully planked out where practicable, and should provide a passage for people of at least 600mm in width.• Where stores are stacked on scaffold platforms then consider load weights, ensure 600mm passage is maintained, do not stack materials too high, and stack near standards as opposed to centre of bays.• Over 2m in height then guard-rails, intermediate guard-rails and toe-boards are required.• Where guard-rails are removed to facilitate loading they must be replaced immediately – consider purpose built loading bays.• Scaffolding must be suitably tied to structures. On no account remove ties – get a scaffolder to do it.• Do not use incomplete or unsafe scaffolding – report it and get it signposted prohibiting use.• Scaffolding should be formally inspected after initial erection, after significant alteration, after any destabilising event, and at least once every 7 days. The findings should be recorded. <p style="text-align: center;">A HANGMANS NOOSE IS SUPPORTED BY A SCAFFOLD – ENSURE YOUR SCAFFOLDING ISN'T AS LETHAL!</p>	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 10	Title: MOBILE TOWER SCAFFOLDS
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Introduction: Mobile tower scaffolds provide a very useful and efficient working platform for numerous tasks when used properly. When misused, they provide a means of serious injury to both users and other employees.

Main points:

- Plan use of mobile tower scaffolds. Ensure SWL's are sufficient, that manufacturers guidelines are complied with, and that a competent person is available to erect, adjust and dismantle.
- Check all mobile tower scaffolds prior to use; check general condition, check brakes/locking devices are working, check free rotation of wheels, check all bracings are in place, check for suitable access/egress and for suitable platform.
- Where height exceeds 2m then guard-rails, intermediate guard-rails and toe-boards must be fitted (note this is a minimum requirement – recommended that they be fitted regardless of height).

Discussion points:

- Check manufacturers guide for base to height ratio. General rule is that the height should not exceed 3 times the narrowest base width, ie where narrowest base width equals 1.5m, height should not exceed 4.5m. (Note: this can be extended by use of outriggers.)
- Mobile tower scaffolds should only be used on level, firm surfaces. If surface is soft or not level then should only be used where adequate support is provided.
- Wheels should be locked whenever the tower is in use.
- Only integral ladders should be used – on no account rest ladders against outside, or use ladders off of mobile tower platforms.
- Ensure all persons and materials are removed from mobile tower scaffolds prior to moving, move by pushing at the base, avoid potholes/uneven surfaces, and beware of overhead obstructions – especially power lines!
- Mobile tower platforms should be fully boarded out where practicable - must be a minimum of 600mm wide.
- Consider tying the tower to structures where applicable.

**MOBILE TOWER SCAFFOLDS ARE AN ASSET – NOT A SHORTCUT.
NO JOB IS SO URGENT THAT IT CAN'T BE DONE SAFELY!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 11	Title: LADDER USE
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Introduction: Ladders are one of the most used, and abused, pieces of equipment on a construction site. When abused and misused, they have enormous potential to cause accidents and injuries.

Main points:

- Ladders are essentially a means of access/egress and should only be used as working platforms for very short duration tasks, where alternative platforms would be impracticable, and where such tasks can be carried out safely using a ladder.
- Only industrial class ladders should be used, which are in good condition (no missing/broken rungs, split stiles, etc).
- Ladders must be suitable angled (1 unit out for every 4 units up) and suitably secured (preferably tied off at the top using both stiles to prevent both sideways slip and rotation).

Discussion points:

- Ladders must extend sufficiently beyond working platforms to allow for safe access/egress.
- Ladders must not be painted (this hides defects), should be stored correctly, and be subject to regular inspection.
- Never take serviceability for granted, always carry out a visual check prior to use. Report any defects immediately.
- Never carry out home made repairs on a ladder, and never use a ladder with existing home made repairs, and never use a home made ladder!
- Always stand ladders on a firm base. Never use milk crates, oil drums, etc., to gain extra height, and if ground is soft use suitable support. Consider staking at bottom.
- Never use rungs as a support for planks, or rest rungs on planks.
- Remove excessive mud, grease, etc., from footwear prior to climbing/descending a ladder.
- Always use both hands to climb/descend, and face the ladder.
- Do not carry loads up ladders – use hoists or alternatives.
- Never over reach from ladders – get down and move them.
- Avoid using metal ladders against metal surfaces – the reduced friction makes them more liable to slipping.
- Beware of overhead obstructions, especially overhead power lines (metal ladders/metal reinforcements).

SILLY PEOPLE TAKE CHANCES – SENSIBLE PEOPLE TAKE PRECAUTIONS

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 12	Title: WORKING PLATFORMS
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Introduction: Working platforms can comprise of almost anything used to achieve your task. Primary examples include trestle platforms and stepladders, both of which are potentially hazardous if not used properly and safely.

Main points:

- Trestle platforms, stepladders, etc, should generally only be used for light, short-term work. Consider alternatives if this description doesn't apply.
- Only equipment designed for use as working platforms should be used as such. Makeshift platforms are generally unsafe and unnecessary.
- The minimum width of any working platform should be 600mm.
- Where 2m in height is reached then guard-rails, intermediate guard-rails and toe-boards must be fitted.

Discussion points:

- Ensure the surface upon which a working platform is to be erected is suitable, ie level and firm.
- Consider access to the working platform.
- Never "piggy back" trestle platforms.
- Only case hardened pins should be used in trestle bearers – not nails, brick ties, etc.
- Never balance trestles, stepladders etc, on breeze blocks, oil drums etc, to gain extra height.
- Do not use trestles, stepladders etc, on scaffolding, tower scaffolds etc, to gain extra height.
- When using stepladders check the rungs, stiles, hinges, and restraining ropes/chains prior to use – if defective then take out of service and report it.
- Stepladder rungs must not be used to support boards and create working platforms.
- Do not over reach when working from stepladders – get down and move them!
- Never use working platforms such as stepladders and trestles near to exposed leading edges, voids, risers, lift shafts, etc.
- Do not work more than two thirds of the way up a stepladder (remember handholds), and ensure they are fully extended prior to mounting.

CATS MAY HAVE NINE LIVES – YOU HAVE ONLY ONE!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 13	Title: ROOF WORK
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Introduction: Roof work is inherently hazardous and results in a significant number of serious accidents every year. Don't become a statistic.

Main points:

- Is it necessary to actually go on the roof? Are there alternatives such as tower scaffolds, mobile elevated work platforms (MEWPs), etc?
- A risk assessment should be carried out for every roof to be worked on.
- Only suitably trained operatives should be permitted to work on roofs.

Discussion points:

- A safe method of work must be agreed prior to any roof work commencing.
- Consider methods of access/egress – these must be safe.
- Suitable and sufficient edge protection must be provided to prevent falls of both persons and materials (scaffolding, guard-rails, etc) – physical protection!
- Hazard tape, rope etc, can only be used where employees are not going to go within 2m of a leading edge, opening, etc.
- Identify all openings and securely guard or cover them.
- Suitable crawling boards and roof ladders must be provided for sloping and/or fragile roofs (unless suitable battening is to be used).
- Where crawling boards are to be used for access/egress or used near leading edges/openings then guard-rails, intermediate guard-rails and toe-boards must be fitted.
- Where it is impractical to provide edge protection then safety harnesses must be worn and suitable anchor points utilised.
- Always consider the weather – wet, windy and/or icy conditions can seriously impact on roof work.
- Consider how you are going to get stores up (hoists, etc) and waste down (rubbish chutes, etc).
- Consider recovery procedures in the event of an accident, ie a person hanging from a safety line, getting a casualty down from the roof etc.

**PREVENTING AN ACCIDENT IS ALWAYS POSSIBLE
– REPAIRING A BROKEN BODY ISN'T!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 14	Title: USE OF HOISTS
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Introduction: Hoists are an excellent accessory when used properly. If misused, they can be extremely dangerous.

Main points:

- The erection, alteration and dismantling of hoists should be carried out only by suitably trained and qualified personnel.
- Hoists must be clearly marked denoting whether they are for personnel or materials use, or for both, and with the Safe Working Load (SWL).
- Hoists should be operated only by suitably trained and competent personnel.

Discussion points:

- Hoist towers must be suitably tied to the hoist structure.
- Passenger hoists must be fitted with interlocking gates at each landing space, and all gates must be kept closed when the hoist is in operation.
- Hoist design and construction should prevent the fall of any materials from any platform or cage.
- Hoists must be fitted with a braking device that operates in the event of a lifting gear failure.
- Such braking devices must be re-tested following any significant adjustment or alteration to the hoist.
- Personnel must never travel in hoists designed for material loads, and material loads must never exceed SWL's.
- Hoists must be subject to periodic thorough examinations by competent persons (in the case of personnel hoists this is at least every 6 months).
- A system of local interim inspections should also be carried out on a regular basis (weekly?) and the results recorded.
- Hoists must be suitably secured when not in use to prevent unauthorised use.

**IF YOU THINK SAFETY RULES ARE A PAIN
– CONSIDER THE PAIN OF AN ACCIDENT!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 15	Title: MOBILE ELEVATED WORK PLATFORMS
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Introduction: Mobile Elevated Work Platforms (MEWP's) are useful pieces of plant when used properly. However, they combine height with mobility and can be extremely dangerous if misused.

Main points:

- Ensure the correct MEWP is selected for the task (ground, height, SWL, etc).
- Only suitably trained operators can use MEWP's (must be trained for that specific item of plant).
- Continually monitor weather conditions.

Discussion points:

- Assess ground conditions (uneven surface could result in MEWP overturning).
- Check for overhead obstructions (especially overhead power lines) remembering height MEWP can be extended to.
- Beware of collision with other vehicles, plant, equipment, scaffold etc, be particularly aware when using near public footpaths and streets. Remember to allow for boom, arcs etc.
- Always check that the plant is stable prior to use, deploy stabilisers, outriggers etc, as required.
- Any tools, materials etc, taken on board must be secured so far as is reasonably practicable to ensure they don't fall from the edge.
- It is recommended that operators employ safety harnesses as secondary protection.
- Never exceed Safe Working Loads.
- When manoeuvring in tight areas or near public rights of way ensure a banksman/signaller is deployed.
- Consider refuelling options (LPG, Diesel, etc). Refuelling should take place in the open air where practicable, and the engine must be switched off.
- Any diesel spillages, etc, should be cleaned up immediately.
- MEWP's must be subject to thorough examinations at least once every six months, and should be subject to regular local inspections (weekly?) the findings of which should be recorded.

EVERY ACCIDENT IS OWNED BY SOMEONE SOMEWHERE

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 16	Title: USE OF ELECTRICITY
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Introduction: Electricity is silent, invisible, and potentially fatal, so it deserves the utmost respect. Never ever take electricity for granted, and never assume a circuit is dead.

Main points:

- The lowest practical voltage should be used on construction sites, which should not exceed 110v.
- Only suitable and authorised electrical supplies and equipment should be used, which should be installed and maintained by trained electricians.
- Suitable protection such as circuit breakers, fuses, and residual current devices, must always be used, along with the correct load ratings.

Discussion points:

- Electrical cables should be suspended where practicable to avoid damage and damp (which also reduces a trip hazard).
- Carry out visual checks of plugs, sockets and cables – if any damage is identified then remove from service and report immediately.
- Any cable joins must utilise proper connector blocks, not just insulating tape.
- Never use lighting sockets to power equipment.
- Ensure cables are long enough for the task – they should not be pulled taut.
- The inner insulation of cables should never be visible – the outer insulation should extend into plugs and equipment and fully utilise cable grips.
- Blown fuses should be replaced immediately – never make do with a “bodge” (note: if a replaced fuse immediately blows again then it is indicative of a problem requiring the attention of an electrician).
- For electrical maintenance work ensure the mains supply is disconnected.
- Never overload electrical sockets – one plug per socket!
- Where “emergency stop” switches are present ensure they are tested regularly.

**LIVE ELECTRICITY CAN EQUAL A DEAD PERSON
– ENSURE IT ISN'T YOU OR YOUR MATES!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 17	Title: PORTABLE ELECTRICAL APPLIANCES
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Introduction: Electrical appliances used on site are subject to harsh treatment and can easily become worn and/or damaged. They can then become lethal.

Main points:

- All portable electrical appliances should be subject to regular inspection and maintenance by a competent person (electrician).
- They must only be used at the correct voltages – this should be 110v maximum on a construction site.
- Visual checks of cables, casings and plugs should be carried out prior to use. If any damage is identified then remove from service and report immediately.

Discussion points:

- Check that suitable protection devices such as fuses, circuit breakers and residual current devices are in place, and that any fuses have the correct load ratings.
- Only use portable electrical appliances for the purpose for which they were designed.
- Ensure switches are working properly at the earliest opportunity (prior to starting the task).
- Disconnect power tools when not in use.
- All power tools must be properly earthed unless it is an approved type that does not require earthing.
- Use of portable electrical appliances will often require wearing of suitable PPE such as eye and/or ear protection – ensure you wear them as required.
- Never connect portable power tools to lighting sockets.
- Never use blunt, worn or damaged bits and accessories.

IT'S TOO LATE TO CARRY OUT BASIC CHECKS AFTER AN ACCIDENT!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 18	Title: WELDING OPERATIONS
Introduction: Welding is a multi-risk operation to both operatives and others in the vicinity that must be strictly controlled.	
Main points: <ul style="list-style-type: none">• Only trained operatives can undertake welding operations.• Welding operations will always require the wearing of suitable personal protective equipment.• Fire is an ever present risk when welding and suitable precautions must be taken.	
Discussion points: <ul style="list-style-type: none">• Infra red rays, visible light rays and ultra violet radiation are hazardous to the eyes and skin. Wear suitable skin and eye protection (basic eye protection will always be required, and normally filter protection will be required).• Consider the risks to other employees and provide suitable protection/procedures such as confining welding to specific areas, use of welding screens, etc.• Wear suitable clothing that covers bare skin and is flame resistant.• Welding and cutting produces fumes and gases that can harm the respiratory system (some fumes from lead or toxic coated materials can also affect the rest of the body) – wear filtered respirators for low volume work. Permanent welding locations should have local exhaust ventilation fitted.• Have CO2 or dry powder fire extinguishers at hand, check areas where welding operations have been undertaken at least 30 minutes after work has been completed for any residual fire risks.• Compressed gas cylinders pose a fire and explosive risk.• Ensure only the minimum number of cylinders are stored on site as are required, ensure they are stored upright, ensure flash back arrestors are fitted at cylinder gauge ends and non-return valves at inlets to the blowpipe, ensure valves are closed prior to moving.• The primary risk from electric arc welding is electric shock – check insulation, earthing, equipment condition and protective devices. <p style="text-align: center;">GLOVES AND MASKS PROTECT THE USER – SAFE SYSTEMS OF WORK PROTECT EVERYONE</p>	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No:	19	Title:	MANUAL HANDLING
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Introduction: Manual handling in construction is unavoidable, thus it is essential that it is carried out correctly to avoid both immediate and long term injuries.

Main points:

- The primary aim is to eliminate manual handling so far as is reasonably practicable (ie use mechanical handling).
- Where manual handling must be carried out then it must be assessed, and proper procedures must be used.
- Plan deliveries and storage to take into account load sizes, locations and distribution.

Discussion points:

- Assess all loads: are they heavy, bulky, unstable, difficult to grasp, sharp etc? Size up the load and, if necessary, make a trial lift by rocking it from side to side and then lifting it a few inches.
- Can you handle the load yourself or do you need assistance?
- Wear suitable clothing and PPE such as gloves and safety boots to protect against cuts, crushed toes etc.
- Is there sufficient space, suitable lighting and a clear route to where you are taking the load?
- Do not carry a load that will obscure your vision.
- If necessary move loads in stages.
- Always use a good handling technique:
 1. Stand reasonably close to the load, feet hip width apart with one foot slightly forward pointing in the direction you're going.
 2. Bend your knees whilst keeping your back straight.
 3. Get a secure grip on the load.
 4. Breathe in before commencing the lift.
 5. Carry out the lift smoothly using the legs to take the strain, keeping the back straight, chin up, and arms close to the body.
 6. Step off in the direction the advanced foot is pointing, keeping the load close to the body.
 7. If necessary, stop for rests en-route.
 8. Avoid any jerky or twisting movements.

**GET IT WRONG TODAY AND YOU COULD SUFFER THE CONSEQUENCES TOMORROW
– AND POTENTIALLY FOR THE REST OF YOUR LIFE!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 20	Title: SAFE STACKING ON SITE
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Introduction: Unsafe stacking can cause injuries as a result of collapse, or when materials have to be collected from stacks. In contrast, safe stacking not only reduces risk, but also enhances site efficiency.

Main points:

- Only stack materials in designated areas ensuring that escape routes, doorways etc, are not obstructed.
- Stack on level, firm surfaces, use packing where appropriate, and never stack materials higher than three times the base width.
- Make sure you wear suitable protective clothing such as gloves and safety boots, and use handling accessories as appropriate.

Discussion points:

- Use machinery where possible eliminating the need for manual handling. Where manual handling is unavoidable, carry out an assessment.
- Stack small pipes in racks, whilst large diameter pipes must be securely chocked at the base.
- Do not stack pipes in pyramids – they are not sufficiently stable.
- Large concrete rings must be laid flat so they cannot roll.
- Small sized timbers should be stacked in racks.
- Bearers should be used for larger timbers and joists – use cross packing to keep level.
- Where possible keep different length timbers in different stacks.
- Large prefabricated panels should be stacked flat or in suitable racks – they should never be leant against temporary structures, parts of buildings, or where the wind could affect them.
- Store bricks/blocks/palletted materials on level surfaces and ensure heights are controlled - only stack two packs high, and place upper stacks squarely on lower stacks.
- If banding is damaged or materials are displaced then do not stack other materials on top - where necessary make lower stacks safe.

**YOU WERE BORN WITH TWO ARMS, TWO HANDS, TWO LEGS AND TWO FEET
– LET’S KEEP IT THAT WAY**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 21	Title: USE OF CARTRIDGE OPERATED TOOLS
Introduction: Cartridge operated tools are potentially lethal if misused and should always be treated with respect.	
Main points: <ul style="list-style-type: none">• Cartridge operated tools, including rivet guns, should only be used by properly trained persons (those issued with a certificate of authority).• Read and understand the manufacturers instructions prior to use and comply with them at all times.• Before handling a gun, and before putting it away, ensure it is not loaded.	
Discussion points: <ul style="list-style-type: none">• Always load with barrel pointing in safe direction (away from you and not at anyone else).• Never walk around on site with a loaded tool/gun.• Never place your hand over the end of the barrel.• Ensure cartridges are suitable for material being fired into (no too powerful) – consider a test fire.• Beware of voids in material being fired into and allow at least 75mm (3”) from edges of concrete or brickwork.• Always hold gun/tool at right angles to material being fired into – ensure splinter guard is resting on surface.• Always wear suitable PPE (eye protection and ear defenders as a minimum).• In the event of a misfire wait one minute and try again. If still a misfire, then wait a further minute prior to unloading.• Keep guns/tools well maintained and clean – never leave a gun loaded.• Cartridges are explosives and must be strictly controlled (kept under lock and key, restrict issue, account for fired cartridges and ensure unfired cartridges are returned). <p style="text-align: center;">IT’S TOO LATE TO PLAN FOR SAFETY AFTER THE ACCIDENT HAS HAPPENED!</p>	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 22	Title: USE OF HAND TOOLS
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Introduction: Misuse and poor maintenance of hand tools result in countless injuries every year. Whilst many may be considered “minor” - all are avoidable by complying with relatively simple procedures.

Main points:

- Only ever use the right tool for the job.
- Maintain all tools in a serviceable condition – if unserviceable either repair or replace.
- Control/protect tools with obvious risks (Stanley knives, etc).

Discussion points:

- Use correct size spanners/sockets for nuts – if using adjustables, be extra cautious as these are more prone to slipping.
- Always keep hands behind cutting edges when working.
- Grind down mushroomed heads of chisels, punches, etc to prevent splinters flying off.
- Do not use screwdrivers as chisels – handles splinter.
- Replace split or damaged wooden handles – do not tape or wire up.
- Regularly check hammer heads, etc for security of fixings.
- All files should be fitted with suitable wooden handles.
- Where necessary use specialist tools (insulated screwdrivers on live electrics).
- Protect sharp edges/points of tools.
- Keep tools in toolboxes or racks when not in use.
- Where applicable ensure suitable PPE is worn (eye protection, gloves, etc).

**MINOR ACCIDENTS CAN RESULT IN MAJOR INJURIES
(A SPLINTER FROM A MUSHROOMED CHISEL HEAD CAN BLIND YOU!)**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 23	Title: FIRE SAFETY
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Introduction: Fire is a major risk both to persons and to property. You can either help prevent fires, or you can help start/allow them.

Main points:

- Ensure you are aware of the fire drill including the means of raising the alarm, escape routes, and the assembly point.
- Ensure you know where the nearest fire point is, what types of fire extinguisher are there, what types of fire they can be used on, and how they should be used (never put yourself at risk!)
- Never obstruct any fire points, fire doors or escape routes.

Discussion points:

- Never misuse or tamper with anything provided for fire prevention or fighting (never discharge fire extinguishers during horseplay).
- Don't hang clothing/materials over or near heating equipment.
- Control rubbish – don't let paper, rags, etc, accumulate.
- Store flammable liquids in suitable containers – well away from any sources of ignition, keeps lids on containers when not in use.
- Control smoking – use designated areas if necessary.
- Don't overload electrical sockets – one plug per socket!
- If electrical equipment is not in use then switch off at the mains
- Bitumen boilers, soldering irons, gas rings, etc., must be placed on non-combustible stands.
- Carry out residual heat checks 30-60 minutes after any hot work has been carried out.
- Always have a fire extinguisher within arms reach when carrying out hot work.
- Obtain hot working permits where applicable.

**FIRE DESTROYS PEOPLE AND PROPERTY
– SAFE PEOPLE PREVENT FIRES**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 24	Title: DEMOLITION WORK
Introduction: All demolition work carries an inherent risk, with primary hazards being falls and unplanned collapse.	
Main points: <ul style="list-style-type: none">• Structures for demolition must be fully assessed for services, hazardous substances/materials (ie asbestos), and design.• All demolition work must be suitably planned and method statements should be produced.• All demolition work must be supervised by a competent person.	
Discussion points: <ul style="list-style-type: none">• Never enter a building if it appears unsafe.• Select and use suitable plant (including protected cabs).• Wear PPE including head protection, safety footwear, gloves and eye protection. Respirators/dust masks should be worn where required (dusty conditions).• Only work from safe platforms (scaffolds, etc.) with safe access/egress.• Protect the public using suitable exclusion zones, keep footpaths and roads clear of debris, damp down dust, minimise noise, and store any hoardings/materials in safe locations inside the site.• Use banksmen for plant where appropriate.• Never demolish walls, floors, etc., adjacent to other workers.• Don't overload floors, supporting structures, etc.• When cutting steel secure gas bottles, ensure flashback arrestors are used, store any spare bottles in suitable compounds and protect hoses.• Ensure adequate fire fighting facilities are present.• Do not burn materials/rubbish on site (unless specific permission has been granted).• If in any doubt regarding procedures – ask! <p style="text-align: center;">SAFETY CULTURE IS WHEN PEOPLE ACT AND BEHAVE SAFELY – EVEN WHEN NO-ONE IS LOOKING!</p>	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 25

Title: EXCAVATION WORK

Introduction: Trenches are potential killers. The majority of fatal trench accidents occur where the depth is less than 1.5m. A cubic metre of earth can weigh over 1.5 tonnes – which will crush a man.

Main points:

- Prior to any digging carry out thorough checks for services.
- Plan excavations including shoring requirements, safe access/egress, etc.
- Ensure any support/shoring materials are present on site prior to commencing excavations.

Discussion points:

- Excavations must be supported/battered back where necessary to prevent collapse.
- Use ladders for access/egress – do not climb supports.
- Provide edge protection around excavations to protect other workers, the public, etc.
- Keep soil heaps, tools and vehicles back away from the edge of excavations.
- Never throw tools/materials into an excavation – always pass hand to hand or lower on a rope.
- Wear suitable PPE, including head and foot protection.
- Do not jump across excavations – provide suitable bridges where required.
- If vehicles are to be used to fill then position stops to ensure vehicles cannot drive into excavations.
- Never adjust/adapt supports/shoring without first getting approval from person in charge.
- Excavations must be inspected prior to entry, at the start of each shift, and after any destabilising event (including heavy rain).
- Excavations must be formally inspected by a competent person at least once every seven days and the results recorded.

**THE MESSAGE IS SIMPLE
– DON'T DIG YOUR OWN GRAVE!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 26	Title: USE OF LIFTING EQUIPMENT
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Introduction: Unsafe lifting practices result in numerous incidents every year, including serious and sometimes fatal accidents. Remember that lifting equipment now includes plant such as forklift trucks, telescopic handlers, MEWP's, hoists, gin wheels, etc, as well as cranes.

Main points:

- All lifting operations should be planned, and be supervised where applicable.
- Lifting equipment and accessories must only be used for the purpose for which they were designed (ie buckets are not designed for lifting persons).
- Lifting equipment and accessories must only be used by trained personnel or under strict supervision.

Discussion points:

- All lifting equipment must be marked with safe working loads (SWL's) which must never be exceeded.
- Beware of overhead obstructions such as overhead power lines.
- Use banksmen/slingers wherever applicable.
- Ensure all loads are stable and secure.
- Beware of weather conditions – especially wind conditions when using cranes.
- Ensure load is lifted off the ground, free, and correctly slung before hoisting.
- Always wear a safety helmet and hi-visibility vest.
- Never stand under a suspended load, and control movement under any such loads (exclusion areas).
- Use hand signals where applicable, using only approved code signals, ensuring they are clear and distinct.
- Use cranes to lift and lower loads vertically – never drag loads.
- If necessary attach tag lines to assist in stability.
- Lifting gear should be formally checked regularly, and visually inspected for any obvious damage prior to use.
- Riding on loads is strictly prohibited, as is riding in unauthorised positions on any lifting equipment.
- When using forklifts travel with the load in the lowest practicable position and don't raise it on the move.

**MURPHY'S LAW ONLY APPLIES WHEN YOU HAVE
FAILED TO PLAN PROPERLY**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 27	Title: USE OF LIFTING ACCESSORIES
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Introduction: Misuse and/or neglect of lifting accessories are a common cause of accidents, some of which prove fatal.

Main points:

- All lifting accessories should be marked with a safe working load (SWL) which must never be exceeded (note that some rope slings may not be marked but these should be accompanied by test certificate indicating the SWL).
- Only ever use the correct type of lifting accessories for the task in hand, and only ever use them in the manner intended.
- Visually inspect lifting accessories prior to use for any obvious faults – if in doubt do not use.

Discussion points:

- Never use fibre rope or wire slings for hot loads and protect them from hot work such as welding.
- Protect nylon and wire rope slings from sharp edges.
- Never tie a knot in a chain sling to shorten it or join pieces together to lengthen it, and ensure there are no kinks or twists prior to use.
- Don't lubricate chain slings – they then pick up abrasive materials.
- Use only approved "C" type hooks or those fitted with a working safety catch.
- Check splices, rings and thimbles on any slings, and check the bow and pin on any shackles (never use home made shackles).
- Land loads onto suitable bearers to avoid damaging lifting accessories and to assist in easy removal.
- Ensure your hands are clear of ropes and chains before the load is taken, and stand well clear.
- Ensure all lifting accessories are suitably stored when not in use – they should not be left laying on the ground where they can get damaged.

A CHAIN IS ONLY AS STRONG AS ITS WEAKEST LINK

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 28	Title: BANKSMEN/SLINGERS
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Introduction: The movement of loads around a site, whether by teleporter, crane or whatever, entails an element of risk. The use of banksmen/slingers can significantly assist in controlling these risks.

Main points:

- Any banksmen/slingers must be competent, ie must have received formal training.
- All lifting operations should be suitably planned prior to commencing.
- Ensure effective communications are in place.

Discussion points:

- Visually inspect all lifting gear daily – if in doubt do not use.
- Ensure safe working loads (SWL's) are always complied with.
- Establish communications with the crane driver where applicable – if you can't see him then use radios (ensure radios are fully charged before the start of shifts).
- When using signals then stand where you can clearly see the load, the crane operator can clearly see you, and make your signs clear and distinct using only the approved codes.
- Ensure you are aware of all relevant hazards on site including overhead power lines, excavations, etc.
- Always wear a safety helmet and hi-visibility vest.
- Always ensure crane hooks are centrally located over loads to reduce swinging when raised.
- Ensure loads are lifted off the ground, are free, and are correctly slung before hoisting.
- Use guide ropes to steady loads where applicable.
- When a crane is in operation, then concentrate on your task, do not become distracted, and on no account leave the area unless relieved by another competent person.
- If the crane is travelling, ensure you warn the driver of obstructions, sharp corners, etc.

REMEMBER: PEOPLE CAUSE ACCIDENTS - NOT EQUIPMENT!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 29	Title: USE OF ABRASIVE WHEELS
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Introduction: Misuse of abrasive wheels continue to result in accidents, often because the wrong type of wheel is fitted.

Main points:

- Wheels must only ever be fitted/replaced by a competent person.
- Machine speeds must never exceed the maximum permissible speed of the wheel.
- Eye and ear protection should always be worn.

Discussion points:

- Don't exert heavy pressure on wheels.
- Don't use the sides of wheels.
- Keep fingers clear of cutting edge of wheel.
- Ensure any guards are always correctly fitted and used – the minimum wheel surface required for the task should be exposed.
- Be aware of other workers in the area – do not expose them to risk.
- Adjust tool rests to be as close as possible to the face of the wheel.
- Only reinforced discs should be used on hand held machines.
- Run replacement wheels for a full minute prior to using them ensuring you stand well clear.
- Always stop wheels when not in use.
- Keep the face of the wheel evenly dressed.
- Visually check wheels before use for any obvious faults – if in any doubt get verification.

PPE IS NO SUBSTITUTE FOR A SAFE SYSTEM OF WORK

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 30	Title: CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH)
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Introduction: Many hazardous substances are used in the construction industry. Ignoring a hazardous substance today is something you may regret tomorrow.

Main points:

- COSHH assessments must be carried out with the aim of elimination, substitution and reduction of exposure to hazardous substances.
- Any substance that has a hazard warning label has the potential to do harm – assess the risks before you use it.
- Employees must use hazardous substances as directed, following the required safety precautions, and using the required PPE as applicable.

Discussion points:

- Store hazardous materials in suitable containers, ensuring only as much as is needed is in the workplace, and that lids are replaced when not in use.
- Read labels on containers – if no label then do not use!
- Know the correct precautions and control measures.
- Avoid all unnecessary contact with hazardous substances.
- Know where the first aid and washing facilities are on site.
- Always wash hands after use, and do not eat, drink or smoke when handling hazardous substances.
- Ensure there is adequate ventilation when using hazardous substances.
- Never mix hazardous substances unless you are sure of what you are doing.
- Never expose other employees to fumes, dust, gas or any other dangers from hazardous substances.
- Don't store hazardous substances above head height.
- Always clean up any spillages, dispose of hazardous waste properly.

**IF A DUST, FUME OR VAPOUR MAKES YOU COUGH,
CATCH YOUR BREATH, OR GIVES YOU A HEADACHE
THEN IT'S A SUBSTANCE HAZARDOUS TO HEALTH**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 31	Title: VIBRATION
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Introduction: Vibration can cause serious and disabling injuries, but many operatives are unaware of the risks. Many construction tools can cause vibration including road breakers, chainsaws, percussive hand tools, rotating hand tools, riveting guns, etc.

Main points:

- Reduce the potential for vibration by careful selection of work equipment (ie use those with vibration absorbing features).
- If using work equipment that causes vibration, then plan the task so that it is broken up with other activities, or rotate the task amongst several employees.
- If you think you are suffering from the effects of vibration, then stop the activity immediately and speak to your supervisor. If necessary, seek medical advice.

Discussion points:

- Vibration can affect the whole body, but more commonly affects the hands and arms.
- The first signs may simply be a tingling in the fingers, but can also result in fatigue, irritation and loss of concentration – thus increasing the general risks to safety at work.
- Longer term effects can include damage to blood vessels, nerves, muscles, tendons and body organs, and potentially lead to “Vibration White Finger” (VWF).
- Always wear adequate clothing to keep dry and maintain hand and body temperatures (cold is a contributory factor to VWF) – note that heavily padded gloves do not protect against vibration and can even increase vibration levels.
- Always let the work equipment do the work for you. Grip the handle as lightly as possible whilst ensuring sufficient grip is maintained for safety.
- Do not use blunt tools – keep tools sharp and use the right tool for the job.
- Note that nicotine reduces the blood supply to hands and fingers, so if you are a smoker, you are at increased risk of VWF.

**PREVENTING EXPOSURE IS RELATIVELY EASY
– CURING VIBRATION WHITE FINGER IS NOT!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 32	Title: HIGHLY FLAMMABLE LIQUIDS
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Introduction: Highly Flammable Liquids (HFL's), including petroleum based adhesives, are used extensively throughout the construction industry and carry with them the risk of fire, serious accidents and injury.

Main points:

- Always look for the hazard symbol and wording on containers.
- Only ever have the minimum quantities at the place of work. Keep the remainder in suitable stores.
- Always keep the lid on containers when not in immediate use, and store correctly.

Discussion points:

- Always follow the manufacturer's instructions.
- Keep away from open flames and sources of heat (HFL's ignite at relatively low temperatures).
- Do not smoke in areas where HFL's are used or stored, and do not use equipment which generates heat and/or sparks (including electrical sparks).
- HFL vapours are generally heavier than air and will accumulate at ground level if they cannot disperse. Beware of drains, excavations, pits, etc, both when using and storing HFL's.
- HFL vapours can also be toxic, make you drowsy, etc. Only use in well ventilated areas, or, if this is not possible, respiratory protective equipment may have to be worn.
- HFL storage should comprise containers made of non-flammable material (don't forget the vapour hazards – ensure there is ventilation).
- Clear up any spillage immediately and safely dispose of contaminated cleaning materials. If inside a building, consider assisting vapour dispersal by opening windows, doors, etc.
- Consider covering drains to protect against entry by substance or its vapour where necessary and practicable.

**IF YOU IGNORE HEALTH AND SAFETY
THE NEXT PERSON YOU INJURE COULD BE YOU!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 33	Title: USE OF COMPRESSED GASES
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Introduction: Compressed gases, including Liquefied Petroleum Gas (LPG), are used extensively on construction sites and provide a valuable source of energy. Misuse, however, can result in fires, serious accidents and injuries.

Main points:

- Treat all cylinders as full.
- Regularly inspect hoses, cylinders and valves for damage and wear and tear.
- The likes of Oxy/Acetylene cylinders should only be used by competent persons.

Discussion points:

- Keep cylinders away from the sun, artificial heat, flammable materials, corrosive chemicals, etc. Do not smoke in vicinity.
- If a cylinder catches fire, then call the fire brigade. Cool the cylinder with water spray only if safe to do so.
- Always have fire extinguishers located within reasonable proximity to any hot work being carried out. Use hot work permits if appropriate.
- Ensure everyone knows fire procedures including alarm signal, evacuation routes, assembly area, and correct use of fire extinguishers (including types!)
- Avoid damage to cylinder valves and fittings. Don't use them as carrying aids. Open valves slowly and close sufficiently to cut off gas supply – do not use excessive force.
- Always secure acetylene cylinders in upright position. Ensure all cylinders are stored so that they cannot fall or roll.
- Consider manual handling of cylinders – they are heavy! Use a trolley for full size cylinders or get assistance.
- Always unload cylinders from lorries, vans, etc, by lifting – not by dropping/sliding.
- Transport cylinders in vehicles with good ventilation – ensure relevant signs (compressed gases) are clearly displayed on vehicles.

**PEOPLE CAUSE ACCIDENTS – NOT EQUIPMENT!
LPG AND COMPRESSED GASES ARE VALUABLE “TOOLS”
– BUT CAN BE LETHAL IF NOT USED CORRECTLY**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 34	Title: LEPTOSPIROSIS (WEIL'S DISEASE)
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Introduction: The presence of rats on construction sites should be discouraged so far as is practicable, but to some extent can be unavoidable, and carries with it the risk of Weil's disease. The risk exists even where rats are no longer present, but were prior to work commencing, as the organism is carried in rats' urine.

Main points:

- Discourage the presence of vermin by disposing of waste food, etc, properly.
- Do not handle the carcasses of dead rats, etc, found on site.
- Always wash your hands and forearms using hot water and soap. If clothing is contaminated then bag it and wash it.

Discussion points:

- The leptospirosis organism contaminates humans by entering broken skin, or by passing through very thin linings such the eye, ear, nose, throat, anal and vaginal areas. Cover up any cuts and abrasions with waterproof dressings where there is any risk of rats. If you cut yourself whilst at work, get it treated by a doctor/nurse.
- Consider the use of suitable PPE to assist in protection (ie coveralls).
- Leptospirosis starts as a mild disease but becomes serious if left untreated, and can be fatal.
- Unfortunately the signs and symptoms are very similar to flu. If you have been exposed to the risk of leptospirosis, then advise your doctor – a simple blood test can quickly confirm either way.
- The greatest risk is to those working near water, who should consider carrying a card or tag warning of risk from the disease.
- Remember that if you fall into infected water, you run the risk of contamination via water getting into your nose, ears, mouth, etc. If in doubt get it checked.

IT CAN'T HAPPEN TO ME? YES IT CAN!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 35	Title: GENERAL SITE PLANT AND EQUIPMENT
Introduction: Site plant and equipment comes in many forms. It can be static or mobile, and can range from dumper trucks to welding sets. Whilst all such plant is beneficial to construction work if used correctly, it can pose a hazard if used incorrectly, and misuse can result in serious injuries.	
Main points: <ul style="list-style-type: none">• Operators of power operated plant and equipment must be trained in its use.• All such plant and equipment must be maintained in safe working order, and subject to formal inspection where applicable.• All safety aids, such as guards, must be used.	
Discussion points: <ul style="list-style-type: none">• Familiarise yourself, and comply with, manufacturer's instructions.• Consider any risks to other employees nearby when using plant and equipment.• Carry out visual checks for any obvious damage/defects prior to use – if in doubt, do not use, but advise your supervisor.• Control access/use of plant and equipment – never leave unattended/unsecured.• Do not carry passengers on plant unless it is designed for such.• Consider use of banksmen when reversing, etc, always comply with site speed limits, one way routes, etc.• Consider exhaust emissions – do these need to be vented out?• Consider use of barriers/exclusion zones to protect others from risks.• Route electrical cables so that they are protected from damp and damage (suspend).• Lock off/chock wheels where applicable (mobile tower scaffolds, etc).• Ensure any warning devices (lights, audible, etc) are functioning correctly.• Ensure any safety limitations are clearly displayed (SWL's, maximum speeds, etc).• Wear appropriate PPE where applicable. <p style="text-align: center;">PREVENTING AN ACCIDENT IS ALWAYS POSSIBLE – MENDING BROKEN LIVES AND BODIES IS NOT!</p>	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 36	Title: SITE WELFARE
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Introduction: Adequate welfare provisions should be available on all sites, not just for the relative comfort of employees, but to encourage good hygiene practices and to help prevent occupational health diseases such as dermatitis.

Main points:

- There should be sufficient toilets, wash basins and rest facilities on site to cater for the maximum number of employees.
- All such facilities must be maintained to a reasonable standard.
- Water facilities must include hot and cold or warm water for washing, and a suitable supply of drinking water that should be sign-posted where applicable.

Discussion points:

- Employees are as responsible as employers for maintaining welfare facilities in a reasonable condition. Leave them as you would wish to find them - do not abuse them, and inform your supervisor if they are unsatisfactory.
- Washing facilities must be in reasonable proximity to toilets and to canteen areas.
- Soap and drying facilities should be provided at wash basins.
- Rest areas should be arranged to protect non-smokers from the effects of cigarette smoke.
- If food is provided on site it must be stored, handled and prepared in a hygienic manner.
- Where cookers/microwaves are provided for site use, ensure they are maintained in a reasonable and clean condition, and ensure all food is thoroughly cooked.
- Dispose of waste on site carefully, especially food waste which can attract vermin.
- Always wash your hands prior to eating/drinking on site.
- Suitable storage areas should be provided for PPE and for "street" clothes as applicable.

**ON SITE HEALTH AND SAFETY IS THE RESPONSIBILITY OF ALL –
TEAMWORK IS REQUIRED IF GOOD WELFARE FACILITIES
ARE TO BE MAINTAINED.**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 37	Title: SITE SECURITY
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Introduction: Construction sites attract children looking for adventure, and thieves looking to steal plant and equipment. It is important, therefore, that sites are made secure in order to protect the public, who will not be as aware of the dangers of a construction site, and to protect site materials.

Main points:

- The law effectively gives trespassers the right not to expect to be put at risk if they enter a construction site. This particularly applies to children.
- Visitors are entitled to a safe environment and they should not be exposed to risk when on a construction site.
- Site security should ensure that no-one can access the site when occupied without authorisation, and when not occupied without having to clearly commit trespass.

Discussion points:

- Sites should be fenced all around with recognised access points, and signs should be displayed warning that it is a construction site and that entry is prohibited.
- Plant and equipment should be locked away out of sight where practicable, and disabled/secured in situ where not practicable.
- Never leave keys in any plant when unattended.
- Hazardous substances on site that may be readily familiar to site employees can pose a serious risk to unauthorised persons who have not encountered them before – lock them away.
- Consider methods of access control based upon the scale and type of site (this may comprise a simple sign telling persons to report to the site manager, or could be a manned access point – note this may also provide a method of monitoring who is on site for emergency purposes).
- Remove ladders from scaffolding, walls, etc, or board up at the end of each working day.
- Whilst trespassers, including children, should be challenged and either escorted off site or introduced to the site manager, avoid putting yourself in a position where you could be accused of assault.

SILLY PEOPLE TAKE CHANCES – SENSIBLE PEOPLE TAKE PRECAUTIONS!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 38	Title: DUST AND FUMES
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Introduction: Exposure to dust and fumes should be prevented where practicable, and must at least be controlled. Breathing in dust and fumes can have both acute and chronic effects, and can cause long-term health problems.

Main points:

- Dusts arise from cutting, sanding and grinding operations, and can also be found when working with old lead pipes (lead oxide dust) or stripping out fibrous insulation (a prime, and very dangerous example being asbestos).
- Fumes arise from a wider source of origins including welding operations, use of hazardous substances, heating metals such as lead, burning off old paints, etc.
- The effects vary greatly, but examples of potential hazards include lung disease from silica dust as a result of cutting/scabbling concrete, cancer from cutting/sanding hardwood dust, metal fume fever from welding fumes, and lung cancer/asbestosis from exposure to asbestos, to name but a few.

Discussion points:

- Where practicable, plan operations/tasks to eliminate exposure to dust and fumes.
- Where elimination is not practicable, then exposure to dusts and fumes must be controlled.
- Use tools with dust extraction systems if possible.
- Consider the use of portable extraction equipment.
- Consider use of local exhaust ventilation where practicable.
- As a last resort use personal protective equipment/respiratory protective equipment. Ensure it is suitable and that you know how to use it properly, and how to maintain it.
- Always remember other workers in the area – they may also require protection.

**YOU CAN LEAVE A DUSTY PLACE ANYTIME
– BUT ASTHMA LASTS FOREVER!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 39	Title: UNDERGROUND SERVICES
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Introduction: There continue to be numerous injuries, and several fatalities, every year as a result of contact with underground services.

Main points:

- Ensure that as much research as possible is carried out to identify underground services prior to any work commencing (existing plans, service authorities, etc).
- Clearly mark potential locations of underground services.
- Employ safe digging techniques wherever underground services are suspected.

Discussion points:

- Ensure all employees are aware of actions to be taken in event of discovering possible services.
- Remember that gas is both inflammable and explosive. If any gas leak is suspected, leave the area and call the gas and emergency services (do not smoke in vicinity!).
- Beware that modern house mains are often smaller diameter plastic pipes – do not confuse with electric cables!
- Follow gas company specifications for back-filling.
- Beware when working with water mains; remember that water at high pressure can cause serious, and even fatal, injuries, and that a burst water pipe can fill an excavation very quickly. Contact the water services immediately if water pipes are damaged.
- Ladders should be provided for access/egress to excavations containing water pipes.
- Don't leave lengths of pipes unsupported, and don't drop tools/equipment onto exposed pipes.
- Be especially aware if foul sewers are damaged as they carry specific health hazards – evacuate immediately and contact the water company.
- If you have to work in or near foul sewers, then wear PPE to protect against sewage, and wash hands before eating, drinking or smoking.
- If you break a stormwater sewer when rain is falling, then evacuate as it could flood without warning.
- Remember buried service colour coding:
 - Black or red: Electricity
 - Blue: Water
 - Yellow: Gas
 - Grey or white: Telecommunications
 - Green: Cable television

NO-ONE IS ACCIDENT PRONE – THEY'RE JUST POORLY PREPARED!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 40	Title: ROAD/STREET WORKS
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Introduction: Many accidents occur at roadsides every year, most of which could be avoided with the implementation of safe working procedures.

Main points:

- Suitable warning signs should be displayed and correctly positioned.
- Traffic control must be implemented to meet the site requirements.
- Use a safety zone wherever practicable.

Discussion points:

- Cone off a tapered lead in zone to control traffic.
- Ensure barriers are erected around excavations, and that lighting/warning lights are used at night.
- Ensure a suitable pedestrian route is maintained – if necessary re-route.
- Clean any excess mud/debris off the road so far as is practicable.
- Beware of work activities that create dust or debris that may impact on vehicular or pedestrian routes.
- Position plant and equipment so that no part of it infringes on the safety zone, and do not store any materials or equipment in the safety zone.
- Consider and organise site traffic access/egress.
- Wear safety helmets, hi-visibility vests and safety footwear.
- Do not enter the safety zone unless specifically required and authorised to do so.
- In the summer consider protection against the sun.
- Consider precautions for working in excavations, underground services, etc.

**IF YOU THINK SAFETY IS EXPENSIVE OR TIME CONSUMING
– TRY THE COSTS OF AN ACCIDENT!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 41	Title: ACCIDENT PREVENTION
<p>Introduction: Whilst overall accident statistics indicate a general reduction, the construction industry remains the exception by showing an increase. It is essential that all personnel contribute in every way possible to reduce accident rates in construction.</p>	
<p>Main points:</p> <ul style="list-style-type: none">• Equipment does not cause accidents – people do!• Every accident is owned by someone somewhere!• It's too late to plan for safety after an accident has happened! <p>Discussion points:</p> <ul style="list-style-type: none">• Accidents are caused by:<ul style="list-style-type: none">a. People not thinking, not following instructions, or not putting their training into practice.b. Unsafe manual handling, loading, stacking and storing of materials.c. Overloading of platforms, scaffolds, hoists, plant, etc.d. Incorrect use and abuse of plant and equipment.e. Use of faulty equipment and “homemade” repairs.f. Illegal adaptations and illegal removal of guards/barriers.g. Failure to use PPE and ignoring safety signs/warning devices.• The costs of accidents include pain, suffering, ongoing disability, and potential fatalities. Can also result in loss of earnings, incapacity for the job, inability to support family, etc.• Employers face financial and time costs in compensation, loss of working time, lost management time during investigations, possible fines, etc.• Help prevent accidents by:<ul style="list-style-type: none">a. Not removing any guards/barriers.b. Not handling hazardous substances without knowing the hazards.c. Not using plant and equipment unless suitably trained.d. Always complying with laid down procedures.e. Always wearing suitable PPE as applicable.f. Not engaging in horseplay where it could result in hazards.g. Not misusing/abusing any equipment provided for safety.h. Not using any defective equipment/plant, and not carrying out “homemade” repairs.i. Employing good hygiene standards.j. Using the correct tools for the job.k. Obeying site safety rules and signs. <p style="text-align: center;">BE THE “EYES AND EARS” FOR SAFETY ON SITE AND REPORT ANY HAZARDS TO SUPERVISORS IMMEDIATELY!</p>	
<p>Notes:</p>	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 42	Title: USE OF CHAINSAWS
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Introduction: Chainsaws are increasingly used within the construction industry, often in a manner for which they were not originally designed. They are particularly dangerous and can cause serious injury, even in the hands of a trained operator.

Main points:

- All chainsaw operators should have received formal training.
- Chainsaw operators should wear suitable PPE.
- Chainsaws should be maintained in a serviceable and safe condition.

Discussion points:

- Before using a chainsaw carry out the following checks:
 - a. Check guards are in place, in good condition and secure.
 - b. Check chain brake operation.
 - c. Check security of casing and all nuts and screws.
 - d. Check throttle and interlock for serviceability.
 - e. Check chain sharpness, tension and freedom of movement.
 - f. Check chain lubricating reservoir – top up if required.
- Ensure you have all the required PPE and that it is serviceable. This should include leggings.
- Always engage the chain brake and place on a secure surface clear of any obstructions before starting the chainsaw.
- Never make adjustments to the chainsaw whilst it is running.
- Maintain a firm grip, using both hands, on the chainsaw when in operation, and aim to complete cuts at full throttle where practicable.
- If you have to stage cuts, take extreme care when re-entering the previous cuts.
- Always beware of the timber closing in on the saw cut and pinching the chain.
- Never place any part of your body in the saw's line of cut.
- Before moving with the chainsaw, switch it off, apply the chain brake, and fit the scabbard over the chain. Carry by front handle with chain facing rearwards.
- Refuel chainsaws in well-ventilated areas and at least 3 metres away from where you are going to use the chainsaw (wipe up any spilt fuel). Do not smoke and ensure no naked flames are nearby. Check for fuel leakage and ensure fuel cap is correctly replaced.

**WE WERE GIVEN TWO ARMS, TWO HANDS AND TWO LEGS –
LET'S KEEP IT THAT WAY!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 43	Title: WORKING NEAR WATER
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Introduction: Most drowning incidents occur in inland waters and involve males. Most causes relate to bravado, foolishness and/or lack of safety awareness.

Main points:

- Drowning can occur in relatively shallow water, and can also occur in other liquids.
- The primary aim should be to prevent persons from falling in the first place. Prevention of drowning is the secondary aim!
- Never work alone near water – always employ the “buddy buddy” system.

Discussion points:

- All working platforms near water must be properly constructed including the required guard-rails and toe-boards. Consider securing boards where water or high winds could affect them.
- All ladders must be firmly secured.
- Ensure there is clear passage on all platforms and access/egress routes.
- Safety harnesses should be employed where applicable.
- If lighting is supplied for night work, note that it should be able to take in the surface of any water that an employee could fall in to.
- Ensure pontoons are properly loaded, stable, and securely moored.
- Where applicable only ever embark at suitable landing places.
- Never work alone, always work in at least pairs, and continually check on each other (never rely on a “shout” as an indication of someone falling – it may not happen or you may not hear it).
- Know how to raise the alarm and know the location of rescue equipment.
- If there is a risk of falling in, then wear a life jacket or buoyancy aid (note that a life jacket will automatically turn an unconscious person face up in the water – a buoyancy aid will not!)
- Ensure all rescue equipment is regularly inspected and maintained (visual check at the start of each shift).
- Where safety boats are provided, they should be continuously manned by a competent (trained) person.
- Know the emergency drills.
- Be aware of dangers from Weil’s disease (leptospirosis).

TIME SPENT NOW ON SAFETY COULD SAVE A LIFE LATER!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 44	Title: WORKING WITH ASPHALT/BITUMEN
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Introduction: Working with asphalt and/or bitumen often carries a double risk. A primary risk from working with hot materials, and a secondary risk from the location – roads and roofs!

Main points:

- Plan tasks using asphalt and/or bitumen taking into account the local environment (roads, roofs, etc).
- Only trained personnel should carry out such tasks (or trainees under supervision).
- Apply hot work precautions including PPE, fire appliances, after work checks, etc.

Discussion points:

- Areas where asphalt/bitumen work is to be carried out should be fenced off to prevent access by other employees and/or the public. Where applicable, traffic control will need to be deployed.
- Signpost the type of work in hand (particularly when asphaltting).
- Ensure suitable PPE is available, serviceable, and used!
- Wear hi-visibility vests when working on or near roads.
- Have suitable and serviceable fire extinguishers within arm's reach. Ensure all know how to use them.
- Have a first aid kit within reasonable access. Ensure basic treatment for burns is known.
- Ensure asphalt/bitumen pots are serviceable and, in particular, that taps are working.
- Avoid the need to carry hot asphalt/bitumen over any distance so far as is reasonably practicable.
- Carry out checks 30 minutes after hot work has been completed for any residual risk.

GOOD QUALITY PROMOTES GOOD HEALTH AND SAFETY!

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 45	Title: GENERAL HEALTH & SAFETY REFRESHER
Introduction: All persons on site have a legal responsibility for health and safety and to conduct their activities in a safe manner. This duty applies both to yourself and to your workmates.	
Main points: <ul style="list-style-type: none">• Safety culture is when people think and act safely even when no-one is looking!• Safety signs don't prevent accidents – safe people and safe systems do!• No system can be safe without the co-operation of all employers and employees. It is a team effort requiring awareness and alertness on the part of everyone.	
Discussion points: <ul style="list-style-type: none">• Know the company's safety policy, including the arrangements.• Use and maintain PPE provided – report any defects immediately.• Do your bit to keep the site tidy, in good order, and safe.• Obey all warning signs.• Never operate plant or equipment unless suitably competent/trained.• Never interfere with the likes of guard-rails, ladders, etc.• Never interfere or misuse safety equipment such as fire extinguishers.• Never throw things from height, always lower properly.• Never take short cuts – they rarely are!• Only ever use authorised access/egress routes.• Store/stack materials sensibly, especially if at height.• Check substances before use – are they hazardous? Inflammable?• Be alert in vicinity of mobile plant.• Be aware of trespassers – if you don't recognise someone, ask them who they are looking for and direct them to the site manager.• Constantly think safety on site. Be on the lookout for unsafe practices, defective equipment, excessive waste build up, etc, and report such to site managers – NEVER turn a blind eye!	
SAFETY IS EVERYONE'S BUSINESS - ESPECIALLY YOURS!	
Notes:	

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 46	Title: MANAGING SITE WASTE
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Introduction: Most construction sites produce significant waste which, if allowed to accumulate, can create new, or complicate existing, health and safety hazards. These range from basic nails in wood to attracting vermin.

Main points:

- Suitable waste locations must be established, and these must be segregated where applicable (controlled and special waste, etc).
- A formal waste management system should be implemented, ie spending the last 15 minutes of each day, or last hour of each Friday, cleaning up the site.
- Waste should only be removed from site by those in possession of a valid waste carriers licence, and should only be handed over to those with a valid waste managers licence.

Discussion points:

- Consider how you are going to separate waste where applicable, such as using different skips, etc.
- Ensure nails etc, are removed from wood or hammered flat to avoid puncture wounds to other persons.
- Consider how waste is going to be lowered to ground level from height. It should never be thrown down! Consider hoists, waste chutes, etc.
- If lightweight waste is produced, it may need to be bagged and tied to prevent the wind blowing it all over the site.
- If skips are to be placed on roads, then permission is required and it must be suitably cordoned off to protect the public and vehicles.
- Never overload skips – they should not be loaded higher than the sides.
- Beware of accumulating flammable waste and thus creating a serious fire risk.
- Never burn or bury waste on site.
- Dispose of any foodstuffs carefully to avoid attracting vermin and the risk of disease such as Weil's disease.
- Inspect your waste! Can it be reduced? Can any of it be reused? Is any of it recyclable? All waste that leaves the site is costing money!

MINIMISED WASTE = MINIMISED COSTS

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 47	Title: POLLUTION PREVENTION
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Introduction: Pollution not only threatens today's generations, but also those of tomorrow – our children, and, in turn, their children. Not only is there a legal obligation to prevent pollution, there is also a moral one.

Main points:

- Pollution can affect air, land or water!
- Smoke, fumes, vapours, chemicals, oils, fuels, etc, are all potential pollutants.
- Pollutants can migrate over significant distances from a site – particularly if water bound.

Discussion points:

- Always use hazardous substances (remember COSHH?) with care, ensuring they are suitably stored and empty containers are properly disposed of.
- Diesel tanks, fuel cans, etc, should be stored and used so that leakages/spillages can be contained (consider hard standings, bunding, spill trays, spillsorbs, etc).
- Do not run plant or equipment when not in use. This is using valuable fuels which are in turn causing pollution, and is also costing someone money!
- Electrically powered plant and equipment is more environmentally friendly than combustion engine operated, but still damages the environment at source.
- Ensure all plant and equipment is well maintained to ensure it is running efficiently (using less energy), and does not have the likes of oil leaks.
- Noise is also a pollutant and should be reduced so far as is reasonably practicable – this will also help your ears.
- Water is an increasingly valuable resource. Do not waste it by using leaking hoses or by leaving them running unnecessarily.
- Be particularly aware if your site borders any watercourse. Water can carry pollutants over significant distances, and all too easily contaminate local drinking supplies. Never use watercourses for cleaning tools, etc, and never store hazardous substances nearby.
- Likewise beware of drains – especially storm drains. Again, never store hazardous substances nearby and never pour any contaminants down storm drains.
- If in doubt – ask!

**PRACTICE SUSTAINABLE DEVELOPMENT
BY MEETING THE NEEDS OF TODAY'S GENERATIONS,
WITHOUT COMPROMISING THE NEEDS OF TOMORROW'S GENERATIONS!**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 48	Title: ACCIDENT PROCEDURES
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Introduction: Whilst the emphasis should be on prevention, the construction industry is a high-risk business, and there is always the possibility of an accident. It is important that all know what to do in such circumstances.

Main points:

- All accidents, and near misses, should be reported.
- All must know who the appointed persons/first-aiders are.
- All should know the best means of contacting the emergency services.

Discussion points:

- Know the name and contact procedures for the appointed person/first aider, and the location of the first aid kit.
- If you are going to be working away, in a small group etc, consider a small first aid kit to take with you.
- Know the basic rules if you have to deal with a casualty:
 - a. Remove hazard from casualty if safe to do so.
 - b. Call for help (first aider if possible).
 - c. Send someone to phone for an ambulance if necessary.
 - d. Do not move the casualty unless he is in immediate danger.
 - e. Make the casualty as comfortable as possible and remain with him providing reassurance.
 - f. Don't give food or drink to the casualty – moisten lips if necessary.
 - g. Do not allow casualty to smoke.
- Consider what you know about first aid - do you know:
 - a. How to resuscitate and start the heart?
 - b. How to stop major bleeding?
 - c. How to treat burns, scolds and shock?

These comprise basic first aid procedures that can save a life both at home and at work. If you don't know them you may wish to consider first aid training.

- Accidents and near misses should be investigated to establish the cause, and to enable the implementation of procedures etc, to prevent recurrence.

**AFTER AN ACCIDENT THE QUESTION SHOULD BE
“WHAT SHOULD HAVE BEEN DONE TO PREVENT IT?”
– ACTION SHOULD THEN BE TAKEN TO PREVENT RECURRENCE**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 49	Title: CONFINED SPACES
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Introduction: Confined spaces can include cellars, pits, tanks, drains, manholes, sewers, and even some types of excavation. Some are more obvious than others, but confined spaces are more common on construction sites than often realised.

Main points:

- Consider what may comprise a confined space on your site!
- A risk assessment should be carried out for all confined spaces.
- Never ever work alone in a confined space.

Discussion points:

- Hazards include oxygen depletion/enrichment, suffocation, toxic and flammable atmospheres, physical dangers (plant), biological hazards (Weil's disease), etc.
- Confined space atmospheres should be checked prior to entry.
- Suitable PPE should be worn which may include breathing apparatus, and may require specialist training.
- Employees working in confined spaces should be fit and healthy.
- Permit to work systems should be used where applicable (these should include rescue procedures).
- Work in confined spaces must be supervised, either physically or by communications/monitoring equipment (remember failure procedures).
- Ensure any recovery equipment is checked and serviceable prior to starting work.
- Ensure all know the alarm procedure – including location of nearest telephone, etc.
- Don't attempt a rescue without first sounding the alarm.
- Always leave a confined space immediately if told to do so.
- Don't eat, drink, smoke, or used naked flames in confined spaces or in close proximity to entry.
- Ensure there is suitable access/egress.
- Remain alert to any changes in the situation/environment. If in doubt - get out.

**GLOVES AND MASKS MAY PROTECT INDIVIDUALS
– SAFE SYSTEMS OF WORK PROTECT EVERYONE**

Notes:

**CONSTRUCTION EMPLOYERS FEDERATION
TOOLBOX TALKS SERIES**

Talk No: 50	Title: STEELWORK
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Introduction: Steelwork carries with it significant inherent risk, both to those erecting steelwork, and to those in the vicinity. Only safe systems of work can control these risks and reduce them to an acceptable level.

Main points:

- Only suitably trained personnel should undertake steelwork, or trainees under suitable supervision.
- A risk assessment must be carried out, and a method statement produced, for any steelwork.
- Suitable PPE should always be worn, both by steelworkers, and by other employees in the vicinity.

Discussion points:

- Plan steelwork according to the method statement, remembering to take into account the use of cranes or other lifting equipment and accessories, and co-ordinate with other site activities.
- If cranes are to be used consider the ground conditions, potential danger to other employees and the public as a result of crane arcs, and the need to ensure continued serviceability of lifting equipment.
- Utilise slingers and banksmen where appropriate.
- Beware of any overhead services.
- As an absolute minimum head and foot protection should be worn.
- Ensure there is safe access/egress to/from places of work.
- Where possible work from a stable working platform.
- Where no working platform is available, utilise a safety harness and fall arrest device – ensure it is clipped on at all times.
- Beware of dangers to those below – consider exclusion zones, nets, etc, as appropriate, do not leave tools/equipment on steelwork.
- Never move along beams by straddling unless absolutely necessary – clip on as soon as is practicable.

CATS HAVE NINE LIVES – YOU ONLY HAVE THE ONE!

Notes:

SECTION 10

WORKPLACE DRUGS, INTOXICANTS AND ALCOHOL POLICY

Objective

The Company is committed to providing a workplace that creates a working environment which is free from risks to Health and Safety. The Company promotes the well-being of everyone working within it including physical and mental health.

Abuse of drugs, intoxicants or alcohol may lead to personal and work-related problems and can affect the health, confidence, morale and performance of those affected by it. The Company aims therefore to create an environment where, if such a problem occurs, it can be dealt with openly and fairly.

All occurrences will be treated sensitively and confidentially and the Company are committed to assisting in the appropriate way. The aims of the Policy are to:

Aims

- Raise awareness of how drugs, intoxicants or alcohol can affect health, well-being and work performance.
- Identify a problem at an early stage, and assure the employee that this will be dealt with sensitively and confidentially.
- Prevent risks to all employees, customers, and the public from the hazards that may be caused.
- Identify sources of help.
- Inform employees of the Company procedure should a problem arise, and to make this procedure accessible to all employees.

Definition

Drugs, intoxicants or alcohol problems will be considered to be those which incorporate a variety of behaviors caused by the misuse of such substances and which may be deemed problematic to the employee, or to the organization or those associated with it.

The definition of “drugs, intoxicants or alcohol” is any substance, legal or otherwise, that may affect your behavior or ability to carry out your everyday activities

Symptoms

There are many warning signs that may be apparent where there is a problem. These include the following (the list is not to be taken as exhaustive);

- Can't think clearly
- Poor co-ordination
- Problems with vision
- Attendance at work under the influence of drugs, intoxicants or alcohol.
- Reduced performance

- Tiredness
- Disinterest
- Use of substances each night or late into the night
- Taking risks
- Feeling hung over
- Missing work or poor timekeeping
- Aggressiveness or being unco-operative
- Craving for substances during the day
- Nervousness or “shakes”
- Worry or dread
- Taking more alcohol than the recommended standard number of drinks per day.

Broken down these may fall into the following categories:

Emotionally:	Anxiety, high anger levels, mood swings, depression, sleep problems, loss of interest, irritability, loss of sense of humor
Mentally:	lack of concentration, poor memory, reduction in accuracy and poor performance, reduced motivation, difficulty in making decisions
Physically:	insomnia, tiredness, disturbed appetite, panic attacks and breathlessness, fidgeting, nausea, tension, weakened immune system

It is important that both individuals and the management team recognize if these symptoms emerge in order that the causes can be identified and dealt with effectively.

Employees’ Responsibilities

It is the responsibility of all employees and others within the organization to report any such problem which they feel has occurred in or been caused by the work environment.

The Company cannot address a potential problem unless it is aware of this. In order to deal effectively and efficiently with the problem, it is essential that the Company be made aware of the situation immediately.

Individuals who believe that they, or others, may have a drugs, intoxicants or alcohol related problem, have a responsibility to bring this to the attention of the Company in one of the following ways;

- Reporting the situation to their line manager
- Notifying the Health and Safety Officer of the situation

Where the individual feels uncomfortable bringing this to the attention of any of the above they may speak to a fellow work colleague to go with them or to speak on their behalf in the first instance.

Managers' and Supervisor's Responsibilities

Managers and Supervisors have a duty to implement this policy and to make every effort to ensure that such issues are brought to the attention of the Health and Safety Officer to be dealt with under this policy. Failure to implement this policy will be considered a serious failure to fulfil all the responsibilities of the job.

Managers and Supervisors should explain the Company's policy to their staff and take steps to positively promote the policy. They should be alert to symptoms as stated above, and take action if this occurs.

They should be responsive and supportive to any member of staff who makes them aware of a problem or where they identify a potential problem, provide full and clear advice on the procedure to be adopted.

The Organisation's Responsibilities

The organization is responsible to ensure that all individuals in the Company are made aware of this policy.

The Company will ensure that the procedure for dealing with incidents of drugs, intoxicants or alcohol abuse are reviewed and remain effective. All those responsible for this procedure will be trained in its effective implementation, the procedure to be adopted, as well as the identification of the symptoms.

Where a problem is identified either from an individual or reported from a manager or supervisor then the Company will ensure that this is investigated fully and sensitively, giving support to the person involved, and by providing any necessary assistance.

Procedure

This policy applies to employees across the organization and at all levels. The policy is designed to assist employees where there may be abuse of drugs, intoxicants or alcohol. This covers all types of drugs, intoxicants or alcohol, including the use of medically prescribed or pharmaceutical medication.

The procedure will not be followed in the circumstances where an employee is under the influence of, using, or supplying, drugs or alcohol in the workplace, which will be dealt with under the normal disciplinary procedure.

Where the employee is prescribed medication this should be brought to the attention of the line manager, especially where this medication may have side effects which have an effect on the ability to carry out the normal job function.

Where an employee recognizes that they have a problem they may wish to seek advice or help for themselves. They should refer to one of the many counselling agencies, specialist clinics, or their own GP.

Supervisors and Managers may intervene where they feel that there are at least some of the symptoms noted as above. In this instance the matter will be referred to the Human Resources Manager. A meeting will be held to consider the information available and to consider a course of action.

Where it is acknowledged that an employee has a problem, treatment or other assistance will be considered. This treatment will depend on the circumstances; however, will normally consist of a medical assessment by an independent occupational health specialist, and further intervention on their advice.

Treatment is given on the understanding that:

- Employees accept that treatment is necessary to fulfil their role within the Company.
- Treatment is on a voluntary basis, and no employee will be forced to undergo treatment as recommended by the occupational health specialist.
- Employees are prepared to fulfil the obligations of the treatment that has been arranged or recommended.

Where a period of treatment is recommended this may involve a period of absence from the workplace. This will be treated as under the terms of illness related absence, and subject to the normal terms of sick payments.

Following treatment, a return to work will be facilitated with a meeting with the line manager or a member of the Human Resources Department. This will be followed by meetings at regular intervals to ensure that the employee is assimilating well into the Company, and to assist should there be difficulties.

Where further treatment is necessary, or where there is a relapse, the Company may give consideration, at its discretion, to further assessment or treatment. The Company will give merit to the time of further treatment, and the likelihood of full recovery.

All information and meetings will be treated as confidential.

Refusal of Help

Employees who refuse to accept help or assistance, or who refuse to attend for occupational health assessments, or recommended treatment, and where they continue to fail to meet the required standards of conduct, will be subject to the normal disciplinary procedures, and may be subject to suspension without pay.

Testing

The Company is committed to the safety of all employees and therefore it may be necessary that employees are asked to undergo testing for any drugs, intoxicants or alcohol related substances. Tests may occur as follows:

- Pre-employment
- Random testing – this may be announced or unannounced
- “For cause” testing, after an accident or incident, or where there are observations or suspicions that there has been use of substances which may affect work performance
- During other clinical assessments, or on medical assessment follow ups

The Company may test for alcohol use by means of basic tests, however testing will be carried out by an accredited practitioner.

Any person testing positive for such substances at that stage will be asked to undergo a further medical assessment, which will give further details related to the nature of the work that you carry out. This may mean that the procedure outlined in this policy be followed.

An employee may challenge the results of the test, and may have this analyzed independently.

Should an employee be suspected of being under the influence of drugs, intoxicants or alcohol they may be suspended under the terms of Precautionary Suspension until appropriate tests can be arranged.

Review

The Company will monitor all incidents and use of this policy and will review the effectiveness of this policy and procedures annually.

**HURRICANE HOLE MARINA EMP
APPENDIX 8
KEY MANAGEMENT PERSONEL
QUALIFICATIONS**

STACY A. R. LUBIN, MSc.

Lakeview Road, Nassau, Bahamas; Phone: 242-376-2334; Email: stacylubin@gmail.com

PERSONAL SUMMARY

- Goal-oriented professional with proven capabilities in technical analysis, team management and project management
- Confident public speaker
- Skilled at multi-tasking with strong analytical skills
- Able to find solutions for tough situations
- Practical knowledge of organizing and planning activities for teams
- Able to work alone or as part of a team
- Quick Learner
- Accomplished negotiator
- Proficient in all major operating systems - Microsoft and Apple based, Microsoft Office Suite

PROFESSIONAL EXPERIENCE

The Bahamas Environment, Science, and Technology
(BEST) Commission
Independent Consultant

July 2020- Present

Baha Mar Development Office
Project Coordinator

April 2018- June 2020

The Bahamas Environment, Science, and Technology
(BEST) Commission
Senior Environmental Officer

February 2006-April 2018

PROJECT MANAGEMENT

BEST Commission - Consultant to the Bahamas Environment Science and Technology (BEST) Commission for the Fifth National Report (5NR) to The United Nations Convention on Biological Diversity (CBD). Contracted to produce the 5NR on behalf of the BEST Commission for submission to CBD:

- Collect data and information needed through literature review, interviews, meetings and a validation for reporting obligations to the CBD.
- Facilitate stakeholder consultations to meet reporting requirements.
- Draft the 5NR while following the guidelines set by the CBD.

BahMar - Assisted the Development and Construction staff with various projects throughout the Baha Mar development.

- Performed Environmental Monitoring and Oversight for the development/construction of the Baha Mar Bay Water Park Facilities.
- Managed the Oil Remediation Project for the Old Radisson Laundry Facility; ensuring the project runs within the schedule and budget and that the contractor meets all deliverables satisfactorily.
- Assisted team members with tasks related to the construction of the Baha Mar Waterpark or various maintenance projects throughout the properties.
- Logged project progress and maintains timelines for ongoing development.
- Performed in-field oversight for ongoing development.

BEST Commission - Lead technical officer for The Government charged with assisting National Project coordinators for projects such as the Global Environment Facility (GEF) \$9.6M Project on Expanding Marine Protected Areas. The GEF serves as the main funding body for global environmental projects. Duties were as follows:

- Supported the implementation of various environmental projects.
- Acted as government liaison to the project coordinator, coordinating resources to achieve project deliverables. Primary stakeholder contact.
- Ensured project activities meet projected outputs and requirements.
- Facilitated success of the project by fostering completion of scope of works.

- Addressed gaps in implementation and identify solutions.

DEVELOPMENT PROJECTS

BEST Commission - Project lead for various development projects throughout The Bahamas such as Baker's Bay, North Abaco Port Project, Coco Cay Island and Schooner Bay. Duties:

- Conducted site visits to assess areas where development was proposed.
- Reviewed Environmental Impact Assessments (EIA) and Environmental Management Plans (EMP).
- Monitored developments during construction phase.
- Provided oversight of compliance of EIAs and EMPs and all Environmental Laws.
- Liaised with Government and Non-Government Agencies.

CONSERVATION PROJECTS

BEST Commission- Project officer for a number national and regional conservation projects including, but not limited to:

- Mitigating the Threat of Invasive Alien Species in The Insular Caribbean (MTIASIC)
- Regional Project for Implementing National Biosafety Frameworks in The Caribbean.
- Disney's Reversing the Decline of Bahamian Coral Reefs
- Bahamas project on Access and Benefit Sharing and the United Nations Nagoya Protocol
- Member of various committees

PROJECT OFFICE MANAGEMENT

BahaMar

- Project management of schedules and meetings within the Development Office.
- Assisted the Director of Development in any tasks required.
- Responsible for ensuring all development team members are adequately equipped to supervise their projects.
- Responsible for the procurement function for the office.

BEST Commission

- Supervised the BEST Commission office in the absence of the Director
- Represented the BEST Commission in the absence of the Director
- Delegated technical officer(s) tasks as necessary
- Ensured the efficiency of daily tasks of The Commission
- Reported to the Permanent Secretary
- Administered technical advice to Government Agencies and the public.

EDUCATION AND TRAINING

Education

- Masters of Science (MSc.) in Sustainable Environmental Management, *Middlesex University*, 2003
- Bachelor of Science (BSc.) hons in Marine Biology and Coastal Ecology, *University of Plymouth*, 2002

Technical Training Received

- Licensed Class B Boat Captain
- Reefcheck-underwater survey methodology
- AGGRA- Atlantic and Gulf Rapid Reef Assessment
- Quickbooks
- GPS/GIS Training and ESRI Certification
- Qualified Scuba Diver
- Project Management

REFERENCES

- Stacey Moultrie- Managing Director, SEV Consultancy/ HDWells
- Philip Simon- President, New Providence Development Company
- Nadia Stubbs- Human Resources Director Scotia Bank

Gregory Van Der Riet

SENIOR PROJECT MANAGER

I am a Senior Project Manager with a 25-year (*15 years in the UK*) record of overseeing all phases of multi-million pound Civil and Building projects for the public and private sector. Having worked in South Africa, Bahamas and the United Kingdom including the Channel Islands, I have the necessary understanding of working in diverse environments and exceptional experience of high-value Construction Projects. I have a thorough understanding of the construction cycle and processes, and the challenges that need to be addressed in each part of these processes, I have successfully managed complex projects from inception through to completion. I have strong strategic focus, high commercial awareness and a positive, proactive approach. I have the ability to successfully lead Construction Projects, incorporating all the roles and responsibilities that a Senior Project Manager is required and expected to undertake in order to successfully achieve necessary goals within required budgetary and time constraints.

Key Skills and Attributes

- Construction (RC and Steel Frame) and Demolition Projects
- Consulting and Liaising with the Client, Main Contractor, Design Management Teams, Structural Engineers, Temporary Works Engineers and Subcontractors.
- Drafting and Reviewing of Method Statements, Risk Assessments and Tender Documents.
- Drafting of Schedules and Budgets required for large scale High End construction projects.
- Setting Out for Major Earthworks, RC and Steel Structures, Major Pipelines, Drainage and Landscaping (Proficient with EDM and various other survey instruments)
- Experienced in Pre and Post Tensioning System's.
- Labour and Material Procurement including Reinforcement call offs
- Quality Assurance
- Tendering Experience
- Solid Determination to achieve all goals and objectives set
- Excellent negotiation and communication skills
- Strong team player and able to manage / lead fellow colleagues on projects
- Positive and proactive approach
- Exceptional time management, organizational, prioritization and planning skills
- Extensive knowledge gained through experience on Civil and Building Projects as a Project Manager/Engineer
- Excellent Health and Safety track record

Employer Summary

OSPREY DEVELOPERS LTD (Nassau, Bahamas)-Senior Project Manager, 09/16-present

Managing of the construction of the Windsor School High School in Albany, Nassau in the Bahamas. Roles included managing all Construction and Engineering aspects of the Project, material call-offs, liaising with the Client, Main Contractor, Architect, Structural Engineer and Temporary Works Co-ordinator for the contract (**Budget**: \$11 million)

Click on Link - <https://www.windsorhighschoolatalbany.com/>

DUNNE BUILDING & CIVIL ENGINEERING LTD (One Blackfriars, London, UK) – Senior Project Manager, 09/15 to 09/16:

Project Managed the construction of a 50 Storey – 170m High RC Frame, Hi Spec Residential Block in Central London, comprised of 274 Residential Units. My role includes overseeing all Construction and Engineering aspects of the Project, material call-offs, liaising with the Client, Main Contractor, Architect, Structural Engineer and Temporary Works Co-ordinator for the contract. (**Contract Value** £24million – **Project Value** £174million) – *Note: click on link for more information*

https://en.wikipedia.org/wiki/1_Blackfriars

MURRAY & ROBERTS BUILDING JHB (Bay West Mall, PORT ELIZABETH, S.A) – Project/Construction Manager, 08/13 to 08/15:

Overseeing part of the construction of an 87000m³ Mega Mall, from inception to completion. This included the completion of an Ice Rink, 8nr. Cinemas including IMAX, two majors and a variety of other Brand Line Shops. Roles included the managing of all Construction aspects of the Project liaising with the Client, Architect, Structural Engineer and Temporary Works Co-ordinator for the contract. (**Budget** R1.7 Billion) – *Note: click on link below for more information*

http://www.property24.com/articles/new-r1721-billion-port-elizabeth-mall/17813?qclid=CKew8e_88QCFsbJtAodwAoA4A

MURRAY & ROBERTS Building (Port Side Tower, CAPE TOWN, S.A) – Project/Construction Manager, 10/12 to 08/13:

Overseeing part of the construction of Cape Town's new tallest building – Portside Tower, 139m tall, and 57000m² floor area with 34 Floors. Responsible for the completion/fit out of all Floors from the Sub-basement levels through to the 10th Floor (Mechanised Level). The managing of all Construction aspects of my area of the Project, liaising with the Client, Project Managers, Architect, Structural Engineer and Temporary Works Co-ordinator of the contract. (**Budget** R1.6 Billion) – *Note: click on link below for more information*

<http://www.property24.com/articles/cape-towns-tallest-new-skyscraper/20468?qclid=CMqfsvPn88QCFejJtAodIhwa0A>

DUFFY CONSTRUCTION LTD (Porter Street, LONDON, UK) – Senior Project Manager, 04/10 – 05/12:

Managed the construction of a 7 Storey RC Frame, Hi Spec Residential Block in Central London. The project included all the Groundwork and Drainage Package. My role included overseeing of all Engineering and Construction aspects of the Project, material call-offs, liaising with the Client, Main Contractor, Architect, Structural Engineer and Temporary Works Co-ordinator for the contract. (**Budget** £45 million)

WOOLF LTD (75 – 89.The Lancaster's, London, UK) – Project Manager, 12/07 - 03/10

Managed and completed a 3 Storey, underground Car Park with Gym and Swimming Pools, completed within required programme dates. Managed and completed Steel and RC Frame Construction phases incorporating the existing facade of a Grade II listed building along with Brickwork Package. Additional roles included, liaising with the Client, Main Contractor, Architect, Structural Engineer and Temporary Works Co-ordinator. (**Budget:** £100 million)
<http://www.thelancastershydepark.com/>

EXPANDED LTD (Camberley, UK) Senior Site Manager/Project Engineer, 4/07-11/07

Managed and completed drainage package along with all required Setting Out.
Site Engineer for Six Level Car Park and Retail Centre, RC Frame using Post Tensioning System, completed all required Engineering tasks up to handover.
(**Budget:** £30 million)

OSPREY DEVELOPERS LTD (Chub Cay & Nassau, Bahamas)-Project Manager, 09/06-4/07

Managing of the construction of the Club House and Marina at Chub Cay, in the Bahamas for 3 months. Then relocated to Nassau to continue work at the Radisson Hotel; complete refurbishment of internal and external existing structure.
(**Budget:** \$35-\$55 million) *Click on Link* - <http://www.chubcay.com/>

DUFFY CONSTRUCTION LTD (Twickenham Stadium, UK)-Project Manager, 01/06-08/06

Groundwork and Drainage Package's Managed from inception through to completion 3 weeks ahead of programme. All hand over dates achieved to meet strict time constraints.
(**Budget:** £28 million)

BYRNE BROTHERS PTY/LTD (Little Brompton's, London, UK)-Project Manager, 04/04-12/05

Managing the construction of 3, three-storey R.C. frames with sub-basement and underground pools, including site supervision and setting out when required, completed 5 weeks ahead of programme. Experience included managing up to 65 men.

(Budget: £17 million)

John Doyle Construction Ltd(Farringdon, London, UK)- Site Manager/Project Engineer, 01/02-03/04

Managing and Setting out of a Six-storey Steel Frame office block with an additional 3 underground levels incorporating a Car Park and Gym.

(Budget: £50 million)

Tilbury Douglas Ltd (Dollis Hill Reservoir, London, UK)-Project Engineer, 10/00-01/02

Provided Site Supervision and Setting Out for a 50 Million Liter Reservoir, including Setting Out and monitoring for major Earthworks, and concrete structures, from inception to completion, 3 weeks ahead of program.

(Budget: £40 million)

Steve Badcocks Ltd(St. Regents Park, Baker Street, London, UK)-Senior Site Engineer, 07/99-09/00

Provided site supervision for Junior Engineers; Setting out of all ground works necessary for drainage, mass concrete, ground beams and R.C. frames for multi-storey apartments.

(Budget: £22 million)

Tarmac Building(The Bolton's, London, UK)-Site Engineer, 04/98-06/99

Setting Out of structural works for two four- storey apartment blocks, from inception to completion.

(Budget: £17 million)

Van Der Riet Plant Hire (Port Elizabeth, S.A.)-Construction Manager, 01/91 - 12/92 & 01/94 - 03/98

Managed daily operations of business which was supplying Heavy Machinery and Equipment to various Projects. Compiling tender documents, Surveying and Setting Out of construction sites for bulk earthworks. Managed up to 30 Operatives at any time.

(Budget: R100 000 - R4million)

Stocks & Stocks (Port Elizabeth, S.A.)- Site Supervisor(Diploma Practical Year), 01/93-12/93

Provided Site Supervision and managed a crew of 28 men on a RDP scheme to promote better living condition by Installing new ablution blocks, roads and affordable housing. Duties also included assisting Site Manager with planning and procurement of materials.

(Budget: R100 million)

Education and Certification

- NELSON MANDELAS UNIVERSITY/PORT ELIZABETH TECHNIKON (South Africa)— **NHD in Civil Engineering**, 1992 to 1997
- ALEXANDER ROAD HIGH SCHOOL(South Africa) – **Matric with exemption** – 1985 to 1990

OTHER QUALIFICATIONS

- PRINCE2 Foundation
- CSCS (Technical, Supervisory and Management)
- Trained Fire Marshal
- Trained First Aider
- Proficient in ACONEX
- Proficient in Synergy
- Proficient in Primavera
- Proficient in BIW
- Proficient in Procure
- Proficient in Microsoft Office
- Proficient in Microsoft Project
- SMSTS – 5 Day course (CDM Regulations – Construction Management)
- Temporary Works Coordinator
- Lead Others 5 day – Management Skills

Contact Information

Email – vdrgreg@yahoo.com

Mobile nr. +1 242 376 6337

References

- References are available on request