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CONTRACT SPECIFICATIONS

DEPARTMENT OF TRANSPORTATION
& PUBLIC WORKS
DESIGN AND ENGINEERING DIVISION

BID DOCUMENTS

UPGRADE CHILLER UNITS AT
WILLIAM LEHMAN CENTER

CONTRACT NO. CICC 7360 PLAN

RPQ NO.: TP-0000017889

PROJECT NO.: IRP171

VOLUME II OF II

MANUALS & PLANS

AUGUST 2023



RPQ NO.: TP-0000017889

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

UPGRADE CHILLER UNITS AT WILLIAM LEHMAN CENTER

PROJECT NO. IRP171

RPQ NO. TP-0000017889

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Department of Transportation and Public Works Adjacent Construction Manual

Project Quality Assurance Plan

Drawings

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

UPGRADE CHILLER UNITS AT WILLIAM LEHMAN CENTER

PROJECT NO. IRP171

RPQ NO. TP-0000017889

MIAMI-DADE TRANSIT CONSTRUCTION SAFETY MANUAL

(INCLUDES SECURITY ID REQUIREMENTS)



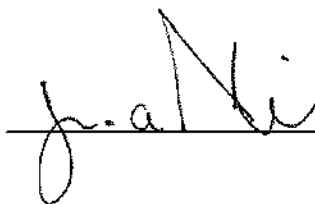
Miami-Dade Transit

Construction Safety Manual

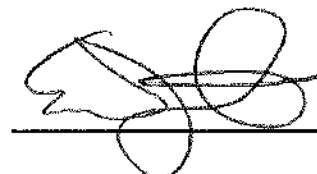


**MIAMI-DADE TRANSIT
MIAMI, FLORIDA
CONSTRUCTION SAFETY MANUAL
Revision No. 6**

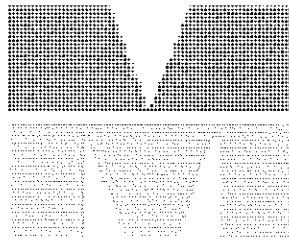
May 2012


_____ 6/4/2012
Date

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MIAMI-DADE

TRANSIT

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Policy Statement

It is the policy of the Miami-Dade Transit (MDT) and Miami-Dade County (MDC) to maintain a safe working environment for all employees and the public. The Construction Safety Program has been designed in accordance with the William-Steiger Occupational Safety and Health Act of 1970. The success of the safety program requires the full support of every employee and contractor working on the MDT system.

Regardless of the urgency or monetary cost of a job; all safety precautions must be observed. Prevention of personal injury or damage to property and equipment must always remain paramount in the minds of every employee and contractor.

PREFACE

THE CONSTRUCTION SAFETY MANUAL (CSM) is one of the Miami-Dade County (MDC) Contract Documents. Contractors are required to assure that all employees, subcontractors, and their suppliers / vendors, while on the work site and in the conduct of MDC contractors, comply with the provisions of the CSM and the minimum standards set forth under the William-Steiger Occupational Safety and Health Act of 1970 and as amended, the Construction and General Industry Standards (29CFR1926/1910), and all other applicable Federal, State and Local laws. The Contractors are expected to be familiar with the contents applicable to their operations. The provisions set forth in this CSM will be strictly enforced. Non-compliance with the CSM will be treated the same as non-compliance with any contract provision. Willful or repeated noncompliance shall result in the suspension of part or all work.

Safety at the work site shall be the sole responsibility of the Contractor. The CSM shall be used as a guide in developing the Contractor's Accident Prevention Program. The Contractor shall assume full responsibility for compliance with all applicable Federal, State and Local safety related regulations and for complying with this Construction Safety Manual during the performance of all activities.

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A. DEFINITIONS

The following definitions apply for the purpose of this Construction Safety Manual.

ACCIDENT – An unforeseen event or occurrence which causes death, injury or damage to property.

ACCIDENT PREVENTION PROGRAM (APP) - A program designed to provide for the protection to life and health of employees and other persons; and for the prevention of damage to property, materials, supplies and equipment. The Contractor's APP shall be developed by the Contractor using the Contractor's Safety Manual as a guide. Once approved by MDC, the Contractor's APP shall be used by the Contractor and his subcontractors to insure the safe prosecution of the work.

ALARM CONDITION - Any abnormal condition that requires the attention or intervention of responsible personnel or an individual monitoring the transit system operations.

ANOMALY - Deviation from nominal performance, which does not cause a significant, effect on system performance but does warrant investigation and/ or repair.

AUDIT - Formal or official examination and verification.

AUTOMATIC - A term applied to a system, subsystem, or device which has the inherent capability to function without direct manual participation.

CENTRAL CONTROL - That place where train control or train supervision is accomplished for the entire Metrorail and Metromover system, the train command center.

CENTRAL DISPATCH - That place where bus, rail or mover supervision or dispatcher is accomplished for the entire transit system.

COMPETENT PERSON – A person who is capable of identifying existing or predicting hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

CONSTRUCTION SAFETY - The optimum degree of safety within the constraints of construction effectiveness, time and cost through specific application of safety management throughout all phases of the construction.

CONSTRUCTION SAFETY MANUAL (CSM) - This manual, issued as a contract document by the Miami-Dade Transit (MDT), to be used as a guide by the Contractors in developing the Accident Prevention Program.

CONTRACTOR'S AUTHORIZED SAFETY REPRESENTATIVE - The person designated as authorized safety representative who will be responsible for work site safety and for reporting all insurance claims. On contracts of over \$5 million in award amount this person shall have full-time safety responsibility, unless deemed by the Office of Safety and Security that due to the nature of the work, part-time oversight is adequate. On contracts of under \$5 million award amount, the person may have part time safety responsibility, unless deemed by the Office of Safety and Security that the nature of the work necessitates full-time safety oversight. Whether part-time or full-time, this person shall NOT report to the Contractor's superintendent.

CONTRACT DRAWINGS - The plans, profiles, typical cross-sections, general cross-section, elevations, schedules and details which show locations, character and dimensions of the work.

CONTRACTING OFFICER - The Director, Miami-Dade Transit.

CONTRACTOR - The individual, firm, partnership, corporation, or combination thereof, private, municipal, or public, including joint ventures which, as an independent contractor, has entered into a contract with MDC, who is referred to throughout the Contract Documents by singular in number and masculine in gender.

DEGRADATION - Falling from an initial level to a lower level in quality or performance.

EMERGENCY - A situation which is life threatening or which can cause serious damage on or in the immediate vicinity of any transit facility, structure, bus or train.

EMPLOYEE - A person employed by the Contractor or Subcontractor.

ENGINEER - MDC or its authorized representatives, including but not limited to the Resident Engineer; the Contracting Officer's Representatives and the Engineer of Record.

EQUIPMENT FAILURE - The state in which equipment no longer meets the minimum acceptable specified performance and cannot be restored through operator adjustment or control.

FTA - Federal Transit Administration, formerly UMTA.

FAILURE - An inability to perform an intended function.

HAZARD - Any real or potential condition that can cause injury or death; or damage to or loss of equipment or property.

HAZARD MANAGEMENT (LOSS CONTROL) - An element of the system safety management function that evaluates the safety effects of potential hazards considering acceptance, control, or elimination of such hazards with respect to expenditure or

resources. (The feasibility of hazard elimination must be considered in light of financial, legal, and human considerations).

HAZARD SEVERITY - A qualitative measure of the worst potential consequences that could be caused by a specific hazard.

Category I - Catastrophic. May cause death, serious injury/illness or major system loss.

Category II - Critical. May cause injury/illness, or major system damage.

Category III - Marginal. May cause minor injury/illness, or minor system damage.

Category IV - Negligible. Will not result in injury/illness, or system damage.

HAZARD INDEX - A quantitative measure, combining the numerical probability of occurrence with a hazard severity.

HAZARD RESOLUTION - The analysis and subsequent actions taken to reduce, to the lowest level practical, the risk associated with an identified hazard.

HAZARD PROBABILITY - The probability that a hazard will occur during the planned life of the system. Hazard probability may be expressed in quantitative or qualitative terms. An example of a hazard probability ranking system is:

- A Frequent
- B Probable
- C Occasional
- D Remote
- E Improbable

IMMINENT DANGER - Refers to any condition or practice where there is reasonable certainty that a danger exists that can be expected to cause death or serious physical harm and/or serious property damage immediately or before the danger can be eliminated through normal enforcement procedures.

INCIDENT - An unforeseen event or occurrence which does not necessarily result in injury or property damage.

MAINTENANCE - All actions necessary for retaining an item in or restoring it to an operable condition.

MALFUNCTION - Any anomaly or failure wherein the system, subsystem, or component fails to function as intended.

MDC - Miami-Dade County - the Board of County Commissioners of Dade County, Florida, a political subdivision of the State of Florida, and MDT, and office under the

County Manager of Miami-Dade County, Created March 1, 1974, by Administrative Order No. 3-8, under the authority of Sections 4.01 and 4.02 of the Miami-Dade County Charter – and any authority, board, body, commission, official or officials to which or to whom the powers now belonging to MDT in respect to the location, construction, equipment, maintenance and operation of transit facilities shall, by virtue of any act or acts, hereinafter pass or appertain.

MDT - Miami-Dade Transit, Miami-Dade County, located at 111 NW 1st Street, Suite 910, Miami, Florida 33128.

MISHAP - An unplanned event or series of events that result in death, injury, occupational illness, or damage to or loss of equipment or property. (See also ACCIDENT).

OFFICE OF SAFETY AND SECURITY (OSS) - Miami-Dade Transit, Miami-Dade County, located at 111 NW 1st Street, 4th Floor, Miami, Florida 33128.

OPERATOR - That person having direct and immediate control of the movement of a vehicle or machinery.

OPERATING TIME - The time period between turn-on and turn-off of a system, subsystem, component or part during which time operation is as specified. Total operating time is the summation of all operating time periods.

OSHA - The Occupational Safety and Health Administration. An agency of the U.S. Government which sets standards to provide for the safety of employees in the workplace. The area office is located in Ft. Lauderdale, Florida, phone (305) 424-0242.

PERSONAL PROTECTIVE EQUIPMENT (PPE) - Equipment designed and worn to provide protection against hazard to some part of an employee's body. Example of PPE are safety glasses, respirators, hard hats, gloves etc. All PPE used at MDT work sites must comply with applicable OSHA standards.

POWER RAIL - A rail mounted on insulators alongside the running surfaces, which provides Metromover traction power for train propulsion.

PROCEDURES - Established methods to perform a series of tasks.

RELIABILITY - The probability that the system or subsystem will perform satisfactorily for a given period of time when used under stated conditions.

REPAIR - The maintenance activity, which restores a failed item to operable state.

RISK - An expression of possible loss over a specific period of time or number of operational cycles. It may be indicated in terms of hazard severity and probability.

RISK MANAGEMENT - The Risk Management Division, Miami-Dade County, General Services Administration, located at 111 NW 1st Street, Suite 2340, Miami, Florida 33128; phone 305-375-4280.

RULE - A law or order authoritatively governing conduct or action.

SAFE - Secure from danger or loss.

SAFETY - A reasonable degree of freedom from those conditions that can cause injury or death to personnel; damage to or loss of equipment or property; and freedom from danger.

SAFETY CHECKLIST - A list for examining the safety aspect of equipment, procedures and personnel.

SAFETY DEVICES - Protective devices, which do not alter the fundamental nature of a hazard but which, do control the extent of the hazard in some manner.

SAFETY CRITICAL - A designation placed on a system, subsystem, element component device, or function denoting that satisfactory operation of such is mandatory to assurance of patron, personnel, equipment, or facility safety. Such a designation dictates incorporation of special safety design features.

SAFETY MANAGEMENT - An element of management that establishes safety programs requirements and ensures the planning, implementation and accomplishment of task and activities to achieve work place safety.

SAFETY PROGRAM - The combined task and activities of safety management and safety engineering that enhance operational effectiveness by satisfying the safety requirements in a timely, cost-effective manner throughout all phases of the work.

SAFETY SUBCONTRACTOR - A subcontractor who satisfies the Florida Department of Labor and Employment Security Industrial Safety and Health Program, Chapter 38F-44, and is duly approved by MDC.

SECURITY PROGRAM PLAN (SPP) - A program designed to provide guidelines to implement security procedures and describe the contractors' commitments and specific actions proposed to provide a secure project site. The Contractor's SPP shall be developed by the Contractor using the Contractor's Safety Manual as a guide. Once approved by MDC, the Contractor's SPP shall be used by the Contractor and his subcontractors to insure the safe prosecution of the work.

SERVICE CONTRACTS/CONTRACTOR - Those operations that are providing any services, or repair, replacement or maintenance functions that are indigenous to the construction process on the work site.

STATE - The State of Florida.

SUBCONTRACTOR - Any person, firm or corporation, other than the employees of the Contractor, who contracts with the Contractor to furnish labor and/or materials under this Contract. The contractor shall be responsible for ensuring that their subcontractors comply with this manual.

SUPPLIER/VENDOR - Those entities whose sole responsibility to the project is the delivery of goods or materials, exclusive of direct labor.

SYSTEM – A composite of people, procedures and equipment operating in a specific environment to accomplished a specific mission or task.

THIRD RAIL - A rail mounted on insulators alongside the running rail which provides Metrorail traction power for train propulsion.

TRANSIT SYSTEM – A transportation system comprised of fleets of motor buses and electrically propelled transit vehicles and all of their operational/support personnel and systems (e.g. maintenance facilities, tracks, structures, etc.) utilized for the mass movement of passengers within a metropolitan area.

UNUSUAL OCCURRENCE – An unforeseen event or incident which does not necessarily result in injury or property damage.

UNSAFE CONDITIONS – Any condition which if not corrected will endanger human life or property.

WARNING DEVICES – Sensors that monitor or detect conditions and provide visible and/or audible alerting signals as desired for selected events.

WORK SITE - The area enclosed by the limit of work indicated in the Contract Documents and boundaries of local streets and public easements in which the Contractor is to perform the work under the Contract. It shall also include areas obtained by the Contractor for use in connection with the Contractor, when contiguous to the limit of work.

B. CONTRACTOR'S ACCIDENT PREVENTION PROGRAM (APP) & SECURITY PROGRAM (SPP) PLANS

1) OBJECTIVES OF THE ACCIDENT PREVENTION PROGRAM

- to achieve an injury-free experience for the Project.
- to achieve maximum property conservation.
- to reduce direct and indirect costs.

Accomplishing the above objectives will provide for:

- a) A greater efficiency as a result of a safer working environment.
- b) A reduction of the construction work interruptions which develop when unsafe environments are created and when accidents occur.

2) METHODS OF ATTAINING OBJECTIVES:

Effectiveness of the Accident Prevention Program depends on the comprehensive participation and cooperation extended by all participants in support of the basic requirements listed below.

The Contractor's Authorized Safety Representative shall be informed immediately of any recognized hazards or potential hazards, related to health & safety, which may impact on the effectiveness of the Project's Accident Prevention Program that cannot be handled promptly as set forth herein, and report such to the Engineer.

The major accident prevention requirements are:

- a) Initiation and maintenance of programs, plans, training, etc. as necessary to comply with the requirements of this manual, and applicable Federal, State and Local standards.
- b) Allocating manpower, as required, for professional safety personnel assistance.
- c) Planning and coordinating all work to avoid personnel injury, property damage and loss of productive time.
- d) Establishing and maintaining a system for prompt detection, reporting, and correction or control of unsafe practices and unsafe conditions.
- e) Assuring the availability, and enforcing the use of appropriate personal protective equipment.

- f) Establishing and maintaining an effective and comprehensive system of tools and equipment inspection and maintenance including records required by applicable regulations or internal directives. The tool and equipment inspection and maintenance program shall include all employee-owned items brought onto the work site.
- g) Establishing and supporting an educational and job skill-training program designed to foster and maintain accident prevention knowledge and cooperation at all levels of employment by:
 - 1. providing for new employee's orientations.
 - 2. conducting targeted subject safety meetings.
 - 3. posting adequate safety and health requirements for all operations.
 - 4. maintaining a list of adequately trained and licensed employees authorized to operate specific equipment.
 - 5. maintaining a list of the trained and certified crane operators.
 - 6. maintain a list of employees who have been certified in accordance with Florida Department of Transportation to perform flagging operations and placement of traffic signs or devices (cones, barricades, warning signs, etc.).
 - 7. maintain a list of "Competent Person" employees who satisfy OSHA standard requirements to perform specific functions under the OSHA standards. A partial list of standards that require a competent person is included in appendix G of this CSM.
 - 8. investigating all accidents to determine causes (s) and taking prompt, reasonable and prudent necessary action to eliminate or control responsible factors.
- h) Providing visitor control and hazard protection.
- i) Providing work site security.
- j) Establishment and maintenance of a first aid and/or medical facility.
- k) Controlling the safe placement of materials or equipment received, or used, consistent with the traffic control pattern established and progression of construction on the work site.

- l) Providing maintenance of traffic control plans and procedures consistent with the work to be performed in accordance with the Contract Documents.
- m) Providing work site fire prevention/protection in coordination with local authorities and applicable standards.
- n) Establishment and maintenance of an effective program in accordance with Federal, State and Local regulations for the storage, use, and disposal of hazardous substances.
- o) Conducting accident/incident investigations.

3) MDC AND THE ENGINEER:

- a) The Engineer will:
 - 1. Receive from the Contractor an Accident Prevention Program and Security Program Plan no later than 25 days after approval of Award Recommendation by the Board of County Commissioners and no less that 15 days before the projected date for notice to proceed of the Contract. The Contractor shall assume full responsibility for compliance with all applicable Federal, State and Local safety related regulations and for complying with this Construction Safety Manual during the performance of all work performed prior to the approval of the Contractor's Accident Prevention Program and Security Program Plan. (See definition of Accident Prevention and Security Program).
 - 2. verify that Contractor plans and executes the work in compliance with the stated objectives of the Accident Prevention Program, Security Program Plan and applicable regulations.
 - 3. authorize work site inspections by MDC representatives to monitor Contractor compliance with this manual.
 - 4. require prompt remedial action to correct substandard or illegal safety and/or health conditions reported or observed by MDC representatives.
 - 5. verify that the Contractor has adequate fire prevention/ protection equipment; contained in ready-operating status at all times.

6. verify that the Contractor has temporary lighting and power systems during the construction phase set up and utilized in such a manner as to reduce hazards to a minimum.
7. ascertain that trained first aid personnel are available and certified for their work.
8. verify that good housekeeping procedures are maintained at all times by the Contractor and subcontractors.
9. establish procedures for the reporting of all fire incidents or damages as stated herein.
10. instruct the Contractor to establish an identification program for all employees at the work site.
11. verify that the Contractor reports all accidents immediately, as required by this manual and State and Federal regulations.
12. instruct the Contractor that employee access to unauthorized or restricted areas on Metromover or Metrorail property requires that the Contractor provide prior notification to, and receive authorization from Central Control.
13. establish procedures for timely reporting/notification to OSS for accidents and injuries.

4) CONTRACTOR: The Contractor Shall:

- a) Submit in writing to the Engineer an Accident Prevention Program and Security Program Plan for approval no later than 25 days after approval of Award Recommendation by the Board of County Commissioners and no less than 15 days before the projected date for notice to proceed of the contract. Provide the name, qualifications, and a "24 hour" phone number of the Contractor's Authorized Safety Representative who shall devote his time to the work site as defined by the definitions section of this Construction Safety Manual. No work on the work site shall begin until MDC approves the Contractor's authorized safety representative. The Contractor shall assume full responsibility for compliance with all applicable Federal, State and local safety related regulations and for complying with this Construction Safety Manual during the performance of all work performed prior to the approval of the Contractor's Accident Prevention Program. (See definition of Accident Prevention and Security Program). For furnish and install equipment contracts (non-construction), the stated approval period will commence ten (10) days prior to the beginning of work on the work site.

- b) Substantiate in writing to the Engineer that the Contractor's Authorized Safety Representative possesses at least two years of construction safety experience, is a managerial supervisory capacity, related to the work contemplated under this Contract.
- c) Maintain responsibility for project safety on the work site for his own or subcontractor's employees at any time, under any circumstances.
- d) After approval of the Contractor's Authorized Safety Representative, the Contractor, his Authorized Safety Representative and the Engineer will be required to attend a meeting with the MDT staff. At that time, a formal presentation and discussion of the Accident Prevention Program will be conducted.
- e) Follow all of the requirements and procedures of the Accident Prevention Program.
- f) Promptly provide the Engineer with a detailed written submission of the safety and/or health hazards not consistent to his work at the work site and a detailed program to control all such hazards. Such program must be consistent with the Accident Prevention Program and conform in all respects to all legal and safety requirements, including those of OSHA and Federal, State, and Local regulations. All such programs must be approved by the Engineer prior to the commencement of this work.
- g) Require each new employee, before he starts work, to be oriented by his supervisor on the safety and health rules, procedures, and requirements established for the work task (s) to be performed and procedures to be adhered to. Tool-box safety meetings are not an acceptable substitute for new employee orientation. The name of the employee and orientation date shall be on record at the work site.
- h) Provide an overall traffic control plan for pedestrians, vehicular traffic and construction operations; and establish a general visitor control program.
- i) Set up and implement a program to protect persons and property in the event of emergencies.
- j) Complete supervisory investigation reports of all injuries.
- k) Require supervisory employees and subcontractors to attend monthly supervisor's safety meetings.
- l) Schedule weekly "tool-box" safety sessions to be held by the job foremen for all employees. A record including date, employee attendance, and subject covered shall be kept of these meetings for the duration of the Construction

Project. The Engineer shall be advised of the time and location of the scheduled meetings. (See Appendix B for suggested format). The meeting should be used to review safety and health rules and procedures, applicable Federal, State or Local standards, and to discuss any problems related to safety at the work site. This would include information as to storage, use and disposal of hazardous materials at the work site.

- m) Schedule and preside at safety meetings to be held monthly at which appropriate supervisory staff of the Contractor and subcontractors will be required to attend. The Engineer shall be advised of the time and location of the scheduled meetings.
- n) Take immediate action to correct unsafe practices and unsafe conditions.
- o) Report to the Engineer and observed conditions or violations of job safety regardless of weather they are within the observer's power or responsibility to correct.
- p) Assure that supervisory employees at all levels have a good working knowledge of applicable safety and health standards as they pertain to their areas of supervisory control and encourage all supervisory personnel and employees to improve their accident prevention awareness.
- q) Provide the establishment of first aid facilities for treatment of employees.
- r) Obtain a personal copy of the OSHA Construction Industry Standards 29CFR1926 and OSHA General Industry Standards 29CFR1910 to be available for the Contractor's reference as required by this manual. (The OSHA standards may be obtained free, or at a minimal cost, by contacting the OSHA area office, phone (305) 424-0242, in Ft. Lauderdale).
- s) Ensure that prior to accessing restricted areas on Metrorail or Metromover property; he has provided proper notifications to and received proper authorization from Central Control through the Engineer.
- t) Ensure that during all times that employees are at the work site, an acceptable and reliable means of communication with local emergency response personnel is available.
- u) In addition to complying with this manual, comply with all applicable safety & health governmental standards including the OSHA Construction Industry Standards 29CFR1926/1910, the Florida Right to Know Law, the Federal Hazard Communication Act, Florida Worker's Compensation Laws, etc. Maintain the necessary documentation, program, and/or training required by such standards.

- v) Ensure all of his subcontractors, and subcontractor's employees, comply with the requirements of this Manual and applicable Federal, State and Local regulations.
- w) Comply with the current edition of the Florida Building codes unless specifically exempt, in writing by the Engineer.

5) EMERGENCIES

For the purposes of the Accident Prevention Program, emergencies are classified as follows:

- a) A fire, or major hazardous material leak or spill, requiring the response of the local fire or environmental protection department.
- b) Unplanned collapse of equipment used in the course of construction.
- c) Unplanned collapse of a substantial part of any structure at the work site.
- d) Any serious accident involving an employee.
- e) Any serious accident involving a member of the public.
- f) Any other occurrence which would require immediate protection of life or property.

6) HOW TO REPORT AN ACCIDENT TO THE MDT ENGINEER:

- a) The Contractor and all other participants in the Program shall instruct their employees and all other concerned personnel in how to report an accident which must include, at a minimum, the following procedures:
 1. Report the matter immediately to the supervisor who shall arrange for first aid or other required emergency medical treatment.
 2. In the event of serious injury or a death, in the absence of emergency first aid facilities on the work site, the supervisor of the injured employee is to arrange for necessary treatment. There shall be full compliance with all requirements of the Contractor's insurance carrier(s) with regard to accident reporting.
 3. The emergency phone number is: **911**

4. In case of a death, or if five or more employees are seriously injured in the same accident, the Contractor's Authorized Safety Representative shall, not later than 24 hours after the occurrence report the same to:
 - a. Office of the Area OSHA Director (305) 424-0242.
 - b. State of Florida, Bureau of Industrial Safety and Health (305) 377-5373.
5. The employer of any injured employee shall be required to complete the Notice of Injury Form, as required by State of Florida Worker's Compensation Division. (See appendix A).
6. The employer of any injured employee shall be required to record all work related injuries on Form 301 (or equivalent), Form 300 and complete/post the summary (Form 300A) at the beginning of the calendar year as required by OSHA 29CFR1904. (See appendix A).
7. The supervisor of the injured employee shall be responsible to immediately report the injury to the Engineer, to fill out the Supervisor's Report of Accident (Appendix A), and make it and the notice of Injury report available to the Engineer.
8. All participants in this Accident Prevention Program shall cooperate fully in the investigation of any accident and/or occurrence.
 - b) The contractors and other participants in the Accident Prevention Program shall instruct employees and all other concerned personnel of the following procedures if there is loss or damage to property of others, including damage to equipment or tools being used at the work site.
 1. Promptly report the loss or damage to the office of the Contractor's Authorized Safety Representative.
 2. In the event of a substantial loss or damage to the property of others, the Contractor is to immediately notify the Contractor's Authorized Safety Representative and the Engineer.
 3. There shall be full compliance with all requirements of the Contractor's insurance carrier (s) with regard to property loss and damages.

MDT SECURITY REQUIREMENTS

All Contractors are required to submit for review and approval a Security Program Plan (SPP), as defined in this Manual. This SPP shall provide guidelines to implement security procedures and describe the contractors' commitments and specific actions proposed to provide a secure project site. The Security Program Plan shall include, at a minimum:

- ✓ Procedures for inspecting perimeter security;
- ✓ Procedures for restricting who may visit the project site;
- ✓ Procedure for performing background checks;
- ✓ Procedure for overseeing security with respect to deliveries and other short-term visitors;
- ✓ Procedure for identification badges;
- ✓ Procedure for conducting periodic security meetings;
- ✓ Procedures for monitoring world-wide security threats and national security warnings and alerts;
- ✓ Emergency security procedures;
- ✓ Procedures for preparing, issuing and reporting security incidents.

MDT Contractor Identification Badges

All MDT contractors are to present identification along with documentation showing reason for visit. Following are the identification badge requirements for contractors.

1. Contractor's must be in possession of a photo identification card issued by MDT noting them as contractor's OR must be provided a VISITOR's BADGE upon the surrender of an approved government-issued photo identification.
2. All contractors under permanent, full-time assignment to MDT are required to display their MDT photo contractor identification. The identification is issued by the MDT Office of Safety and Security. A supervisory employee must be present with the contract employee for them to be issued identification.
3. All MDT employees who are involved in any way with contractor employees are to ensure that these security requirements are provided to those employees. MDT employees are to also assist contractors in meeting those requirements.
4. Contractor's requiring access to critical areas **MUST BE ACCOMPANIED BY AN MDT EMPLOYEE WITH AUTHORIZED ACCESS TO THAT AREA AT ALL TIMES. AT NO TIME MAY A CONTRACTOR BE LEFT UNSUPERVISED IN ANY CRITICAL OR SENSITIVE AREA.** These areas include, but are not limited to: bus and mover central control, bus dispatch, William Lehman Yard Tower,

traction power substations, switchgear rooms, train control rooms, electrical rooms, telephone rooms, computer server rooms, video monitoring areas, and communications rooms.

Visitor's to MDT Facilities

1. All visitors will be logged in before entering the premises.
2. Employees shall not allow any unauthorized persons to enter any MDT facility, including yard gates, buildings and other secure entrances. As necessary, MDT employees may direct visitor's to the security desk or, as necessary, request intervention by security personnel.
3. The employee entering the area is to ensure that each secured door is closed behind them and that no one else enters.
4. Any visitor who comes to our facilities for food delivery or any other personal type delivery will be met at the facility entrance by the employee who ordered the delivery. The delivery person shall not be allowed into the facility under any circumstances.
5. In instances where remote entry buttons are used at secure facilities, the entry button is not be used unless there is direct observation of the person entering. Direct observation includes visual observation and observation of closed circuit television monitors only.

All appropriate MDT field staff will be familiar with each contractor's approved Security Program and will comply with specific requirements of the plan when carrying out their assigned tasks. The contractors have the primary responsibility for developing and implementing the program; however, the Engineer will monitor the contractors' compliance with each contractor's security program.

C. GENERAL SAFETY AND HEALTH PROVISIONS

- 1) The Contractor shall ensure employees do not work under conditions, which are unsanitary, hazardous, or dangerous to their health or safety.
- 2) The Contractor shall initiate and maintain such programs as may be necessary to comply with this manual, and all applicable government regulations.
- 3) Such programs shall provide for the frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the Contractors; and shall include a program for the

performance of work, to promote its orderly and expeditious progress and ensure its safe completion within the prescribed time.

- 4) The use of any machinery, tool, material or equipment not in good working order, or which has had a safety feature removed or tampered with, is prohibited. Such machine, tool, material or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from the work site.
- 5) The Contractors shall permit only those employees qualified by training or experience to operate equipment and machinery. Applicable laws requiring employee to have a current license or certification (i.e., Class A Commercial Drivers License, etc.) to operate equipment are to be complied with.
- 6) The Contractor shall be solely responsible for the performance of the work in a manner, which will not create safety hazards, objectionable noise or other nuisance to the public.
- 7) Employees of the Contractor or subcontractors who are found to be intoxicated or appear to be under the influence of alcohol or drugs (other than as prescribed by a doctor) while on the work site shall be removed from the work site by the Contractor for the duration of the Contract. Employees who are found to be in possession of alcohol or drugs (other than as prescribed by a doctor) at the work site shall be removed from the work site by the Contractor for the duration of the Contract. An employee who is under a doctor's care and taking prescription drugs should inform his supervisor of same to determine if restrictions should be imposed.
- 8) Prior to the start of, and during the course of, any work, above or below ground level, the Contractor shall make a through survey of the entire work site to determine the type and locations of all utilities or other lines on the work site. The Contractors must verify this information by notifying the Underground Utilities Notification Center at 1-800-432-4770, other utilities not members of the Underground Utilities Notification Center, and notify the Engineer.
- 9) The Contractor shall instruct employees as to any precautions and procedures to be followed while working in the proximity of any utility or power line.
- 10) The Contractor shall develop and have readily available at the work site an emergency plan with the locations of any utility or line shut-offs or disconnects so that if any emergency arises, immediate action may be taken.
- 11) The Contractor will be required to identify and provide a notification procedure for all contingencies where cutting off a utility could adversely

affect any operation or render inoperative any protective apparatus in the surrounding area.

- 12) All structural repairs, alterations or reconstruction of any equipment used on the work site shall be certified in accordance with all applicable laws and regulations.
- 13) Portable toilets shall be chemical type or equal and shall be located convenient to work crews and maintained in proper sanitary conditions at all times.
- 14) Construction operations will normally be confined to those hours between dawn and dusk. Any work done other than during daylight hours must be approved by the Engineer. In requesting approval during other than daylight hours, the Contractor must present a written statement outlining the special precautions to be taken to control the extraordinary hazards presented by night work. This program shall include, but not limited to such items as supplementary lighting of work areas, illuminated barricades, proper supervision, availability of medical facilities, and security precautions.
- 15) Emergency lighting facilities, (i.e. battery operated or equivalent) shall be required in all construction areas where normal light failures would cause employees to be subjected to hazardous conditions. Such systems shall be maintained monthly.
- 16) Employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the precautions to take, and the use of protective and emergency equipment. The Contractor shall comply with all regulations applicable for working in dangerous or potentially dangerous areas.
- 17) The use of torpedo or salamander type heaters are prohibited.
- 18) No open burning of any kind shall be permitted without permits from appropriate local authorities and the Engineer.
- 19) Flammable storage cabinets shall be labeled in conspicuous lettering "Flammable – Keep Fire Away" and "No Smoking".

D. MEDICAL SERVICES AND FIRST AID

- 1) At least one person who has valid certificates in first-aid training from either the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the work site to render first-aid. Further, a minimum ratio of one such qualified person to 50 employees shall be maintained throughout the course of the

construction. A suitable emblem shall be affixed to the qualified person's hard hat, or other suitable means of identification shall be used.

- 2) First-aid supplies, approved by a physician licensed to practice in the State of Florida, shall be accessible for immediate use. One 16-unit first-aid kit (or equivalent) shall be provided for each 50 persons or fraction thereof.
- 3) First-aid kit (s) shall be provided in a weatherproof container with individual sealed packages for each type item. The kits shall be checked by the Contractor before being sent out on each job and at least weekly on each job to ensure that the expanded items are replaced.
- 4) A telephone shall be made available at the site before construction begins. Telephone numbers and locations of emergency facilities including emergency hospitals, physicians, ambulance service, police and fire department, as well as the complete street address of the work site, shall be posted in conspicuous locations at the work site, and at all telephone locations. The communication system for contacting necessary ambulance service or other emergency response personnel shall be operable at all times personnel are on the work site.
- 5) The location and number of approved stretchers provided for each contract shall be submitted to MDC for approval immediately after work commences on site. They will be maintained, properly protected and easily accessible at all times.
- 6) The Contractors, his supervisors and foreman, shall assure that any of his employees who suffers a job-related injury shall receive first aid and medical attention consistent with and as required by law.
- 7) The Contractor's first aid facility shall maintain a daily log of all injuries, both first aid and doctor cases. The log shall contain information to reflect the date, name of employee, employer, craft, supervisor, type of injury, how accident happened, time, disposition of patient and name of attendant.
- 8) The Contractor shall ensure that all OSHA and State of Florida record-keeping and reporting requirements are met.

E. DRINKING WATER

- 1) An adequate supply of potable water shall be provided in all places of employment.
- 2) Portable water containers shall be capable of being tightly closed and be equipped with a tap.

- 3) A common drinking cup is prohibited. Disposable cups shall be furnished.
- 4) Unused disposable cups shall be kept in a sanitary container, and a receptacle shall be provided for used cups.
- 5) All containers utilized for potable water shall be labeled as "Potable/Drinking Water Only".

F. PERSONAL PROTECTIVE AND LIFE SAVING EQUIPMENT

1) GENERAL

- a) The Contractor is responsible for requiring and enforcing the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions.
- b) The Contractors is to comply with all OSHA regulations (29CFR1926 Subpart E) regarding personal protection devices and life saving equipment.
- c) All persons on the Work Site shall utilize the proper foot protection which meets ANSI Z41 (toe), Z41.2 (metatarsal) and Z41.4 (electrical) standards.
- d) All persons on the Work Site shall utilize hand and body protection which meets ANSI/ISEA 105 and ASTM F23 standards.

2) HEAD PROTECTION

- a) All persons on the Work Site shall be protected by NON-METALLIC protective helmets, which meet ANSI Z89.2 standards. Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specifications contained in ANSI Z89.1 Safety Requirements for Industrial Head Protection. Bump caps are not acceptable.
- b) All Work Sites shall have posted approved signs alerting all persons that hard hats are required on the site. The use of hard hats at the Work Site will be strictly enforced.

3) RESPIRATORY PROTECTION

- a) Whenever feasible administrative and/or engineering controls fail or are inadequate to prevent harmful exposures to employees; the Contractor shall

provide and require the use of appropriate respiratory protective devices in accordance with OSHA, 29 CFR 1910.134.

- b) Respiratory protective devices must be approved by the U.S. Bureau of Mines or acceptable to the U.S. Department of Labor for the specific contaminant to which the employee is exposed.
- c) Employers must have a written respiratory protection program as defined in 29 CFR 1910.134.
- d) Employees required to use respiratory protective equipment must be trained in the use and limitations of such equipment, fit tested annually and medically approved to wear respiratory protection as required by 29 CFR 1910.134.
- e) Respiratory protective equipment shall be inspected regularly and maintained in good condition. Defective or worn parts shall be replaced.

4) HEARING PROTECTION

- a) Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in the table below.
- b) When engineering or administrative controls fail to reduce sound levels within the limits of the Table below, protective hearing devices in accordance with OSHA (29CFR1926.101) shall be provided and used.
- c) Exposure to impulsive or impact noise should not exceed 140-db peak sound pressure level.
- d) In all cases, where the sound levels exceed the values shown in the Table below, a continuing, effective hearing conservation program shall be administered.
- e) PERMISSIBLE NOISE EXPOSURE TABLE (Source: OSHA, 29CFR1926.52)

<u>Duration per day, hours</u>	<u>Sound level dBA slow response</u>
8	90
6	92
4	95
3	97
2	100
1 -1/2	102

<u>Duration per day, hours</u>	<u>Sound level dBA slow response</u>
1	105
1 / 2	110
1 / 4 or less	115

- f) Plain cotton is not an acceptable protective device. Hearing protection shall be used only when it meets OSHA requirements and is suitable to correct the exposure.

5. EYE AND FACE PROTECTION

- a) Eye and face protection shall be provided and worn when machines or operations present potential eye or face injury.
- b) Eye and face protective equipment shall meet the requirements of ANSI Z87.1 – 2003, "Occupational and Educational Eye and Face Protection".
- c) Employees involved in welding operations shall be furnished with a welding helmet with minimum grade 10 shade filter lens for shielded arc welding or cutting. Welding goggles with a minimum grade 4 shade filter lens may be worn only for oxyacetylene gas welding or burning.
- d) Employees exposed to laser beams must be furnished suitable laser safety goggles, which will protect for the specific wavelength of the laser and be of optical density (0.0) adequate for the energy involved.

6. SAFETY NETS

- a) Safety nets shall be provided when workplace are over roads, guideways, or more than 25 feet above other surfaces where the use of ladders, scaffold catch platforms, temporary floors, safety lines, or safety belts is impractical. Safety net systems shall conform to OSHA 29 CFR 1926 502.
- b) Where nets are required, operations shall not be undertaken until the net is in place and has been tested & inspected by the Resident Engineer.

7. SAFETY BELTS, LIFELINES AND OTHER PERSONAL FALL ARREST SYSTEMS

- a) Approved personal fall arrest systems (in accordance with OSHA; 29 CFR 1926.104 and 29 CFR 1926.502) shall be worn by those employees whose

work exposes them to falling from the perimeter of a structure or through shaftways and openings. Protection must also be provided for employees who are exposed to the hazard of falling into/onto dangerous equipment,

- b) Employers must provide a training program for employees who might be exposed to fall hazards. The training shall include how to recognize such hazards and how the employees can minimize their exposure to such hazards. The training shall, at a minimum, comply with 29 CFR 1926.503. Re-training or refresher training must also be provided when necessary. Records of such training must be available for inspection by MDT.

8. WORKING OVER OR NEAR WATER

- a) Employees shall be provided with a U.S Coast Guard approved life jacket or buoyant work vest.
- b) Prior to and after each use, the buoyant work vest or life jacket shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used and be removed from the job site.
- c) Ring buoys with at least 90 feet of line shall be provided and available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
- d) At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.

G. SIGNS, SIGNALS, BARRICADES AND TRAFFIC CONTROL

- 1) All traffic signs or devices used for protection of construction workmen or the public shall conform to the State of Florida Department of Transportation's "Roadway and Traffic Design Standards" and applicable permit(s) conditions. All work areas on or around highways, roads and streets shall follow approved maintenance of traffic plans.
- 2) Barricades, cones and/or similar protective devices shall be used whenever men or equipment are exposed to traffic or similar hazards.
- 3) When traffic lanes are closed due to work activity, advance warning signals and high level warning devices shall be used as described in the State of Florida Department of Transportation's "Roadway and Traffic Design Standards" and applicable permit(s) conditions. All work areas on or around highways, roads and streets shall follow approved maintenance of traffic plans.

- 4) Flagmen and signalmen will be properly trained, certified, wear high-visibility clothing (as required by F-DOT FTDS600) and use appropriate procedures following the current F-DOT manual. Where flaggers are used, a flagger symbol or legend sign must also be used.
- 5) All employees within 15 feet of the edge of the travelway and/or where employees are exposed to roadway traffic shall be required to wear a high visibility vest/garment, per F-DOT manual.
- 6) Whenever and wherever possible and necessary, line voltage (12 volt) protected lights shall be used to mark fences and barricades and other such encroachments onto public streets or sidewalks. Warning lights shall be in accordance with F-DOT RTDS 600.
- 7) Where covered sidewalks are required they shall be provided with permanent lights to provide sufficient illumination for safe use by the public day or night. All bulbs shall be cage-protected.
- 8) Public walkways shall be kept clean and free of hazards at all times. When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodations must be maintained and include provisions for the disabled. Only approved temporary traffic control devices may be used to delineate a temporary traffic control zone for pedestrian and bicycle ways. Advanced notification of sidewalk closures and detours shall be provided by appropriate signs.
- 9) Where the Contractor is required to provide public walkway, they shall have abrasive, non-slip surface.
- 10) Where access to bus stop is disturbed or obstructed by the Contractors operations, safe access will be maintained or the bus stop relocated as directed by the Engineer. Coordination for maintaining or relocating bus stops with the appropriate agencies is the sole responsibility of the Contractors.
- 11) When steel plates or similar covers are used on public ways to cover excavations they shall be substantially secured to prevent movement imposed by traffic. Covers shall have non-slip surface, conforming to OSHA Specifications.
- 12) When such covers are located where there is pedestrian exposure, they shall be tapered at all sides with cut-back cold mix or similar material to eliminate tripping hazards. Covers shall have non-slip surface.
- 13) Free access shall be maintained to every fire extinguisher, fire hydrant, fire alarm box, fire escape and standpipe connection, street and traffic light control box. When required, hydrants shall be extended by suitable tube or piping to an

accessible point as approved by the Engineer. No obstructions shall be allowed at any time within 15 feet of a fire hydrant. Where materials are placed in the vicinity of a fire hydrant or a fire alarm box or fire extinguisher, and to such a height as to prevent the same from being readily seen, the position of such hydrant or fire alarm box or fire extinguisher shall be indicated by suitable signals, both day and night.

- 14) The Contractor shall erect and maintain fences and barricades to enclose the Contractor's work area, and provide watchmen where required to prevent unauthorized access.
- 15) No work shall be allowed above or below an active traffic lane. Contractor shall establish a work zone including appropriate lane closures following F-DOT RTDS 600 series.

H. MATERIAL HANDLING – (STORAGE, USE AND DISPOSAL)

- 1) All materials stored in tiers shall be secured to prevent sliding, falling or collapse.
- 2) Reinforcing steel shall not be used as a lifting ("Pick") point on any load nor as a guy line anchor.
- 3) Hooks, except special sliding choker hooks shall be securely moused when in use, or shall be provided with a functioning safety latch.
- 4) Scrap material of any kind, type or nature shall be placed daily into appropriate containers specifically supplied for this purpose. Containers shall be removed from the Work Site when full.
- 5) Loose material on open decks or other exposed locations shall be removed or secured at the end of each day to eliminate dislodgment by wind or other causes.
- 6) Compatibility of stored materials and storage methods will comply with all applicable OSHA, Fire Department and environmental agency standards.
- 7) Employees required to handle, use or dispose of hazardous materials shall be instructed regarding the safe handling, proper procedures, potential hazards, personal hygiene, and personal protective equipment required.
- 8) Disposal of materials shall be in accordance with all applicable Federal, State and Local regulations. All applicable recordkeeping and reporting requirements will be met by the Contractors.

I. TOOLS – HAND AND POWER

1) General

- a) Keep the work area clear of clutter
- b) Keep the work area well lighted
- c) Maintain and keep tools sharpened, oiled and stored in a safe place
- d) Supervisors instruct employees on using equipment and safe work practices before using equipment
- e) Inspect tools, cords and accessories prior to use
- f) Repair or replace problem equipment immediately
- g) Use 3-prong electrical plugs, double insulated tools and safety switches
- h) Machine guards must be in place and not removed
- i) Do not wear loose clothing or jewelry when operating equipment
- j) Install and repair equipment only if you are qualified to do so
- k) Use the right tool for the job (i.e. do not use a pipe wrench as a hammer)
- l) Carry a sharp tool pointed downward or place it in a tool belt/box
- m) Protect sharp blades with a shield/sheath
- n) Store tools in draws or chests with cutting edge down
- o) Proper personal protective equipment shall be worn
- p) All power hand tools shall be equipped with a “dead man” control where the power is shut down when the operator releases the tool
- q) Never leave a running tool unattended
- r) Tools of a non-sparking material and/or intrinsically safe tools must be used if fire or explosion hazards exist
- s) All fuel operated tools shall be stoped and allowed to cool prior to being refueled, serviced, or maintained and proper ventilating used when used in enclosed spaces
- t) Power grinding machines shall have proper grounding. Work rests must be kept at a distance not to exceed 1/8” from the wheel surface
- u) Avoid repetitive motion, hold tools in a neutral position

2) “Lock on” buttons on all hand held power drills are prohibited.

3) Powder Actuated Tools

- a) High velocity tools are prohibited. Only low velocity piston drive tools are permitted.
- b) Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a power actuated tool. ANSI STANDARD A10.3-1970.
- c) Firing of the tools shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into firing position. The tool shall be so

designed so as not to be operable other than when being held against a work surface with a force of at least five pounds greater than the total tool weight. Caution must be exercised to ascertain that the proper color coded charge, for the materials involved, is utilized.

- d) In case of misfire, the operator shall hold the tool in the operating position for at least 30 seconds. He shall then try to operate the tool a second time. He shall wait again 30 seconds, holding the tool in the operating position. Then he shall proceed to remove the explosive load in strict accordance with the manufacturer's instructions. Misfired cartridges shall be placed carefully in a metal container filled with water and returned to the supervisor for disposal.
- 4) Grinding wheels shall not be operated at speeds in excess of the manufacturer's RPM rating as labeled on the wheel.
 - 5) Face and eye protection or safety goggles shall be worn by all employees using grinding wheels, jackhammering, slag chipping, powder actuated tools or similar operations.
 - 6) Radial Saws
 - a) The upper hood shall completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The slides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock.
 - b) Radial saw for ripping shall be provided with non-kickback finger or dogs approved by the manufacturer.
 - c) The saw and table shall be designed to prevent the blade from traveling beyond front of table.
 - d) Installation shall be in such a manner so that the front end of the unit be slightly higher than the rear, so as to cause the cutting head to return gently to the starting position when released by the operator.
 - 7) Table saws shall be equipped with a functioning hood, guard, anti-kickback device and splitter.
 - 8) Only power saws specifically designed by the manufacturer for cutting concrete block, or similar materials, shall be used for this purpose.
 - 9) Cutting shall be done with water spray and the operator shall wear a face shield.

- 10) All hose couplings or any pneumatic or hydraulic equipment or tools shall be equipped with appropriate safety clips or retainers and shall be properly installed and maintained.
- 11) All appropriate machine and tool guarding devices shall be provided, shall be operational, and shall be use when the equipment is in operation.

J. WELDING AND CUTTING

- 1) Contractors shall instruct employees in the safe and proper use of cutting and welding equipment prior to using that equipment.
- 2) Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use. Each regulator shall be provided with an anti-flashback device for protection against excessive oxygen back pressure in the fuel gas supply.
- 3) A minimum of one 10-pound all-purpose (ABC) dry chemical fire extinguisher shall be kept within 10 feet of any cutting or welding operation. The extinguisher shall be kept in a conspicuous place, free of any obstructions.
- 4) Proper personal protective equipment shall be worn while welding and cutting.
- 5) Welding screens shall be used in areas where prefabrication work is to be performed.
- 6) Oxygen and fuel gas regulators and hoses shall be maintained and in proper working order while in use.
- 7) All oxygen cylinders and fittings shall be kept free of grease and oil.
- 8) Do not weld without the approved goggles, hood and jacket/apron.
- 9) Always use approved gloves when welding.
- 10) Do not weld or burn in an area where fellow employees are working, without protective barriers, non-combustible flameproof screens/shields (blankets, covers, curtains etc.).
- 11) Do not weld where flammable or combustible material, such as waste, rags, paper, etc. can be ignited by the sparks or molten metal.
- 12) Do not weld in any location where open flame is not permitted.
- 13) Do not weld on a wooden bench or other structure that can burn.

- 14) Do not use leaky regulators, hose or other defective gas welding tools.
- 15) Do not use leaky gas cylinders.
- 16) Do not operate gas welding or cutting torches at pressure in excess of prescribed maximum.
- 17) Do not change or adjust pressure on regulators with torch valve closed.
- 18) Do not leave valves of gas cylinders open when not in use.
- 19) Do not leave valve key on gas cylinders when not in use.
- 20) Always remove all scale, rust, grease, protective surface coatings, oil and other foreign matter from metals before welding.
- 21) Always keep welding bench clear of dirt.
- 22) Always locate electric welding machine where it is protected from dirt, dust and harmful fumes.
- 23) Always see that the material being electrically welded is well grounded, and the ground connection from machine is tight.
- 24) Avoid fires on personal clothing from sparks or hot metal.
- 25) Always use protective clothing (welders legging, aprons, sleeves, jacket, etc.) when welding or burning.
- 26) Oxygen must not be used near flammable or combustible materials, such as grease, oil, etc., or any substance likely to cause fire.
- 27) Do not weld or cut in confined spaces without adequate ventilation.
- 28) Protect welding hose from being burned, trampled on or run over. Do not leave hose where it may be tripped over.
- 29) Valves on acetylene and oxygen tanks must be tightly closed when work is completed.
- 30) Carrying a lighted torch while climbing is forbidden.
- 31) Put rod stubs in a container. Stubs thrown on the floor become a slipping hazard.
- 32) Do not direct the flow of oxygen, from the torch, at clothing to remove dust, etc. This is a fire hazard.

- 33) Always have good ventilation when welding and gas cutting.
- 34) In the open air, when welding, cutting or heating metals having toxic substance(s), such as zinc, lead, cadmium, or chromebearing metals, approved respirator shall be used
- 35) When required have a certified fireguard while burning or welding. Fireguard must have a functional fire extinguisher present.
- 36) Use caution when removing eye protection. Hot slag may pop during cooling.
- 37) Remove manifold and replace protective caps on cylinders before storing welding unit (overnight, etc.).
- 38) Manifold hoses must be equipped with flash arrestors.

K. COMPRESSED GAS CYLINDERS

- 1) Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored.
- 2) Cylinder valves shall be closed when work is finished and when cylinders are empty or are moved.
- 3) Compressed gas cylinders shall be secured in an upright position at all times, except when cylinders are actually being hoisted or carried.
- 4) Cylinders shall be kept at a safe distance or shielded from welding or cutting operations. Cylinders shall not be placed where they can contact an electrical circuit.
- 5) You are forbidden to lift or transport gas cylinders with hoisting equipment. Rough handling of loaded or empty gas cylinders is dangerous. Install protective caps onto cylinders before moving same. Transport cylinders on handcarts equipped with chains and secure the cylinder during movement. Do not accept cylinders, which do not have a protective cap.
- 6) Grease or oil on acetylene cylinders or oxygen cylinders is forbidden. It is extremely dangerous.
- 7) Avoid freezing acetylene cylinders.
- 8) Always remove leaky gas cylinders to open air, place them clear of flammable material or anything that might ignite them.

- 9) Always secure cylinders in an upright position. When a cylinder is empty, it must be marked "empty" and stored separately from full cylinders.
- 10) Protect cylinders from excessive heat. Do not store near steam pipes, furnaces, etc.
- 11) Oxygen cylinders should not be stored with acetylene or other highly combustible materials, including welding units. A minimum of 20 feet must be maintained from combustible and flammable gases.
- 12) All cylinders must be transported and stored with the protective cap securely in place. Never store cylinders with regulators/manifolds attached.
- 13) All cylinders must be clearly labeled as to content.

L. ELECTRICAL

- 1) Extension cords and temporary lighting electrical cords shall conform to the current edition of the National Electrical Code table 400.11. "Hard Usage" or "Extra Hard Usage", and shall be protected against all types of abrasion and damage.
- 2) All male plugs and female receptacle connections shall have cords physically interlocked to prevent accidental or unintentional separation and provide complete and positive continuity and grounding.
- 3) All power cords connected to panels of breaker boxes shall be connected using plugs. No direct wiring is permitted.
- 4) Temporary (extension) cords used to supply tools shall be limited to a maximum length of 200 feet, except that additional length may be used if supplemental positive equipment grounding is maintained within 200 feet of the tool or power use.
- 5) All portable power generators shall be grounded.
- 6) Ground-Fault Circuit Protection:
 - a) Ground-Fault Circuit interrupters will be installed on all 120 volts, single-phase, 15 and 20 ampere receptacles, on the Work Site.
 - b) An assured equipment grounding conductor program may be substituted for ground-fault circuit protectors, only after the following has been provided.

- c) Submit a written program, developed by a licensed electrician, including specific procedures adopted by the Contractor to the Engineer and MDC Risk Management.
- 7) All Work Site conditions will comply with requirements in OSHA 1926 Subpart K.
- 8) Before starting work on electrical equipment and lines, inspections and tests must be made to determine if they are alive or dead.
- 9) Use only tools or devices provided and see that they are in good condition.
- 10) Never touch two parts at different potentials or a single exposed live part at a dangerous potential to ground unless employee is insulated from other conducting surfaces, including ground.
- 11) Standing with hands behind back, with back toward generator or switchboard, is prohibited.
- 12) Employees working near live equipment and lines must protect themselves from tripping, slipping or falling, or from touching equipment or lines with body, tools or material.
- 13) Work on or about electrical circuit, apparatus or equipment only if qualified and with a thorough knowledge of its operating voltage and service, and then only when authorized by the immediate supervisor.
- 14) Do not use appliance, device, tool, flashlight, material or equipment that is not designed and approved for the maintenance and operation of the circuit on which it is to be used.
- 15) Insulation, weather proofing or covering on electrical wire, apparatus or equipment must not be depended upon for protection against shock.
- 16) Do not use bolt, rivet, cotter key or other object as a jumper in place of fuse.
- 17) Do not place clothing, lunch, tools, clothes hanger, or other unauthorized items in or about the power or control cabinet, switch box, battery box or on top of electrical apparatus.
- 18) Place "DO NOT OPERATE" warning tag on switch, set to de-energize line, apparatus or equipment. "Lock Out" procedures are preferred where feasible. At all times, when working on equipment that has the potential to cause harm or create a hazard, "Lockout/Tagout projection Televisions" procedure shall be followed. Lockout/Tagout procedure requires each employee to place a lock (if possible) or a safety tag on the energy source of any equipment that has the

potential to cause harm if the equipment is activated while it is being worked on. Refer to OSHA Standard 1910.147, "Control of Hazardous Energy".

- 19) Consider every circuit to be alive.
- 20) Use extreme care when using "snakes" in preparation of installing wire or cable. The coiled "snake" may fly loose and strike a person or electrified equipment.
- 21) Do not allow wet clothing, raincoats, etc., to come in contact with electrified equipment.
- 22) Do not lubricate electrical apparatus with power on.
- 23) Do not use water to put out electrical fires.
- 24) Do not change any wire or connections with power on.
- 25) Do not shift brushes in electrical motors with power on.
- 26) Do not leave the secondary of a current transformer open-circuited, or open up the secondary with power on.
- 27) Never wear ring(s) or jewelry on fingers on person when working near or handling electrical equipment.
- 28) Inspect all temporary cords and plug equipment for damage prior to use. Cords with damaged insulation, covers, plugs or missing grounding pins are not to be used.
- 29) Do not pass temporary cords through door openings or other areas where they are likely to be cut.
- 30) When temporary cords are used, care must be taken to ensure a trip hazard is not created.
- 31) Portable extension lights shall be visually inspected by employees using them. Lamp guards must be in place on all extension lamps.
- 32) Electrical plugs of portable extension cords, or cords attached to any electrical apparatus, shall be disconnected by grasping the plug and not by pulling the cord.

LADDERS AND SCAFFOLDS

- 1) Ladders:
 - a) The use of ladders with broken or missing rungs or steps, broken or split side rails, or with other faulty or defective construction is prohibited. When ladders with such defects are discovered, they shall immediately be withdrawn from service.
 - b) Portable ladders shall be placed on a substantial base at a 4-1 pitch, have cleat access at top and bottom, extend a minimum of 36 inches above the landing, and be secured against movement while in use.
 - c) Portable metal ladders shall not be used for electrical work or where they may contact electrical conductors.
 - d) Job-made ladders shall be constructed for this intended use. Cleats shall be inset into side rails $\frac{1}{2}$ inch, or filler blocks used. Cleats shall be uniformly spaced, 12 inches, top-to-top.
 - e) Wooden ladders must not be painted. Split or rotted conditions would not be easily seen and constitute a hazard.
 - f) The foot of a ladder shall be placed $\frac{1}{4}$ of its length away from vertical plane of its support and must be secured to prevent all possibility of slipping.
 - g) Before climbing ladders, see that your shoes are free and clean of slippery substances. Watch out for broken rungs.
 - h) Face the ladder while climbing either up or down.
 - i) Never place a ladder in front of an unlocked door.
 - j) Employees must not reach out from a ladder more than an arm's length.
 - k) Ladders must be inspected by employees using them daily. Defective ladders are to be marked and kept separate from serviceable equipment and must be repaired before using.
 - l) Do not "walk" a ladder while on it.
 - m) Do not jump from or slide down any portion of any kind of ladder.

- n) When getting off a ladder, make certain of secure footing and avoid stepping on loose stones, debris or into a depression before releasing handhold on the ladder.
 - o) A stepladder must be fully opened and spread properly before being used. Never stand on the top step of a stepladder.
 - p) When carrying tools or other objects up a ladder presents a hazard, they should be raised with a rope and bucket.
 - q) Two or more persons should raise, extend, shorten or move extension ladders. Never use the top section of an extension ladder as a single ladder, since it has no safety feet.
 - r) Always rope off the area directly beneath ladders.
 - s) Never leave extended ladders unattended. Remove ladders when there is a temporary stoppage of work.
- 2) Scaffolds:
- a) Platforms shall be tightly planked for the FULL width of the scaffold except for any necessary entrance opening. Platforms shall be secured in place, with proper guardrail and toe boards.
 - b) Workmen shall not be allowed to climb or stand in cross bracing, or scaffold bucks.
 - c) Adjustment screws on scaffold legs shall not be extended beyond the manufacturer's recommendations, or two-thirds of the threaded length, whichever is shorter.
 - d) Casters shall be properly designed for strength and dimensions to support four times the maximum intended load. All casters shall be provided with a positive locking device to hold the scaffold in position. Casters shall be provided with a positive means of attachment to the scaffold legs.
 - e) Scaffold support bearing shall not be comprised of concrete block or similar materials and footed securely on a solid, stable base.
 - f) Materials shall not be stored on scaffolds in excess of the supplies needed for the immediate operation.
 - g) The edges of scaffolds shall be protected with railings and toe boards.

- h) When using rollers for moveable scaffolds, lock or secure wheels.
- i) Do not use bent or twisted members on scaffolds.
- k) Always remove a scaffold as soon as there is no more need for it. A scaffold is a constant hazard.
- l) Always rope off the area directly beneath scaffolds.
- m) Use extreme caution and use approved fall protection equipment on elevated surfaces lacking side rail and/or approved guard.

FLOORS, WALL, OPENINGS AND STAIRWAYS

- 1) One-half inch mild plow steel cables or equivalent, or ¼ inch alloy steel chains may be used on bridge or guideway decks, open floor edges, and similar applications, in lieu of standard wooden top midrails. Such cables or chains shall be firmly anchored and kept taut. All connections or cables shall be looped and clamped. Standard toeboards shall be used in such instances.
- 2) Floor openings shall be guarded by a standard railing and toeboards or cover. In general, the railing shall be provided on all exposed sides, except at entrances to stairways. Temporary floor openings shall have standard railings.
- 3) Every open-sided floor or platform, six feet or more above adjacent floor or ground level, shall be guarded by a standard railing, or the equivalent, on all open sides except where there is entrance to a ramp, stairway, or fixed ladder.
- 4) Runways four feet or higher shall have standard railings on all open sides except runways more than 18 inches wide used exclusively for special purposes may have the railing on one side omitted where operating conditions necessitate.

RAILING

- 1) A standard railing shall consist of top rail, intermediate rail and posts, and have a vertical height of approximately 42 inches from upper surface of top rail to the floor, platform, etc.
- 2) The top rail of a railing shall be smooth-surfaced, with a strength to withstand at least 200 pounds. The intermediate rail shall be approximately halfway between the top rail and floor.

- 3) A stair railing shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches nor less than 30 inches from upper surface of top rail of tread, in line with face of riser at forward edge of tread.
- 4) A standard toeboard shall be at least four inches in height, and may be of any substantial material either solid or open, with openings not to exceed one inch in greatest dimension.

CRANES, DERRICKS, HOISTS, ELEVATORS, PILE DRIVERS, & CONVEYORS

- 1) Prior to commencement of any work using any hoisting equipment on the Work Site, the Contractor will provide the Engineer with a valid certification of compliance for shore-based, or water borne equipment meeting all the provisions of OSHA 29CFR 1919.
- 2) Record Keeping Requirements:
 - a) Supervision of all testing, examinations, inspections, heat treatments and record keeping procedures shall be carried out by such persons as are so designated in OSHA 29CFR 1919.
 - b) Certificates issued by an accredited person (agency) shall be signed and all register entries made only by persons authorized by such accredited person (agency).
 - c) Certification shall not be issued until all conditions cited for correction on the semi-annual certification report form have been corrected in a manner satisfactory to the certifying agency.
 - d) In the event deficiencies remain uncorrected, no certification shall be issued.
 - e) An accredited person (agency) shall maintain records of all work performed including reports of work or tests performed by others (nondestructive testing, heat treating, etc.), in relation to each certification. Such records shall be available for examination upon request by MDC Risk Management, the Engineer or their authorized representatives.
 - f) A copy of each certificate relating to semi-annual examination and/or unit proof load test shall be available with each crane or derrick.
- 3) A checklist will be prepared and submitted to the Engineer by the Contractor for any lift where the load exceeds 80% of the load chart capacity for the crane or derrick, or, where the lift involves the use of two or more cranes. (See Appendix C).

- a) No lifts meeting the above criteria will be made without prior submission of a Critical Lift Checklist.
 - b) Where erection drawings are prepared for submittal to the Engineer, Appendix C, will not be required if all the information contained therein is shown on the drawing submitted.
 - c) Prior to making the lift, the conditions shown on the drawing submitted will be verified by the Contractor's representative at the Work site. Any deviations from the erection drawing submitted will be reviewed and verified as safe by the Contractor's representative.
- 4) Operation of boom equipment, or other equipment such as forklifts, backhoes, and the handling of any load in the proximity of electrical transmission lines is forbidden within a minimum of 10 feet. Further, if such equipment is positioned so that it is possible by rotation or any other movement, whether anticipated or not, to possibly contact high voltage, de-energizing of the lines, restraints, "hold-backs", or other positive physical means will be required. (Note: "High Voltage" is defined as voltage in excess of 400 volts).
 - 5) All cranes shall be equipped with spirit level, or equivalent, to indicate the level of the crane fore and aft, and across the width. As nearly as possible, the crane shall be operated in level position.
 - 6) After normal working hours and during other extended periods of non-usage, crane booms shall be lowered to a horizontal position to minimize the chance of movement due to wind. If this cannot be accomplished, load lines shall be securely fastened to a substantial anchoring point.
 - 7) Except for floor-controlled overhead track cranes, a bell or other effective audible warning signal shall be provided for each crane equipped with power traveling mechanism, which shall be automatically engage and immediately audible when the crane begins to travel.
 - 8) All pinch points drive mechanisms, and other hazardous moving parts shall be effectively guarded. (See Appendix C for suggested checklist).
 - 9) Conveyor Systems
 - a) Conveyor systems shall be equipped with an automatic audible warning signal sounded immediately **BEFORE** starting up the conveyor.
 - b) Whenever a conveyor is equipped with a catwalk, a safety cable shall be installed on the conveyor to stop it instantly in an emergency, so as it cannot be started until the actuating switch has been reset to the "On" position. The

cable shall not be less than 12 inches nor more than 18 inches above the conveyor belt and shall extend the entire length of the conveyor.

- 10) Catwalks shall be kept clean and free of tripping hazards.
- 11) Any anticipated use of helicopters for lifting operations shall require advance notice and approval by the Engineer and MDC Risk Management.
- 12) No person will be allowed to ride on a suspended load or hook for any reason.
- 13) No person shall be allowed to stand or pass under the elevated portion of any equipment whether loaded or empty.
- 14) Pile driving loftsmen shall use safety belts when working at elevations outside loft platforms. When the leads are to be rotated or moved, the loftsmen shall descent from the leads.
- 15) Exhaust pipes, steam lines, and other hot surfaces, located where employees could contact them, shall be effectively guarded or insulated.
- 16) Do not operate cranes or hoisting machines unless qualified to do so.
- 17) Do not stand under load being moved by crane.
- 18) Always test crane brakes and limit switches before operating on your tour of duty.
- 19) Always be sure that path of crane travel is clear of people or alerted by signal alarm in advance of moving load and while crane is in motion.
- 20) Always be sure that hooks, chains or cables are secure and properly placed before raising load.
- 21) Always be sure that loose parts are removed from load before raising it.
- 22) Only the operator is permitted to be in the operators cab while crane is in operation, except when authorized maintenance is being performed or a new operator is being trained.
- 23) Hoisting hooks, chains or cables are to be visually inspected daily for flaws, cracks, etc., by employees using them and defects reported to their immediate supervisor. A monthly inspection with a certification record which includes the inspection date and signature of individual inspector must also be done.
- 24) Do not lift load with twists or kinks in the chain, rope or sling.

- 25) Operators of cranes that are moving loads in close proximity of exposed current carrying devices, are required to maintain a safe operating distance at least 10 feet from such devices to avoid contact with hoisting cables, blocks, hooks, etc.
- 26) Know the load rating of equipment when starting to raise an unusual or heavier than normal load (Load should not exceed limits of crane). Test brakes when load is a few inches from floor or ground.
- 27) When hoisting unusual material or machinery, attach a chain or cable well above the center of gravity to prevent the load from tilting or falling over when lift is made
- 28) When hoisting long shaped objects, a red tag line or other method of control is required to prevent load from turning end on end.
- 29) No employee shall ride or hang onto tongs, slings, hooks or load of hoisting equipment.
- 30) Before removing sling or chain from load, observe arrangement of load to be sure it has settled securely.
- 31) Keep from positioning yourself between the load being handled and a fixed object, (wall, stanchion or car) to avoid being pinned.
- 32) Leaving any hoisting equipment with a suspended load unattended, is forbidden.
- 33) Before hoisting a load, one (1) person must be designated to give signals, and all persons involved in the hoisting operation shall be notified who has been designated.
- 34) Before pulling a hoisting rope, wire, cable, chain or other such tackle, secure a firm footing, assume a braced position, and move clear in the event of adverse action.
- 35) Use both hands, when climbing into or leaving the crane cab. Lift tools and materials to the cab with a hand line.
- 36) If repairs to crane cause it to be laid up for a long period of time, lock the main switch in the open position to prevent use.
- 37) Make sure the controllers are in the "Off" position before opening or closing the main switch.
- 38) If power should go off, move the controllers to the "Off" position at once. Wait until power is restored before operating controllers again.

- 39) Never depend upon a limit switch to stop hoisting motor. Use your controls. Do not attempt to use two controls at the same time when approaching limits.
- 40) Whenever leaving the crane, place all controllers in the "Off" position, open the main switch and set the brakes.
- 41) When hoist operator's view is obstructed in the direction of movement, assign an employee to precede the hoist and warn others of its approach.
- 42) Do not shorten, repair or splice hoisting chain with wire, nails, bolts or other objects.
- 43) Use standard hoisting hand signals.
- 44) Do not make side pulls with a hoist, which will misalign the rope. It may cause the load to swing sideways or damage the rope itself.
- 45) Do not operate crane (move load) while the load is being raised or lowered.
- 46) Approved fire extinguishers are required in overhead cabs.
- 47) Any construction activity, including crane movement, occurring within 30' of the drip line of a Metromover or Metrorail guideway will also be subject to compliance with Miami-Dade Transit Adjacent Construction Manual requirements and OSS approval.

Q. WIRE ROPES, CHAINS, AND ROPES

- 1) Wire ropes, chains, ropes, and other rigging equipment shall be inspected prior to use and as necessary to assure their safety. Defective gear shall be tagged and removed from service.
- 2) Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, etc., or other such attachments, shall not be used.
- 5) The proper type of chain is to be used for the particular application (overhead lifting, transport, cargo securement, etc)
- 6) Any attachment, such as hooks or links, are to have a rated "working load limit" at least equal to the chain/rope with which it is used.
- 3) When U-bolts are use for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope.

- 4) When U-bolt wire rope clips are used to form eyes, the following table shall be used to determine the number and spacing of clips.

NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope diameter inches	Number of clips		Minimum Spacing (inches)
	Drop forged	Other material	
1/2.....	3	4	3
5/8	3	4	3-3/4
3/4.....	4	5	4-1/2
7/8.....	4	5	5-1/4
1.....	5	6	6
1-1/8.....	6	6	6-3/4
1-1/4.....	6	7	7-1/2
1-3/8.....	7	7	8-1/4
1-1/2.....	7	8	9

- 7) Slings are to be tagged for simple inclusion of sling type, working load limit, reach, serial number, chain size and grade.
- 8) State and federal regulations regarding size and number of chain systems required for securing loads on trucks are to be adhered too.

R. MOTOR VEHICLES AND MECHANIZED EQUIPMENT

- 1) All equipment that is left unattended adjacent to a roadway in normal use shall have appropriate lighted barricades placed around the location of the equipment
- 2) Loaders, backhoes, bulldozer and other similar equipment shall have their blades or buckets fully lowered and engines shut-off when left unattended.
- 3) All vehicles and equipment shall be checked at the beginning of each shift to ensure that the equipment is in proper operating condition and that accessories that affect safe operations are free from defects.
- 4) Heavy equipment, machinery, or parts thereof, shall be blocked to prevent falling or shifting before employees are permitted to work under or between them.
- 5) All equipment and vehicles with cabs shall have safety glass or equivalent windshields that are free of cracks and defects. Broken or cracked glass shall be replaced.

- 6) No person shall be allowed to ride in or on any equipment or vehicle except in seats, which are provided by the manufacturer.
- 7) Only trained, qualified and/or licensed persons are to operate equipment/vehicles.
- 8) All vehicles are required to have visual and audio back-up alarms.

S. EXCAVATION, TRENCHING AND SHORING

- 1) The Contractor shall call the Engineer who will call the Underground Utilities Notification Center at 1-800-432-4770 prior to any excavation regarding utilities. All initial excavation, which is done to expose all subsurface utilities, shall be done by hand to prevent damage. When exposed, they shall be protected at all times by suitable bridging, boxing, hangers or other supports during the prosecution of the work.
 - a) To provide access in emergencies, and for routine inspections of valves on water, gas or other mains, and to electrical power, communications, signal alarm and other service boxes, junction boxes and manhole that are decked over; trap door of a suitable size with suitable identifying steel plates securely attached thereto, shall be provided at all times in the decking.
 - b) The Contractors shall have a copy of the water main and gas drawings, clearly marked, to show the valves that control flow in the area and at the construction site. At least two valves in all directions outside the net lines shall be shown. The Contractor's superintendent shall mark and keep clear the location of valves for ready identification, should trouble develop.
- 2) Walkways shall be kept clean and free of all hazards at all times.
- 3) Internal combustion engines used in confined areas, such as in excavations or utility vaults where natural ventilation is limited, shall have exhaust fumes dispelled with forced ventilation or equivalent means.
- 4) All excavations and similar work areas where an exposure to the public or work personnel exists shall be promptly and completely fenced or barricaded, as shown in the Contact Drawings, except in those areas temporarily required to be open for the conduct of the work, then these openings shall be guarded to prevent access.
- 5) Adjustment screws on cross braces or trench jacks shall not be extended beyond the manufacturer's recommendations or 2/3 of the threaded length, whichever is more restrictive.

- 6) No one shall be permitted to climb or work from cross bracing.
- 7) Supervision – Excavation work shall at all times be under the immediate supervision of someone with authority to modify the shoring system or work methods, as necessary, to provide greater safety. He shall frequently examine the material under excavation and improve the shoring or methods beyond the minimum requirements, as necessary, to insure protection of workmen from moving material.
- 8) Removal of Shoring – No part of the shoring system of any excavation shall be removed until proper steps have been taken to avoid hazard to workmen from moving material. If a newly installed masonry or concrete wall is to be depended upon for this protection, it must have attained adequate strength to sustain resulting pressures.
- 9) Access and Egress – Convenient and safe means shall be provided for workmen to enter and leave the excavated area. This shall consist of a standard stairway, ladder, or ramp securely fastened in place at suitably guarded or protected locations where men are working and shall not require movement farther than 25 feet to reach such egress.
- 10) Blasting will not be permitted on the Work Site without prior approval of the Engineer and MDC Risk Management.
- 11) If any excavation (s) are required or requested to be left open by a utility company (s), municipality (s), or governmental agency, the excavations (s) will remain the sole responsibility of the Contractor for proper barricading and protection.

T. LASERS

- 1) Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment.
- 2) Employees shall wear proper eye protection where there is potential exposure to laser light greater than 0.005 watts (5 milliwatts).
- 3) Beams shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, over-night, or at change of shifts, the laser shall be turned off and shall be secured in a manner, which will preclude indiscriminate or unauthorized activation.
- 4) Employees shall not be exposed to light intensities above: direct staring – 1 microwatt per square centimeter; incidental observing – 1 milliwatt per square

centimeter: diffused reflected light – 2 1/2 watts per square centimeter.
Employees shall not be exposed to microwave power densities in excess of 10 milliwatts per square centimeter.

- 5) The Engineer shall be notified of the location, time and qualifications of person or persons operating the laser.

U. **ROLLOVER PROTECTIVE STRUCTURES, OVERHEAD PROTECTION AND REVERSE WARNING ALARMS**

- 1) On **ALL** rubber-tired or crawler scrapers, bulldozers, front-end loaders, backhoes, motor graders, industrial tractors and forklift trucks, Rollover Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) are required. (Note: See OSHA for structural performance standards).
- 2) On equipment where ROPS are required (above), seat belts shall be installed and worn by operators.
- 3) In lieu of a signalman, all bi-directional earthmoving, haulage or compacting equipment, and all trucks with a body capacity of 1-1/2 yards or more used to haul dirt, rock, concrete or other material shall be equipped with an automatically operated reverse signal alarm (such as buzzer, horn or bell) which is audible from a distance of 100 feet from the rear of the vehicle in operation. It shall be the duty of the contractor to inform his suppliers of these requirements.

V. **CONCRETE**

- 1) All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements for design, construction, inspection, testing, maintenance and operations as provided in OSHA.
- 2) Employees working more than six feet above adjacent working surfaces, placing and tying reinforcing steels in walls, piers, columns, etc., shall be provided with a personal fall arrest system (29CFR 1926.502), or equivalent device.
- 3) Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of implement.
- 4) Guying – Reinforcing steel for walls, piers, column and similar vertical structures shall be guyed and supported to prevent collapse.
- 5) Wire mesh rolls – Wire mesh rolls shall be secured at each end to prevent dangerous recoiling action.

- 6) Pumpcrete systems – Pumpcrete or similar systems using discharge pipes shall be provided with pipe supports designed for 100 percent overload. Compressed air hose in such systems shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized. Safety chains shall be provided on all line two inches in diameter or larger.
- 7) Concrete buckets equipped with hydraulic or pneumatically operated gates shall have positive safety latches or similar safety devices installed to prevent aggregate and loose material from accumulating on the top and sides of the bucket.
- 8) Riding of concrete buckets for any purpose shall be prohibited, and vibrator crews shall be kept out from under concrete buckets suspended from cranes or cableways.
- 9) When discharging on a slope, the wheels of ready-mix trucks shall be locked and the brakes set to prevent movement. The use of chocks is also required.
- 10) Nozzlemen applying a cement, sand, and water mixture through a pneumatic hose shall be required to wear protective head and face equipment.
- 11) When temporary storage of reinforcing rods, materials, or equipment on top of formwork becomes necessary, these areas shall be strengthened to meet the intended loads.
- 12) The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.
- 13) All shoring equipment shall be inspected prior to erection to determine that it is as specified in the shoring layout. Any equipment found to be damaged should not be used for shoring.
- 14) Erected shoring equipment shall be inspected immediately prior to, during, and immediately after the placement of concrete. Any shoring equipment that is found to be damaged or weakened shall be immediately reinforced or reshored.
- 15) Reshoring shall be provided when necessary to safety support slabs and beams after stripping or where such members are subjected to superimposed loads due to construction work done.
- 16) Metal tubular frames used for shoring shall not be loaded beyond the safe working load recommended by the manufacturer.
- 17) All locking devices on frames and braces shall be in good working order; coupling pins shall align the frame or panel legs; pivoted cross braces shall have

their center pivot in place; and all components shall be in a condition similar to that of original manufacture.

- 18) When checking the erected shoring frames with the shoring layout, the spacing between towers and cross brace spacing shall not exceed that shown on the layout, and all locking devices shall be in the closed position.
- 19) Devices for attaching the external lateral stability bracing shall be securely fastened to the legs of the shoring frames.
- 20) Formwork and shoring shall be designed, erected, supported, braced, and maintained so that it will safely support all vertical and lateral loads that may be imposed upon it during placement of concrete.
- 21) Working drawing showing the jack layout, formwork, shoring, working decks, and scaffolding, shall be available at the Work Site for review by the Engineer.
- 22) Stripped forms and shoring shall be removed and stockpiled promptly after stripping. In all areas which persons are required to work or pass, protruding nails, wire ties, and other form accessories not necessary to subsequent work shall be pulled, cut, or other means taken to eliminate the hazard.
- 23) Imposition of any construction loads on the partially completed structure shall not be permitted unless such loading has been considered in the design and approved by the Engineer.
- 24) Jacks and vertical supports shall be positioned in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks.
- 25) When checking the erected shoring towers with the shoring layout, the spacing between posts shall not exceed that shown on the layout, and all interlocking of tubular members and tightness of couples shall be checked.
- 26) All baseplates, shore heads, extension devices, or adjustment screws shall be in firm contact with the footing sill and the form material and shall be snug against the posts.
- 27) For stability, single post shores shall be horizontally braced in both the longitudinal and transverse directions, and diagonal bracing shall also be installed. Such bracing shall be installed as the shores are being erected.
- 28) All baseplates or shore heads of single post shores shall be in firm contact with the footing sill and the form materials.
- 29) Whenever single post shores are used in more than one tier, the layout shall be approved by the Engineer.

- 30) When formwork is at an angle, or sloping, or when the surface shored is sloping, the shoring shall be designed for such loading.
- 31) Adjustment of single post shores to raise formwork shall not be made after concrete is in place.
- 32) Fabricated single post shores shall not be used if heavily rusted, bent, dented, rewelded, or having broken weldments or other defects.
- 33) Timber shall not be used if it is split, cut, has sections removed, is rotted, or is otherwise structurally damaged.
- 34) Nails used to secure bracing or adjustable timber single post shores shall be driven home and the point of the nail bent over if possible. Double head nails will be permitted.

W. DEMOLITION

- 1) All sidewalks and walkways open to the public shall have abrasive non-skid surface and shall be kept clean and free of tripping hazards at all times.
- 2) "NO PARKING" zones with appropriate signs and barricades shall be displayed adjacent to buildings being demolished.
- 3) Water or other means of dust control shall be used where dust presents a health or environmental hazard, property damage potential, or nuisance.
- 4) See this Manual's section for Rollover and Falling Object Protection Structures, which also applies to demolition equipment.
- 5) Provide adequate protection to prevent damage to pipes, conduits, wires, cables, or structures above or below ground, which are not designated for removal.
- 6) Overhead protection shall be erected over sidewalks and shall extend at least ten feet beyond the building lines along direction of the sidewalks. Overhead planking shall be a minimum of three-inch full dimension lumber placed on adequately designed, metal or timber frames.
- 7) Substantial catch platforms shall be erected around all sides of the building prior to any demolition. Design must be approved by the Engineer.
- 8) Solid barriers of $\frac{3}{4}$ inch exterior fire rated B/D Plywood at least eight feet high shall be erected around the structure at ground or sidewalk level to protect the public. The barriers shall be framed with, at a minimum, 2"x3" fire rated studs 16" on center.

- 9) Full time flagman shall be provided to assist truck egress and ingress.
- 10) All mechanical, electrical, air conditioning, ducting, skylights, windows, and any other equipment, material or objects on roofs or walls of adjoining or adjacent structures to buildings under demolition shall be adequately protected from falling material and activity of wrecking crews and equipment.
- 11) No mechanical equipment (i.e. headache ball, impact equipment other than hand held) shall be used within six feet of any adjoining structure.
- 12) Employees engage in the demolition or removal of any pipes, structures or machinery covered or insulated with asbestos shall conform with all federal, state and local codes, rules, regulations and requirements including but not limited to:
 - a) 29CFR 1926.1101
 - b) 40CFR 61, Subpart M
 - c) Florida Statue 469.001-469.099
 - d) Miami-Dade Department of Environmental Resource Management
- 13) Employees engage in the demolition, removal or disturbance of any listed hazardous substance shall conform with all applicable federal, state and local codes, rules, regulations and requirements.

X. ADVERSE WEATHER CONDITIONS

- 1) Disassemble all scaffolds, loose formwork, radio antennas and secure properly.
- 2) All items that cannot be secured shall be stored inside secured storage areas or buildings.
- 3) All crane booms shall be lowered to ground level and secured to prevent movement.
- 4) All office trailers shall be tied down in compliance with MDC Tie Down Ordinance No. 77-1 upon original installation. All tie down straps, ground anchors, piers, etc., shall be checked for condition and operation.
- 5) All exposed glass on the Work Site shall be protected by a solid, rigid covering.
- 6) All free standing walls shall be shored from both sides.

- 7) Before employees are dismissed from the Work Site, the Contractors shall make a thorough inspection to verify all necessary precautions have been taken, and report to the engineer for any further instructions.
- 8) All precautions for construction sites during hurricane conditions, as required by the Florida Building Codes (Appendix D) shall be met.
- 9) All contractors shall develop a project specific hurricane plan. This plan will include a detailed description of all hurricane preparation activities for each MDT phase of hurricane readiness including:
 - a) Phase A – Pre-Season Preparedness
 - b) Phase B – Hurricane Advisory (48 hours prior to landfall)
 - c) Phase C – Hurricane Watch (24-48 hours prior to landfall)
 - d) Phase D – Hurricane Warning (24 hours prior to landfall)
 - e) Phase E – Landfall
 - f) Phase F – Recovery/Post Hurricane
- 10) Progression through the MDT phases of hurricane readiness will be declared by the MDT Hurricane Disaster Preparedness Coordinator (Coordinator). The Coordinator may accelerate preparedness levels based on prevailing conditions and expectations. The time of day the storm is expected to arrive, along with the Miami-Dade Emergency Operations Center levels of activation, are some of the factors that are considered. The MDT readiness phase will be communicated through the Resident Engineer or other MDT contract representative.

Y. HOUSEKEEPING

- 1) All refuse piles shall be removed from the Work Site immediately.
- 2) Stored and stacked materials shall be kept orderly, properly stacked, choked, and secured.
- 3) Any protruding nails, etc., shall be bent, removed or clinched immediately.
- 4) Oil, grease, and water spills shall be cleaned up immediately.
- 5) Loose materials, tools, or equipment shall be kept off stairs, out of walkways, ramps, platforms at all times when not in use.

- 6) Depressions and pot-holes in vehicle or walkway surfaces on the Work Site shall be properly filled and graded immediately.
- 7) Walkways, vehicle travel ways, ramps, railings, and stairways, shall be kept free from debris, properly installed and maintained.
- 8) Smoking or the use of open flames within 25 feet of flammable storage areas or fueling areas shall not be permitted.
- 9) Flammable storage areas shall be properly posted "**NO SMOKING**", provided with adequate fire extinguishers and free of combustible materials.
- 10) All sanitary facilities used on the Work Site shall be maintained on a daily basis.
- 11) All structures shall have a minimum of a 5-foot perimeter clearance that is to be free from any combustible debris or materials.

Z. HAZARDOUS SUBSTANCES

- 1) The Contractor shall develop, implement and maintain a written Hazard Communication/Right-to-Know Program and comply with all applicable requirements of OSHA Hazard Communication Standard 29CFR1910.1200.
- 2) The Contractor shall ensure that each container of hazardous substances in the workplace is labeled, tagged, or marked with the following information:
 - a) identify of the hazardous substance (s) contained therein
 - b) appropriate hazard warnings
- 3) The Contractor's written hazard communication program shall describe how the criteria for labeling; Material Safety Data Sheets (MSDS); employee information and training will be met and also include:
 - a) A list of the hazardous chemicals known to be present and their locations at the Work Site.
 - b) The methods the employer will use to inform employees of the hazards of non-routine tasks & the hazards associated with hazardous substances contained in unlabeled pipes in their work areas.
- 4) The Contractor shall maintain copies of the required Material Safety Data Sheet (MSDS) for each hazardous substance in the workplace, and shall ensure that they are readily accessible during each work shift to employees. (The Contractor may obtain the MSDS for a product by requesting it from the product's manufacturer, distributor, or importer.

- 5) Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the MSDS may be kept at a central location at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.
- 6) MSDS shall also be made readily available to fire & emergency response personnel, the Engineer and MDC Rick Management.
- 7) Contractors shall provide their employees with the following:
 - a) Information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.
 - b) Any operations in their work area where hazardous chemicals are present.
 - c) The location and availability of the written hazard communication program, including the required list (s) of hazardous chemicals and material safety data sheets.
 - d) Information as to the employees' rights under the Florida Right-to-Know Law:
 1. The right to know of the listed toxic substances present in the workplace.
 2. The right to obtain a copy of the Material Safety Data Sheet for each listed toxic substance present.
 3. The right to refuse to work, under specified circumstances, with a listed substance, if not provided a copy of the Material Safety Data Sheet for that substance within 5 of the requesting employee's working days after submitting a written request to the employee's employer.
 4. The right to instruction, within 30 days of employment, and at least annually thereafter, on the adverse health effects of each listed toxic substance with which they work in the workplace, how to use each substance safely, and what to do in case of any emergency.
 5. The right to obtain further information on the properties and hazards of listed toxic substances from the Toxic Substance Information Center (1-800-367-4378).
 6. The right to protection against discharge, discipline, or discrimination for having exercised any of these rights.
- 8) The Contractor shall post the State of Florida Right-to-Know Poster at the Work Site. The poster and information/assistance in complying with the Right-to-Know Law is available from the Toxic Substance Information Center (1-800-367-4378). As soon as any environmental item is discovered, the Contractor shall immediately inform the Resident Engineer and the MDT Senior Professional Engineer (Environmental).

APPENDICES

- Appendix A - State of Florida, First Report of Injury or Illness; Supervisor's Report; OSHA 300 & 300A
- Appendix B - Tool Box Safety Meeting Document, Suggested Format
- Appendix C - Safety Inspection Checklist For Crane Inspection & Critical Lifts
- Appendix D - Special Hurricane Precautions
- Appendix E - OSHA General Industry and Construction Standards Requiring a Competent Person

APPENDIX A

INSTRUCTION - FIRST REPORT OF INJURY OR ILLNESS
LES FORM DWC – 1

EMPLOYER -You are required by law to report all industrial accidents to the Division of Workers' Compensation within seven days of your first knowledge of the accident. A civil penalty of up to \$500 is provided for failure. Fully complete this form, using the employee's description of the accident, signs it, have the employees sign it and mail the original to the Division. Copies marked for the employee and your carrier (insurance company) must be sent to them.

If, for any reason, the employee cannot or will not sign the notice, **do not delay your report.**

EMPLOYEE -You are required by law to report your accident to the Worker's Compensation Division. Enter your description of the accident on this form, have your employer complete the form, then both of you should sign. If your employer refuses to sign or complete the report you should complete it. Send the original to the division, a copy to your employer.

For assistance, or for answers to questions on Workers' Compensation, call the toll free number shown on the form.

DISTRIBUTION: Part 1 - Division Copy
 Part 2 - Carrier Copy
 Part 3 - Employer Copy
 Part 4 - Employer Copy

CONSTRUCTION SAFETY MANUAL
May 2012

FIRST REPORT OF INJURY OR ILLNESS
FLORIDA DEPARTMENT OF FINANCIAL SERVICES
DIVISION OF WORKERS' COMPENSATION

For questions call 1-800-242-1743
 or contact your local RAC Office
 Report to be filed within 24 hours (400-213-1223 or 800-222-1165)

REPORTED BY CLAIMS-MANAGING ENTITY	SENT TO DIVISION DATE	DIVISION RECEIVED DATE

PLEASE PRINT OR TYPE NAME (Last, Middle, First)		EMPLOYEE INFORMATION Social Security Number		Date of Accident (Month/Day/Year)	Type of Accident <input type="checkbox"/> FA <input type="checkbox"/> FIA
HOME ADDRESS Street #1 _____ City _____ State _____ Zip _____		EMPLOYEE'S DESCRIPTION OF ACCIDENT (Include Cause of Injury)			
TEL. NUMBER Area Code Number	OCCUPATION		NUMBER OF HOURS THAT OCCURRED	PART OF BODY AFFECTED	
DATE OF BIRTH _____ SEX <input type="checkbox"/> M <input type="checkbox"/> F	COMPANY NAME		FEDERAL ID NUMBER (FID#)	DATE FIRST REPORTED (Month/Day/Year)	
D.B.A. _____ Street _____ City _____ State _____ Zip _____	TELEPHONE Area Code Number		NATURE OF BUSINESS	ACCIDENTER'S NUMBER	
EMPLOYER'S LOCATION ADDRESS (if different) Street _____ City _____ State _____ Zip _____	LOCATION # (if applicable)		DATE EMPLOYED _____	FIRST OR DATE OF PLURY <input type="checkbox"/> YES <input type="checkbox"/> NO	
PLACE OF ACCIDENT (Street, City, State, Zip) Street _____ City _____ State _____ Zip _____	COUNTY OF ACCIDENT _____		LAST DATE EMPLOYEE WORKED _____	WILL YOU CONTINUE TO PAY INAGES INSTEAD OF WORKERS COMP? <input type="checkbox"/> YES	
AGREES WITH DESCRIPTION OF ACCIDENT? <input type="checkbox"/> YES <input type="checkbox"/> NO		DATE OF DEATH (if applicable) _____		LAST DAY WAGED WILL BE PAID INSTEAD OF WORKERS COMP? _____	
EMPLOYEE SIGNATURE (I am the injured)		DATE _____		RATE OF PAY <input type="checkbox"/> HR <input type="checkbox"/> WS \$ _____ PER <input type="checkbox"/> DAY <input type="checkbox"/> MO Number of hours per day _____ Number of hours per week _____ Number of days per year _____	
EMPLOYER SIGNATURE		DATE _____		NAME, ADDRESS AND TELEPHONE OF PHYSICIAN OR HOSPITAL	

CLAIMS/PENDING ENDY INFORMATION

1(a) Denied Case - DWC-12, Notice of Denial Attached 2. Medical Only which became Lost Time Case (Complete all required DWC forms in #1)

1(b) Injuncty Only Denied Case - DWC-12, Notice of Denial Attached Employee's 8th Day of Disability _____
 Employee's Knowledge of 8th Day of Disability _____

3. Lost Time Case - 1st day of disability _____ Full Salary (incl. comp)? YES NO Full Salary End Date _____

DATE First Payment Made _____ AMOUNT _____ COMP RATE _____

T.T. T.T. - 80% T.P. I.B. P.T. DEATH SETTLEMENT ONLY

Penalty Amount Paid in 1st Payment \$ _____ Interest Amount Paid in 1st Payment \$ _____

ADAMS#			INSURER NAME
INSURER CODE #	EMPLOYEE'S CLASS CODE	EMPLOYER'S CLASS CODE	CLAIMS-MANAGING ENTITY NAME, ADDRESS & TELEPHONE
SERVICE CONTRACT CODE #	CLAIMS-MANAGING ENTITY #		

FORM DSR-1 (REV. 11/2010)



Year 20 _____

U.S. Department of Labor
Occupational Safety and Health Administration
200 Constitution Avenue, N.W.
Washington, D.C. 20355-1200

OSHA's Form 300A (Rev. 01/2000)

Summary of Work-Related Injuries and Illnesses

This form is to be completed by the employer for each establishment in which work-related injuries or illnesses occurred during the year. It must be submitted to OSHA with the Form 300, Summary of Work-Related Injuries and Illnesses, and the Form 301, Injury and Illness Incident Report, for each injury or illness.

Use this form to summarize the work-related injuries and illnesses that occurred during the year. It must be submitted to OSHA with the Form 300, Summary of Work-Related Injuries and Illnesses, and the Form 301, Injury and Illness Incident Report, for each injury or illness.

Employers, former employers, and their representatives have the right to review the OSHA Form 300A and 301 in their possession. They also have the right to request OSHA to review their records. See 29 CFR 1904.15 for more information on this right.

Number of Cases	
Total number of cases with days away from work, transfer or restriction	Total number of cases with job transfer or restriction
(a) _____	(b) _____

Number of Days	
Total number of days away from work	Total number of days of job transfer or restriction
(c) _____	(d) _____

Injury and Illness Types	
Total number of...	
(1) Injuries	(4) Poisonings
(2) Skin disorders	(5) Hearing loss
(3) Respiratory disorders	(6) All other illnesses

Post this summary page from February 1 to April 30 of the year following the year covered by this form.

OSHA will conduct an audit of the information reported on this form to determine if the information is accurate and complete. If OSHA finds that the information is not accurate or complete, OSHA may require the employer to provide additional information. OSHA will also conduct an audit of the information reported on this form to determine if the information is accurate and complete. If OSHA finds that the information is not accurate or complete, OSHA may require the employer to provide additional information.

Establishment Information

Name: _____
 Street: _____
 City: _____ State: _____ ZIP: _____

Industry: _____ (See NAICS Manual for more details)

Standard Industrial Classification (SIC) or NAICS (See Manual for details): _____

OSHA: _____

North American Industry Classification (NAICS) (See Manual for details): _____

Employment Information (If you do not have this information, or do not know it, check the box if true for the year covered.)

Number of employees: _____

Number of employees in this establishment: _____

Sign Name: _____

I certify that I have completed this document and I am responsible for its accuracy. I understand that this document may be used as evidence in a legal proceeding.

Signature: _____ Title: _____



U.S. Department of Labor
Occupational Safety and Health Administration
200 Constitution Avenue, NW
Washington, DC 20330

Attention: The information on this form is for use in a matter that involves health and safety. It is not to be used for any other purpose. This information is for use in a matter that involves health and safety. It is not to be used for any other purpose. This information is for use in a matter that involves health and safety. It is not to be used for any other purpose.

OSHA's Form 301 Injury and Illness Incident Report

This report will show OSHA's Recordable Injury or Illness. It is for use in a matter that involves health and safety. It is not to be used for any other purpose. This information is for use in a matter that involves health and safety. It is not to be used for any other purpose.

When a recordable injury or illness occurs, you must fill out this form or an equivalent. Some state workers' compensation insurance or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-505 and 29 CFR 1904, OSHA's record-keeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Company: _____
Date: _____
Time: _____

Information about the employee

1) Full name: _____
2) Job title: _____
3) Job description: _____
4) Date of birth: _____
5) Sex: Male Female
6) Date of hire: _____
7) Date of injury or illness: _____

Information about the physician or other health care professional

8) Name of physician or other health care professional: _____
9) Address: _____
10) Telephone: _____
11) Fax: _____
12) City: _____ State: _____ ZIP: _____

Information about the case

13) Date when incident occurred: _____
14) Time of day when incident occurred: _____
15) Description of incident: _____
16) Name of employee who reported incident: _____
17) Name of supervisor: _____
18) Name of employer: _____
19) Name of project: _____
20) Name of contractor: _____
21) Name of subcontractor: _____
22) Name of manufacturer: _____
23) Name of distributor: _____
24) Name of retailer: _____
25) Name of importer: _____
26) Name of exporter: _____
27) Name of manufacturer of equipment: _____
28) Name of manufacturer of material: _____
29) Name of manufacturer of component: _____
30) Name of manufacturer of part: _____
31) Name of manufacturer of assembly: _____
32) Name of manufacturer of system: _____
33) Name of manufacturer of subsystem: _____
34) Name of manufacturer of module: _____
35) Name of manufacturer of component: _____
36) Name of manufacturer of part: _____
37) Name of manufacturer of assembly: _____
38) Name of manufacturer of system: _____
39) Name of manufacturer of subsystem: _____
40) Name of manufacturer of module: _____
41) Name of manufacturer of component: _____
42) Name of manufacturer of part: _____
43) Name of manufacturer of assembly: _____
44) Name of manufacturer of system: _____
45) Name of manufacturer of subsystem: _____
46) Name of manufacturer of module: _____
47) Name of manufacturer of component: _____
48) Name of manufacturer of part: _____
49) Name of manufacturer of assembly: _____
50) Name of manufacturer of system: _____
51) Name of manufacturer of subsystem: _____
52) Name of manufacturer of module: _____
53) Name of manufacturer of component: _____
54) Name of manufacturer of part: _____
55) Name of manufacturer of assembly: _____
56) Name of manufacturer of system: _____
57) Name of manufacturer of subsystem: _____
58) Name of manufacturer of module: _____
59) Name of manufacturer of component: _____
60) Name of manufacturer of part: _____
61) Name of manufacturer of assembly: _____
62) Name of manufacturer of system: _____
63) Name of manufacturer of subsystem: _____
64) Name of manufacturer of module: _____
65) Name of manufacturer of component: _____
66) Name of manufacturer of part: _____
67) Name of manufacturer of assembly: _____
68) Name of manufacturer of system: _____
69) Name of manufacturer of subsystem: _____
70) Name of manufacturer of module: _____
71) Name of manufacturer of component: _____
72) Name of manufacturer of part: _____
73) Name of manufacturer of assembly: _____
74) Name of manufacturer of system: _____
75) Name of manufacturer of subsystem: _____
76) Name of manufacturer of module: _____
77) Name of manufacturer of component: _____
78) Name of manufacturer of part: _____
79) Name of manufacturer of assembly: _____
80) Name of manufacturer of system: _____
81) Name of manufacturer of subsystem: _____
82) Name of manufacturer of module: _____
83) Name of manufacturer of component: _____
84) Name of manufacturer of part: _____
85) Name of manufacturer of assembly: _____
86) Name of manufacturer of system: _____
87) Name of manufacturer of subsystem: _____
88) Name of manufacturer of module: _____
89) Name of manufacturer of component: _____
90) Name of manufacturer of part: _____
91) Name of manufacturer of assembly: _____
92) Name of manufacturer of system: _____
93) Name of manufacturer of subsystem: _____
94) Name of manufacturer of module: _____
95) Name of manufacturer of component: _____
96) Name of manufacturer of part: _____
97) Name of manufacturer of assembly: _____
98) Name of manufacturer of system: _____
99) Name of manufacturer of subsystem: _____
100) Name of manufacturer of module: _____

This form is for use in a matter that involves health and safety. It is not to be used for any other purpose. This information is for use in a matter that involves health and safety. It is not to be used for any other purpose.

APPENDIX B
TOOL BOX SAFETY MEETING

FOREMAN/SUPERVISOR – PRINT NAME

Date and Shift

FOREMAN/SUPERVISOR – SIGNATURE

Section

TOPICS COVERED AT MEETING:

Name(s) of Personnel Present for Meeting _____

Name (print)	Signature	Job Title

MDC AUDIT: _____
(name) (signature) (date)

Original must be filed for length of construction project.

APPENDIX C: SAFETY INSPECTION CHECKLIST
 Page 1 of 3

TITLE: JOB SITE ERECTION – Crane Inspection

AREA INSPECTED: _____

INSPECTED BY: _____ **DATE:** _____

INSPECTOR SIGNATURE: _____

PCI SAFETY MANUAL REFERENCE SECTIONS: _____

* Check items to be inspected in your area – disregard others not applicable

*	OK	ITEM INSPECTED	NOT OK	COMMENTS
		<u>The Crane Crew:</u> Is the operator and crew properly trained and medically fit to perform their job?		
		Operating is a full time job – does the operator pay strict attention to his duties?		
		Do crane personnel wear hard hats when away from the crane?		
		Is the operator aware of the regulations involving working close to high voltage lines and electrical equipment?		
		High Voltage, even from a distance source, can be induced in metal parts of the crane. Is the operator aware of these situations?		
		Does the operator know the weight of each piece before he picks it?		
		Does the crane crew know the manufacturer's proper recommendations for making short moves on the job site?		
		Does the crew get help when lifting heavy items?		
		Does the crew periodically check for level?		
		Do they check outriggers for stability?		
		Do they check the boom angle indicator and other electronic load equipment for accuracy?		
		Does the operator allow anyone to ride the load or the hooks?		
		<u>The Ground Crew (hooking up product)</u> Does the ground crew have, maintain and use proper safety equipment?		
		Are they familiar with the product erection sequence?		

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APPENDIX C: SAFETY INSPECTION CHECKLIST
 Page 2 of 3

TITLE: JOB SITE ERECTION – Crane Inspection (continued)

AREA INSPECTED: _____

INSPECTED BY: _____ **DATE:** _____

INSPECTOR SIGNATURE: _____

PCI SAFETY MANUAL REFERENCE SECTIONS: _____

* Check items to be inspected in your area – disregard others not applicable

*	OK	ITEM INSPECTED	NOT OK	COMMENTS
		(Continue) Are they familiar with the crane signals and general operation of the crane?		
		Do they know how to properly hook pieces and provide aerial stability?		
		Do they know how to properly use tag lines?		
		Are tag lines in good condition, strong enough?		
		Long Enough?		
		Two-way communication between the operator and erection foreman are becoming more common to provide safety on the job. Does the crew know how to operator and maintain the system? Are spare parts available for quick repair?		
		Is the crane swing radius roped off to prohibit the crane (during swing) from causing damage or hurting someone? Is entire swing checked? Including counterweights?		
		<u>The Machine:</u> Is the crane operated within all capacities?		
		Is the machine inspected daily?		
		Are the required crane inspections recorded?		
		Are all controls properly identified?		
		Are warning devices operative?		
		Is an operator's manual available to the crew for easy reference?		
		Are load charts, operating signals and other important information posted and/or readily available?		

APPENDIX C: SAFETY INSPECTION CHECKLIST

Page 3 of 3

TITLE: JOB SITE ERECTION – Crane Inspection (continued)

AREA INSPECTED: _____

INSPECTED BY: _____ DATE: _____

INSPECTOR SIGNATURE: _____

PCI SAFETY MANUAL REFERENCE SECTIONS: _____

* Check items to be inspected in your area – disregard others not applicable

*	OK	ITEM INSPECTED	NOT OK	COMMENTS
		(continued)		
		Are brakes within operating limits?		
		Are clutch and brakes surfaces dry?		
		Are all protective panels and guards in place?		
		Are electrical systems in good condition?		
		Are all of the sheaves properly aligned so as to reduce rope wear during work?		
		Is cable in good condition?		
		Are hooks in good condition?		
		Have hooks been inspected by magnetic particle inspection?		
		Are there safety latches on hooks?		
		Are fuel tanks in good condition and without leaks?		
		Are fire extinguishers available and routinely inspected?		
		<u>Slings</u>		
		Are slings in good conditions? Is safety factor of 5 maintained?		
		Are slings stored properly?		
		Are sling inspected reports maintained?		
		Are "U" bolt wire rope clips correctly placed?		
		Are all other lifting devices in good condition?		

CHECK LIST FOR CRITICAL LIFTS

NOTE: THIS FORM IS TO BE COMPLETED WHEN THE LOAD EXCEEDS 80% OF THE LOAD CHART FOR THE CRANE OR DERRICK OR WHERE THE PICK INVOLVES THE USE OF TWO OR MORE CRANES.

DATE: _____

(1) SUPERVISOR RESPONSIBLE FOR LIFT: _____

(2) DESCRIPTION OF ITEM TO BE LIFTED AND ESTIMATED WEIGHT:

(3) EQUIPMENT AND LIFT RELATIONSHIP:

(A) OPERATING RADIUS..... _____

(B) BOOM LENGTH..... _____

(C) ALLOWABLE LOAD (FROM LOAD CHART)..... _____

(D) RATIO OF LIFT TO ALLOWABLE LOAD..... _____

(E) CLEARANCE TO SURROUNDING FACILITIES..... _____

(F) SLING ANGLE..... _____

(4) CONDITION OF HOISTING EQUIPMENT AND RIGGING:

(A) HAS ALL EQUIPMENT BEEN REINSPECTED FOR THIS LIFT? YES NO

(5) STABILITY OF GROUND AREA:

(A) CHECK SOIL BEARING ALLOWABLE LOAD (COMMENTS):

(B) WILL MATS BE NEEDED? YES NO

CHECK LIST FOR CRITICAL LIFTS (cont.)

(B) ANY UNDERGROUND INSTALLATIONS NEEDING SPECIAL ATTENTION?
 YES NO

(C) WILL IT BE NECESSARY FOR THE CRANE TO WALK WITH THE LOAD?
 YES NO

IF THE ANSWER IS "YES", ANSWER QUESTIONS E, F, & G.

(E) IS AREA SURFACE LEVEL AND STABLE WHERE THE CRANE WILL BE WALKING
 YES NO

(F) HAVE FACILITIES BEEN PROVIDED TO KEEP THE LOAD RADIUS FROM CHANGING?
 YES NO

(G) HAVE ALL OVERHEAD FACILITIES BEEN CHECKED FOR CLEARANCE IN THE AREA WHERE THE CRANE WILL BE MOVING?

(6) DOES THE OPERATOR HAVE THE NECESSARY EXPERIENCE ON THE CRANE AND ON THIS TYPE OF LIFT?
 YES NO

(7) IF LIFT INVOLVES USE OF TWO CRANES ANSWER THE FOLLOWING:

A) HAVE OPERATORS WORKED TOGETHER BEFORE? YES NO

B) WHO WILL COORDINATE INSTRUCTIONS TO OPERATORS? _____

BY: _____
CONTRACTOR'S SUPERINTENDENT

APPENDIX D

SPECIAL HURRICANE PRECAUTIONS

During such periods of time as are designated by the United States Weather Bureau as being a hurricane warning or alert, all construction materials or equipment shall be secured against displacement by wind forces; provided that where a full complement of personnel is employed or otherwise in attendance, or engaged for such protection purposes, normal construction procedures or uses of materials or equipment may continue allowing such reasonable time as may be necessary to secure such materials or equipment before winds of hurricane force are anticipated. Construction materials and equipment shall be secured by guying and shoring, by tying down loose materials equipment and construction sheds.

APPENDIX E

OSHA General Industry and Construction Standards Requiring a Competent Person

The following OSHA standards require a competent person to perform specific functions under the standard. Standards are arranged numerically within the categories of General Industry and Construction. This list of standards requiring a competent person is to be used as a reference tool and does not supercede OSHA requirements.

General Industry (1910)

- 1910.66, Powered platforms for building maintenance.
- 1910.66 App C, Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms, Personal Fall Arrest System (Section I - Mandatory; Sections II and III - Non-Mandatory).
- 1910.109, Explosives and blasting agents.
- 1910.139, Respiratory protection for M. tuberculosis.
- 1910.183, Helicopters.
- 1910.184, Slings.
- 1910.268, Telecommunications.

Construction (1926)

- 1926.20, General safety and health provisions.
- 1926.53, Ionizing radiation.
- 1926.62, Lead.
- 1926.101, Hearing Protection.
- 1926.251, Rigging equipment for material handling.
- 1926.354, Welding, cutting, and heating in way of preservative coatings.
- 1926.404, Wiring design and protection.
- 1926.451, Scaffolds.
- 1926.454, Scaffolds, Training requirements.
- 1926.500, Fall Protections, Scope, application, and definitions applicable to this subpart.
- 1926.502, Fall protection systems criteria and practices.
- 1926 Subpart M App C, Personal Fall Arrest Systems - Non-Mandatory Guidelines for Complying with 1926.502(d).
- 1926 Subpart M App E, Sample Fall Protection Plan - Non-Mandatory Guidelines for Complying with 1926.502(k).
- 1926.503, Fall Protection, Training Requirements.
- 1926.550, Cranes and derricks.
- 1926.552, Material hoists, personnel hoists, and elevators.
- 1926 Subpart P App A, Excavations, Soil Classification.
- 1926 Subpart P App B, Excavations, Sloping and Benching.
- 1926.651, Specific Excavation Requirements.
- 1926.652, Excavations, Requirements for protective systems.
-

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May 2012

- 1926.705, Concrete and Masonry Construction, Requirements for lift-slab operations.
- 1926.752, Steel Erection, Bolting, riveting, fitting-up, and plumbing-up.
- 1926.800, Underground Construction.
- 1926.803, Underground Construction, Caissons, Cofferdams, and Compressed Air, Compressed air.
- 1926.850, Demolition, Preparatory operations.
- 1926.859, Mechanical demolition.
- 1926.900, Blasting and the Use of Explosives.
- 1926.1053, Ladders.
- 1926.1060, Stairways and Ladders, Training requirements.
- 1926.1101, Asbestos.
- 1926.1101 App F, Work practices and engineering controls for Class I Asbestos Operations - non-mandatory.
- 1926.1127, Cadmium.

Memorandum



Date: June 25, 2015
To: Distribution
From: Eric J. Muntan, Chief
Office of Safety and Security
Subject: Background Checks for Contractors ID Procedures

Background Checks for Contractors: ID Procedures

Miami-Dade Transit (MDT) is implementing the following policies and procedures to govern both the issuance of new contractor and subcontractor ID cards, as well as renewal of currently existing contractor and subcontractor ID cards.

Procedures

All contractors and subcontractors are required to have a current ID card displayed while on MDT property at all times. In order to obtain a new or renewed Contract ID card, the following paperwork must be submitted in person:

- A completed, **original** contractor ID application, completed **in blue ink**, and signed by both the contractor/subcontractor and an MDT authorized representative.
- A completed, **original fingerprint card**.
- A completed, **original local background check** form with a proper raised seal from the issuing law enforcement agency.

All documents must be original, and can have no alterations or markings. Similarly, all documents must be produced in person. No emails, PDF files, or facsimiles will be accepted.

Copies

All copies of original documents will be maintained by an MDT inventory control specialist.

Ineligibility for issuance or renewal of contractor/subcontractor ID cards

Personnel may not be issued a new or renewed contractor or subcontractor ID if he/she currently or in the past has:

- Any felony, sexual, or domestic violence conviction
- Been discharged from the military under any conditions other than honorable
- Any history of irresponsible behavior including but not limited to an unreasonable driving record, or a problem employment record as determined by the county contract administrator or designee

- Any criminal activity listed in 49 US Code of Federal Regulations (CFR) section 1542.209, *Disqualifying Criminal Offenses* and 19 CFR 122.183, *Denial of Access*.

Display of ID card

All contractor and subcontractor personnel **must** at all times conspicuously display their contractor/subcontractor ID card. Prior to entry, and at all times while on MDT property, contract and subcontract personnel are subject to ID checks by any authorized MDT agent. Any personnel not in possession of their ID card will be denied access to MDT property, or if already on property will be immediately escorted off MDT property until such time as he/she can display proper ID.

All contract and subcontract personnel are subject to random ID checks while on MDT property, at any time for any purpose, by any authorized MDT agent.

Limit of Duration of Contractor/Subcontractor ID card

New or renewed contractor/subcontractor ID cards shall be valid for a time not to exceed one year. All issued contractor/subcontractor cards must be renewed prior to the completion of the one year period to maintain all contractor/subcontractor privileges included therein. Any contractor or subcontractor who fails to comply with the one year renewal requirement is strictly forbidden from entering any MDT property as a contractor/subcontractor until such time as the ID card is renewed and returned to valid status.



Contractor/Subcontractor New or Renewal ID Checklist

Each of the following tasks **must** be completed prior to issuance of any new or renewed contractor or subcontractor ID cards. Successful completion of the below requirements will help prevent any unnecessary delays or obstacles in obtaining your new or renewed contractor or subcontractor ID card.

Did you remember to:	Completed?
Complete your contractor ID application in blue ink?	<input type="checkbox"/>
Have your contractor ID application signed by an authorized MDT representative?	<input type="checkbox"/>
Complete a fingerprint identification card?	<input type="checkbox"/>
Complete an NCIC background check with proper seal?	<input type="checkbox"/>
Bring only original documents, not photocopies, and refrain from sending any email, PDF, or faxed documents?	<input type="checkbox"/>
Keep all original documents free of any unnecessary markings or alterations?	<input type="checkbox"/>
Verify that you have no convictions for any listed criminal acts that prohibit issuance or renewal of an ID card?	<input type="checkbox"/>
Read all requirements for obtaining, maintaining, and displaying your contractor/subcontractor ID card?	<input type="checkbox"/>

Upon successful completion of all of the above listed items, you are permitted to turn in the necessary original documents to request issuance of either a new or renewed contractor/subcontractor ID card.



MDT CONTRACTOR IDENTIFICATION CARD APPLICATION

Company Name: _____ Date: _____
Company address: _____
City: _____ State: _____ Zip: _____ 24 hrs Contact #: _____
Email Address: _____ Fax #: _____

Employee's Name: _____ Phone #: _____
Employee Address: _____
City: _____ State: _____ Zip: _____ SS #: _____

Certification: I hereby certify that all information made on this form is true to the best of my knowledge. Furthermore, I agree to abide by all County and MDT policies and procedure while on MDT property. I further agree that any identification cards and/or credentials issued to me are MDT property and shall be surrendered to MDT upon completion of any assignment/project at the property for which the identification was issued. I am aware if the ID is lost or stolen, the replacement fee will be \$10.00 the first time and \$20.00 every time there after. I further agree and understand that the MDT card is not to be used for free transportation on MDT Metrobus or Metrorail system.

Employee's Signature: _____ Print Name: _____

MDT accompanying Supervisor Statement: I hereby certify that all information made on this form is true to the best of my knowledge and that the applicant is a bona fide employee or sub-contractor of said Contractor.

MDT signature: _____ Print Name: _____
Title: _____ Phone #: _____

Contractor's Representative Statement: I hereby certify that all the information made on this form is true to the best of my knowledge and the applicant is a bona fide employee or sub-contractor of our company. I further agree that any identification cards/credentials issued to this person are MDT property and shall be surrendered to MDT upon completion of any assignment/project at the property for which the identification was issued.

Signature: _____ Print Name: _____
Title: _____ Phone #: _____

SECTION TO BE COMPLETED BY EMPLOYEE RELATIONS ONLY

Date: _____ Prox. Card #: _____ Station Card #: _____
Cyber Key #: _____ 311 Card #: _____
Expiration Date not to exceed 12 months after date of issue: _____

Identification given: License #: _____ Alien Card #: _____
Passport #: _____ Other: _____

ID in [] not returned [] Date: _____ Cyber key in [] not returned [] Date: _____
Station Card in [] not returned [] Date: _____ 311 Card in [] not returned [] Date: _____

APPLICANT
* See Privacy Act Notice on Back

LEAVE BLANK

TYPE OR PRINT ALL INFORMATION IN BLACK
LAST NAME NAM FIRST NAME MIDDLE NAME

FBI LEAVE BLANK

FD-258 (REV. 12-10-07)

SIGNATURE OF PERSON FINGERPRINTED

ALIASES AKA

O
R
I

RESIDENCE OF PERSON FINGERPRINTED

DATE OF BIRTH DOB
Month Day Year

CITIZENSHIP CTZ

SEX RACE HGT. WGT. EYES HAIR

PLACE OF BIRTH POB

DATE

SIGNATURE OF OFFICIAL TAKING FINGERPRINTS

YOUR NO. OCA

LEAVE BLANK

EMPLOYER AND ADDRESS

FBI NO. FBI

CLASS _____

REASON FINGERPRINTED

SOCIAL SECURITY NO. SOC

REF. _____

MISCELLANEOUS NO. MNU

1. R. THUMB

2. R. INDEX

3. R. MIDDLE

4. R. RING

5. R. LITTLE

6. L. THUMB

7. L. INDEX

8. L. MIDDLE

9. L. RING

10. L. LITTLE

LEFT FOUR FINGERS TAKEN SIMULTANEOUSLY

L. THUMB

R. THUMB

RIGHT FOUR FINGERS TAKEN SIMULTANEOUSLY

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

UPGRADE CHILLER UNITS AT WILLIAM LEHMAN CENTER

PROJECT NO. IRP171

RPQ NO.

TP-0000017889

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

ADJACENT CONSTRUCTION MANUAL




**DEPARTMENT OF
TRANSPORTATION AND
PUBLIC WORKS
ADJACENT CONSTRUCTION MANUAL**

July 2017

**DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ADJACENT CONSTRUCTION MANUAL**

**DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
OFFICE OF SAFETY AND SECURITY
MIAMI, FLORIDA**

July 2017


for Eric Muntan

**Approved By:
Eric Muntan
Chief, DTPW
Office of Safety and Security**

8-4-17

Date

**DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
ADJACENT CONSTRUCTION MANUAL**

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DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS ADJACENT CONSTRUCTION MANUAL

1.0 Introduction

This manual was prepared in the interest and for the guidance of those who may want to construct a non-Department of Transportation and Public Works (DTPW) physical structure (incl. any excavation, demolition or use of DTPW real property) on, adjacent to, or over, an existing DTPW facility and/or property. The purpose of this Manual is to provide uniform minimum standards and criteria for the construction, development and maintenance of all properties that have or may enter the **Safety Zone** (defined in Appendix A and C) that has been established for all DTPW property and extending on either side of the Metrorail and/or Metromover systems. This includes any equipment, regardless of distance from the guideway, which static or operational failure could directly or indirectly affect DTPW operations or structures.

These standards are intended to provide the basic guidance for the construction, development and maintenance of property adjacent to the operating guideway systems so as to:

1. Protect the safety of the general public and DTPW Employees.
2. Protect the guideway system and the DTPW property from physical damage.
3. Preserve the level of service and operational schedules so as to cause the least disruption for the ridership and use of the DTPW system.

This manual outlines the design guidelines and criteria to follow for the design and submittal of construction plans and specifications to DTPW for review prior to construction of the project. It is the general policy of DTPW to review designs for construction projects adjacent to or on DTPW property on a case-by-case basis to ensure that DTPW facilities are not damaged by the proposed construction, and that DTPW operations are not impacted during or after the adjacent construction.

DTPW maintains half-size "as-built" drawings in its Engineering, Planning & Development (EP&D) Library. Half-size copies of any of the drawings on file are available at printing costs. The full-size drawings on file are available at printing costs. The full-size drawings are normally in archival storage. Full size drawings may be obtained by special request. The Manager, DTPW Document Control, may be contacted (telephone: (786) 469-5268) for an appointment to review the drawings and to order prepaid copies as required.

The criteria provided herein are general in nature and for the sole purpose of providing a selective overview of the design requirements. Specific designs performed in the past by DTPW's consultants may not necessarily be in total conformance with this manual. It is considered to be the Developer's responsibility to obtain the original design computations, where available, from DTPW to completely understand the original design intent in order to accurately assess the impact of their proposed construction on the DTPW structures and facilities. A map of the DTPW Metrorail and Metromover system is provided in Section 2.0 (below) for use in locating "as-built" drawings.

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2.0 System Maps (Rail & Mover)

2.1 Metrorail System



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2.2 Metromover System



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3.0 General Procedures for Adjacent and Transit Right-of-Way Construction Activity

Developers or agencies contemplating any construction activity adjacent to or on Department of Transportation and Public Works (DTPW) facility, structure or property, including any excavation, maintenance, restoration, demolition or use of DTPW real property, should provide, for review, three (3) copies of their drawings and three (3) copies of their calculations, showing the relationship between their project and the DTPW facilities.

Sufficient drawings and details should be submitted to facilitate DTPW's review of the effects that the proposed project may or may not have on the DTPW facilities. A DTPW review requires internal circulation of the construction drawings to concerned departments. Drawings normally required for review are:

- Site Plan
- Drainage Area Maps and Drainage Calculations
- Architectural drawings (basement plans through top floor)
- Sections showing foundations and DTPW Structures
- Structural drawings (provide relative sections showing DTPW)
- Column load tables
- Pertinent drawings detailing an impact on DTPW facilities
- A copy of the geotechnical report

If uncertainty exists on the possible impacts a project may have on the DTPW facilities, and before making a formal application for a review of a construction project adjacent to the DTPW System, the developer or his agent may contact the **Chief, Right-of-Way and Utilities Division** should be contacted at **(786) 469-5244**.

Sheeting and shoring drawings should be accompanied by calculations. The drawings and calculations should contain comments, details, notes, and instructions describing the proposed sequence of construction.

When the design of foundations and site work of the project has progressed to the point considered complete and ready for review, the drawings and calculations, as applicable, should be sent to:

**Chief
Right-of-Way and Utilities
Department of Transportation and Public Works
701 N.W. 1st Court, Suite 1500
Miami, FL 33136**

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A period of 15 working days should be allowed for review of the drawings and calculations. Fifteen (15) days should be allowed for each successive review as required. Additional review time may be required for complex projects.

Reimbursement is required for the cost of providing support services for adjacent construction and joint development projects where access is required into the operating Metrorail/Metromover system; or the system is impacted. As part of the review procedure, and before any work may proceed, the developer will be required to sign a letter accepting this obligation.

The applicant must receive written approval for the design of a given project by the DTPW Chief, Right-of-Way & Utilities or DTPW Fire/Life Safety Technical Committee Chairperson (as applicable), prior to the start of construction.

Project Documents shall be reviewed and accepted by the appropriate DTPW Divisions for possible impact on DTPW facilities and operations, including all elements associated with the construction of the project and any temporary protection system needed to preserve the system safety.

Each "Part" of the project's design shall be reviewed and approved by the DTPW Design and Engineering Division (DED). A few of the more common "Parts" of a project are considered to be sheeting and shoring, overhead protection, dust protection, dewatering, temporary use of public space for construction activities.

The DTPW review process is outlined in Figure 1 below

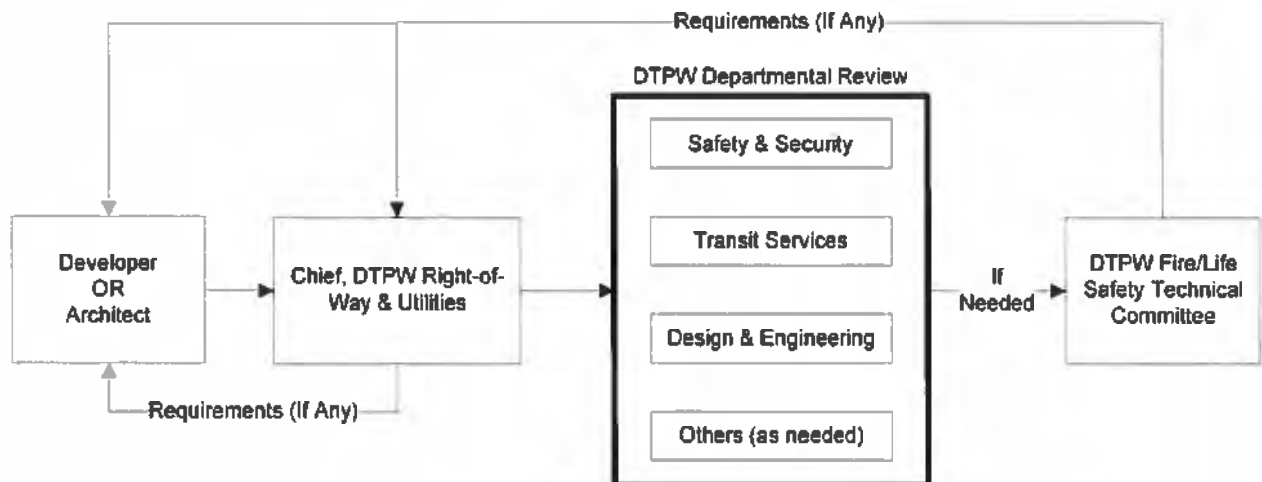


Figure 1

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS ADJACENT CONSTRUCTION MANUAL

3.1 Fire/Life Safety

DTPW Office of Safety and Security is charged with the responsibility to chair the DTPW Fire/Life Safety Technical Committee which was formed in 1978 to guide Department of Transportation and Public Works (DTPW), rapid transit operations, in developing and following emergency procedures and operational procedures to ensure all fire/life safety related equipment is in proper order and all associated personnel are appropriately trained; to prescribe testing and inspection procedures for fire/life safety equipment in accordance with appropriate codes; to assist the DTPW in developing and implementing a comprehensive joint training program for fire/rescue personnel and DTPW employees; and, to interpret and apply fire/life safety codes, criteria and standards to the design of the fixed guideway systems.

The DTPW Fire/Life Safety Technical Committee acts on behalf of the DTPW Director in accordance with the above to interpret and apply fire/life-safety requirements incorporated in the Florida Building code; National Fire Protection Association Codes and Standards; State Statutes and Fire Marshal's Office; South Florida Fire Protection Code; DTPW Criteria and Standards; other applicable codes, standards and criteria; and, as required, to develop, and verify implementation of, design standards for the DTPW to protect life and property. The Committee works closely with Transit Engineering for design of fire/life safety features and test and maintenance of alarm systems. For test and maintenance of fire suppression systems, the Committee works with facilities maintenance organizations.

As required by the current System Safety Program Plan, the Fire/Life Safety Technical Committee addresses fire/life safety concerns, as described above, for all phases of DTPW Metrorail, Metromover, Metrobus and Special Transportation Services Operations. The Committee also serves as liaison with all Miami-Dade County jurisdictions for development and coordination of emergency response procedures and annual emergency response drills.

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4.0 DTPW Review Policy

All design work will be reviewed based upon the assumption that the design will meet the applicable code adopted in the jurisdiction as well as the DTPW Design Criteria and DTPW Standard Specifications. The DTPW design concepts, as set forth herein, generally represent the design approach used by DTPW in the design of its facilities. The effect of adjacent construction upon DTPW structures should be examined based upon the same approach.

Permits, where required by the local jurisdiction, shall be the responsibility of the developer.

Monitoring of the temporary support of excavation structures for adjacent construction shall be required in all cases for excavations within the influence line of DTPW structures (Appendix B). The extent of the monitoring will vary from case to case. Structural design computations maybe required for the adjacent construction. When requested by DTPW, the calculations submitted for review shall include the following:

- A concise statement of the problem and the purpose of the calculation.
- Input data, applicable criteria, clearly stated assumptions and justifying rationale.
- References to articles, manuals and source material should be furnished with the calculations.
- References to pertinent codes and standards.
- Sufficient sketches or drawing references for the work to be easily understood by an independent reviewer. Diagrams indicating data (such as loads and dimensions) shall be included along with adequate sketches of all details not considered standard by DTPW.
- The source or derivation of all equations shall be shown where they are introduced into the calculations.
- Numerical calculations shall clearly show all English units.
- Identify results and conclusions.
- Calculations shall be neat, orderly, and legible.

Drawings should be drawn, to scale, showing the location and relationship of the proposed adjacent construction to existing DTPW structures at various stages of new construction along the entire adjacent alignment. The stresses and deflections induced in the existing DTPW structures should be provided.

The short-term and long-term effects of the new loading due to the adjacent construction on the DTPW structures should be provided. The soil parameters and other pertinent geo-technical criteria contained herein should be used to analyze the existing DTPW structures.

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DTPW structures shall be analyzed for differential pressure loadings caused by dewatering the adjacent construction site.

A system of earth retaining structures is required for new excavations adjacent to DTPW structures. Design calculations and drawings stamped and prepared by a Registered Professional Engineer experienced in this type of work, and registered in the state where the work will be performed, are required.

All DTPW underground concrete structures are designed using the ACI Alternate Design Method (working stress design) to curtail excessive deflections and cracking. DTPW underground structures shall be fully reevaluated, for the effects caused by the adjacent construction, using working stress techniques.

4.1 REVIEW SUBMITTALS - DRAWING CRITERIA

General

All designs for the protection, support (sheeting and shoring) and underpinning of existing DTPW structures shall be reviewed by DTPW's Design and Engineering Division (DED). The investigation of the feasibility of various underpinning and dewatering schemes for structures constructed adjacent to DTPW facilities shall be investigated by the developer. The developer's engineer should make recommendations concerning the best underpinning design for a particular structure.

The developer's contract drawings and specifications shall require his construction contractor to maintain, protect and be responsible for the safety, stability and integrity of all adjacent DTPW structures which may be affected by his work.

Drawing Details

The following information shall be included in the drawings submitted for review of an adjacent construction project:

- Dimensioned clearances, both horizontal and vertical, between the adjacent developer's construction and DTPW structures, track, roadways, parking areas and utilities.
- Details of the proposed modifications to DTPW's roadways, parking areas, and busways. Include sections and details showing the relationship of existing facilities and proposed facilities.
- Cross sections with the existing and proposed contours and limits of grading work shown in relation to the property lines and the impact or lack thereof on DTPW facilities. Where grading changes are required in DTPW property, provide the dimensions and square footage of the area required for construction easements.
- Hydrologic and hydraulic calculations showing the impacts on the DTPW drainage system are required if storm drainage from the proposed development is to be discharged into the existing DTPW drainage system. Appropriate sedimentation

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and erosion control measures should be included upstream of the discharge point onto DTPW property.

- Where modifications to DTPW utilities are required by adjacent construction, submit for review cross sections, plan and profiles, specifications and design calculations concerning the utility modifications. Details for maintaining electrical and water service to DTPW Stations should be shown when required.
- Where construction will impact a DTPW station entrance and the public, include in the submittal plans for temporary pedestrian and vehicular traffic circulation for the area around the station entrance. Where construction will be adjacent to or above a Metrorail/Metromover station entrance, protection will be required over the escalators in accordance with Section "Overhead Protection" of this Manual. Provide the construction plans, the shop drawings or the working drawings showing the phasing of adjacent construction as well as the construction details for overhead protection, pedestrian barricades, and sidewalk protection. Requests for relocation of bus stops and bus shelters shall be clearly shown on the plans. Barricades and signing necessary to direct the public through the construction zone will be required. Lighting will be required as part of all overhead protection structures.
- Provide construction protection details to preclude impacts on DTPW landscaping, street furniture, pylons, bus shelters and light fixtures.

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5.0 DTPW Operational Requirements

DTPW shall have the right to stop any work or construction activities that effects the safety of the DTPW patrons and or facilities or normal DTPW operations. DTPW will exercise reasonable advance notice, except for any matters related to immediate system concerns which will require no advance notice.

Construction work which may have any impact on the Metrorail/Metromover Systems may be scheduled during the Non-Peak Operating Hours or Non-Passenger Hours. Non- Peak Operating Hours are defined as weekdays prior to 6:30 A.M. or after 7:00 P.M. and between 10 A.M. and 3 P.M.; and all day Saturday and Sunday. Non-Passenger hours are defined as Monday through Sunday 12:30 A.M. to 4:30 A.M. Passenger hours may change without notice.

Construction work that may impact weekend or special operational conditions will be limited. Schedule requirements will be addressed on a project by project basis where the individual scheduling need of the project can be evaluated with respect to the operations of the DTPW system.

5.1 General Conditions for Construction Adjacent to the Metrorail or Metromover Guideway/Facilities

- A. Clear access is required on a 24 hour basis for ingress and egress for transit patrons, fire and rescue personnel, and maintenance personnel.
- B. A contact person will be named by the Contractor to act as liaison with the DTPW Office of Safety and Security for all matters related to safety of the DTPW System. A contact person shall also be named (may be the same person) to act as liaison with the DTPW Metrorail/Metromover Operations Division for all matters related to operation of the Transit System.
- C. DTPW shall have the right to review all plans and any construction with reasonable advance notice, except for any matters related to immediate system safety concerns which will require no advance notice.
- D. No construction elevators or cranes will be erected on the Metrorail/Metromover guideway side of the building/structure being constructed or demolished.
- E. The Metrorail/Metromover guideway shall not be used to support and/or brace construction scaffolding or equipment.
- F. For any activity within the **Safety Zone**, the following requirements may apply pending DTPW review.
- G. At least forty-eight hours notice describing the nature of the work shall be provided to the DTPW prior to commencement of work.
- H. The contractor will provide special protection, such as netting, barricades, walks, screens, scaffolds, etc., acceptable to DTPW, to help ensure the safety

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- of DTPW property, patrons and employees. No work shall be permitted unless such protection is provided as determined necessary by DTPW.
- I. Best efforts will be used to schedule all construction work which may have any impact on the Metrorail/Metromover System during the Non-Peak Operating Hours or Non-Passenger Hours. Non-Peak Operating Hours are defined as weekdays prior to 6:30 A.M.; after 7:00 P.M. and between 10 A.M. and 3 P.M.; and all Saturdays and Sundays. Non-Passenger Hours are defined as Monday through Sunday 12:30 A.M. to 5:00 A.M. or such other hours as may be designated by the County as Non-Passenger hours. Passenger hours will change as required by DTPW.
 - J. No crane lifts, other crane operations or any other operation shall be performed within the **Safety Zone** (Appendix A and C) without prior approval (in writing) from DTPW. This paragraph shall apply where any part of the load or crane (incl. counter weight), construction equipment or operation that is above the surface of the guideway running pad/rail.
 - K. For any construction activity within the **Safety Zone** (Appendix A and C) or that may encroach into the Safety Zone, DTPW may deem, as necessary, at the contractor's expense, a DTPW employee or DTPW authorized contractor or consultant (Monitor), to coordinate the contractor's activities with Central Control. This employee will be responsible for monitoring construction activities and communicating with DTPW Central Control. DTPW will determine, in the reasonable exercise of its discretion, the number of hours the above-mentioned employee is needed. The construction contractor will reimburse DTPW for costs arising from the provision of the above-mentioned employee which will be charged at the current rate.
 - L. DTPW may, at its discretion, modify any of the above conditions or impose additional conditions, to help ensure the safety of the public, and its patrons, employees or property.

5.2 DTPW Monitor and Contractor Coordination

A. Start-up

There will be continued meetings between representatives from DTPW, and Contractor/Developer's project manager, DTPW crane Monitors, the Contractor's crane operators and the form-work Contractor prior to the commencement of the phase work by the tower cranes and any other equipment or operation, adjacent to the DTPW Metromover/Metrorail Guideway System. In addition, DTPW Monitors and the contractor equipment/crane operators will continue to meet daily, at the beginning of the work day, of the project to establish a working relationship of the daily routines in and around the DTPW safety zone.

No construction work requiring a DTPW Monitor will commence until the Contractor provides the DTPW Monitor a functional Contractor radio, and sign off for same as per contractor procedures. Upon arrival at the project site, the DTPW Monitor will

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immediately contact the DTPW Central Control Facility, to advise of his/her presence at the project site.

If, at any time during the construction project, a new crane operator is brought on-site to operate any crane, he/she must be apprised of all of the rules and regulations outlined in this Plan by the Contractor's/Developer's Project Manager.

B. Special Provisions – Pre-Task Plan

At the discretion of DTPW, based on construction project proximity to DTPW system and scope of work, DTPW may assign a DTPW manager to log in arrival of DTPW Monitor(s), at the construction site. The assigned DTPW manager will contact the Contractor Senior Superintendent to request and receive a Contractor radio and meet with the Contractor Senior Superintendent and Contractor trade partner /Superintendent or Foreman to go over planned work. The Contractor Senior Superintendent, Contractor Trade Superintendent/Foreman, the DTPW Monitor and the assigned DTPW manager will complete and sign the Contractor Pre-Task Plan (PTP) Form, as specified in the DTPW Adjacent Construction Manual. Until this revised PTP form is accurately and completely filled out, scheduled work warranting a DTPW Monitor shall not proceed. After the PTP form is completed, if PTP is deemed by DTPW, the assigned DTPW manager and the DTPW Monitor shall walk to the selected area to commence monitoring duties, performing a radio check with the operator or crew on the other end of the Contractor radio. If the radio check is successful, the DTPW Monitor will use the DTPW radio to communicate to the Rail Central Control Facility to advise that the Contractor will commence with construction work.

C. Commencement of Work

Once receiving authorization from the appropriate Rail Traffic Controller, the DTPW Monitor will use the Contractor radio to communicate to the work crew that it is now permissible to begin work. The Contractor representative and the DTPW Monitor will sign the provided Central Control log form (as specified in the DTPW Adjacent Construction Manual), with the corresponding approval code, to confirm hearing the verbal approval from the Rail Central Control Facility over the DTPW radio before commencing with work. This log records the code, date, time, location, equipment being used, person giving code and DTPW Monitor receiving code.

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6.0 Construction Activity Considerations

The Contractor shall comply with the following requirements:

- The Contractor shall assume full responsibility for the compliance with all applicable Federal, State and local regulations and for complying with this Manual for construction adjacent to the right-of-way during the performance of all work.
- Provide an overall maintenance of traffic (MOT) control plan for pedestrians, vehicular traffic and construction operations. Establish a general visitor control program if required.
- Maintain responsibility for project safety on the work site for the company employees as well as its' subcontractor employees.
- Require each of the Contractor's personnel that may need access on the guideway, to attend the DTPW Orientation and Guideway Safety Class. The Contractor shall reimburse costs of these classes to the DTPW.

6.1 DTPW Personnel/Public/Property Safety & Security

6.1.1 Mechanical Criteria

Existing services to DTPW facilities, including chilled water and condenser water piping, potable and fire water, fire standpipes and storm and sanitary sewers, are not be interrupted nor disturbed without written approval of DTPW.

Clear access for the fire department to the DTPW fire standpipe system and guideways shall be maintained at all times. Construction signs shall be provided to identify the location of DTPW fire standpipes. Call **DTPW Office of Safety and Security (305-375-4240)** 48 hours in advance of any approved interruption to fire standpipe water service.

Modifications to existing DTPW mechanical systems and equipment, required by new connections into the DTPW System, will only be permitted with prior review and approval by DTPW.

The adjacent construction developer will be required to submit the design calculations, drawings, specifications, catalog cuts and any other information necessary to fully describe the proposed modification.

At the option of DTPW, the adjacent construction developer will be requested to perform the field tests necessary to verify the adequacy of the modified system and the equipment performance. Where a modification is approved, the developer shall be held responsible to maintain original operating capacity of the equipment and the system impacted by the modification.

6.1.2 Corrosion & Stray Current Protection

The developer should be aware that, since Metrorail/Metromover transit cars are powered by direct current (DC) electricity, direct current can enter the earth through

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unintentional leakage from the DTPW negative ground return system. The leakage or stray current may flow to the discharge from underground metallic elements (i.e. steel reinforcing, pipelines, grounding systems, etc.) which are in contact with any electrolyte, including earth, in the vicinity of the DTPW System. Because stray current may be corrosive to metal at locations where it flows into an electrolyte, the developer is cautioned to investigate the site for stray current and to provide the means for stray current mitigation when warranted.

Further information concerning stray current mitigation can be obtained by contacting The National Association of Corrosion Engineers (NACE), P.O. BOX 218340, Houston, Texas 77812, telephone (713) 492-0535.

6.1.3 Electrical System Interference

No interference to existing DTPW duct banks for the following electrical services shall be allowed:

- 13.8 K.V. service from Florida Power & Light
- 480 V. Florida Power & Light or from DTPW substations
- 480 V service to lighting in Parking Lots, Kiss and Ride areas, and 120 V service to Bus Shelters.

If any of the listed duct banks are affected by the adjacent construction, all information shall be submitted to the DTPW and utility company for review and approval.

No interference to existing DTPW duct banks for the following services shall be allowed:

- Telephone cables from Bell South
- DTPW train control and communications cables

Redesign of Facilities

The design for relocation or modification to existing DTPW parking lots, or Kiss & Ride areas and bus shelters shall be done in accordance with DTPW Design Criteria, Directive Drawings and Standard Specifications. To minimize interruption of DTPW operations, a phasing plan shall be developed and submitted for approval.

Proposed relocation of light fixtures, if any, shall be submitted for DTPW approval.

Existing ground-grids and ground conductors from ground-grids to DTPW facilities shall not be disturbed. No digging or cutting into existing DTPW facilities (ductbanks, wall, floor or ceiling) shall be permitted.

Access to personnel and equipment hatches for underground facilities shall not be blocked. In case any structure is built over an equipment access hatch, adequate passageway for entry of a heavy truck and clearance for the use of a crane to lower equipment from the truck into the hatch shall be provided.

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In case any structure is built adjacent to DTPW at-grade facilities (traction power substations, tiebreaker stations, train control or communications rooms), passageways for heavy trucks and adequate clearance for the use of cranes to move equipment from trucks into and out of the equipment hatches shall be provided.

Emergency access gates for at-grade or aerial sections of DTPW rail shall not be blocked. Adequate passage from the gates to public streets shall be provided.

6.1.4 Modifications/Direct Connections to a DTPW Station

Connections to Metrorail/Metromover Facilities shall be designed, built and paid for by the person requesting the connection in accordance with DTPW Design Criteria or through a Direct Connection Agreement. Below are the items that shall be considered in the design of the connections.

The connection shall have a bronze flexible gate installed between the two passageways. The gate or grate shall be keyed on both sides with separate locks. To open the gate both locks will have to be open. Where the connection has 24-hour manned security on the non-DTPW side of the connection, glass doors may be used in lieu of a gate. If doors are used, each door shall be locked from both sides.

When required, a Closed-Circuit Television (CCTV) will be installed at the developer's expense and connected to the DTPW Kiosk. Power for the cameras shall be run from the CCTV to the station power room. The existing conduit runs and spare breaker locations can be found in the DTPW "As Built" drawings. It is the developer's responsibility to have this research performed by a competent professional. Intrusion alarms shall be installed on the gate or door and control wires installed between the gate or door and the communications room by the developer's contractor. Final connection will be made by DTPW to the DTPW security system.

Finishes on the interior of the DTPW side of the connection shall be to DTPW standards and specifications.

Lights in the new passageway shall be run to the developer's power room and included in the development's emergency power panel.

In the event that a Direct Connection is to be maintained by DTPW then the design will be in accordance with DTPW Design Criteria and construction would be required to meet DTPW's standard construction specifications. Normally the Direct Connection passageway is designed to be compatible with the building of which they are constructed as a part.

Before removing the knock-out panel the contractor shall have an approved dust protection system in place and fully functional. Typically, a dust protection system shall consist of a stationary partition that isolates the knock-out panel from the station. The dust partition shall be constructed using only fire rated materials. All joints shall be sealed with tape. Construction of the partition shall be during non-passenger hours.

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Adjacent construction with a connecting passageway(s) to DTPW facilities will require special features to isolate one facility from the other for fire-safety, and may include automatic fire doors and dampers, sprinkler systems, smoke removal and ventilation systems and detection and alarm systems as required by the local fire code.

6.1.5 Signs, Signals, Barricades and Traffic Control General Requirements

1. All traffic signs or devices used for protection of construction workmen or the public shall conform to the State of Florida Manual on Traffic Control and Safe Practices on Street and Highway Construction.
2. Barricades, cones and/or similar protective devices shall be used whenever men or equipment are exposed to traffic or similar hazards.
3. When traffic lanes are closed due to work activity, advance warning signals and high level warning devices shall be used as described in the State of Florida Manual on Traffic Control and Safe Practices on Street and Highway Construction.
4. Flagmen and signalmen will be properly trained and use appropriate procedures, using the current FDOT manual.
5. All employees working adjacent to traffic shall be required to wear reflective vest, per FDOT manual.
6. Whenever and wherever possible and necessary, line voltage (12 volt) protected lights shall be used to mark fences and barricades and other such encroachments onto public streets or sidewalks.
7. Where covered sidewalks are required they shall be provided with permanent lights to provide sufficient illumination for safe use by the public day or night. All bulbs shall be cage-protected.
8. Public walkways shall be kept clean and free of hazards at all times.
9. Where the Contractors are required to provide public walkway, they shall have abrasive non-slip surface.
10. Where access to bus stop is disturbed or obstructed by the Contractors operations, safe access will be maintained or the bus stop relocated as directed by DTPW. Coordination for maintaining or relocating bus stops with the appropriate agencies is the sole responsibility of the Contractors.
11. When steel plates or similar covers are used on public ways to cover excavations they shall be substantially secured to prevent movement imposed by traffic. Covers shall have non-slip surface, conforming to OSHA Specifications.

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12. When such covers are located where there is pedestrian exposure, they shall be tapered at all sides with cut back cold mix or similar material to eliminate tripping hazards. Covers shall have non-slip surface.
13. Free access shall be maintained to every fire extinguisher, fire hydrant, fire alarm box, fire escape and standpipe connection, street and traffic light control box. When required, hydrants shall be extended by suitable tube or piping to an accessible point as approved by DTPW. No obstructions shall be allowed at any time within 15 feet of a fire hydrant. Where materials are placed in the vicinity of a fire hydrant or a fire alarm box or fire extinguisher, and to such a height as to prevent the same from being readily seen, the position of such hydrant or fire alarm box or fire extinguisher shall be indicated by suitable signals, both day and night.
14. The Contractor shall erect and maintain fences and barricades to enclose the Contractor's work area, and provide watchmen where required to prevent unauthorized access.

6.1.6 Material Handling (Storage, Use and Disposal) General Requirements

1. All materials stored in tiers shall be secured to prevent sliding, falling or collapse.
2. Reinforcing steel shall not be used as a lifting ("Pick") point on any load or as a guy line anchor.
3. Hooks, except special sliding choker hooks shall be securely moused when in use, or shall be provided with a functioning safety latch.
4. Scrap material of any kind, type or nature shall be placed daily into appropriate containers specifically supplied for this purpose. Containers shall be removed from the work site when full.
5. Loose material on open decks or other exposed locations shall be removed or secured at the end of each day to eliminate dislodgment by wind or other causes.
6. Compatibility of stored materials and storage methods will comply with all applicable OSHA, Fire Department and environmental agency standards.
7. Employees required to handle, use or dispose of hazardous materials shall be instructed regarding the safe handling, proper procedures, potential hazards, personal hygiene, and personal protective equipment required.
8. No explosive or flammable materials shall be stored under the guideways.
9. Disposal of materials shall be in accordance with all applicable Federal, State and Local regulations. All applicable recordkeeping and reporting requirements shall be met by the Contractors.

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6.1.7 Adverse Weather Conditions General Requirements

1. Disassemble all scaffolds, loose formwork, radio antennas and secure properly.
2. All items that cannot be secure shall be stored inside secured storage areas or buildings.
3. All crane booms shall be lowered to ground level and secured to prevent movement.
4. All office trailers shall be tied down in compliance with MDC Tie-Down Ordinance No. 77-1 upon original installation. All tie down straps, ground anchors, piers, etc., shall be checked for condition and operation.
5. All exposed glass on the Work Site shall be protected by a solid, rigid covering.
6. All free standing walls shall be stored from both sides.
7. Before employees are dismissed from the Work Site, the Contractors shall make a through inspection to verify all necessary precautions have been taken.
8. All precautions for construction sites during hurricane conditions, as required by the Florida Building Code shall be met.

6.1.8 Housekeeping General Requirements

1. All refuse piles shall be removed from the Work Site immediately.
2. Stored and stacked materials shall be kept orderly, properly stacked, choked, and secured.
3. Any protruding nails, etc., shall be bent, removed or clinched immediately.
4. Oil, grease, and water spills shall be cleaned up immediately.
5. Loose materials, tools, or equipment shall be kept off stairs, out of walkways, ramps, platforms at all times when not in use.
6. Depressions and pot-holes in vehicle or walkway surfaces on the Work Site shall be properly filled and graded immediately.
7. Walkways, vehicle travel ways, ramps, railings, and stairways, shall be kept free from debris, properly installed and maintained.
8. Smoking or the use of open flames within 25 feet of flammable storage areas or fueling areas shall not be permitted.

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9. Flammable storage areas shall be properly posted **"NO SMOKING"**, provided with adequate fire extinguishers and free of combustible materials.
10. All sanitary facilities used on the Work Site shall be maintained on a daily basis.
11. All structures shall have a minimum of a 5-foot perimeter clearance that is to be free from any combustible debris or materials.

6.1.9 Overhead Protection

Overhead protection from falling objects shall be provided over DTPW facilities whenever there is a possibility, due to the nature of a construction operation, that objects could fall in or around DTPW guideway, at-grade sections, DTPW facilities, DTPW station entrances and areas designated for public access to DTPW facilities. Erection of the overhead protection for these areas shall be done in strict accordance with the requirements of this Manual and applicable standards cited herein.

The design live load for all overhead protection shall be in compliance with the minimum required by the current Florida Building Code and/or other(s) enforceable code. Overhead protection design shall include provision for impact loading when located adjacent to demolition projects or construction / maintenance projects where it is foreseeable that construction debris could fall on or near DTPW Facilities. Overhead protection for impact loading must be designed for a minimum of 300 pounds per square foot and to resist the force of impact of the largest foreseeable member or building element as taken from the elevation of that element. All overhead protection shall be designed by a licensed professional engineer. The design wind load on the temporary structures shall be in accordance with the calculated loads for components and claddings per the latest edition of the ASCE 7 Code.

Overhead protection over sidewalks and pedestrian areas shall be constructed of fire resistant materials. The vertical clearance between walking surface and the lowest projection of the overhead protection shall be 6'- 8". Construction materials and equipment shall not be stored on the completed walkway and pedestrian areas of the overhead protection roofs. A clear path from any DTPW emergency exit to the public street shall be maintained at all times.

The contractor will provide special protection, such as netting, barricades, walks, screens, scaffolds, etc., acceptable to DTPW, to help ensure the safety of DTPW property, patrons and employees. No work shall be permitted unless such protection is provided as determined necessary by DTPW. Erection of protective structures shall not be done during normal passenger hours unless by written authorization through DTPW.

Lighting of overhead protection at sidewalks and pedestrian areas is required and shall be provided under the overhead protective to maintain a minimum level of ten (10) foot candles at the walking surface. The temporary lighting will be maintained by the contractor.

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With written DTPW authorization, the Overhead or Fall Protection structure may be constructed over the right of way and the guideway, if designed for the use for which it is intended, as well as in accordance with the above minimum design load requirements. The shield shall be constructed or installed during non-passenger hours. Once installed, limited work may proceed above the overhead protection during non-passenger hours.

6.1.10 Cranes and Swing Stage Scaffolding

General Requirements

The erection or staging of cranes, construction elevators and man lifts, swing stage or scaffolding, debris chutes or gantries shall not be performed within the 30 feet of the guideway drip line during passenger hours, without an authorized DTPW "Monitor" under radio communication with Central Control, on site.

Crane lifts located within 30 feet of the DTPW guideway drip line are permitted during non-peak passenger operating hours only when coordinated by an authorized DTPW crane Monitor or DTPW authorized employee under radio communication with Central Control on site. Under no conditions will loads be permitted to be swung over or within 5 feet of the guideway.

Crane lifts and exterior building operation conducted from swing stage that are located within the DTPW Right of Way or within 30 feet of the guideway drip line are permitted only during non-peak operating hours and only when coordinated by an authorized DTPW Monitor under radio contact with Central Control.

No construction elevators or cranes will be erected on the Metrorail / Metromover guideway side of the building /structure.

The contractor must ensure that all cranes are operated only by trained, experienced and competent operators who hold either an Operating Engineers, Local Union, Verification of Competence and Experience or equivalent licensure.

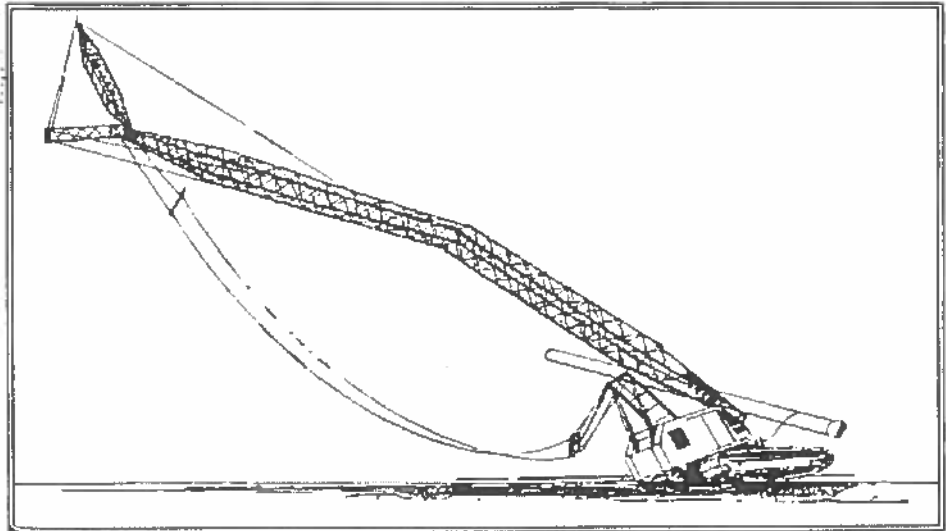
The contractor must also ensure that the men who direct, rig and handle loads are adequately trained, able to establish load weights, judge distance, heights and clearance and capable of selecting tackle and lifting gear suitable for the loads lifted.

All crane/scaffolding operations within the DTPW Right of Way and 30 feet of the guideway drip line are subject to inspection by the DTPW Design and Engineering Division, Metromover Maintenance Division and DTPW Office of Safety and Security. Cranes operated within DTPW Right of Way and Safety zones shall have complete maintenance, repair and inspection logs present on the machine and available for review. DTPW reserves the right to refuse the operation of any machine that the structural condition or stability of the machine is questioned regarding the task attempted by the contractor.

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MOBILE CRANES

Over 50% of all
Crane Accidents
are "caused"
when the
machine is
improperly set
up.



The size, boom length and capacity of all cranes operated on projects within the DTPW Right of Way and Protective Safety Zones must be clearly shown on a site plan as part of an DTPW Access Permit application. The swing radius of the machine must be shown on the site plan with respect to the location of DTPW facilities.

Adequate care must be demonstrated by the contractor to DTPW representatives when setting up cranes and booms. Cranes shall be erected in strict conformance with the manufacturer's specifications and standard of good construction practice. Outriggers and support shall be adequately cribbed and blocked so as to properly brace the crane frame.

Adequate swing clearance shall be provided at the counterweight of the crane cab. At no time shall the counterweight swing clearance be less than 5 feet from the DTPW guideway drip line, without an authorized DTPW crane Monitor or employee under radio communication with Central Control on site. Overturning boom stops are required on all cranes when the boom angle exceeds 50 degrees from horizontal.

Mechanical swing limit switches and stops may be required to limit crane swing over and adjacent to the DTPW guideway and DTPW facilities. At no time will loads be allowed to be swung over the DTPW guideway, DTPW Stations or DTPW facilities.

Sheet pile and driven pile crane operations should be erected so that the crane and boom are situated perpendicular to the DTPW guideway. Staging and erection of piling should be adequately restrained or stayed such that the piling cannot topple into DTPW facilities during setup operations.

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Tower Cranes

Tower cranes may be employed on projects that are adjacent to the DTPW facilities and guideway systems and that are tall enough, have sufficient jib length to reach a distance of 30 feet from the guideway drip line or that loads could be swung over DTPW facilities, are regulated by this manual. In general all tower cranes with base of tower located at a distance from the DTPW guideway drip line less than the height of the tower crane are subject to the restrictions in operation of this chapter.

Tower cranes are subject to wind movement and must be able to weather-vane during periods of high wind. Weather-vaning tower cranes, when cranes are not in use, are allowed to swing over DTPW guideway or facilities during passenger hours.

Tower cranes are subject to fatigue cracking and failure at the tower and jib connections. A certified structural inspection log of the Crane tower, jib, cables and haulage assemblies must be provided to DTPW on all tower cranes located in areas that they could affect DTPW facilities.

6.1.11 Excavations, Foundations and Sheet Piling

Until provisions for permanent support have been made, all excavations shall be properly guarded and protected so as to prevent the same from becoming dangerous to life and property and shall be sheet piled, braced and/or shored, where necessary, to prevent the adjoining earth from caving in; such protection to be provided by the person causing the excavation to be made. No excavation, for any purpose, shall extend within five (5) feet of the angle of repose of any soil bearing footing or foundation unless such footing or foundation is first properly underpinned or protected against settlement.

The design of all soils excavations, stabilization, modifications, underpinning or laterally protected with sheet piling shall be designed by a licensed professional engineer known to the Building Official to be qualified to evaluate the bearing capacity of soils. This design shall include a Geotechnical Soils investigation such that the registered Professional Engineer shall submit to the Building Official a letter attesting that the site has been observed and the foundation conditions are similar to those upon which the designed is based. The letter shall be signed and bear the impress seal of the engineer or architect, as applicable. Geotechnical soils sampling shall be conducted at sufficient frequency to ensure that the soils conditions on the project site are representative of the design conditions.

Angle of Repose

The angle of repose of all support soils within the DTPW Right of Way and safety zones shall be considered as 1:1 ratio. No excavation, for any purpose, shall extend within five (5) feet of the angle of repose of any DTPW soil bearing footing or foundation unless the design capacity of that footing is evaluated by the design Engineer of Record and his recommendations are approved by DTPW with respect to the design engineers modifications. Refer to Appendix B for clarification.

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Pilings

Sheet pilings, driven pilings, auger cast pilings or other operations that create significant soils vibration shall be closely monitored with seismic accelerometers to verify the energy transmitted into the DTPW structures is less than 0.22 inches per second. Additional detailed survey analysis may be required to verify that no settlement has occurred in the course of the work.

Excavators

Excavation equipment operated within the DTPW Right of Way and Safety Zones must take extra care to avoid causing damage to DTPW facilities. Track excavators have similar swing geometry problems as mobile cranes and are capable of causing significant damage if improperly operated. Similarly, improper operation of wheel loaders, excavators, dump trucks and vibratory rollers can cause impact and vibration damage to structures.

The contractor must ensure that all heavy excavation equipment is operated only by trained, experienced and competent operators who hold either an Operating Engineers, Local Union, Verification of Competence and Experience or equivalent licensure.

Excavations may be conducted within the DTPW Right of Way and Safety Zones only during non-passenger hours. Excavation operations within the DTPW Right of Way and Safety Zones require a trained DTPW Monitor, in radio communication with DTPW Central Control, during all excavation operations.

Protection of underground site utilities is the responsibility of the contractor. All utilities must be located by an approved utilities locator service prior to the start of any excavation or piling activities.

DTPW may, at its discretion, modify any of the above conditions or impose additional conditions, to help ensure the safety of the public, and its patrons, employees or property.

6.1.12 Demolition

No Demolition of structures adjacent to DTPW facilities by blasting shall be permitted. During piece-by-piece demolition, it is essential that the DTPW escalators, and/or other DTPW equipment be protected from dust generated by the demolition. The DTPW equipment must be covered with polyethylene sheets during demolition to prevent dust from entering the equipment. Guideway protection diagrams and location plans shall be submitted by the contractor when appropriate or requested by DTPW. Such plans shall clearly show the alignment of the DTPW right-of-way together with the setback dimensions of the portions of the building to be demolished.

Application

This section is intended to apply to all activity on the exterior of buildings located within the Safety Zone including maintenance, inspections, probing, demolition operations and shall comply with the American National Standard (ANSI) A 10.6 standard for demolition

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operations. In cases of practical difficulty and unnecessary hardship, or where other extenuating circumstances exist, DTPW may grant exceptions to the requirements stated herein, or may permit alternative methods, but only when it is clearly evident that equivalent protection is thereby secured.

Demolition Plan

The contractor must submit a detailed demolition plan to DTPW Engineering for review as part of the permit application package. This Demolition plan must include the scope of proposed demolition, location plan and building elevation of the proposed demolition work detailing the setback distance to DTPW facilities. Additionally the anticipated contractor means and methods, anticipated protective methods, equipment list including sizing of all demolition equipment should be supplied in the demolition submittal plan. The plan shall describe the type of construction (concrete, steel frame, masonry, etc.) and the overall construction configuration.

Guideway protection diagrams and location plans shall be submitted by the contractor when appropriate and requested by DTPW. Such plans shall clearly show the alignment of the DTPW right-of-way together with the setback dimensions of the portions of the building to be demolished.

Protection

During demolition, it is essential that the DTPW facilities be protected from dust generated by the demolition. The DTPW stations, escalators, train control and traction power rooms/buildings must be covered with polyethylene lined sheets during demolition to prevent dust from entering the DTPW switch gear and equipment.

Structural Condition and Analysis Survey

Prior to starting any demolition operation within the safety zone, an engineering survey of the structure shall be made to determine the condition at all locations of the exterior walls adjacent to the DTPW system. The purpose of the survey is to determine the condition of the framing, floors, and walls so that actions can be taken, if needed to prevent premature collapse of any portion of the structure. Such survey shall be made on the outside utilizing swing stages with full rail protection. The survey shall consist of documenting all locations displaying loose, cracked, and/or deteriorated stucco, tile, or other building facade materials in which such condition could result in falling debris.

An exterior crack survey may be required as part of the engineering survey of building to be demolished. A crack survey should be prepared locating all significant cracks including a location sketch, description, width, estimated recent activity, and the existence of previous repairs. Cracks of any significance shall be physically marked so that future observation may be made with telescopic equipment at the ground level. A stucco condition survey locating all significant irregularities in the stucco facade including bulges, micro/map cracking, hollow and de-bonded areas, discoloration due to water absorbance effervesce scaling, or other abnormalities should be included in the crack / engineering survey.

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Guideway Protection Diagrams and Location Plans shall be submitted by the contractor when appropriate and requested by DTPW. Such plans shall clearly show the alignment of the DTPW right-of-way together with the setback dimensions of the portions of the building to be demolished.

Similarly a window / wall opening survey of the condition of window vents, plywood covers, sill stability, and other characteristics from which conclusions can be made as to the security of such openings. Where a hazard exists from fragmentation of glass or instability of the window frame/vent, all glazed openings shall be removed or protected.

Scheduling

Exterior building element demolition activities located within the safety zone are permitted only during non-passenger operating hours and only when coordinated by an authorized DTPW "Monitor" under radio communication with Central Control on site.

Protective Measures

Remove all loose materials by hand which are in imminent danger of falling. The removal of such loose materials must also include a temporary repair or stabilization at any location where the removal results in an opening or area, which can allow water to penetrate resulting in further or future deterioration.

Pedestrian Site Security and Safeguards

Prior to the engineering survey of the building exterior and other invasive activities, it is necessary to fully protect the public and in particular, DTPW facilities. Every sidewalk, train guideway, station platform, stairs, escalator, or public thoroughfare adjacent to or near enough to be affected by the operations on the building shall be closed, relocated or protected as specified in overhead protection above.

Demolition Observer

Provide a full time observer who is classified as a qualified person and who is capable of recognizing changes in the building facade and appearance. The purpose of this person is to provide warnings to the DTPW operators in the event of a sudden change in the building's outward appearance or stability so that service on a rail section may be discontinued. The observer and shall remain at the site at all times DTPW is in operation and providing service to the public

Periodic Demolition Reports

A certification shall be provided by a licensed engineer after each periodic inspection stating that the building components are secure and that it is safe to operate the DTPW system in that location.

Demolition Means and Methods

No wall sections shall be permitted to stand alone without lateral bracing. Additionally, all walls shall be left in a stable condition at the end of each shift. Masonry walls or other sections of masonry shall not be permitted to fall upon the floors of the building unless qualified persons have determined the impact of such masses will not exceed the safe carrying capacities of the floors.

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Chutes

Materials shall be dropped only through chutes to any point lying outside the exterior walls of the building and chutes at any angle exceeding 45 degrees from the horizontal shall be entirely enclosed. Also, chutes shall be designed and constructed to eliminate hazards of impact of materials or debris

Particle Velocity and Seismograph Reports

When required, the contractor shall measure and furnish reports of particle velocity caused by impacts in accordance with provisions in Appendix E of this document.

Additional Requirements

DTPW may, at its discretion, modify any of the above conditions or impose additional conditions, to help ensure the safety of the public, and its patrons, employees or property.

6.1.13 Exterior Building Maintenance

Pressure Washing

Painting

Window Washing

Sandblasting

Stucco Damage Repair

Other Maintenance Operations

Structural/ Non-Structural Inspections

General

In general, some routine maintenance activities associated with the exterior building envelope of buildings may not require a building permit. However, to adequately ensure the safety of the DTPW system, provisions are made in this manual detailing specific requirements and limitations of allowed building maintenance activities within the DTPW Safety Zone. A DTPW Access Permit is required on all exterior building maintenance activities for buildings located within the Safety Zone.

Access to exterior building components located within the Safety Zone including window cleaning operations and roofing operations is prohibited during DTPW passenger hours without a DTPW Monitor. The simple DTPW policy is that "there shall not be any exterior building maintenance activity at or above the elevation of the DTPW guideway during normal passenger operations without a DTPW Monitor".

Maintenance

This section is intended to apply to all activity on the exterior of buildings located within the Safety Zone including maintenance, inspections, probing, stucco repair, painting and waterproofing operations. In cases of practical difficulty and unnecessary hardship, or where other extenuating circumstances exist, DTPW may grant exceptions to the requirements stated herein, or may permit alternative methods, but only when it is clearly evident that equivalent protection is thereby secured.

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Small Particle Protection

Routine exterior building cleaning is required to some extent on most structures. Much of this work is commonly accomplished by access to the building exterior via either swing stage or boson chair. Access on building exteriors located within the safety zones is prohibited during passenger hours without a DTPW Monitor.

Pressure cleaning and sandblasting activities produce over spray, dirt and particle fallout below the work area. DTPW guideway, stations and facilities must be adequately protected from the fallout of the dirt, particles, sand, loose paint, etc. prior to the start of any exterior building cleaning activity. Such protection may be in the form of polyurethane lines, canvas tarps or other catchment devices. Design of required protection must be approved by DTPW.

Stucco probing and repair, painting and waterproofing activities produce falling debris. DTPW guideway and DTPW Facilities must be adequately protected with overhead protection as described in this manual as part of the DTPW Work Order for stucco repair and painting activities.

DTPW may, at its discretion, modify any of the above conditions or impose additional conditions, to help ensure the safety of the public, and its patrons, employees or property.

DTPW Operations and Scheduling

DTPW shall have the right to stop any work or construction activity that affects the safety of DTPW patrons and or facilities or normal DTPW operations. DTPW will exercise reasonable advance notice, except for any matters related to immediate system safety concerns which will require no advance notice.

Construction work which may have any impact on the Metrorail/Metromover System may be scheduled during the Non-Peak Operating Hours or Non-Passenger Hours. Non- Peak Operating Hours are defined as weekdays prior to 6:30 A.M. or after 7:00 P.M. and between 10 A.M. and 3 P.M.; and all day Saturday and Sunday. Non-Passenger hours are defined as Monday through Sunday 12:30 A.M. to 4:30 A.M. or such other hours as may be designated by the County as Non-Passenger Hours. Passenger hours may change without notice as needed by DTPW.

Weekends / Holidays & Special Events

Construction work that may impact weekend or special operational conditions will be limited. Schedule requirements will be addressed on a project to project basis where the individual scheduling needs of the project can be evaluated with respect to the operations of the DTPW systems.

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APPENDIX A: GLOSSARY

The following terms shall, for the purpose of this Manual, have the meanings respectively ascribed to them:

- ACCIDENT -** An unforeseen event or occurrence that causes death, injury or damage to property. Any abnormal condition that requires the attention or intervention of responsible personnel or an individual monitoring the transit system operation.
- ALARM CONDITION -** Deviation from nominal performance, which does not cause a significant, effect on system performance but does warrant investigation and/or repair. Sanctioned or accepted by the building official and Department of Transportation and Public Works.
- AUTOMATIC -** A term applied to a system, subsystem, or device, which has the inherent capability to function without direct manual participation.
- CATCH PLATFORM -** A temporary structure erected around or attached to, and abutting a building for the purpose of safeguarding the employees, and the public, by catching and retaining falling objects or debris.
- CENTRAL CONTROL -** That place where train control or train supervision is accomplished for the entire Metro-rail and Metro-mover system; the train command center.
- CONSTRUCTION SAFETY -** The optimum degree of safety within the constraints of construction effectiveness, time and cost through specific application of safety management throughout all phases of the construction.
- CONSTRUCTION SAFETY MANUAL -** Issued as a contract document by Department of Transportation and Public Works (DTPW), to be used as a guide by the Contractor in developing his Accident Prevention Program.
- DTPW ACCESS PERMIT -** Issued written authorization from DTPW for work in the DTPW Right of Way and DTPW Safety Zones. Construction Work Orders are specific with regard to the scope, extent, additional requirements or limitations, and allowable

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schedule of approved work to be completed in the DTPW Right of Way and Safety Zones.

**CONTRACT
DRAWINGS -**

The plans, profiles, typical cross-sections, general cross-sections, elevations, schedules and details which show locations, character and dimensions of the work.

**CONTRACTOR'S
AUTHORIZED SAFETY
REPRESENTATIVE -**

The person designated as authorized safety representative who will be responsible for work site safety and for reporting all insurance claims.

CONTRACTOR-

The individual, firm, partnership, corporation, or combination thereof, private, municipal, or public, including joint ventures, which, as an independent contractor, has entered into a contract with MDC, who is referred to throughout the Contract Documents by singular in number and masculine in gender.

CHUTE-

A trough or tube used to guide and transport sliding objects, materials, or debris from a higher to a lower level.

DEGRADATION -

Falling from an initial level to a lower level in quality or performance.

DEMOLITION -

Dismantling, razing, destroying, or wrecking any fixed building or structure or any part thereof.

EMERGENCY -

A situation which is life threatening or which can cause serious damage on or in the immediate vicinity of any transit facility, structure, bus or train.

EMPLOYEE -

A person employed by the Contractor or Subcontractor.

EQUIPMENT FAILURE -

The state in which equipment no longer meets the minimum acceptable specified performance and cannot be restored through operator adjustment or control.

FTA -

Federal Transit Administration, formerly UMTA.

FAILURE -

An inability to perform an intended function within specified tolerances.

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HAZARD - Any real or potential condition that can cause injury or death; or damage to or loss of equipment or property.

HAZARD MANAGEMENT (LOSS CONTROL) - An element of the system safety management function that evaluates the safety effects of potential hazards considering acceptance, control, or elimination of such hazards with respect to expenditure or resources. (The feasibility of hazard elimination must be considered in light of financial, legal, and human considerations).

HAZARD SEVERITY – A qualitative measure of the worst potential consequences that could be caused by a specific hazard.

Category I Catastrophic	May cause death, serious injury/illness or major system loss.
Category II Critical	May cause injury/illness, or major system damage.
Category III Marginal	May cause minor injury/illness, or minor system damage.
Category IV Negligible	Will not result in injury/illness, or system damage.

HAZARD RESOLUTION - The analysis and subsequent actions taken to reduce, to the lowest level practical, the risk associated with an identified hazard.

IMMINENT DANGER - Refers to any condition or practice where there is reasonable certainty that a danger exists that can be expected to cause death or serious physical harm and/or serious property damage immediately or before the danger can be eliminated through normal enforcement procedures

INCIDENT - An unforeseen event or occurrence that does not necessarily result in injury or property damage.

MAINTENANCE - All actions necessary for retaining an item in or restoring it to an operable condition.

MALFUNCTION - Any anomaly or failure wherein the system, subsystem, or component fails to function as intended.

MAY - A permissive condition. Where the work "may" is used, it is considered to denote permissive usage

MIAMI DADE COUNTY - The Board of County Commissioners of Dade County, (MDC) Florida, political subdivision of the State of Florida, and the DTPW, an office under the County manager of Miami Dade County, Created March 1, 1974, by Administrative

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Order No. 3-8, under the authority of Sections 4.01 and 4.02 of the Miami Dade County Charter - and any authority, board, body, commission, official or officials to which or to whom the powers now belonging to DTPW in respect to the location, construction, equipment, maintenance and operation of transit facilities shall, by virtue of any act or acts, hereinafter pass or appertain.

- DTPW -** Department of Transportation and Public Works, Miami-Dade County, located at 701 N.W. 1st Court, Suite 1700, Miami, Florida 33136
- DTPW RIGHT OF WAY-** As defined by the legal description of the properties that the DTPW facilities occupy or are situated above and supportive easements. For the purpose of this manual the Right of Way shall be defined as those properties located within the drip lines of the DTPW rails, stations and facilities and include those properties used for access and egress to the DTPW facilities by the general public and normal DTPW operations.
- MISHAP -** An unplanned event or series of events that result in death, injury, occupational illness, or damage to or loss of equipment or property. (See also ACCIDENT).
- MONITOR -** An authorized DTPW employee, DTPW contractor or DTPW consultant monitoring the movement of construction equipment or materials that may infringe upon the 30' "Safety Zone" (that area of the Department of Transportation and Public Works Guideway (Metrorail and/or Metromover) that lies within 30' of the outermost edge of the superstructure) which has the potential to interfere with Department of Transportation and Public Works operations and/or maintenance. This person(s) shall ensure the safety of Department of Transportation and Public Works patrons, employees, property and the public. DTPW contractors and DTPW consultants shall be trained per DTPW Rail Services Metromover and Metrorail training packages before they perform duties as Monitors.
- OPERATOR -** That person having direct and immediate control of the movement of a vehicle or machinery.
- OPERATING TIME -** The time period between turn-on and turn-off of a system, subsystem, component or part during which time operation is as specified. Total operating time is the summation of all operating time periods

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- OSHA -** The Occupational Safety and Health Administration. An agency of the U.S. Government which sets standards to provide for the safety of employees in the workplace. The local area office is located in Ft. Lauderdale, Florida, phone (305) 527-7292
- PERSONAL PROTECTIVE EQUIPMENT (PPE) -** Equipment designed and worn to provide protection against hazard to some part of an employee's body. Examples of PPE are safety glasses, respirators, hart hats, gloves etc. All PPE used at DTPW work sites must comply with applicable OSHA standards
- POWER RAIL -** Three separate rails center mounted on insulators on the guidebeam which provides traction power for vehicle propulsion. (Metromover)
- PROCEDURES -** Established methods to perform a series of tasks.
- QUALIFIED PERSONS -** Those who by possession of a recognized degree, certificate, or professional standing, or by extensive knowledge, training, and experience in the demolition industry have successfully demonstrated their ability to solve or resolve problems relating to the subject matter of demolition.
- QUALIFYING BUILDINGS -** Buildings located within 30 feet of DTPW Right of Way corridor, and greater than 35 feet, in height, that have a building footprint located adjacent to a Safety Zone where the elevation of the building encroaches into the Vertical Safety Zone extensions as defined in Safety Zone above and at the rate of 1 foot horizontal offset per 4 feet of building height above DTPW facility. See the definition of Safety Zone above and attached drawing CZ-1 (Appendix C).
- QUALIFYING STRUCTURES -** Cranes whose boom swing infringes within the 30 feet Safety Zone or DTPW Right-of-Way corridor. Signs located within the safety zone. Temporary scaffolding or construction towers within the Safety Zone or DTPW Right of Way corridor with heights greater than 30 feet.

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- QUALIFYING WORK-** Any construction, demolition, equipment operations or building maintenance activity performed on or in a building or structure which may be hazardous to persons or property within the DTPW Right of Way or protective safety zones.
- RELIABILITY -** The probability that the system or sub-system will perform satisfactorily for a given period of time when used under stated conditions.
- REPAIR -** The maintenance activity which restores a failed item to operable state.
- RISK -** An expression of possible loss over a specific period of time or number of operational cycles. It may be indicated in terms of hazard severity and probability.
- RISK MANAGEMENT -** The Risk Management Division, Miami Dade County, General Services Administration, located at 111 N.W. 1st Street, Suite 2340, Miami, Florida 33128; phone 375-4280.
- RULE -** A law or order authoritatively governing conduct or action.
- SAFE -** Secure from danger of loss.
- SAFETY -** A reasonable degree of freedom from those conditions that can cause injury or death to personnel; damage to or loss of equipment or property; and freedom from danger.
- SAFETY CHECKLIST -** A list for examining the safety aspects of equipment, procedures and personnel.
- SAFETY CRITICAL -** A designation placed on a system, sub-system, element, component, device, or function denoting that satisfactory operation of such is mandatory to assurance of patron, personnel, equipment, or facility safety. Such a designation dictates incorporation of special safety design features.
- SAFETY DEVICES -** Protective devices which do not alter the fundamental nature of a hazard but which do control the extent of the hazard in some manner.
- SAFETY MANAGEMENT -** An element of management that establishes safety program requirements and ensures the planning, implementation and accomplishment of task and activities to achieve work place safety.

**DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
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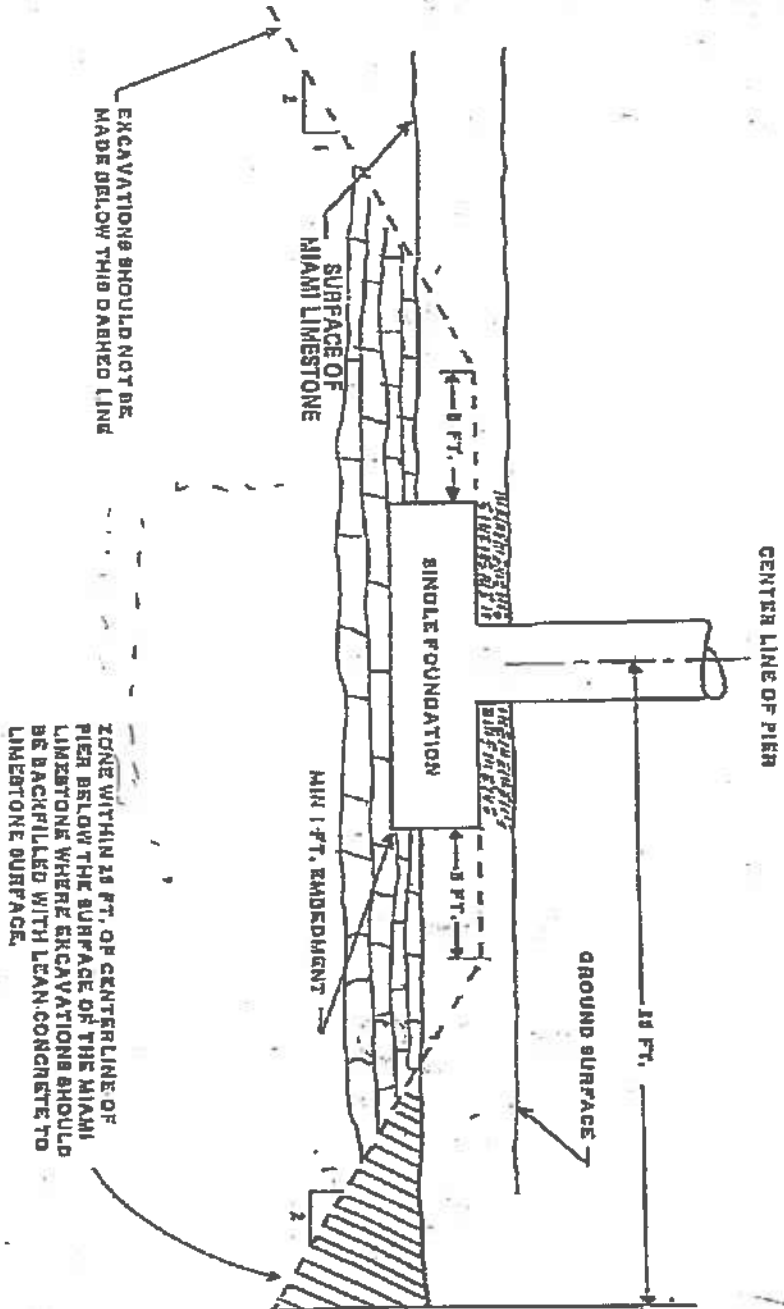
- SAFETY PROGRAM -** The combined task and activities of safety management and safety engineering that enhance operational effectiveness by satisfying the safety requirements in a timely, cost-effective manner throughout all phases of the work.
- SAFETY SUBCONTRACTOR -** A subcontractor who satisfies the Florida Department of Labor and Employment Security Industrial Safety and Health Programs, Chapter 38F-44, and is duly approved by MDC
- SAFETY ZONE -** Safety Zones are defined as a protective safety buffer zone adjacent to the DTPW Right of Way. Safety Zones include all lands public or private within 30 feet (horizontally) of the DTPW Right of Way measured from the drip line of the facility/guideway. No work is allowed at the exterior of any building located within the protective safety zone without an approved DTPW Access Permit.
- SERVICE CONTRACTS/
CONTRACTOR -** Those operations that are providing any services, or repair, replacement or maintenance functions that are indigenous to the construction process on the Work Site.
- SHALL -** A mandatory condition. Where certain requirement are described with the "shall" stipulation, it is mandatory that these requirements be met.
- SHOULD -** An advisory condition. Where the "should" is used, it is considered to be advisable usage, recommended but not mandatory.
- STATE -** The State of Florida.
- SUBCONTRACTOR -** Any person, firm or corporation, other than the employees of the Contractor, who contracts with the Contractor to furnish labor and/or materials under this Contract.
- SUPPLIER/VENDOR -** Those entities whose sole responsibility to the project is the delivery of goods or materials, exclusive of direct labor.
- SYSTEM -** A composite of people, procedures and equipment operating in a specific environment to accomplish a specific mission or task
- THIRD RAIL -** A rail mounted on insulators adjacent to running rails which provides traction power for train propulsion. (Metrorail).

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- TRANSIT SYSTEM -** A transportation system comprised of fleets of motor buses and electrically propelled transit vehicles and all of their operational / support personnel and systems (e.g. maintenance facilities, tracks, structures, etc.) utilized for the mass movement of passengers within a metropolitan area.
- UNUSUAL OCCURRENCE -** An unforeseen event or incident which does not necessarily result in injury or property damage.
- UNSAFE CONDITION -** Any condition which if not corrected, will endanger human life or property.
- WARNING DEVICES -** Sensors that monitor or detect conditions and provide visible and/or audible alerting signals as desired for selected events.
- WORK SITE -** The area enclosed by the limit of Work indicated in the Project Drawings and boundaries of local streets and public easements in which the Contractor is to perform the work under the Contract. It shall also include areas obtained by the Contractor for use in connection with the Contract, when contiguous to the Limit of Work.

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APPENDIX B: CRITERIA FOR EXCAVATION ADJACENT TO SINGLE FOUNDATIONS



METROPOLITAN DADE COUNTY
TRANSIT IMPROVEMENT PROGRAM
LINE SECTION 4



LAW ENGINEERING
TESTING COMPANY

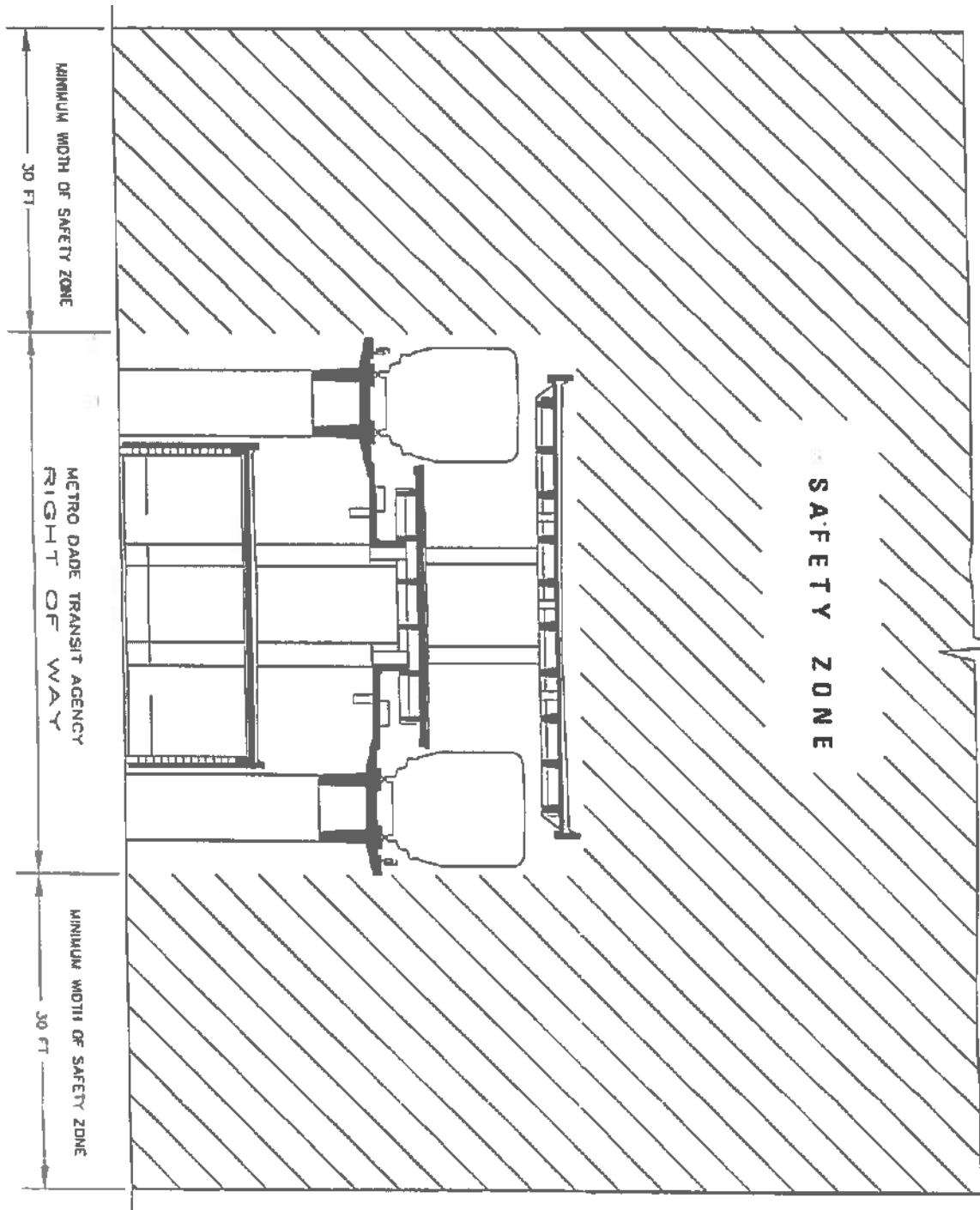
CRITERIA FOR EXCAVATION ADJACENT
TO SINGLE FOUNDATIONS

DRAWN *SKA*
CHECKED *KPS*

ENGINEER 11

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APPENDIX C: SAFETY ZONE CRITERIA



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APPENDIX D: SAMPLE CRANE SAFETY INSPECTION CHECKLIST

CRANE SAFETY INSPECTION CHECKLIST				
Location:				
Area Inspected:				
Inspected By:			Date:	
* Check items to be inspected in your area - Disregard others as not applicable				
*	OK	ITEM INSPECTED	NOT OK	COMMENTS
THE CRANE CREW				
		Is the operator and crew properly trained?		
		Operating is a full time job—does the operator pay strict attention to his duties?		
		Do crane personnel wear hard hats when away from the crane?		
		Is the operator aware of the regulations involving working close to high voltage lines and electrical equipment?		
		High voltage, even from a distant source, can be introduced in metal parts of the crane. Is the operator aware of these situations?		
		Does the operator know the weight of each piece before he picks it?		
		Does the crane crew know the manufacturer's proper recommendations for making short moves on the job site?		
		Does the crew get help when lifting heavy objects?		
		Does the crew periodically check for level?		
		Do they check the outriggers for stability?		
		Do they check the boom angle indicator and other electronic load equipment for accuracy?		
		Does the operator allow anyone to ride the load or to the hooks?		
THE GROUND CREW (HOOKING UP THE LOAD)				
		Does the ground crew have, maintain and use proper safety equipment?		
		Are they familiar with the product erection sequence?		
		Are they familiar with the crane signals and general operation of the crane?		
		Do they know how to properly hook pieces and provide aerial stability?		
		Do they know how to properly use tag lines?		
		Are the tag lines in good condition, strong enough and long enough?		

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**APPENDIX D: SAMPLE CRANE SAFETY INSPECTION CHECKLIST
(CONT)**

✓	OK	ITEM INSPECTED	NOT OK	COMMENTS
		Is two way communication between the operator and the erection foreman being used? Does the crew know how to use and maintain the equipment? Are spare parts available for quick repair?		
		Is the crane swing radius roped off to prohibit the crane (during swing) from causing damage or hurting someone? Is entire swing checked including the counterweights?		
THE MACHINE				
		Is the crane operated within all capacities?		
		Is the machine inspected daily?		
		Are the required crane inspections recorded?		
		Are all controls properly identified?		
		Are warning devices operative?		
		Is the manufacturer's rating plate visible?		
		Is the operator's manual available to the crew for easy reference?		
		Are load charts, operating signals and other important information posted and/or readily available?		
		Are brakes within operating limits?		
		Are clutch and brake surfaces dry?		
		Are all protective panels and guards in place?		
		Are electrical systems in good condition?		
		Are all of the sheaves properly aligned so as to reduce rope wear during work?		
		Is cable in good conditions?		
		Are hooks in good condition?		
		Have hooks been inspected by magnetic particle inspection?		
		Are there safety latches on the hooks?		
		Are fuel tanks in good condition and without leaks?		
		Are fire extinguishers available and routinely inspected?		
SLINGS				
		Are slings in good condition? Is safety factor of 5 maintained?		
		Are slings stored properly?		
		Are sling inspection reports maintained?		
		Are "U" bolt wire rope clips correctly placed?		
		Are all other lifting devices in good condition?		

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APPENDIX D: CHECKLIST FOR CRITICAL LIFTS

CHECKLIST FOR CRITICAL LIFTS

This form is to be completed when the load exceeds 80% of the load chart for the crane or derrick or where the pick involves two or more cranes.

LIFT DATE: _____

1) Supervisor responsible for the lift: _____

2) Description of item to be lifted and estimated weight: _____

3) Equipment and Lift Relationship:

a. Operating Radius _____

b. Boom Length _____

c. Allowable Load (From Load Chart) _____

d. Ratio of Lift to Allowable Load _____

e. Clearance to Surrounding Facilities _____

f. Sling Angle _____

4) Condition of Hoisting Equipment and Rigging

a. Has all equipment been reinspected for this lift: ____ Yes ____ No

5) Stability of Ground Area:

a. Check Soil/Ground Bearing Allowable Load (List Conditions) _____

b. Will mats be needed? ____ Yes ____ No

c. Any underground installations needing special attention? ____ Yes ____ No

d. Will it be necessary for the crane to walk with the load? ____ Yes ____ No

e. Is the surface level and stable where the crane will be walking?

____ Yes ____ No

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APPENDIX D: CHECKLIST FOR CRITICAL LIFTS (CONT)

f. Have facilities been provided to keep the load radius from changing?

___ Yes ___ No

g. Have all overhead facilities been checked for clearance in the area where the crane will be moving/operating? ___ Yes ___ No

6) Does the operator have the necessary experience on the crane and this type of lift?

___ Yes ___ No

7) If the lift involves the use of two cranes answer the following:

a. Have operators worked together before? ___ Yes ___ No

b. Who will coordinate instructions to operators? _____

By: _____

Contractor's Superintendent

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APPENDIX E: RECOMMENDED VIBRATION LIMITS

Seismological research by the U.S. Bureau of Mines, foreign investigative groups, and individual seismologists has established criteria relating the occurrence of structural damage to certain frequencies and levels of ground motion.

USBM Report of Investigations 8507¹ states that residential structures are most prone to damage as a result of vibration energy within the frequency range of 4-12 hertz. Within this range, a 0.5-inch per second maximum particle velocity is recommended to preclude 'threshold' damage to the plaster-on-wood-lath interior portions of older structures.

Threshold damage is defined by the USBM as the loosening of paint, small plaster cracks at joints between construction elements or the lengthening of old plaster cracks. A maximum of 0.75 inch per second is recommended for the protection of modern drywall interior construction. The damage threshold is normally considerably higher for load bearing or other structural portions of a house.

Above 12 hertz, the allowable vibration increases as the frequency increases, up to 40 hertz, above 40 hertz, a constant 2.0 inches per second level is recommended to protect the interior walls and ceilings of structures, regardless of construction material. A graphic representation of the USBM recommended criteria is shown in the velocity versus frequency curve on the following page, and the vibration analysis of the recordings are plotted on graphic representations at the end of this report.

It should be noted², however, that it is almost impossible in actual practice to visually determine if the recorded peak vibration on a typical seismogram is actually within the Bureau's 4-12 hertz range. This is because ground vibration is usually a complex mixture of many frequencies that cannot be accurately separated by visual analysis of a seismogram.

Proper implementation of the Bureau's limit can only be accomplished by a computerized technique that analyzes the seismographic data in terms of both peak particle velocity and frequency. Therefore, in order to best determine the potential effects of ground vibrations recorded in this study, a computerized response versus frequency technique known as RSVP was used in the preparation of this report.

RSVP TECHNIQUE

The Response Spectrum Velocity Profile (RSVP) technique used in this study was developed by Dr. Kenneth Medearis. It is a powerful vibration analysis tool which not only conforms to USSM recommendations, but also provides insight into the responses of various types of residences to a given vibration episode.

² Siskind, David *et al.* Structural Response and Damage Produced by Ground Vibration From Blasting. U.S. Bureau of Mines, RI, 1980.

**DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
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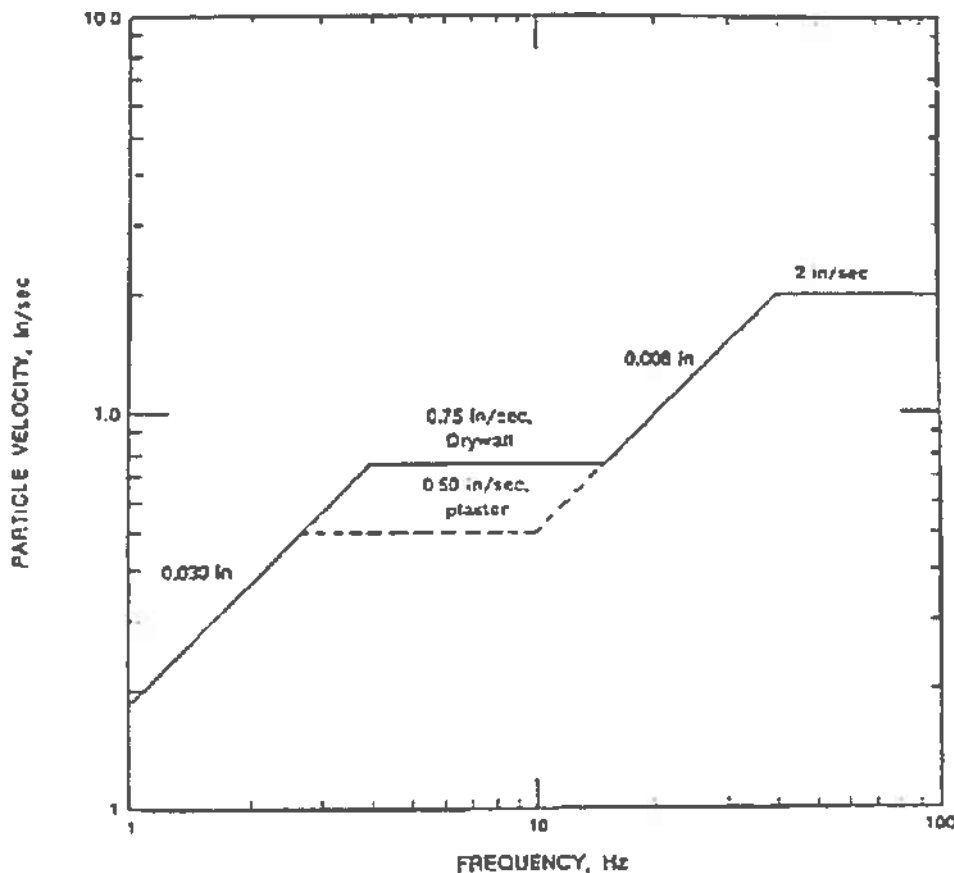
APPENDIX E: RECOMMENDED VIBRATION LIMITS (cont)

All buildings are characterized by a single natural fundamental frequency. This means that, as with a pendulum or a tuning fork, there is one dominant frequency at which a particular building will vibrate when excited. The fundamental natural frequency of a building depends primarily upon its height. Tall buildings are more flexible and vibrate at low frequencies. Low-rise structures, being stiffer, vibrate at higher frequencies.

When the frequency of a ground vibration wave matches the structure's natural frequency, the ground motion will be amplified within the structure. According to the USSM, the natural frequency of typical residential structures ranges between 4 and 12 hertz. Thus, it is within this range that the vibration limits recommended by the USBM are most stringent.

By applying the computerized RSVP Technique to the data obtained in this survey, both the ground particle velocity and response characteristics of residential structures are considered over a wide range of frequencies. The results are then related to the USSM velocity versus frequency curve discussed previously, and are plotted on the analysis sheets at the end of this report.

When particle velocities exceed the limits of the USBM Curve, non-damage probability calculations are performed, based on the research of Medearis. These probabilities are given under the graphs on the analysis sheet for 1, 1-1/2, and 2story houses. When no figures are given, probability of non-damage is essentially 100 percent.



DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

UPGRADE CHILLER UNITS AT WILLIAM LEHMAN CENTER

PROJECT NO. IRP171

RPQ NO. TP-0000017889

PROJECT QUALITY ASSURANCE PLAN

PROJECT QUALITY ASSURANCE PLAN

PROJECT TITLE

PROJECT/CONTRACT NUMBER

COMPANY NAME

REVISION DATE

PROJECT QUALITY ASSURANCE PLAN

SIGNATURE SHEET

This Quality Assurance Plan dated (*input revision date identified on page 1*):
__ __ __ __ __ was prepared or revised in accordance with the project/contract requirements.

Prepared by (Quality Representative Signature): _ _ _ _ _ Date: __ _

Approved by (Project Manager Signature): _____ Date: __ _

PROJECT QUALITY ASSURANCE PLAN

REVISION LOG

Any changes to this document will be re-submitted for review and approval by Miami-Dade County (MDC).

REVISION DATE	AFFECTED PAGES	REASON FOR CHANGE
<i>SAME DATE AS IDENTIFIED ON PAGE / :</i>	<i>ALL PAGES</i>	<i>INITIAL ISSUE</i>

PROJECT QUALITY ASSURANCE PLAN

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2. DOCUMENTED QUALITY MANAGEMENT SYSTEM	
3. DESIGN CONTROL	
4. DOCUMENT CONTROL	
5. PURCHASING	
6. PRODUCT IDENTIFICATION AND TRACEABILITY	
7. PROCESS CONTROL	
8. INSPECTION AND TESTING	
9. INSPECTION, MEASURING, AND TEST EQUIPMENT	
10. INSPECTION AND TEST STATUS	
11. NONCONFORMANCE	
12. CORRECTIVE ACTION	
13. QUALITY RECORDS	
14. QUALITY AUDITS	
15. TRAINING	
APPENDICES	

PROJECT QUALITY ASSURANCE PLAN

1. MANAGEMENT RESPONSIBILITY

The successful implementation of this Quality Assurance Plan (QAP) for this project rests on the level of commitment by top management that ensures that the quality elements are understood, implemented, and maintained throughout all phases of the project.

Contractor input:

STATEMENT OF COMMITMENT to QUALITY:

(Input quality statement)

_____ (Approved by highest level of management) DATE: _____

In this section, identify management's commitment to quality, and ensure that the commitment is understood, implemented, and maintained. Personnel assigned to this project shall be identified in an organizational chart format. Those personnel responsible for assuring quality must be independent of those having direct responsibility for the work being performed:

ORGANIZATIONAL CHART

(Insert the company's organizational chart)

PROJECT QUALITY ASSURANCE PLAN

Roles & Responsibilities: Include in this section assigned personnel duties and responsibilities within this project that are identified in the organizational chart.

Contractor input:

In this section, document the roles and responsibilities of key personnel (by functional position only) assigned to the project:

Example Positions:

Project Manager:

Quality Assurance Representative:

Inspection Personnel:

C

COMPANY NAME: _____

Revision Date: mm/dd/yyyy

6

PROJECT QUALITY ASSURANCE PLAN

2. Documented Quality Management System (QMS)

The Quality Assurance Plan (QAP) applies to all quality activities performed under the contract. In order to ensure continued adherence to the standard practices, procedures and policies established for the project, periodic reviews, revisions, and redistribution of this QAP shall be performed.

Documentation records testifying to the satisfactory execution of the required activities for the project (i.e. construction, inspections, & testing) are readily available and delivered to authorized personnel as directed. An integral part of this project is the list of instructions, procedures, drawings, specifications, inspection test reports, and quality assurance reports to be prepared, submitted, or made available for review or approval, in accordance with contract requirements.

Contractor input:

In this section, document the method of insuring that all key documents are developed, reviewed, and updated. Also, any plan or procedure should include a statement of purpose, scope, and should contain any references to applicable codes, standards, or specifications to ensure compliance to contract requirements.

PROJECT QUALITY ASSURANCE PLAN

3. Design Control: (if applicable)

Note: If the design process does not apply, you may put "N/A" in this section.

The Contractor shall establish and maintain QA/QC procedures to control and verify the design in order to ensure that the design criteria, technical and relevant regulatory requirements are in compliance with Contract Documents and Ff A guidelines for this project. Design control includes ensuring that the design requirements are understood, planned, verified, executed and that changes are reviewed and approved throughout the design process and project completion as applicable. The Final Design establishes criteria for the inspection and testing on items that affect safety, reliability, service life, and ADA requirements.

Contractor input:

In this section, document the design process, including quality control reviews for assuring design Integrity is established throughout all phases of development, and what methods will be used to control the design within the key elements identified below:

Note: Key elements of the design process include, but not limited to:

- Design Planning:
- Design Input:
- Design Output:
- Design Verification:
- Design Validation:
- Design Changes:

PROJECT QUALITY ASSURANCE PLAN

4. Document Control

Procedures shall be established and maintained for the control of project documents and data. Quality procedures shall describe methods for review and approval of project documents by authorized personnel, distribution and storage of documents, correction and deletion of documents, and control of changes to these documents. These controls are required to be implemented in order to provide project participants and organizations with access to the latest version of each document.

Contractor Input:

In this section, identify which documents will be controlled and the process to ensure that they are maintained and current throughout the project:

Example of Documents:

- *Contractors Project Quality Assurance **Plan (QAP)***
- *Contractors inspection Procedures.*
- *Contract Documents.*
- *Drawings*

PROJECT QUALITY ASSURANCE PLAN

5. Purchasing (If applicable)

Note: If the purchasing process does not apply, you may put "*N/A*" in this section

Procedures shall be established and maintained to ensure that purchased services or products conform to specified technical requirements. Purchasing requirements apply to all Contractors and Suppliers.

Receiving Inspection

The receiving inspection of all materials will be performed by the Contractor's QA/QC staff at their facility in accordance with approved Contractor's QAP. The Contractor's QAP shall provide methods to control and ensure that all materials received are properly inspected. Any nonconforming materials shall be identified.

Approved Supplier List

The Contractor shall develop and maintain an approved Supplier list available for review and approval.

Contractor input:

In this section, document the purchasing process and how all products are received, inspected and maintained:

PROJECT QUALITY ASSURANCE PLAN

6. Product Identification and Traceability (If applicable)

Note: If the product identification and traceability process does not apply, you may put "N/A" in this section.

The purpose of product identification and traceability is to ensure the control of materials, parts, components, equipment, and products, and the identification and traceability of these materials to prevent the use of incorrect or defective items. They also ensure that only correct and acceptable items are used or installed. These requirements apply to all materials, parts, components, equipment, and products, including partially fabricated or assembled components, produced for incorporation into the project.

Identification

All materials, supplies, and components that are intended for use in this Project shall be identified from the time of initial fabrication, or receipt, up to and including installation or end use. Items shall be identified by positive markings and/or certifications. They shall be segregated and/or stored with identification data to ensure control and proper identification as applicable.

Item identification methods include use of physical markings. If physical markings are either impractical or insufficient, other appropriate means of identification such as physical separation, container labels, barcodes or tags shall be employed.

Traceability

Item identification methods ensure that traceability is established and maintained in a manner that allows an item to be traced to applicable drawings, specifications, or other documents during all stages of production, delivery, and installation or end use.

Contractor input:

In this section, document how materials, components, equipment, and products will be identified:

PROJECT QUALITY ASSURANCE PLAN

7. Process Control

The Contractor shall identify and plan the installation and/or construction processes that directly affect quality and ensure these processes are performed under controlled conditions. Controlled conditions shall include the following:

- Qualifications requirements for personnel.
- Implementing documents defining the manner of design and/or construction process.
- Use of suitable products for design and/or construction equipment, and a suitable working environment.
- Compliance with reference standards/codes, quality plans, and/or documented procedures.
- Monitoring and control of suitable process parameters and product characteristics.

A major issue in process control is to ensure that work is performed in the proper sequence.

Contractor input:

In this section, document how the process will be controlled:

PROJECT QUALITY ASSURANCE PLAN

8. Inspection and Testing

Activities affecting quality shall be inspected and documented by experienced personnel who are independent of those performing the work. Inspections and tests shall be performed in accordance with approved documents to determine that contract activities meet the established requirements of the specifications.

Contractor input:

In this section, identify the types of inspections/testing to be performed and the procedures/forms to be used to perform tire Inspections and/or testing:

PROJECT QUALITY ASSURANCE PLAN

9 Inspection, Measuring, and Test Equipment

All equipment used in the inspection or testing process shall be identified, calibrated, and maintained under controlled conditions. Provisions shall be established for scheduled re-calibration. Such equipment shall meet the National Institute of Standards and Technology (NIST) standards of accuracy for the measurements and tests required.

Contractor input:

In this section, document which, inspection and test equipment will be identified, calibrated and maintained to ensure accuracy of the inspections and testing as required. Also, identify the calibration intervals or frequency for each, equipment that is subject to calibration:

PROJECT QUALITY ASSURANCE PLAN

IO Inspection and Test Status

A means should be provided for identifying the inspection and test status of the work during the installation process. The purpose of this is to ensure that only work that has passed the required inspections and tests is accepted.

The test and inspection status should be identified by means of markings, stamps, tags, labels, routing cards, inspection records, test software, physical location, or other suitable means.

Contractor input:

In this section, document the method to be used to identify the inspection and testing status on the work to be performed:

PROJECT QUALITY ASSURANCE PLAN

11 Nonconformance

Where practicable, nonconforming items should be segregated. When segregation is not possible, nonconforming items should be clearly identified as such. Those activities affected by the nonconforming work should be notified. Nonconforming work should be identified, documented, and evaluated to determine appropriate disposition.

Contractor input:

In this section, document the method to be used to identify, document, evaluate and address nonconforming products. It is highly recommended that a "log of nonconformances" is kept and that it includes the corrective actions to address the nonconformances:

PROJECT QUALITY ASSURANCE PLAN

12 Corrective Action

The corrective action plans should include the investigation of the root cause of any nonconforming work and the preventive action needed to prevent recurrence.

Contractor input:

In this section, document the method to be used to implement a corrective action plan to address all nonconformances. It's highly recommended that a log be kept to track all nonconformances and the proposed corrective action plans as necessary:

PROJECT QUALITY ASSURANCE PLAN

13 Quality Records

Procedures should be established and maintained for all quality records. These procedures should identify which records should be kept, responsibility for production and collection, and responsibility for indexing, filing, storage, maintenance, and disposition of all quality records.

Contractor input:

In this section, identify which quality records will be controlled and the process to ensure that they are maintained, stored and dispositions appropriately:

Example of Quality Records:

- *Inspection Reports*
- *Test Data*
- *Calibration Records*
- *Nonconformance Reports*
- *Corrective Action Reports*
- *Audit Reports*
- *Training Records*
- *Product Certification*

PROJECT QUALITY ASSURANCE PLAN

14 Quality Audits (if applicable)

Note: If quality audits does not apply, you may put "N/A" in this section

Quality audits are not the same as financial audits. A quality audit program should be established to ensure that the elements of the contractor's quality program are functioning as intended.

Quality audits should be performed by the Contractor's qualified quality personnel, and should be independent, scheduled, and performed to standards and/or checklists. A final report that identifies the audit results should be generated, distributed, and a log developed to track both the findings and corrective action plans.

Contractor input:

In this section, document the audit program that should include an audit scheduled, the activities to be audited and how the contractor will address the audit findings:

PROJECT QUALITY ASSURANCE PLAN

15 TRAINING

The contractor should establish and maintain procedures for identifying the training needs and provide for the training of all personnel performing the activities affecting quality.

Records of the training and evaluations should be maintained. A training matrix can be used as an effective tool for determining which personnel require what type of training.

Contractor input:

In this section, document the training program, personnel qualification and any certification needed as necessary:



PROJECT QUALITY ASSURANCE PLAN

APPENDICES

Contractor input

In This section, the Contractor may include any references, procedures, process, flow charts, forms and acronyms/definitions that apply to this project:

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

UPGRADE CHILLER UNITS AT WILLIAM LEHMAN CENTER

PROJECT NO. IRP171

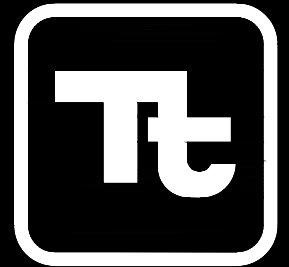
RPQ NO. TP-0000017889

DRAWINGS

MIAMI DADE COUNTY DTPW WILLIAM LEHMAN CENTER CHILLED WATER PLANT REPLACEMENT

6303 BLUE LAGOON DRIVE, SUITE 305
MIAMI, FLORIDA 33126
TEL: (305) 908-1420 FAX: (305) 264-1805

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PROJECT LOCATION:
WILLIAM E LEHMAN CENTER
6601 NW 72ND AVENUE,
MIAMI, FL, 33166

CLIENT INFORMATION:
MIAMI DADE COUNTY DEPARTMENT OF
TRANSPORTATION AND PUBLIC WORKS
701 NW 1CT STE 1700,
MIAMI, FL, 33136-3902

Tt PROJECT No.:
200-15769-22008

CLIENT PROJECT No.:
WO-EDP-MT-IRP171
FOLIO: 30-3014-031-0010

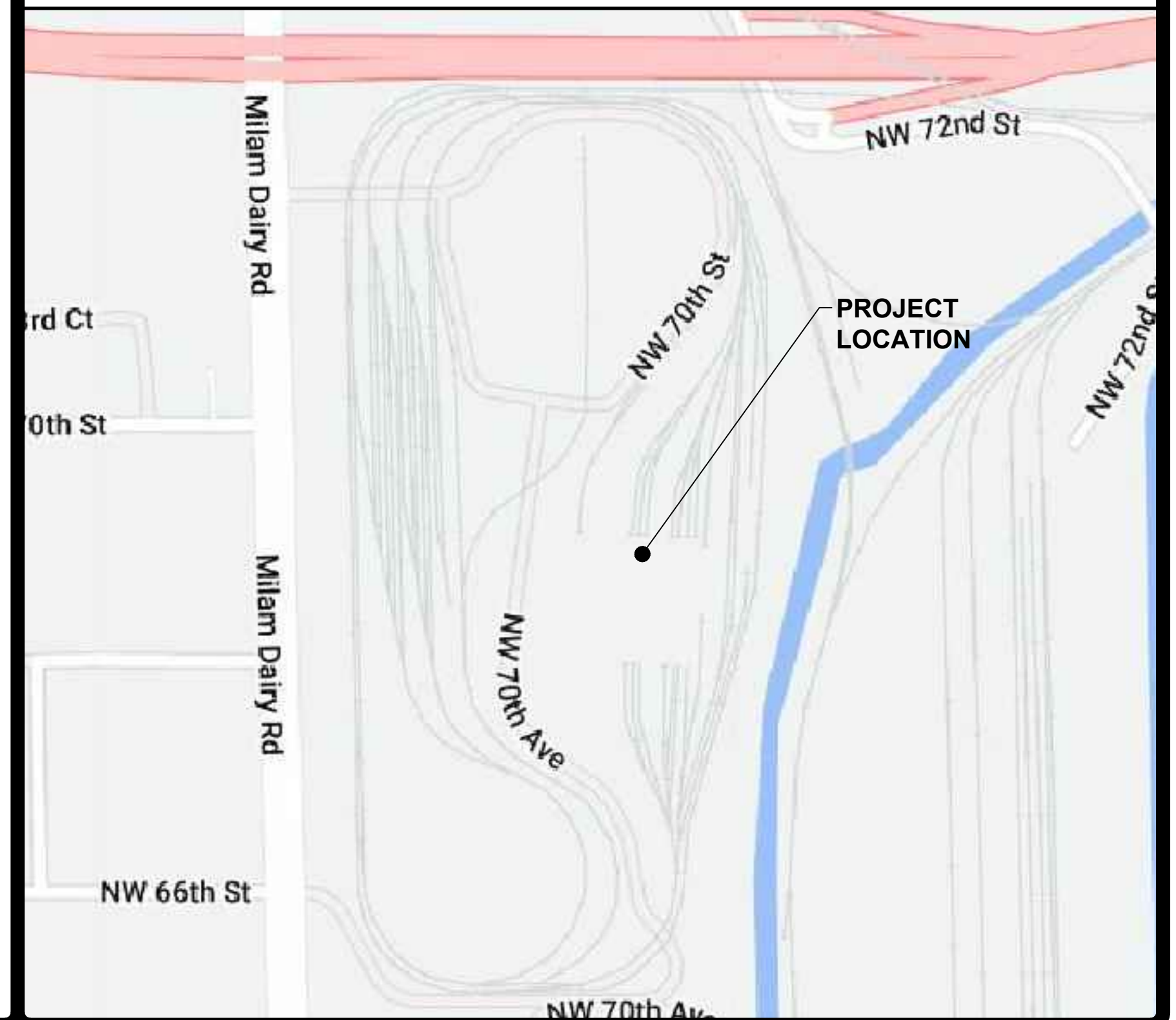
PROJECT DESCRIPTION / NOTES:

THE PROJECT INCLUDES THE REMOVAL AND REPLACEMENT OF (2) EXISTING WATER-COOLED CHILLERS WITH NEW MAGNETIC BEARING WATER-COOLED CHILLERS, (3) NEW CHILLED WATER PUMPS, (2) NEW CONDENSER WATER PUMPS, INCLUDING ALL NECESSARY ELECTRICAL UPGRADES TO SUPPORT THE REPLACEMENT. THE PROJECT INCLUDES THE REMOVAL OF ALL NECESSARY CHILLED WATER PIPING, VALVES, APPURTENANCES, ETC. IN THE MECHANICAL ROOM TO FACILITATE THE REMOVAL AND REPLACEMENT OF THE CHILLED WATER PLANT.

ISSUED:

BID SET NOT FOR CONSTRUCTION - JAN 2023

VICINITY MAP:



MECHANICAL GENERAL NOTES CONTINUED

EQUIPMENT NOTES

- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- IDENTIFY ALL NEW MECHANICAL EQUIPMENT PER SPECIFICATIONS.
- MOTOR STARTERS AND VARIABLE FREQUENCY DRIVES, WHERE REQUIRED, SHALL BE PROVIDED AND MOUNTED BY THE MECHANICAL INSTALLER. CONDUIT AND WIRING SHALL BE PROVIDED BY ELECTRICAL INSTALLER.
- PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS (SUPPLY, RETURN, AND EXHAUST) CONNECTED TO AIR HANDLING UNITS AND FANS. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE INDICATED.
- PROVIDE VIBRATION ISOLATION DEVICES FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- EQUIPMENT AND APPLIANCES SHALL BE ACCESSIBLE FOR SERVICE, INSPECTION, REPAIR AND REPLACEMENT WITHOUT REMOVING PERMANENT CONSTRUCTION. SUFFICIENT CLEARANCE SHALL BE MAINTAINED TO PERMIT CLEANING, REPLACEMENT OF FILTERS, BLOWERS, MOTORS, CONTROLS AND LUBRICATION OF MOVING PARTS.

PIPING NOTES

- CONDENSATE AND PRESSURE RELIEF PIPING SHALL BE TYPE L TUBING WITH WROUGHT COPPER FITTINGS. A PRIMARY DRAIN PAN SHALL BE PROVIDED WITH COOLING COIL AND EXTEND BEYOND THE LEAVING SIDE OF THE COIL AND UNDERNEATH THE COOLING COIL CONNECTIONS. PROVIDE SECONDARY DRAIN PIPE FOR EQUIPMENT ABOVE CEILINGS AND ROUTE TO A READILY VISIBLE LOCATION.
- SUPPORT ALL PIPING SO THAT IT IS FIRMLY HELD IN PLACE BY APPROVED HANGERS AND SUPPORTS.
- HYDRONIC PIPING SHALL HAVE MANUAL VENTS AT ALL HIGH POINTS. A MINIMUM OF ONE AUTOMATIC AIR VENT SHALL BE PROVIDED AT THE HIGHEST POINT IN THE SYSTEM AND SHALL HAVE EXTENDED TUBING ROUTED TO APPROVED DRAINAGE. PROVIDE DRAIN VALVES WITH REMOVABLE PLUG AT THE BOTTOM OR PIPE RISERS AND LOW POINTS TO ALLOW DRAINING SYSTEM.
- IDENTIFY AND TAG ALL PIPING, EQUIPMENT, VALVES, ETC. AS SPECIFIED IN SECTION 230553.

CONTROL NOTES

- LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UPSTREAM AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR RATED ACCURACY.
- UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM SENSORS AND THERMOSTATS SUCH THAT OPERABLE PARTS ARE NO HIGHER THAN 48" ABOVE FINISHED FLOOR.
- PROVIDE ALL DEVICES, CONTROLLERS, SENSORS, CONDUIT, WIRING AND LABOR TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM TO MEET THE OWNER'S PROJECT REQUIREMENTS AND THE DESIGN INDICATED ON THESE DRAWINGS AND SPECIFICATIONS.
- ALL CONTROL CONDUIT AND WIRING SHALL COMPLY WITH THE ELECTRICAL CODE AND THE SPECIFICATIONS.
- THE CONTROLS CONTRACTOR IS RESPONSIBLE FOR POWER CIRCUITS AND WIRING TO ALL CONTROL PANELS.
- INSTALL REFRIGERANT MONITORING SYSTEM AND EXHAUST FAN CONTROL PANEL IN COMPLIANCE WITH FLORIDA FIRE PREVENTION CODE, FLORIDA MECHANICAL CODE, ASHRAE-15, CSA B-52 AND MANUFACTURER'S INSTRUCTIONS.
- PROVIDE SIGNAGE IN COMPLIANCE WITH NFPA 704 FOR ALL SWITCHES INCLUDING OCCUPIED VENTILATION, EMERGENCY PURGE FAN OPERATION, AND EMERGENCY PURGE FAN SHUTOFF.

MECHANICAL ROOM - REFRIGERANT VENTILATION CALCULATION					
SPACE	FLOOR AREA	OCCUPIED VENTILATION RATE (SEE NOTE 1)	TOTAL COMBINED MASS OF REFRIGERANT	OCCUPIED MINIMUM AIRFLOW (SEE NOTE 1)	EMERGENCY VENTILATION AIRFLOW (SEE NOTE 2)
	SQ-FT	CFM / SQ-FT	LBS	CFM	CFM
MECHANICAL ROOM #5	1344	0.5	484	672	2200

NOTES:

- OCCUPIED VENTILATION RATE PER FMC, 1105.6.3.1
- EMERGENCY CONDITIONS VENTILATION RATE PER FMC, 1105.6.3.2. AIRFLOW = 100 SORT(MASS OF REFRIGERANT)

HVAC INSULATION SCHEDULE		
MARK	TYPE	THICKNESS
D-1	SUPPLY AIR	1.0 INCH
	RETURN AIR	
D-2	OUTSIDE AIR	1.5 INCH
P-1	CHILLED WATER SUPPLY	1.5 INCH
	CHILLED WATER RETURN	

NOTES:

- REFER TO 230700 FOR ADDITIONAL INFORMATION.
- PROVIDE ALUMINUM JACKETING ON ALL EXPOSED CHILLED WATER PIPING IN MECHANICAL ROOM AND PROVIDE IDENTIFICATION PER SECTION 230553.

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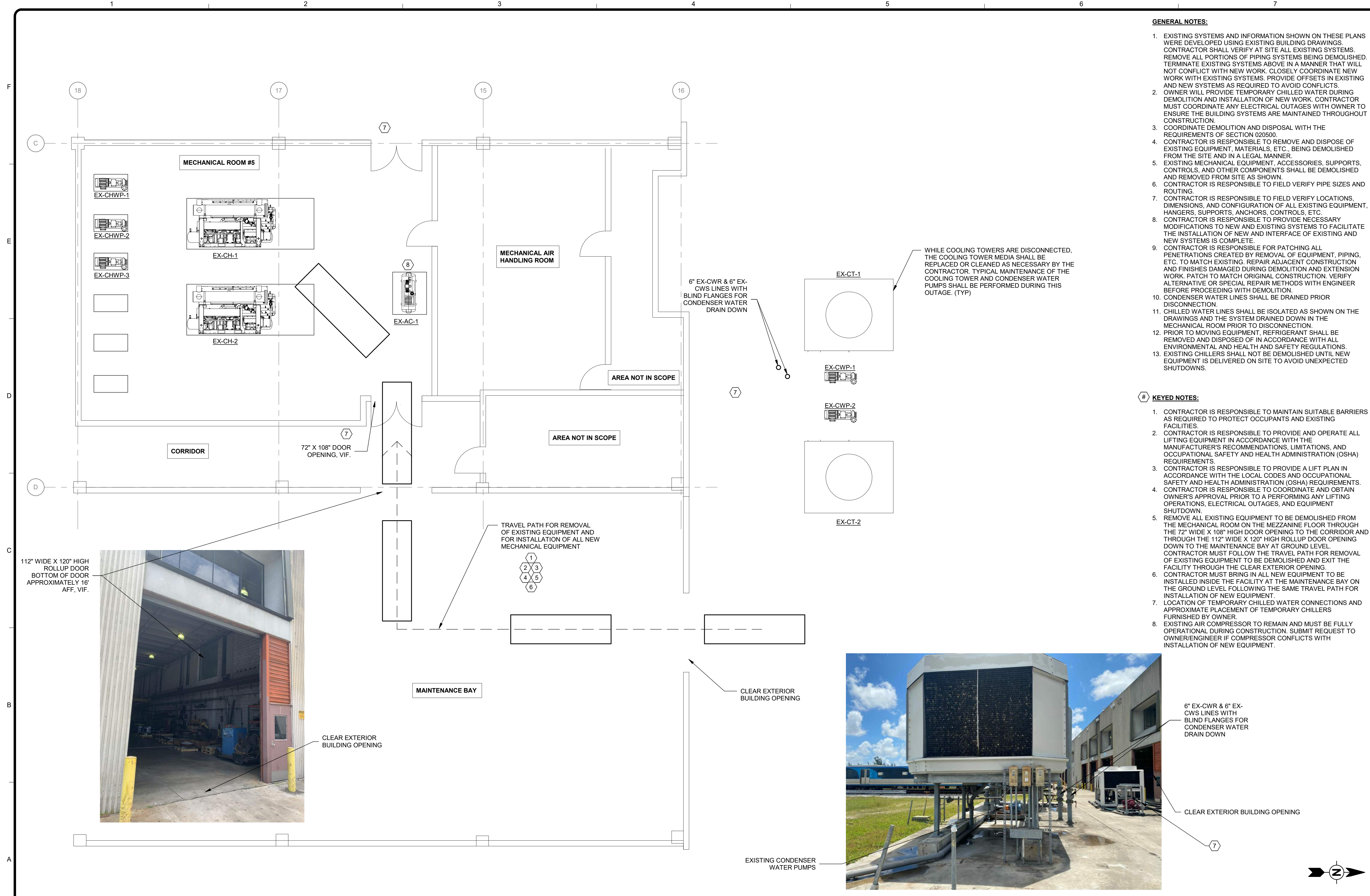
MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
**MECHANICAL GENERAL
NOTES**

PROJ: 200-15769-22008
DESN: MGS
DRWN: FFA
CHKD: KPK

M-0002

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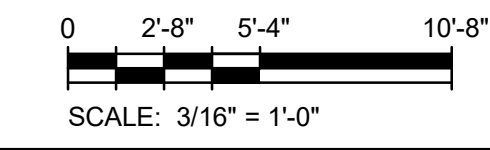
- GENERAL NOTES:**
- EXISTING SYSTEMS AND INFORMATION SHOWN ON THESE PLANS WERE DEVELOPED USING EXISTING BUILDING DRAWINGS. CONTRACTOR SHALL VERIFY AT SITE ALL EXISTING SYSTEMS. REMOVE ALL PORTIONS OF PIPING SYSTEMS BEING DEMOLISHED. TERMINATE EXISTING SYSTEMS ABOVE IN A MANNER THAT WILL NOT CONFLICT WITH NEW WORK. CLOSELY COORDINATE NEW WORK WITH EXISTING SYSTEMS. PROVIDE OFFSETS IN EXISTING AND NEW SYSTEMS AS REQUIRED TO AVOID CONFLICTS.
 - OWNER WILL PROVIDE TEMPORARY CHILLED WATER DURING DEMOLITION AND INSTALLATION OF NEW WORK. CONTRACTOR MUST COORDINATE ANY ELECTRICAL OUTAGES WITH OWNER TO ENSURE THE BUILDING SYSTEMS ARE MAINTAINED THROUGHOUT CONSTRUCTION.
 - COORDINATE DEMOLITION AND DISPOSAL WITH THE REQUIREMENTS OF SECTION 020500.
 - CONTRACTOR IS RESPONSIBLE TO REMOVE AND DISPOSE OF EXISTING EQUIPMENT, MATERIALS, ETC., BEING DEMOLISHED FROM THE SITE AND IN A LEGAL MANNER.
 - EXISTING MECHANICAL EQUIPMENT, ACCESSORIES, SUPPORTS, CONTROLS, AND OTHER COMPONENTS SHALL BE DEMOLISHED AND REMOVED FROM SITE AS SHOWN.
 - CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PIPE SIZES AND ROUTING.
 - CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY LOCATIONS, DIMENSIONS, AND CONFIGURATION OF ALL EXISTING EQUIPMENT, HANGERS, SUPPORTS, ANCHORS, CONTROLS, ETC.
 - CONTRACTOR IS RESPONSIBLE TO PROVIDE NECESSARY MODIFICATIONS TO NEW AND EXISTING SYSTEMS TO FACILITATE THE INSTALLATION OF NEW AND INTERFACE OF EXISTING AND NEW SYSTEMS IS COMPLETE.
 - CONTRACTOR IS RESPONSIBLE FOR PATCHING ALL PENETRATIONS CREATED BY REMOVAL OF EQUIPMENT, PIPING, ETC. TO MATCH EXISTING. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PATCH TO MATCH ORIGINAL CONSTRUCTION. VERIFY ALTERNATIVE OR SPECIAL REPAIR METHODS WITH ENGINEER BEFORE PROCEEDING WITH DEMOLITION.
 - CONDENSER WATER LINES SHALL BE DRAINED PRIOR DISCONNECTION.
 - CHILLED WATER LINES SHALL BE ISOLATED AS SHOWN ON THE DRAWINGS AND THE SYSTEM DRAINED DOWN IN THE MECHANICAL ROOM PRIOR TO DISCONNECTION.
 - PRIOR TO MOVING EQUIPMENT, REFRIGERANT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL ENVIRONMENTAL AND HEALTH AND SAFETY REGULATIONS. EXISTING CHILLERS SHALL NOT BE DEMOLISHED UNTIL NEW EQUIPMENT IS DELIVERED ON SITE TO AVOID UNEXPECTED SHUTDOWNS.

- # KEYED NOTES:**
- CONTRACTOR IS RESPONSIBLE TO MAINTAIN SUITABLE BARRIERS AS REQUIRED TO PROTECT OCCUPANTS AND EXISTING FACILITIES.
 - CONTRACTOR IS RESPONSIBLE TO PROVIDE AND OPERATE ALL LIFTING EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, LIMITATIONS, AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
 - CONTRACTOR IS RESPONSIBLE TO PROVIDE A LIFT PLAN IN ACCORDANCE WITH THE LOCAL CODES AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
 - CONTRACTOR IS RESPONSIBLE TO COORDINATE AND OBTAIN OWNER'S APPROVAL PRIOR TO A PERFORMING ANY LIFTING OPERATIONS, ELECTRICAL OUTAGES, AND EQUIPMENT SHUTDOWN.
 - REMOVE ALL EXISTING EQUIPMENT TO BE DEMOLISHED FROM THE MECHANICAL ROOM ON THE MEZZANINE FLOOR THROUGH THE 72" WIDE X 108" HIGH DOOR OPENING TO THE CORRIDOR AND THROUGH THE 112" WIDE X 120" HIGH ROLLUP DOOR OPENING DOWN TO THE MAINTENANCE BAY AT GROUND LEVEL. CONTRACTOR MUST FOLLOW THE TRAVEL PATH FOR REMOVAL OF EXISTING EQUIPMENT TO BE DEMOLISHED AND EXIT THE FACILITY THROUGH THE CLEAR EXTERIOR OPENING.
 - CONTRACTOR MUST BRING IN ALL NEW EQUIPMENT TO BE INSTALLED INSIDE THE FACILITY AT THE MAINTENANCE BAY ON THE GROUND LEVEL FOLLOWING THE SAME TRAVEL PATH FOR INSTALLATION OF NEW EQUIPMENT.
 - LOCATION OF TEMPORARY CHILLED WATER CONNECTIONS AND APPROXIMATE PLACEMENT OF TEMPORARY CHILLERS FURNISHED BY OWNER.
 - EXISTING AIR COMPRESSOR TO REMAIN AND MUST BE FULLY OPERATIONAL DURING CONSTRUCTION. SUBMIT REQUEST TO OWNER/ENGINEER IF COMPRESSOR CONFLICTS WITH INSTALLATION OF NEW EQUIPMENT.



1 SITE PLAN
M-1101 SCALE: 3/16" = 1'-0"

2 EXISTING COOLING TOWER
M-1101 SCALE: NTS



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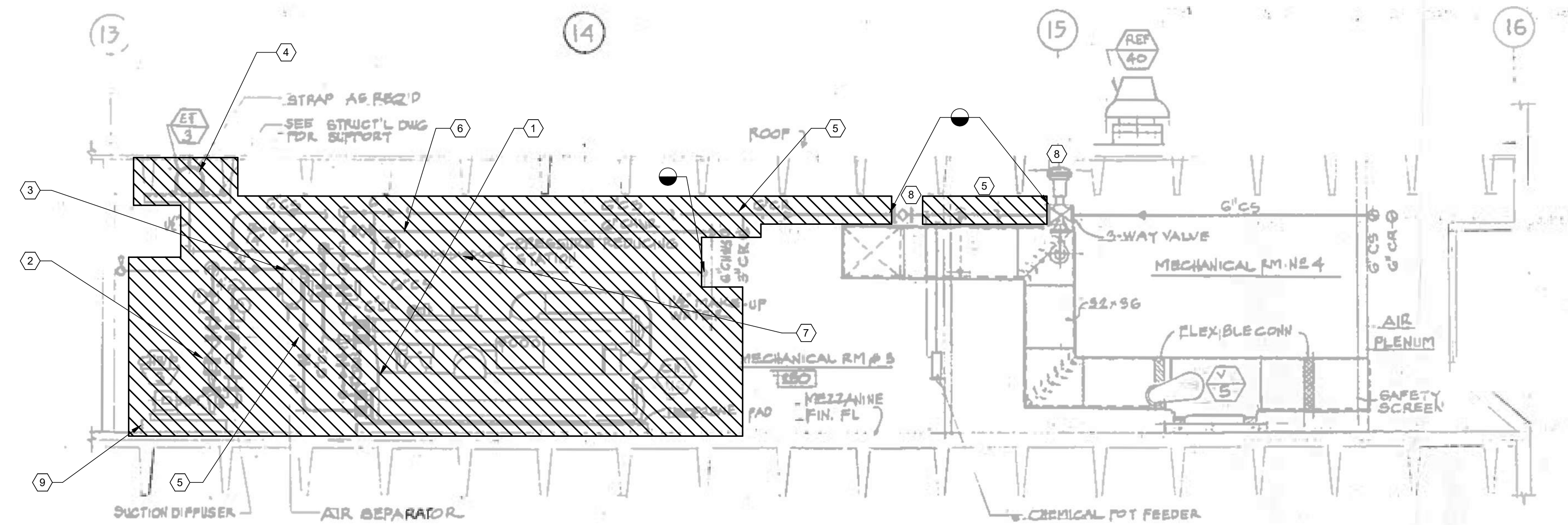
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MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL SITE PLAN

PROJ: 200-15769-22008
DESN: MGS
DRWN: FFA
CHKD: KPK

M-1101
5 of 28

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1 DEMOLITION SECTION
M-2102 SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXISTING SYSTEMS AND INFORMATION SHOWN ON THESE PLANS WERE DEVELOPED USING EXISTING BUILDING DRAWINGS. CONTRACTOR SHALL VERIFY AT SITE ALL EXISTING SYSTEMS. REMOVE ALL PORTIONS OF PIPING SYSTEMS BEING DEMOLISHED. TERMINATE EXISTING SYSTEMS ABOVE IN A MANNER THAT WILL NOT CONFLICT WITH NEW WORK. CLOSELY COORDINATE NEW WORK WITH EXISTING SYSTEMS. PROVIDE OFFSETS IN EXISTING AND NEW SYSTEMS AS REQUIRED TO AVOID CONFLICTS.
2. OWNER WILL PROVIDE TEMPORARY CHILLED WATER DURING DEMOLITION AND INSTALLATION OF NEW WORK. CONTRACTOR MUST COORDINATE ANY ELECTRICAL OUTAGES WITH OWNER TO ENSURE THE BUILDING SYSTEMS ARE MAINTAINED THROUGHOUT CONSTRUCTION.
3. COORDINATE DEMOLITION AND DISPOSAL WITH THE REQUIREMENTS OF SECTION 020500.
4. CONTRACTOR IS RESPONSIBLE TO REMOVE AND DISPOSE OF EXISTING EQUIPMENT, MATERIALS, ETC., BEING DEMOLISHED FROM THE SITE AND IN A LEGAL MANNER.
5. EXISTING MECHANICAL EQUIPMENT, ACCESSORIES, SUPPORTS, CONTROLS, AND OTHER COMPONENTS SHALL BE DEMOLISHED AND REMOVED FROM SITE AS SHOWN.
6. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PIPE SIZES AND ROUTING.
7. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY LOCATIONS, DIMENSIONS, AND CONFIGURATION OF ALL EXISTING EQUIPMENT, HANGERS, SUPPORTS, ANCHORS, CONTROLS, ETC.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE NECESSARY MODIFICATIONS TO NEW AND EXISTING SYSTEMS TO FACILITATE THE INSTALLATION OF NEW AND INTERFACE OF EXISTING AND NEW SYSTEMS IS COMPLETE.
9. CONTRACTOR IS RESPONSIBLE FOR PATCHING ALL PENETRATIONS CREATED BY REMOVAL OF EQUIPMENT, PIPING, ETC. TO MATCH EXISTING. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PATCH TO MATCH ORIGINAL CONSTRUCTION. VERIFY ALTERNATIVE OR SPECIAL REPAIR METHODS WITH ENGINEER BEFORE PROCEEDING WITH DEMOLITION.
10. CONDENSER WATER LINES SHALL BE DRAINED PRIOR DISCONNECTION.
11. CHILLED WATER LINES SHALL BE ISOLATED AS SHOWN ON THE DRAWINGS AND THE SYSTEM DRAINED DOWN IN THE MECHANICAL ROOM PRIOR TO DISCONNECTION.
12. PRIOR TO MOVING EQUIPMENT, REFRIGERANT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL ENVIRONMENTAL AND HEALTH AND SAFETY REGULATIONS.
13. EXISTING CHILLERS SHALL NOT BE DEMOLISHED UNTIL NEW EQUIPMENT IS DELIVERED ON SITE TO AVOID UNEXPECTED SHUTDOWNS.

KEYED NOTES:

1. REMOVE (2) EXISTING WATER COOLED CHILLERS INCLUDING ALL ASSOCIATED CHILLED AND CONDENSER WATER PIPING, GAUGES, SENSORS, VALVES, AND ACCESSORIES TO POINTS INDICATED ON THE DRAWINGS. EXISTING EQUIPMENT PADS TO REMAIN.
2. REMOVE (3) EXISTING CHILLED WATER PUMPS INCLUDING ALL ASSOCIATED PIPING, GAUGES, SENSORS, VALVES, SUCTION DIFFUSERS AND ACCESSORIES TO POINTS INDICATED ON THE DRAWINGS. EXISTING EQUIPMENT PADS TO REMAIN.
3. REMOVE EXISTING AIR SEPARATOR INCLUDING HANGERS, SUPPORTS, DRAIN, VENT AND INSULATION.
4. REMOVE EXISTING EXPANSION TANK INCLUDING HANGERS, SUPPORTS, VALVES, AND GAUGES AS SHOWN.
5. REMOVE ALL EXISTING CONDENSER WATER SUPPLY AND RETURN PIPING TO POINTS INDICATED ON THE DRAWINGS.
6. REMOVE ALL EXISTING CHILLED WATER SUPPLY AND RETURN PIPING TO POINTS INDICATED ON THE DRAWINGS.
7. REMOVE EXISTING PRESSURE REDUCING STATION AND MAKEUP WATER PIPING TO POINTS AS INDICATED ON THE DRAWINGS. CONNECT NEW MAKEUP WATER PIPING TO NEW CHILLED WATER RETURN PIPING.
8. EXISTING VALVE TO REMAIN FOR RECONNECTION.
9. EXISTING CONCRETE PAD TO REMAIN FOR REINSTALLATION. CONTRACTOR SHALL EXTEND PAD AS REQUIRED TO SUPPORT NEW PUMPS. REFER TO 1M-9503.

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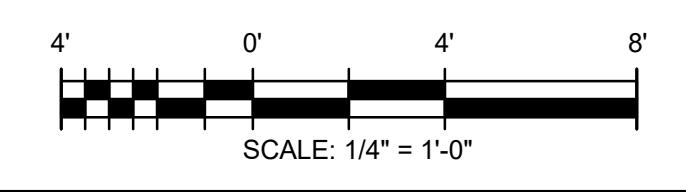
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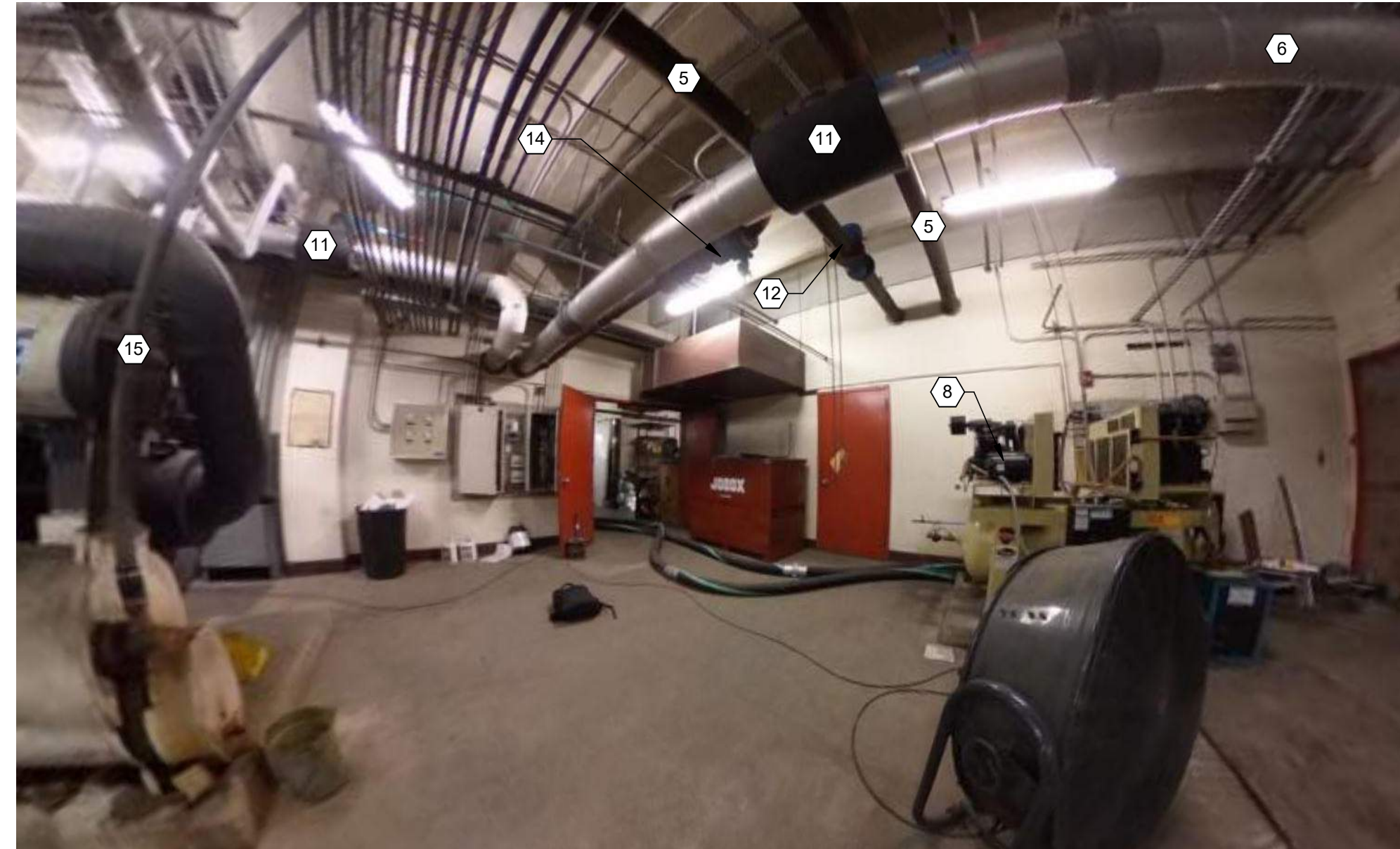
MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL DEMOLITION SECTION

PROJ:	200-15769-22008
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DRWN:	FFA
CHKD:	KPK

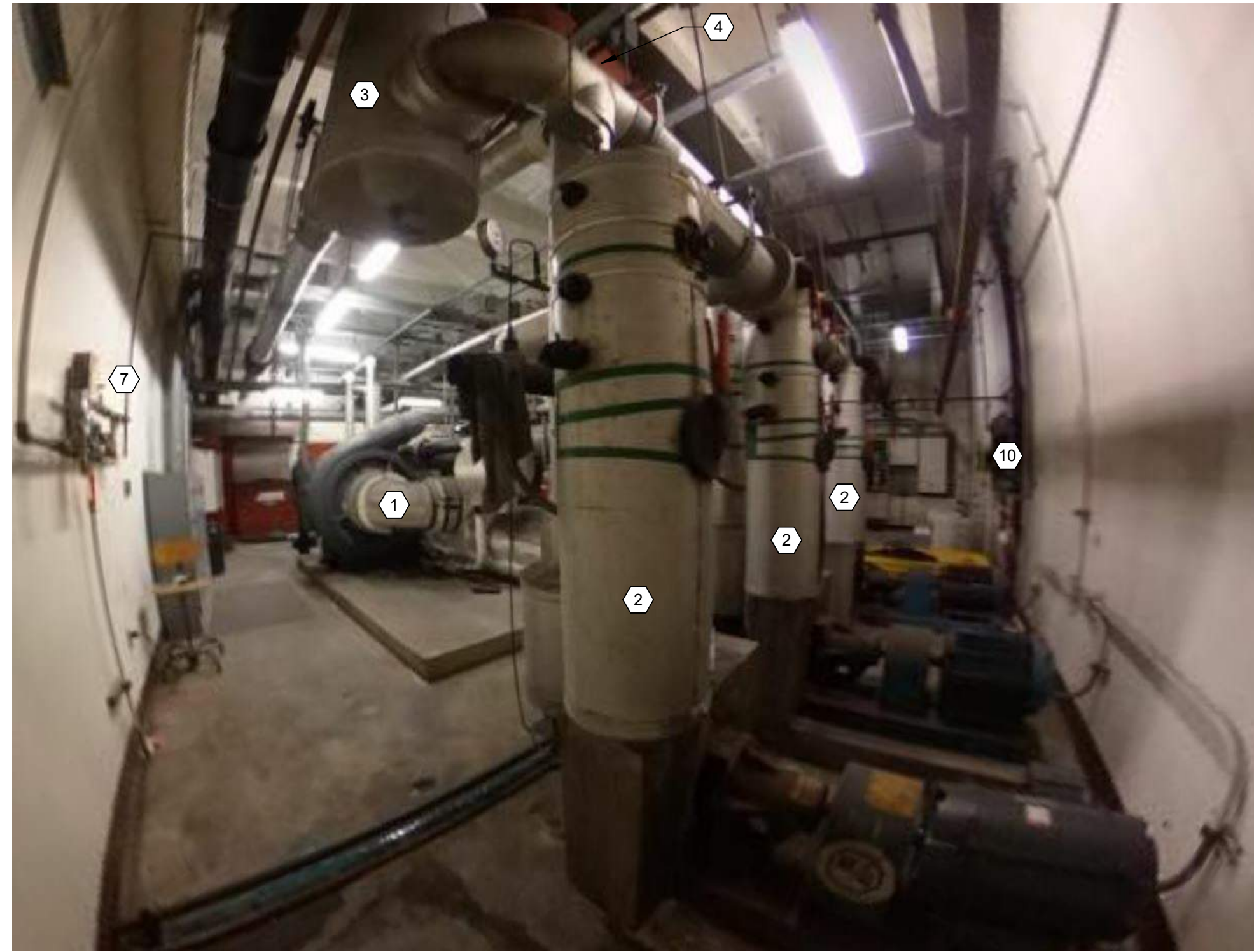
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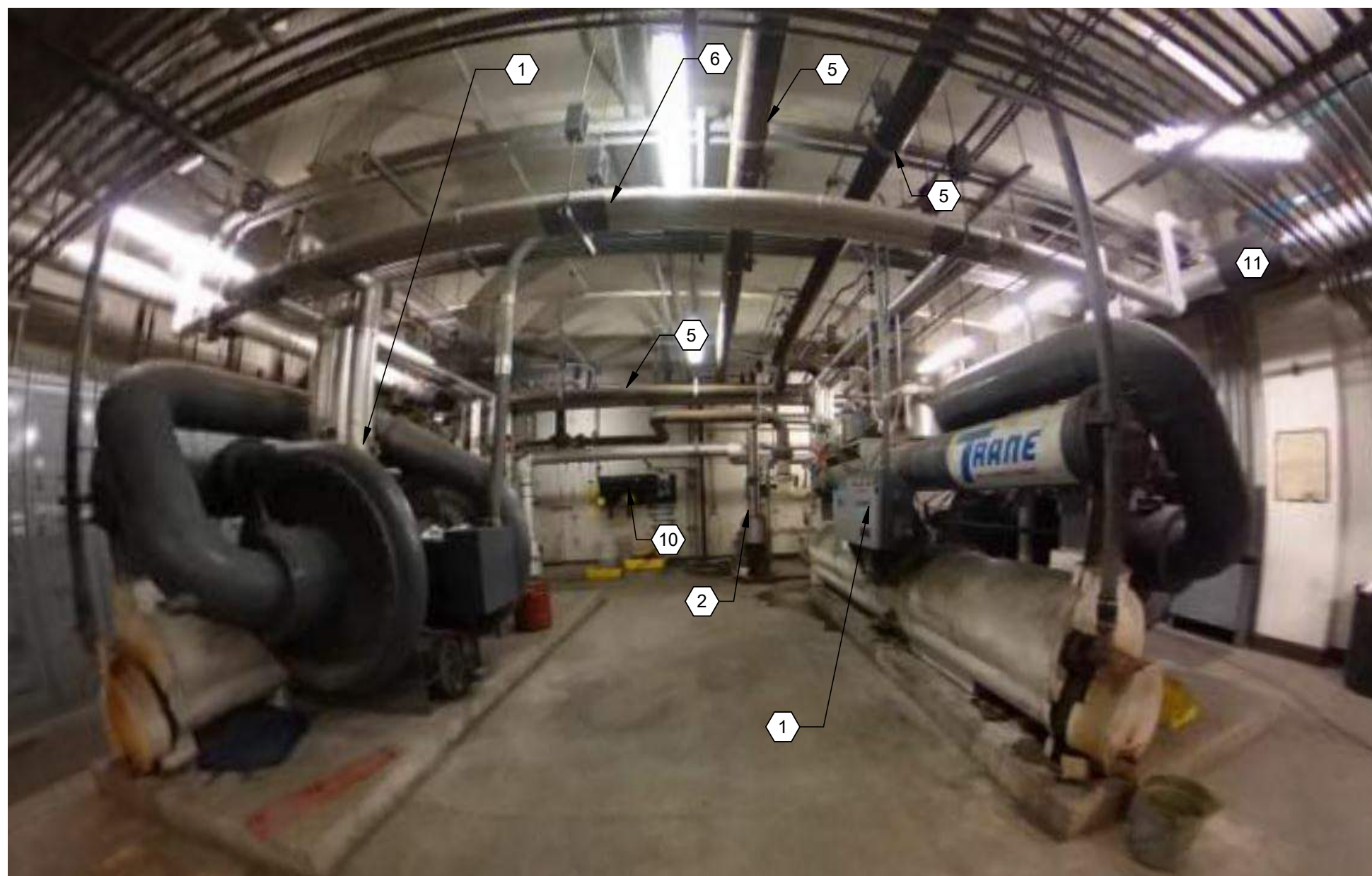
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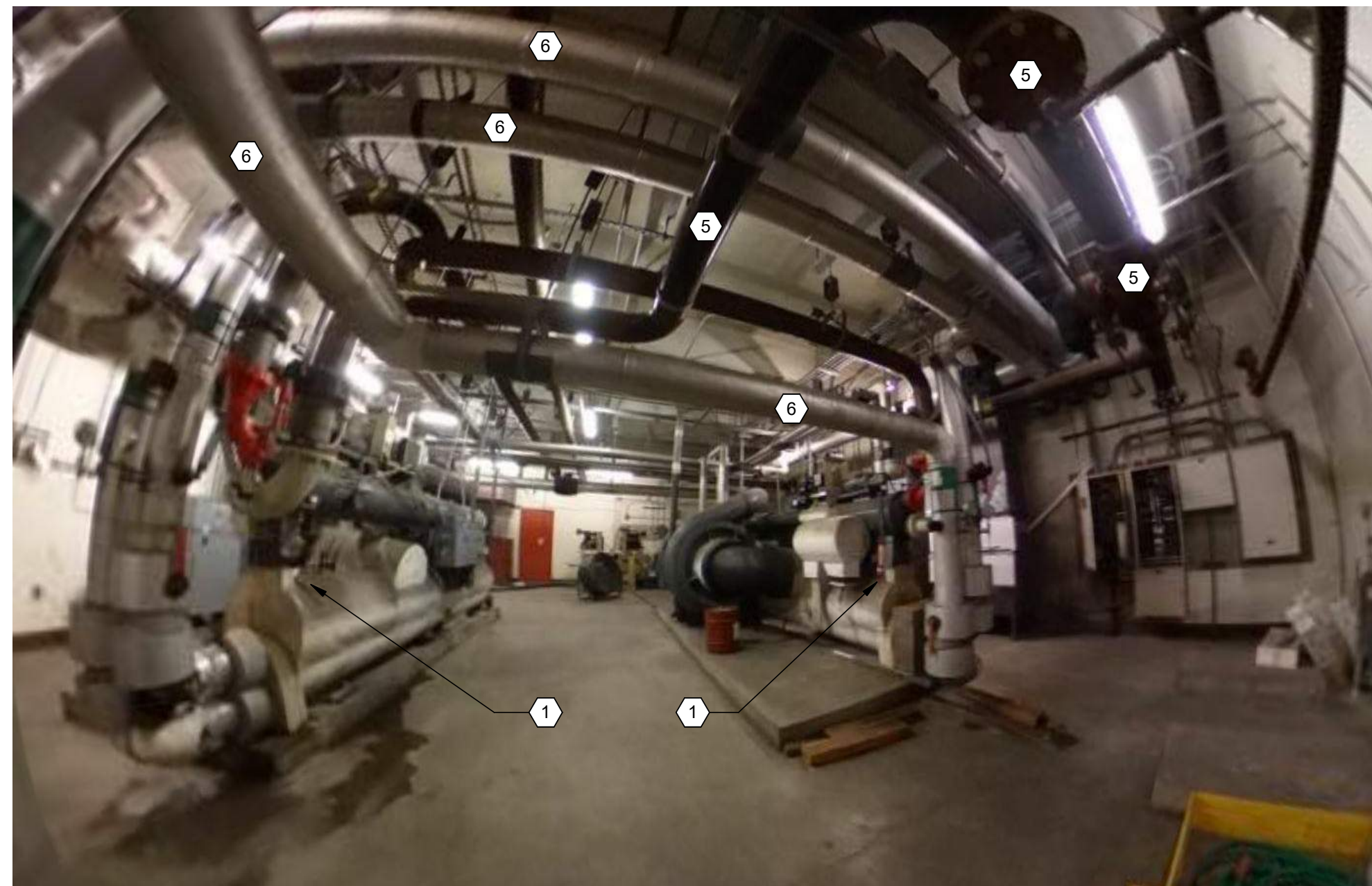
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M-2105 SCALE: NTS



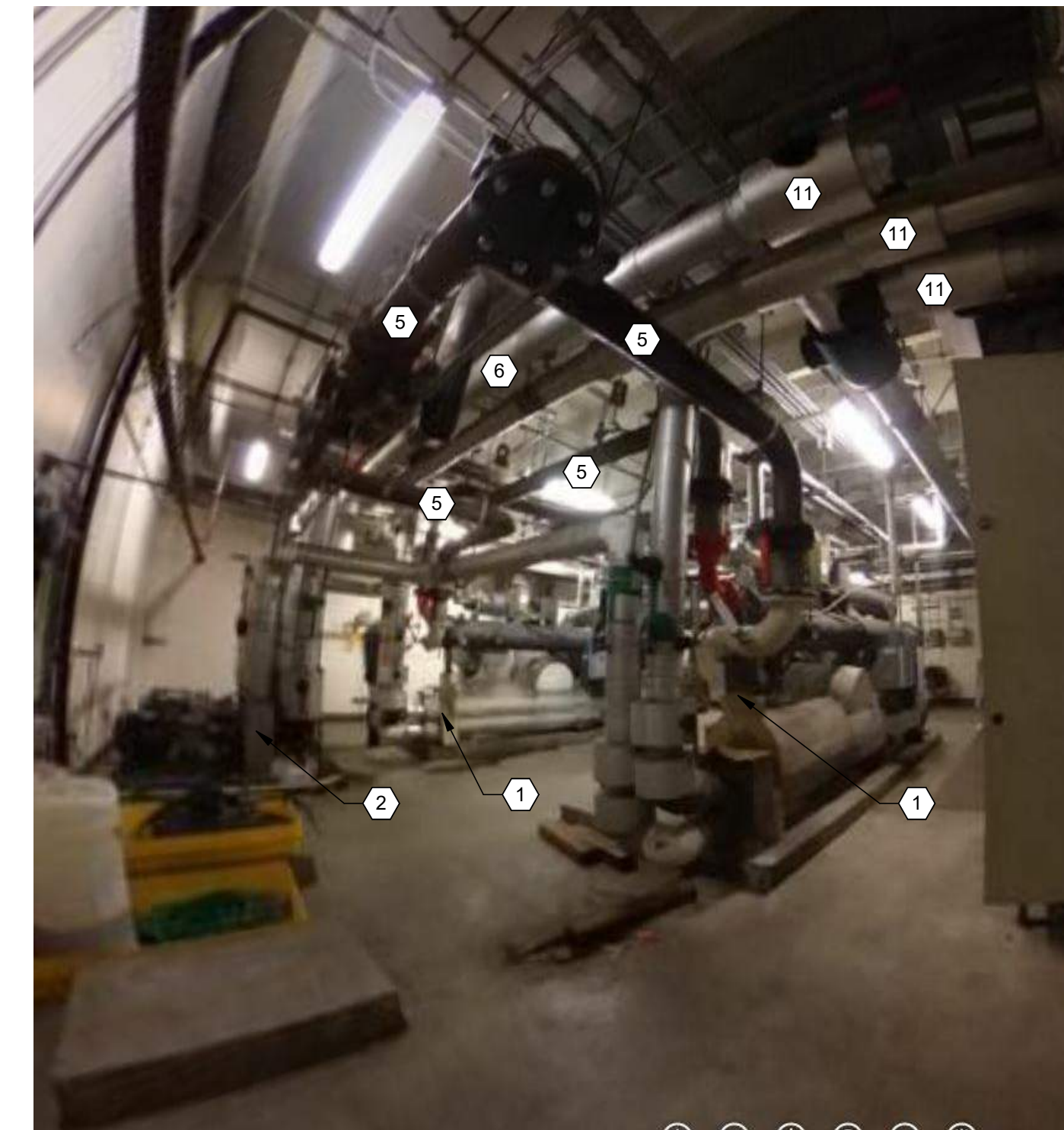
2 DEMO PHOTO
M-2105 SCALE: NTS



3 DEMO PHOTO
M-2105 SCALE: NTS



4 DEMO PHOTO
M-2105 SCALE: NTS



5 DEMO PHOTO
M-2105 SCALE: NTS

KEYED NOTES:

1. REMOVE (2) EXISTING WATER COOLED CHILLERS INCLUDING ALL ASSOCIATED CHILLED AND CONDENSER WATER PIPING, GAUGES, SENSORS, VALVES, AND ACCESSORIES TO POINTS INDICATED ON THE DRAWINGS. EXISTING EQUIPMENT PADS TO REMAIN.
2. REMOVE (3) EXISTING CHILLED WATER PUMPS INCLUDING ALL ASSOCIATED PIPING, GAUGES, SENSORS, VALVES, SUCTION DIFFUSERS AND ACCESSORIES TO POINTS INDICATED ON THE DRAWINGS. EXISTING EQUIPMENT PADS TO REMAIN.
3. REMOVE EXISTING AIR SEPARATOR INCLUDING HANGERS, SUPPORTS, DRAIN, VENT AND INSULATION.
4. REMOVE EXISTING EXPANSION TANK INCLUDING HANGERS, SUPPORTS, VALVES, AND GAUGES AS SHOWN.
5. REMOVE ALL EXISTING CONDENSER WATER SUPPLY AND RETURN PIPING TO POINTS INDICATED ON THE DRAWINGS.
6. REMOVE ALL EXISTING CHILLED WATER SUPPLY AND RETURN PIPING TO POINTS INDICATED ON THE DRAWINGS.
7. REMOVE EXISTING PRESSURE REDUCING STATION AND MAKEUP WATER PIPING TO POINTS AS INDICATED ON THE DRAWINGS. CONNECT NEW MAKEUP WATER PIPING TO NEW CHILLED WATER RETURN PIPING.
8. EXISTING AIR COMPRESSOR WITH DRYER, PIPING, HANGERS AND SUPPORTS TO REMAIN.
9. EXISTING 46"x18" DUCTWORK INCLUDING SUPPORTS TO REMAIN FOR REUSE.
10. EXISTING CONDENSER WATER CHEMICAL TREATMENT SYSTEM TO REMAIN. CONTRACTOR TO DISCONNECT THE SUPPLY/RETURN CONNECTIONS AND RECONNECT INTO NEW CONDENSER WATER PIPING. CONNECT EXISTING SYSTEM TO NEW MAKEUP WATER LINE AS SHOWN ON THE MODIFICATION PLAN.
11. EXISTING LEVER TYPE MJ BALL VALVE TO REMAIN FOR RECONNECTION.
12. EXISTING VALVE TO REMAIN FOR RECONNECTION.
13. EXISTING FULL PORT TAP WITH MJ BUTTERFLY VALVE TO REMAIN. VALVES ARE USED FOR OWNER FURNISHED TEMPORARY CHILLED WATER CONNECTIONS.
14. REMOVE ALL EXISTING 3" CWS/CWR PIPING IN EXISTING MECHANICAL ROOMS.
15. EXISTING PRESSURE RELIEF PIPING TO BE REMOVED. EXISTING ROOF OPENING TO REMAIN FOR NEW RELIEF PIPING



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CONSTRUCTION

BY

DESCRIPTION

DATE

MARK

MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL DEMOLITION
PHOTOS

PROJ: 200-15769-22008

DESN: MGS

DRWN: FFA

CHKD: KPK

M-2105
10 of 28

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WATER COOLED CHILLER SCHEDULE

MARK	LOCATION	TONS	COMPRESSOR			EVAPORATOR						CONDENSER				ELECTRICAL				MOTOR STARTER		WEIGHT (LBS.)	NPLV	IPLV	MANUFACTURER	MODEL	NOTES
			QTY	CONTROLS	REFRIG.	FLOW RATE (GPM)	MIN FLOW RATE (GPM)	EWT (°F)	LWT (°F)	FOULING FACTOR	WATER PD (FT)	FLOW RATE (GPM)	EWT (F)	LWT (°F)	WATER PD (FT WG)	VOLTS / PH / HZ	RLA (A)	MCA	MOCP	TYPE	ENCLOSURE						
WLF-CH-1	MECHANICAL ROOM	125	2	VFD / INLET GUIDE VANES	R-134a	315	160.0	54.5	45	0.000100	9.0	360	85	95	4.4	460 / 3 / 60	108	122	175	VFD	NEMA1	8209	.355	.357	DAIKIN	WMC036DDSNA	1,2,3,4,5,6,7,8
WLF-CH-2	MECHANICAL ROOM	125	2	VFD / INLET GUIDE VANES	R-134a	315	160.0	54.5	45	0.000100	9.0	360	85	95	4.4	460 / 3 / 60	108	122	175	VFD	NEMA1	8209	.355	.357	DAIKIN	WMC036DDSNA	1,2,3,4,5,6,7,8

NOTES:

1. PROVIDE SINGLE POINT POWER CONNECTION, MOTOR WITH OVERLOAD PROTECTION, GROUND FAULT PROTECTION, WIRED PASSIVE HARMONIC FILTER AND DISCONNECTS.
2. PROVIDE CERAMIC COATING TO EVAPORATOR CONDENSER HEADS, AND MARINE BOX.
3. PROVIDE MARINE WATER BOXES THAT ALLOW THE END PLATE OF THE WATER BOX TO BE REMOVED WITHOUT DISCONNECTING THE WATER PIPING FROM THE CHILLER.
4. PROVIDE RAISED FACE FLANGES ON BOTH EVAPORATOR AND CONDENSER WITH MATING FLANGES.
5. PROVIDE 1 1/2" THERMAL INSULATION ON EVAPORATOR SHELL / SUCTION PIPING, AND EVAPORATOR HEADS AND WATER BOXES.
6. PROVIDE EVAPORATOR, CONDENSER AND SUCTION NOZZLE RELIEF VALVES.
7. PROVIDE CAPABILITY TO RESTART AND REACH FULL LOAD IN THE EVENT OF POWER INTERRUPTION. THE COMPRESSOR SHALL BE CAPABLE OF RESTARTING WITHIN 43 SECONDS AFTER POWER IS RESTORED AND SHALL REACH 80% LOAD WITHIN 120 SECONDS.
8. PROVIDE CHILLERS WITH VIBRATION ISOLATOR PADS FOR FIELD INSTALLATION.

PUMP SCHEDULE

MARK	LOCATION	SERVICE	TYPE	GPM	TOTAL HEAD (FT.)	NPSH REQUIRED (FT.)	IMPELLER DIA. (INCHES)	MIN. EFF. %	DESIGN PRESS. (PSIG.)	MOTOR				TYPE SEAL	MANUFACTURER	MODEL	NOTES
										SPEED (RPM)	BHP	HP	VOLTS / PH / HZ				
WLF-CHWP-1	MECHANICAL ROOM	CHW	BASE MOUNT END SUCTION	315	115	7	10.75"	74	125	1760	12.39	20	460 / 3 / 60	STANDARD SEAL	TACO	FI-3011D	1,2,3,4,5,6,7
WLF-CHWP-3	MECHANICAL ROOM	CHW	BASE MOUNT END SUCTION	315	115	7	10.75"	74	125	1760	12.39	20	460 / 3 / 60	STANDARD SEAL	TACO	FI-3011D	1,2,3,4,5,6,7
WLF-CHWP-2	MECHANICAL ROOM	CHW	BASE MOUNT END SUCTION	315	115	7	10.75"	74	125	1760	12.39	20	460 / 3 / 60	STANDARD SEAL	TACO	FI-3011D	1,2,3,4,5,6,7
WLF-CWP-1	EXTERIOR	CW	BASE MOUNT END SUCTION	720	55	10	8.55"	83	125	1760	12.10	15	460 / 3 / 60	STANDARD SEAL	TACO	FI-4009D	1,2,3,4,5,6,8
WLF-CWP-2	EXTERIOR	CW	BASE MOUNT END SUCTION	720	55	10	8.55"	83	125	1760	12.10	15	460 / 3 / 60	STANDARD SEAL	TACO	FI-4009D	1,2,3,4,5,6,8

NOTES:

1. PROVIDE SINGLE POINT POWER CONNECTION, TEFC MOTOR WITH OVERLOAD PROTECTION, GROUND FAULT PROTECTION, AND DISCONNECTS.
2. PROVIDE VFD WITH NEMA 4X ENCLOSURE.
3. PROVIDE CORROSION RESISTANCE COATING PER ASTM B117, HERESITE PROTECTIVE COATING OR APPROVED EQUAL ON EXTERIOR CABINET AS WELL AS ALL INTERNAL COMPONENTS
4. PROVIDE HEAVY DUTY COUPLING WITH COUPLER GUARD PER ANSI 315.1 SECTION 8 AND OSHA 1910.219.
5. PROVIDE SUCTION DIFFUSER WITH PRESSURE / TEMPERATURE PORTS, STRAINER, STAINLESS STEEL DRIP PAN, AND STAINLESS STEEL SHAFT
6. PROVIDE REPLACEABLE BRONZE WEAR RING, DRILLED AND TAPPED FOR GAUGE PORTS AT BOTH THE SUCTION AND DISCHARGE CONNECTIONS AND FOR DRAIN PORT AT THE BOTTOM OF THE CASING.
7. PROVIDE CHILLED WATER PUMP WITH STAINLESS STEEL FLANGED CONNECTION SUCTION DIFFUSER TACO MODEL SD040040-5 OR APPROVED EQUAL.
8. PROVIDE CONDENSER WATER PUMP WITH STAINLESS STEEL FLANGED CONNECTION SUCTION DIFFUSER TACO MODEL SD060060-5 OR APPROVED EQUAL.

AIR SEPARATOR SCHEDULE

MARK	LOCATION	SERVICE	TYPE	SIZE				PRESSURE RATING (PSIG)	PRESSURE DROP (FT.)	POSITION	MANUFACTURER	MODEL	NOTES
				TANGENTIAL OPENINGS DIA. (IN.)	DIA. (IN.)	HEIGHT (IN.)	MAXIMUM FLOW RATE (GPM)						
WLF-AS-1	MECHANICAL ROOM	CHW	CENTRIFUGAL AIR & DIRT SEPARATOR	8	20	46	850	125	1.49	VERTICAL	TACO	AC08F-125	1,2

NOTES:

1. AIR AND DIRT SEPARATOR SHALL BE ASME CONSTRUCTED AND STAMPED SEC. VIII, DIV 1.
2. PROVIDE AIR AND DIRT SEPARATOR WITH BLOWDOWN VALVE AND AIR VENT.

EXPANSION TANK SCHEDULE

MARK	LOCATION	SERVICE	TYPE	SIZE			POSITION	MANUFACTURER	MODEL	NOTES
				DIA. (IN.)	HEIGHT (IN.)	TOTAL VOLUME (GAL)				
WLF-ET-1	MECHANICAL ROOM	CHW	BLADDER	24	58	80	VERTICAL	TACO	CA300300	1,2,3

NOTES:

1. EXPANSION TANK SHALL BE ASME CONSTRUCTED AND STAMPED SEC. VIII, DIV 1.
2. EXPANSION TANK SHALL BE CARBON STEEL CONSTRUCTED AND BLADDER SHALL BE HEAVY DUTY BUTYL RUBBER.
3. PROVIDE WITH INTEGRATED BLADDER INTEGRITY MONITOR AND FACTORY PRE CHARGE TO 12 PSI, ADJUSTABLE IN THE FIELD.

CHEMICAL POT FEEDER TANK SCHEDULE

MARK	LOCATION	SERVICE	TYPE	DIA. (IN.)	HEIGHT (IN.)	VOLUME (GAL)	PRESSURE RATING (PSI)	MANUFACTURER	MODEL	NOTES
WLF-CPFT-1	MECHANICAL ROOM	CHW	VERTICAL STYLE DISH BOTTOM OUT	10	29 3/4	5	300	NEPTUNE	DBFC-5	1,2,3,4

NOTES:

1. CHEMICAL POT FEEDER TANK SHALL BE CARBON STEEL CONSTRUCTED WITH CAST IRON CAP INCLUDING SQUARE SECTION O-RING SEAL.
2. PROVIDE WITH LEG EXTENSIONS AND FULL BOTTOM DRAIN.
3. PROVIDE WITH 5 MICRON PLEATED CARTRIDGE FILTER INCLUDING WITH SUPPORTS AND MOUNTING.
4. PROVIDE WITH FILTER BAG KITS INCLUDING BAG, BAG FRAME, TUBING AND CONNECTORS.

CONTROL VALVE SCHEDULE

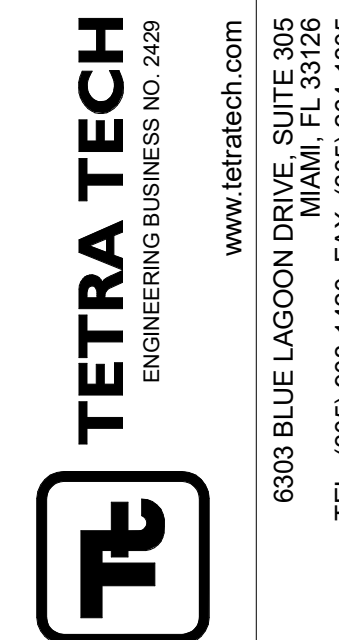
MARK	DESCRIPTION	LOCATION	SERVICE	TYPE	SIZE (IN.)	PRESSURE DROP (FT.)	PRESSURE (PSI)	CONTROL	VOLTAGE	MANUFACTURER	MODEL	NOTES
WLF-CV-1	TRIPLE DUTY	MECHANICAL ROOM	WLF-CHWP-1	FLANGED	4	3	175	MANUAL	-	TACO	MPV 040-4	1,2,3
WLF-CV-2	TRIPLE DUTY	MECHANICAL ROOM	WLF-CHWP-3	FLANGED	4	3	175	MANUAL	-	TACO	MPV 040-4	1,2,3
WLF-CV-3	TRIPLE DUTY	MECHANICAL ROOM	WLF-CHWP-2	FLANGED	4	3	175	MANUAL	-	TACO	MPV 040-4	1,2,3
WLF-CV-4	FLOW CONTROL	MECHANICAL ROOM	WLF-CHWP-3	FLANGED	4	-	175	ACTUATED	120	BELIMO	G7100D	4,5
WLF-CV-5	FLOW CONTROL	MECHANICAL ROOM	WLF-CHWP-3	FLANGED	4	-	175	ACTUATED	120	BELIMO	G7100D	4,5
WLF-CV-6	FLOW CONTROL	MECHANICAL ROOM	WLF-FCU-1	FLANGED	2	-	175	ACTUATED	120	BELIMO	G7100D	4,5
WLF-CV-7	FLOW CONTROL	MECHANICAL ROOM	WLF-CH-1	FLANGED	6	-	175	ACTUATED	24	BELIMO	G7150S	4,6
WLF-CV-8	FLOW CONTROL	MECHANICAL ROOM	WLF-CH-2	FLANGED	6	-	175	ACTUATED	24	BELIMO	G7150S	4,6

NOTES:

1. TRIPLE DUTY CONTROL VALVE BODY SHALL BE CAST IRON CONSTRUCTED WITH BRONZE SEAT.
2. PROVIDE DISC WITH EPDM SEAT RING, STAINLESS STEEL STEM AND SPRING.
3. PROVIDE PRESSURE/TEMPERATURE PORT, BRASS READOUT VALVE WITH EPT INSERT, CHECK VALVE AND GASKET.
4. VALVE BODY SHALL BE CAST IRON CONSTRUCTED WITH STAINLESS STEEL AISI 316 SEAT.
5. PROVIDE ON/OFF, FLOATING POINT, ELECTRONIC FAIL-SAFE, LINEAR, 120 VOLT BELIMO ACTUATOR MODEL AVBK120-3 OR APPROVED EQUAL. PROVIDE VALVE WITH MANUAL OVERRIDE. CONTROL SIGNAL FROM CHILLER CONTROL PANELS.
6. PROVIDE DUAL MOUNT ON/OFF, MODULATING, ELECTRONIC FAIL-SAFE, 24 VOLT BELIMO ACTUATOR MODEL GXK24-MFT-X1 OR APPROVED EQUAL. PROVIDE VALVE WITH MANUAL OVERRIDE. CONTROL SIGNAL FROM CHILLER CONTROL PANELS.

BACKFLOW PREVENTER SCHEDULE

Mark	LOCATION	SERVICE	MATERIAL	SIZE	MANUFACTURER	MODEL	NOTES
WLF-BFP-1	MECHANICAL ROOM	CHW	BRONZE	1"	WATTS	U009M2QT	-



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WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL SCHEDULES

PROJ: 200-15769-22008

DESIN: MGS

DRWN: FFA

CHKD: KPK

M-9601

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FAN COIL UNIT SCHEDULE

MARK	LOCATION	TYPE	AIR FLOW (CFM)	OUTSIDE AIR (CFM)	EXT. S.P. (IN.WG.)	FAN RPM	MOTOR		COOLING CAPACITY										VOLTS / PH / HZ	MANUFACTURER	MODEL	WEIGHT (LBS.)	NOTES
							HP	FLA	MBH		EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	FLOW RATE (GPM)	EWT (°F)	LWT (°F)	ROWS OF COIL					
									TOTAL COOLING	SENS. COOLING													
WLF-FCU-1	MECHANICAL ROOM	INDOOR AIR HANDLER	3000	672	0.10	812	1.5	2.1	106.9	76.6	80.0	67.0	56.6	55.6	24.0	45.0	53.9	4	460 / 3 / 60	DAIKIN	LAH007A	625	1,2,3,4,5,6

- NOTES:**
1. PROVIDE SINGLE POINT POWER CONNECTION, GROUND FAULT PROTECTION, AND DISCONNECTS.
 2. PROVIDE TEFC BLOWER MOTOR WITH OVERLOAD PROTECTION AND DRIVE KITS.
 3. PROVIDE SUPPLY AIR DUCT WITH SMOKE DETECTOR.
 4. PROVIDE 5000 HOURS CORROSION RESISTANCE WITH 1% MAXIMUM HEAT TRANSFER REDUCTION HERESITE PROTECTIVE COATING OR APPROVED EQUAL ON EXTERIOR CABINET AS WELL AS ALL INTERNAL COMPONENTS
 5. PROVIDE MERV 8 AIR FILTERS WITH FILTER MOUNTING KITS, AND 7 DAY PROGRAMMABLE THERMOSTATS.
 6. PROVIDE DRAIN PAN WITH CONDENSATE OVERFLOW SWITCH.

EXHAUST FAN SCHEDULE

MARK	LOCATION	AIR FLOW (CFM)	S.P. (IN-WG)	FAN RPM	VOLTS / PH / HZ	MOTOR SIZE (HP)	DRIVE	MANUFACTURER	MODEL	NOTES
WLF-EF-3	ROOF	2200	1.1	1164	208 / 1 / 60	2	DIRECT	GREENHECK	CUE-180HP-VG	1,2,3,4,5,6,7

- NOTES:**
1. FAN SHALL BE FLORIDA PRODUCT APPROVED WITH HIGH WIND RATING PER MANUFACTURER AND MIAMI DADE APPROVED WITH VALID NOA'S.
 2. PROVIDE SINGLE POINT POWER CONNECTION, TEFC MOTOR WITH OVERLOAD PROTECTION, GROUND FAULT PROTECTION, EXTERNAL WIRING PIGTAIL AND NEMA-4X DISCONNECT SWITCH.
 3. PROVIDE CORROSION RESISTANCE COATING PER ASTM B117, GREENHECK HI-PRO POLYESTER OR APPROVED EQUAL ON EXTERIOR CABINET AS WELL AS ALL INTERNAL COMPONENTS.
 4. PROVIDE FAN WITH ALUMINUM CONSTRUCTION, WALL GRILLE, GRAVITY BACKDRAFT DAMPER, STAINLESS STEEL FASTENERS, AND ALUMINUM BIRD SCREEN.
 5. PROVIDE CURB ADAPTOR SIZED ATTACHED TO EXISTING ROOF CURB. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY DIMENSIONS.
 6. PROVIDE FAN WITH A TWO SPEED FACTORY MOUNTED CONTROLLER WITH 24 VDC TRANSFORMER ACCEPTING (2) DRY CONTACT INPUTS TO ALLOW LOW SPEED (OCCUPIED) AND HIGH SPEED (EMERGENCY PURGE VENTILATION) CONTROL.
 7. BASIS OF DESIGN IS GREENHECK WITH APPROVED MIAMI DADE APPROVED WITH N.O.A. 22-0606.03.

GRAVITY HOOD SCHEDULE

MARK	LOCATION	AIR FLOW (CFM)	S.P. (IN-WG)	THROAT				MANUFACTURER	MODEL	NOTES
				WIDTH (IN.)	LENGTH (IN.)	AREA (FT2)	VELOCITY (FPM)			
WLF-GH-6	ROOF	2900	.06	32	32	7	408	GREENHECK	FGI	1,2,3,4,5,6

- NOTES:**
1. GRAVITY HOOD SHALL BE FLORIDA PRODUCT APPROVED WITH HIGH WIND RATING PER MANUFACTURER AND MIAMI DADE APPROVED WITH VALID NOA'S.
 2. PROVIDE CORROSION RESISTANCE COATING PER ASTM B117, GREENHECK HI-PRO POLYESTER OR APPROVED EQUAL ON EXTERIOR CABINET AS WELL AS ALL INTERNAL COMPONENTS.
 3. PROVIDE GRAVITY HOOD WITH ALUMINUM CONSTRUCTION, 12" BASE HEIGHT, GALVANIZED STEEL MESH BIRD SCREEN, AND GALVANIZED STEEL SUPPORT.
 4. PROVIDE CURB ADAPTOR SIZED ATTACHED TO EXISTING ROOF CURB. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY DIMENSIONS.
 5. PROVIDE TRANSITION FITTING FOR DUCTWORK CONNECTION AND LOW LEAKAGE MOTORIZED DAMPERS.
 6. BASIS OF DESIGN IS GREENHECK WITH APPROVED MIAMI DADE N.O.A. 22-0606.01.

MOTORIZED DAMPER SCHEDULE

MARK	DESCRIPTION	ASSOCIATED EQUIPMENT	AIR FLOW (CFM)	VELOCITY (FPM)	SIZE (W X H)	MATERIAL	OPERATOR (VOLTS)	FAIL POSITION	MANUFACTURER	MODEL	NOTES
WLF-MOD-1	HEAVY DUTY CONTROL DAMPER	WLF-FCU-1	670	500	16X12	GALVANIZED	24	CLOSED	GREENHECK	HCD-230	1,2,3,4,5
WLF-MOD-2	HEAVY DUTY CONTROL DAMPER	WLF-GH-6	3500	500	32 X 32	GALVANIZED	24	CLOSED	GREENHECK	HCD-230	1,2,3,4,5

- NOTES:**
1. DAMPER SHALL BE EQUIPPED WITH BLADE AND JAMB SEALS FOR LOW LEAKAGE PERFORMANCE.
 2. BLADE SEALS SHALL SILICONE RUBBER FOR 400°F (204°C) MAXIMUM TEMPERATURE.
 3. JAMB SEALS SHALL BE FLEXIBLE STAINLESS STEEL.
 4. TESTING AND RATINGS SHALL BE PER AMCA STANDARD 500-D.
 5. PROVIDE MODULATING, NON-SPRING RETURN BELIMO ACTUATOR MODEL NMB24-SR OR APPROVED EQUAL.

REFRIGERANT GAS LEAK DETECTION SYSTEM SCHEDULE

MARK	DESCRIPTION	LOCATION	POWER REQUIRED	OUTPUT RATING	MANUFACTURER	MODEL	NOTES
WLF-RC-1	CONTROLLER	MECHANICAL ROOM	22-27 VAC	5A, 30 VDC	HONEYWELL	301EM-20	1
WLF-RCP-1	CONTROL PANEL	CORRIDOR	22-27 VAC	5A, 30 VDC	HONEYWELL	301EMRP-20	1

- NOTES:**
1. SYSTEM MUST BE CAPABLE OF PROVIDING ALARM OUTPUT DRY CONTACT TO THE EXHAUST FAN CONTROL PANEL. REFER TO THE CONTROL DRAWINGS FOR MORE INFORMATION.



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MARK

MIAMI DADE COUNTY DTPW

WILLIAM LEHMAN CENTER
 CHILLED WATER PLANT REPLACEMENT
 MECHANICAL SCHEDULES

PROJ: 200-15769-22008

DESN: MGS

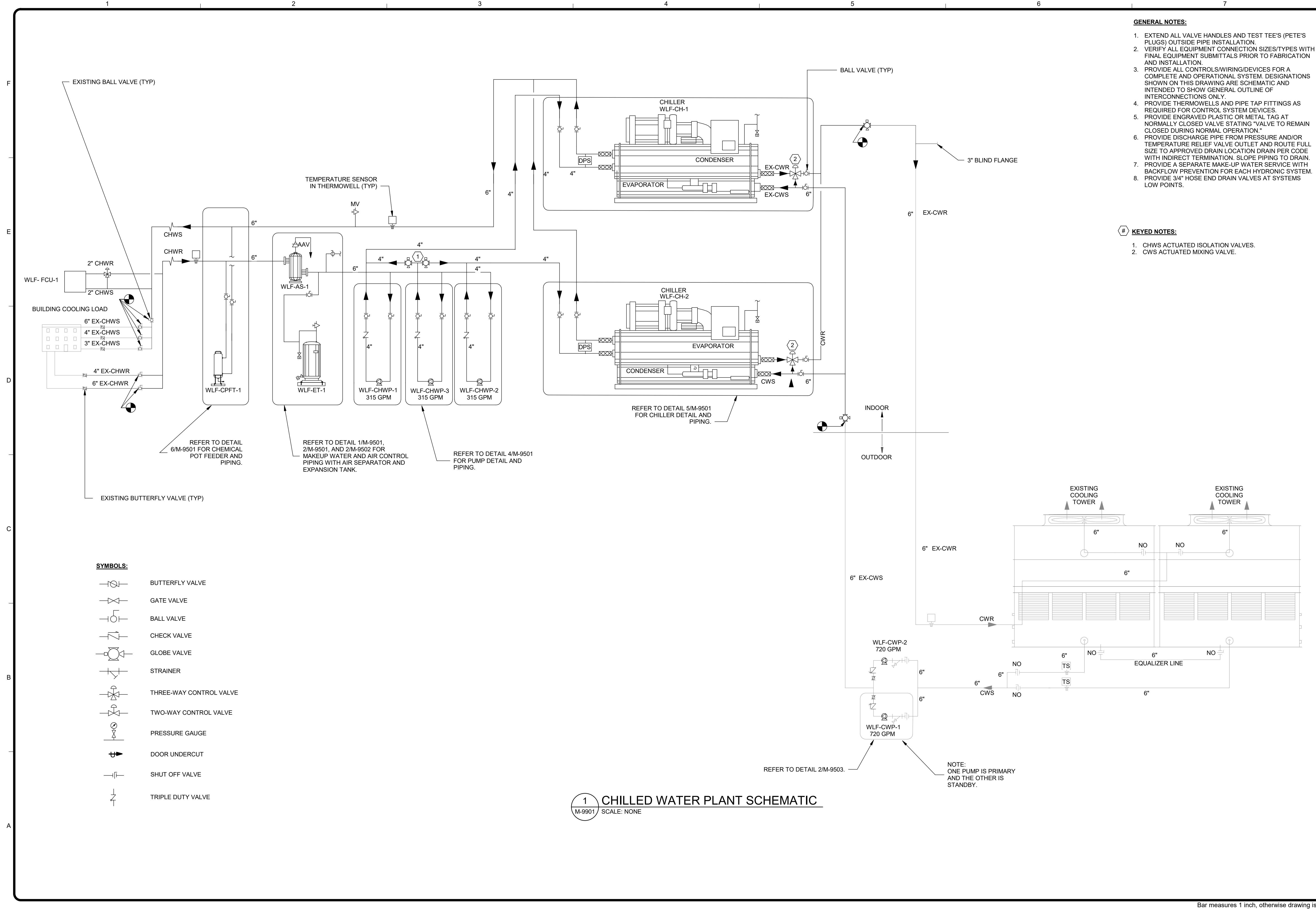
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CHKD: KPK

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- GENERAL NOTES:**
1. EXTEND ALL VALVE HANDLES AND TEST TEE'S (PETE'S PLUGS) OUTSIDE PIPE INSTALLATION.
 2. VERIFY ALL EQUIPMENT CONNECTION SIZES/TYPES WITH FINAL EQUIPMENT SUBMITTALS PRIOR TO FABRICATION AND INSTALLATION.
 3. PROVIDE ALL CONTROLS/WIRING/DEVICES FOR A COMPLETE AND OPERATIONAL SYSTEM. DESIGNATIONS SHOWN ON THIS DRAWING ARE SCHEMATIC AND INTENDED TO SHOW GENERAL OUTLINE OF INTERCONNECTIONS ONLY.
 4. PROVIDE THERMOWELLS AND PIPE TAP FITTINGS AS REQUIRED FOR CONTROL SYSTEM DEVICES.
 5. PROVIDE ENGRAVED PLASTIC OR METAL TAG AT NORMALLY CLOSED VALVE STATING "VALVE TO REMAIN CLOSED DURING NORMAL OPERATION."
 6. PROVIDE DISCHARGE PIPE FROM PRESSURE AND/OR TEMPERATURE RELIEF VALVE OUTLET AND ROUTE FULL SIZE TO APPROVED DRAIN LOCATION DRAIN PER CODE WITH INDIRECT TERMINATION. SLOPE PIPING TO DRAIN.
 7. PROVIDE A SEPARATE MAKE-UP WATER SERVICE WITH BACKFLOW PREVENTION FOR EACH HYDRONIC SYSTEM.
 8. PROVIDE 3/4" HOSE END DRAIN VALVES AT SYSTEMS LOW POINTS.

- KEYED NOTES:**
1. CHWS ACTUATED ISOLATION VALVES.
 2. CWS ACTUATED MIXING VALVE.

- SYMBOLS:**
- BUTTERFLY VALVE
 - GATE VALVE
 - BALL VALVE
 - CHECK VALVE
 - GLOBE VALVE
 - STRAINER
 - THREE-WAY CONTROL VALVE
 - TWO-WAY CONTROL VALVE
 - PRESSURE GAUGE
 - DOOR UNDERCUT
 - SHUT OFF VALVE
 - TRIPLE DUTY VALVE

1 CHILLED WATER PLANT SCHEMATIC
SCALE: NONE

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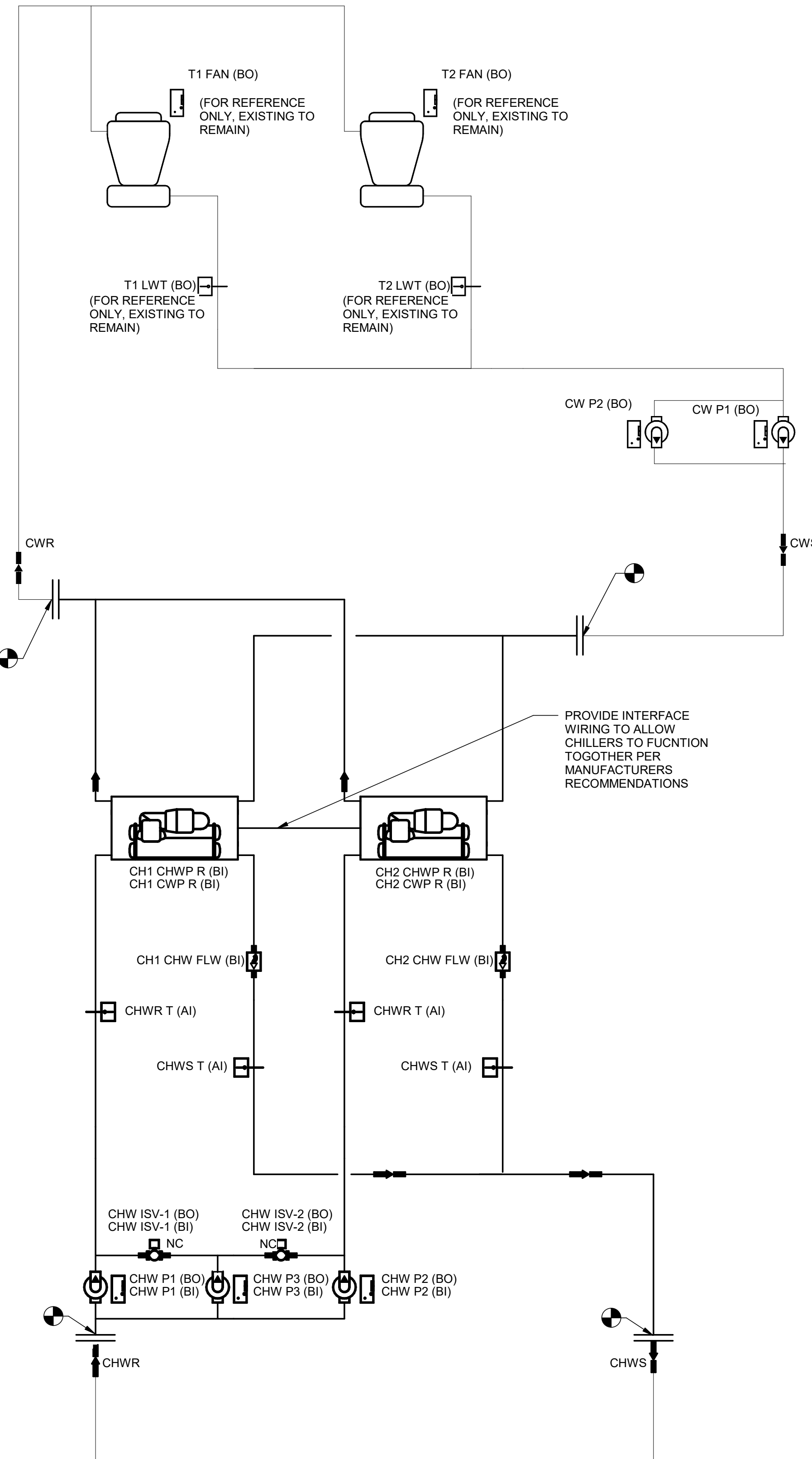
MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL CHILLED WATER PLANT SCHEMATIC

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CHKD:	KPK

M-9901
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FLOW DIAGRAM: CHILLED WATER PLANT CONTROLS



SEQUENCE OF OPERATION: CHILLED WATER PLANT:

SYSTEM GENERAL DESCRIPTION:

THE COOLING PLANT CONTROL SYSTEM SHALL MONITOR AND CONTROL THE SYSTEM'S CHILLER(S), CHILLED WATER PUMP(S), AND CONTROL VALVES AS SHOWN ON THE COOLING PLANT FLOW DIAGRAM AND AS DETAILED IN THE SEQUENCE OF OPERATIONS LISTED BELOW. THE COOLING PLANT SYSTEM CONSISTS OF (2) WATER-COOLED CHILLER(S) WITH ITS PIPING CONFIGURATION ARRANGED AS A CONSTANT FLOW LOOP SUPPLYING CHILLED WATER TO THE FACILITY. THE CHILLED WATER DISTRIBUTION PUMP(S) ARE PIPED IN SERIES WITH THE CHILLER AND ARE DEDICATED TO SUPPLYING CHILLED WATER FLOW THROUGH ITS RESPECTIVE CHILLER AND OUTWARD THROUGHOUT THE FACILITY CHILLED WATER LOOP.

THE SYSTEM INCLUDES (2) PRIMARY CHILLED WATER PUMPS, (1) STANDBY PUMP, AND (2) NORMALLY CLOSED CHILLED WATER ISOLATION VALVES (CHW-IV-1,2). CHWP-1 IS THE PRIMARY PUMP SERVING CH-1, CHWP-2 IS THE PRIMARY PUMP SERVING CH-2, AND CHWP-3 IS THE STANDBY PUMP CAPABLE OF SERVING EITHER SYSTEM. REFER TO THE TABLE FOR THE VALVE SCHEDULE FOR EACH PUMPING SCENARIO.

THE CONDENSER WATER PUMP(S) (CWP-1,2) ARE CONFIGURED AS LEAD / STANDBY CONTROL. THE NEW PUMPS AND ASSOCIATED ISOLATION VALVES ARE MANUALLY CONTROLLED.

CHILLED WATER PLANT SYSTEM ENABLE/DISABLE:

CHILLER - RUN CONDITIONS:

THE CHILLER SHALL BE ENABLED TO RUN WHENEVER IT IS COMMANDED TO BE ENABLED BY THE CHILLER MANAGER PROGRAM. THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS TO PREVENT SHORT CYCLING. THE CHILLER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER-DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS. THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS. THE COOLING PLANT SYSTEM SHALL SEND AN ENABLE SIGNAL TO THE CHILLER(S). UPON RECEIVING THE ENABLE SIGNAL THE CHILLER SHALL SEND A CHILLED WATER PUMP REQUEST SIGNAL TO THE CONTROL SYSTEM TO ENABLE THE (2) PRIMARY CHILLED WATER PUMPS. WHEN THE PLANT IS DISABLED, THE CHILLED WATER PUMPS SHALL BE COMMANDED OFF.

CHILLED WATER PUMP COMMANDS:

WHEN THE CHILLED WATER SYSTEM IS ENABLED, THE SYSTEM SHALL START (2) PRIMARY CHILLED WATER PUMPS THROUGH A CONTACT CLOSURE OF THE PUMPS MOTOR STARTER ENABLE CONTACTS. THE SYSTEM SHALL DETECT CHILLED WATER PUMP RUN STATUS BY A CURRENT SWITCH. THE (3) DEDICATED CHILLED WATER PUMPS WILL OPERATE IN A LEAD/STANDBY SEQUENCE THAT SHALL BE ROTATED ON A WEEKLY SCHEDULE (ADJ.). THE ROTATION SEQUENCE SHALL BE BASED ON CALCULATED RUN TIME WITH THE PUMP HAVING THE GREATEST RUN TIME DESIGNATED AS STANDBY. AN OPERATOR SHALL BE ABLE TO MANUALLY CHANGE THE LEAD/STANDBY SEQUENCE OR REQUEST ANY PUMP TO BE UNAVAILABLE WHICH WOULD REMOVE IT FROM THE ROTATION SEQUENCE.

CHILLED WATER PUMP FAILURE:

IF THE LEAD START/STOP RELAY IS ENABLED AND THE PUMP'S RUNNING STATUS IS OFF FOR MORE THAN 30 SECONDS (ADJ.), THE SYSTEM SHALL ANNUNCIATE A CHILLED WATER PUMP FAILURE ALARM, OPEN THE NORMALLY CLOSED ISOLATION VALVE, AND START THE NEXT PUMP IN THE SEQUENCE. ONCE THE PROBLEM HAS BEEN CORRECTED, THE OPERATOR SHALL BE ABLE TO CLEAR THE ALARM FAILURE AT THE OPERATOR INTERFACE OR BY MANUALLY OVERRIDING THE PUMP ON. THIS SHALL RE-ENABLE THE LEAD/STANDBY SEQUENCE.

CHILLED CONDENSER WATER FLOW CONTROL VALVE:

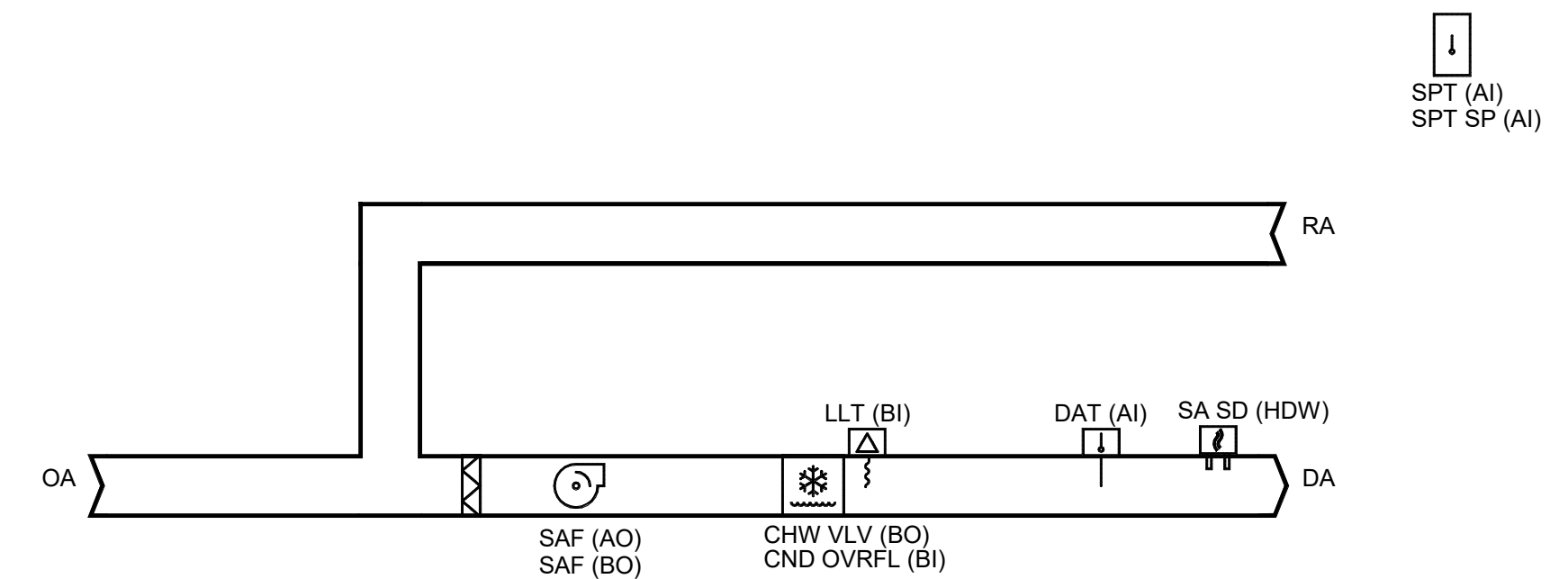
EACH CHILLER INCLUDES A THREE-WAY CONDENSER WATER SUPPLY CONTROL VALVE TO ALLOW REDUCED FLOW INTO THE CONDENSER DURING LOW AMBIENT CONDITIONS TO MAINTAIN SYSTEM HEAD PRESSURE. UNDER NORMAL OPERATING CONDITIONS, THIS VALVE WILL REMAIN CLOSED AND CONDENSER WATER WILL FLOW INTO THE CONDENSER.

EXISTING COOLING TOWER FAN CONTROLS:

SYSTEM TO REMAIN AS-IS.

1 CHILLED WATER CONTROLS
M-9902 / SCALE: NTS

Flow Diagram: WLF-FCU-1



SEQUENCE OF OPERATION: WLF-FCU-1

OCCUPIED:

WHEN AN OCCUPIED SIGNAL IS RECEIVED FROM THE EXHAUST FAN CONTROL PANEL INDICATING THE WALL SWITCH HAS BEEN ENGAGED THE UNIT SHALL BE PLACED INTO OCCUPIED MODE AND THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE CHILLED WATER VALVE SHALL CONTROL TO MAINTAIN THE ACTIVE SPACE TEMPERATURE SETPOINT OF 78.0 DEG. F (ADJ.)

UNOCCUPIED:

WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 78.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE CHILLED WATER VALVE SHALL OPEN. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE CHILLED WATER VALVE SHALL CLOSE AND THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED.

SPACE TEMPERATURE CONTROL:

IN UNOCCUPIED MODE, THE UNIT SHALL MAINTAIN ZONE TEMPERATURE BY CONTROLLING THE DISCHARGE AIR TEMPERATURE TO CONTROL THE ZONE TEMPERATURE WHILE MINIMIZING THE FAN SPEED. THE SPACE TEMPERATURE SHALL BE MAINTAINED AT THE OCCUPIED COOLING SETPOINT OF 78.0 DEG. F (ADJ.).

SUPPLY FAN OPERATION:

THE SUPPLY FAN SHALL CYCLE ON DEMAND DURING THE UNOCCUPIED MODE. WHEN THE CONTROLLER IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AT HIGH SPEED TO MEET MINIMUM VENTILATION REQUIREMENTS. THE SUPPLY FAN STATUS SHALL BE MONITORED BY THE ECM MOTOR CONTROLLER. IF THE SUPPLY FAN FAILS THE FAN SHALL BE COMMANDED OFF. A MANUAL RESET SHALL BE REQUIRED TO RESTART THE FAN.

CONDENSATE OVERFLOW:

IF THE CONDENSATE LEVEL REACHES THE TRIP POINT THE BUILDING THE FAN SHALL BE DISABLED AND THE CHILLED WATER VALVE SHALL CLOSE.

FREEZE PROTECTION:

A HARDWIRED, LOW LIMIT TEMPERATURE SWITCH SHALL BE ELECTRICALLY INTERLOCKED WITH THE SAFETY CIRCUIT. IF THE LOW LIMIT TEMPERATURE SWITCH IS TRIPPED 38.0 DEG. F (ADJ.), THE SUPPLY FAN SHALL BE COMMANDED OFF AND THE WATER VALVES SHALL OPEN.

SMOKE DETECTOR SHUTDOWN:

THE UNIT SHALL SHUT DOWN IN RESPONSE TO A SIGNAL FROM THE SMOKE DETECTOR INDICATING THE PRESENCE OF SMOKE. THE SMOKE DETECTOR SHALL BE INTERLOCKED TO THE UNIT THROUGH THE DRY CONTACTS OF THE SMOKE DETECTOR. A MANUAL RESET OF THE SMOKE DETECTOR SHALL BE REQUIRED TO RESTART THE UNIT.

2 FAN COIL UNIT CONTROL
M-9902 / SCALE: NTS



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BID SET

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MARK	DATE	DESCRIPTION	BY

MIAMI DADE COUNTY DTPW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
MECHANICAL CONTROLS

PROJ:	200-15769-22008
DESN:	MGS
DRWN:	FFA
CHKD:	KPK

M-9902
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ELECTRICAL SYMBOLS

Table of electrical symbols including Duplex Receptacle, Light Switch, Motor Starter, and various control panels.

ELECTRICAL SYMBOLS (CONTINUED)

Continuation of electrical symbols including Recessed Down Light, Pendant Mounted Round Fixture, and Surface Mount Fixture.

HATCHING SYMBOL LEGEND

Hatching symbol legend defining patterns for Demolition and Out of Scope areas.

ABBREVIATIONS

Table of abbreviations for electrical components such as Ampere, Conduit, and Transformer.

ABBREVIATIONS

Table of abbreviations for electrical components such as Minimum, Motor, and Voltage.

GENERAL NOTES

- List of 17 general notes regarding work standards, door swings, fire-rated walls, and equipment labeling.

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TETRA TECH logo and contact information including address and phone number.

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Table with columns for MARK, DATE, and DESCRIPTION.

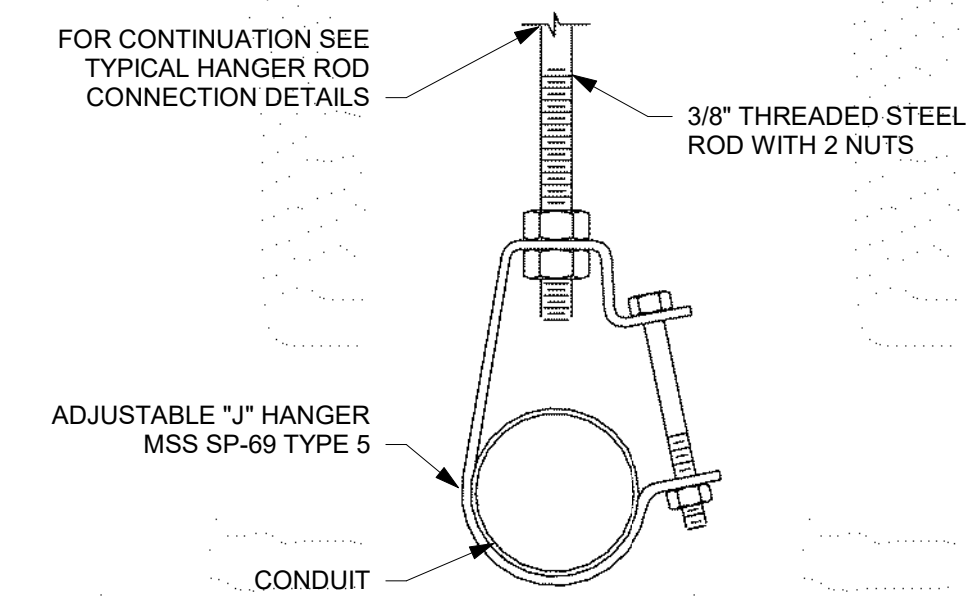
MIAMI DADE COUNTY DPTW WILLIAM LEHMAN CENTER CHILLED WATER PLANT REPLACEMENT ELECTRICAL LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

Table with columns for PROJ, DESN, DRWN, and CHKD.

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1 CONDUIT HANGER DETAIL

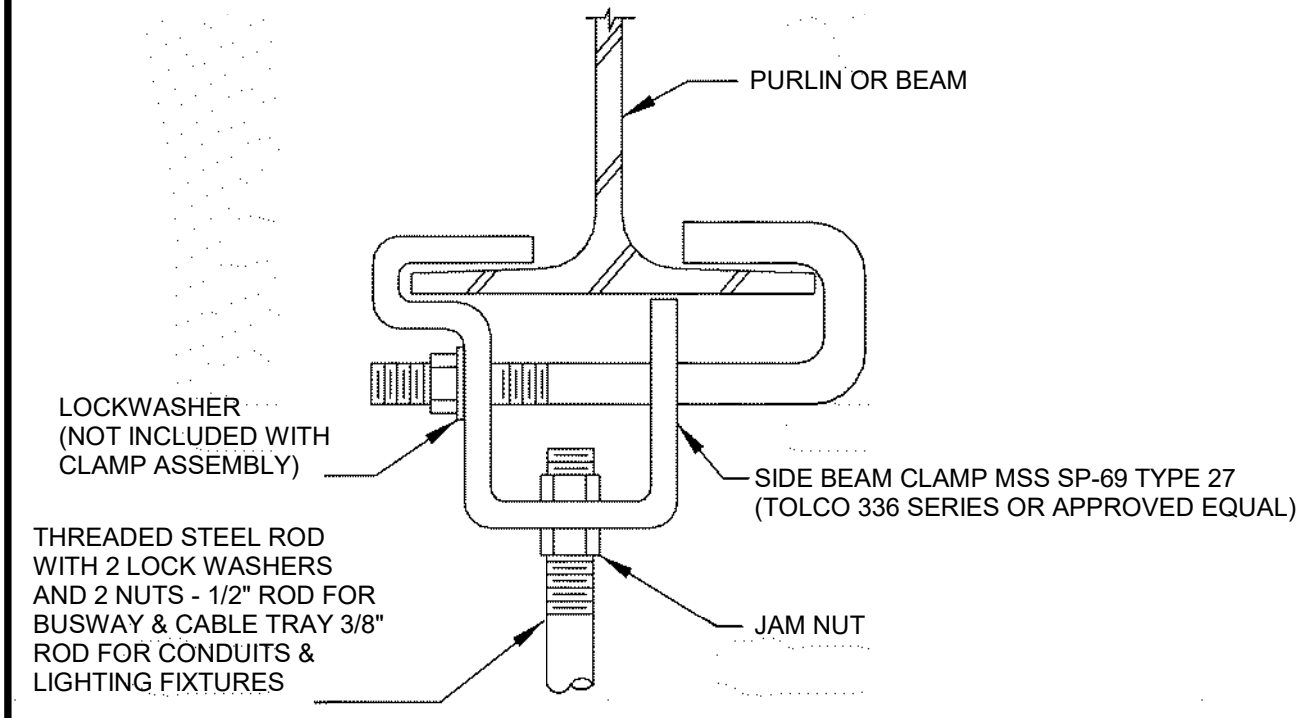
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- NOTES:**
- MSS SP-69: REFERENCE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY INC. STANDARD PRACTICE SP-69 2002 EDITION

2 HANGER ROD CONNECTION TO BEAM CLAMP DETAIL

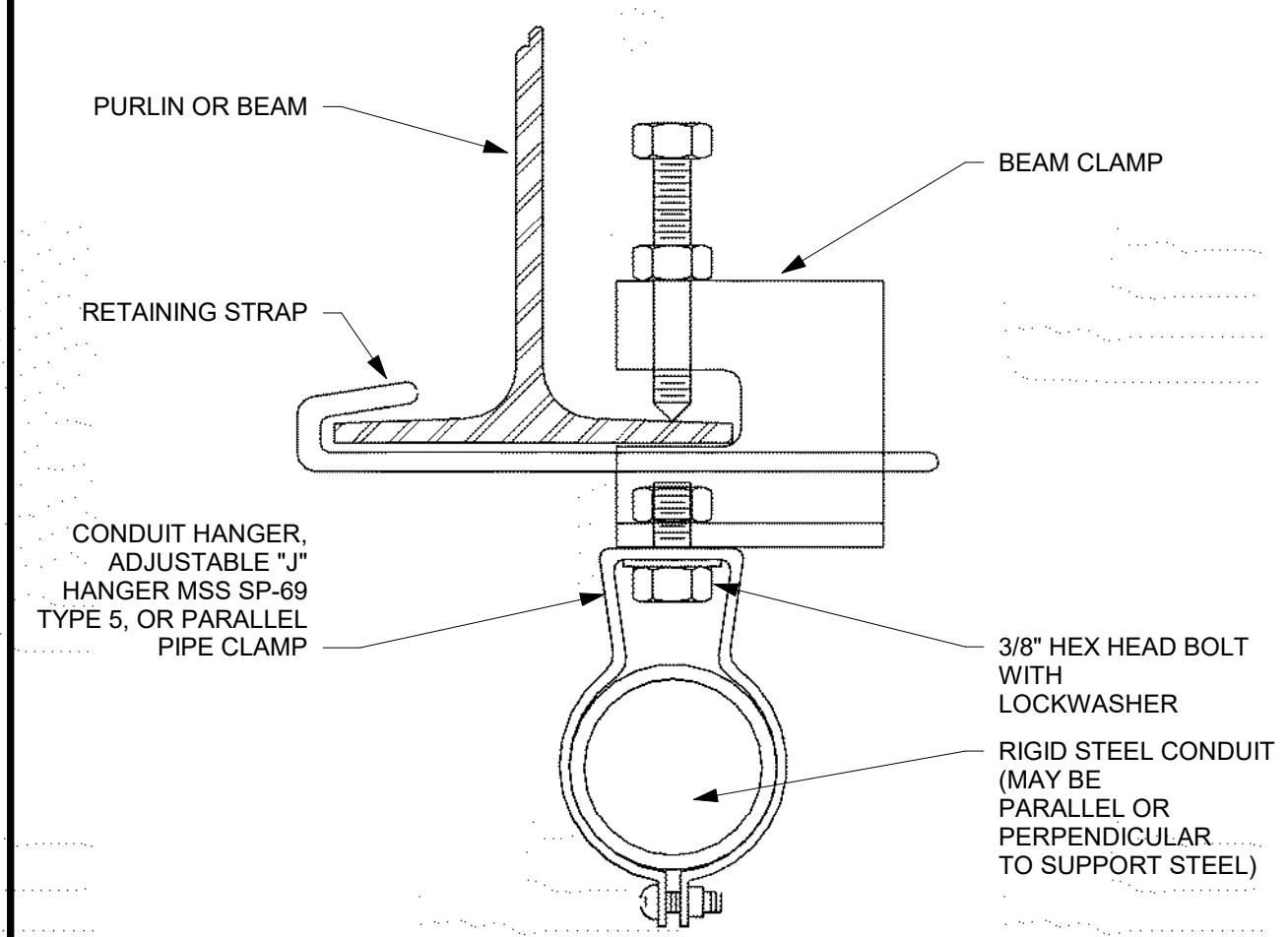
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- NOTE:**
- MSS SP-69: REFERENCE MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY INC. STANDARD PRACTICE SP-69 2002 EDITION

3 CONDUIT HANGER AND BEAM CLAMP DETAIL

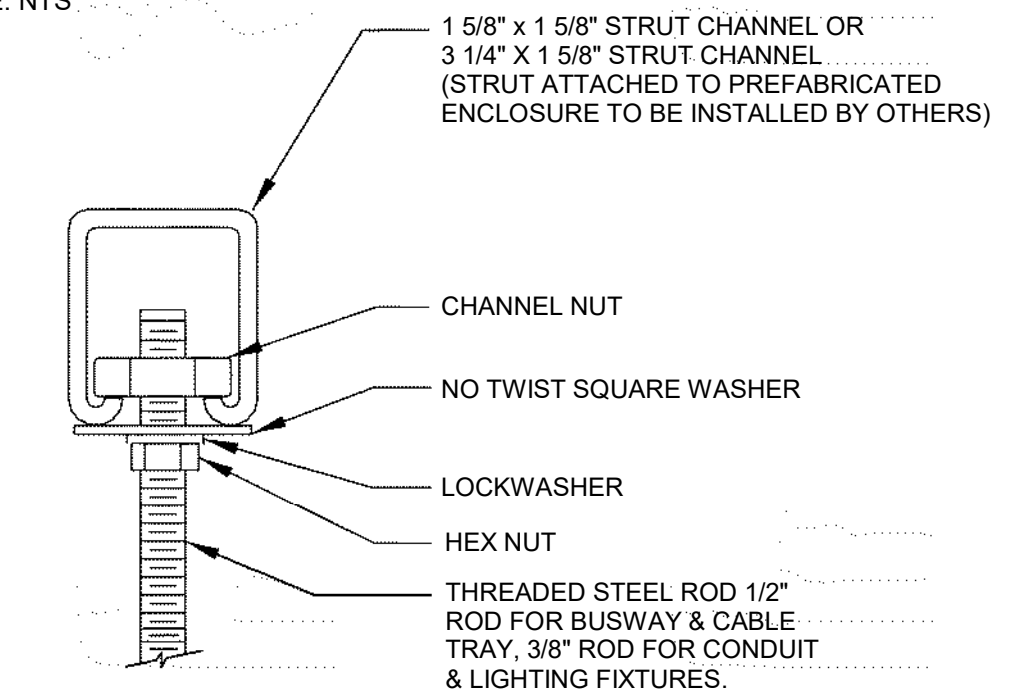
SCALE: NTS



- NOTES:**
- SIDE BEAM CLAMP, INVERTED TOP BEAM CLAMP, OR J-BOLT TYPE BEAM CLAMP (WITH LOCKWASHER UNDER NUT INSTEAD OF BOLT HEAD) MAY BE SUBSTITUTED FOR BEAM CLAMP WITH RETAINING STRAP (SEE TYPICAL HANGER ROD CONNECTION DETAILS - SIMILAR.)

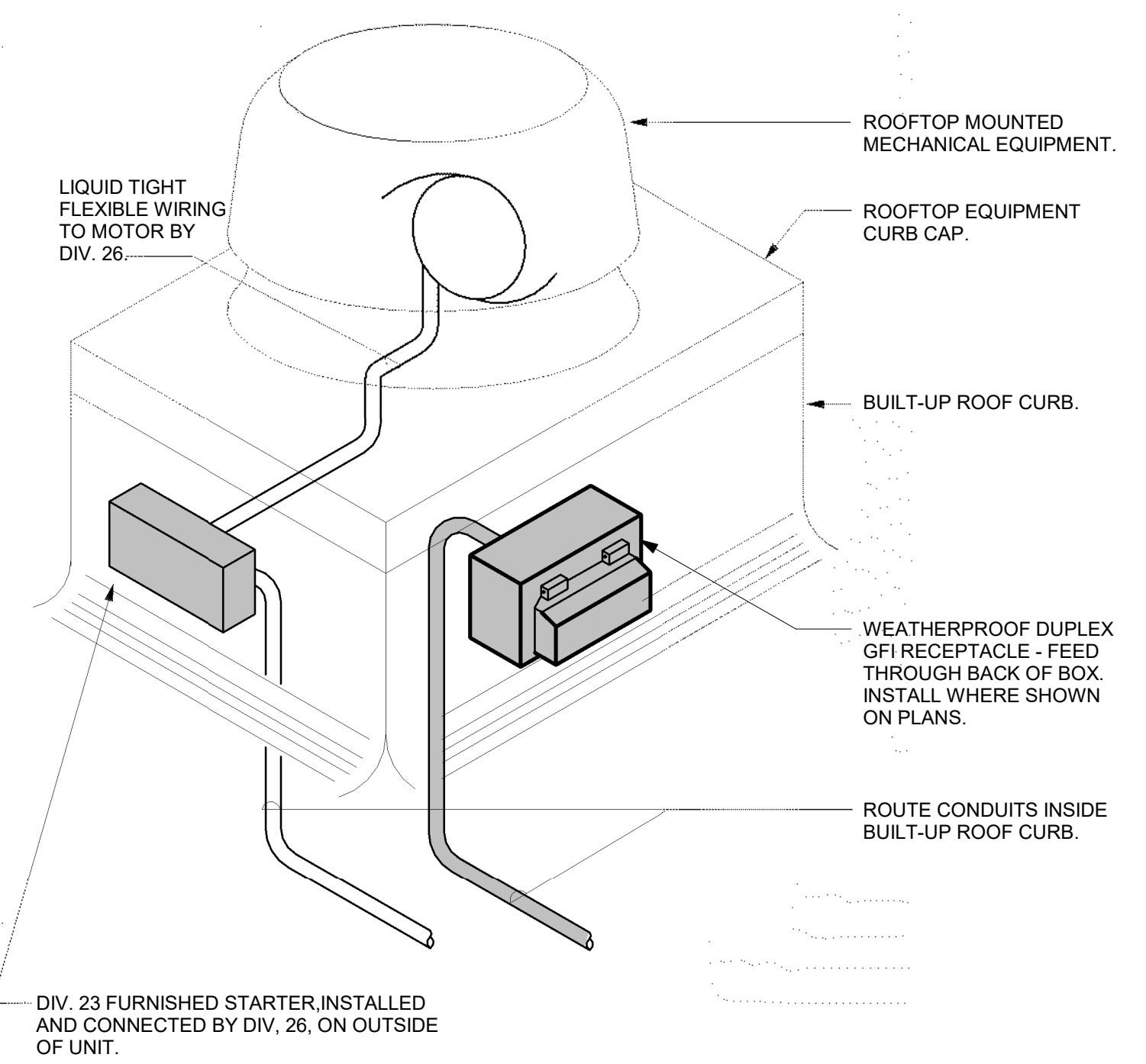
4 HANGER ROD CONNECTION TO STRUT CHANNEL DETAIL

SCALE: NTS



5 ROOFTOP HVAC DETAIL

SCALE: NTS



DIV. 23 FURNISHED STARTER, INSTALLED AND CONNECTED BY DIV. 26, ON OUTSIDE OF UNIT.

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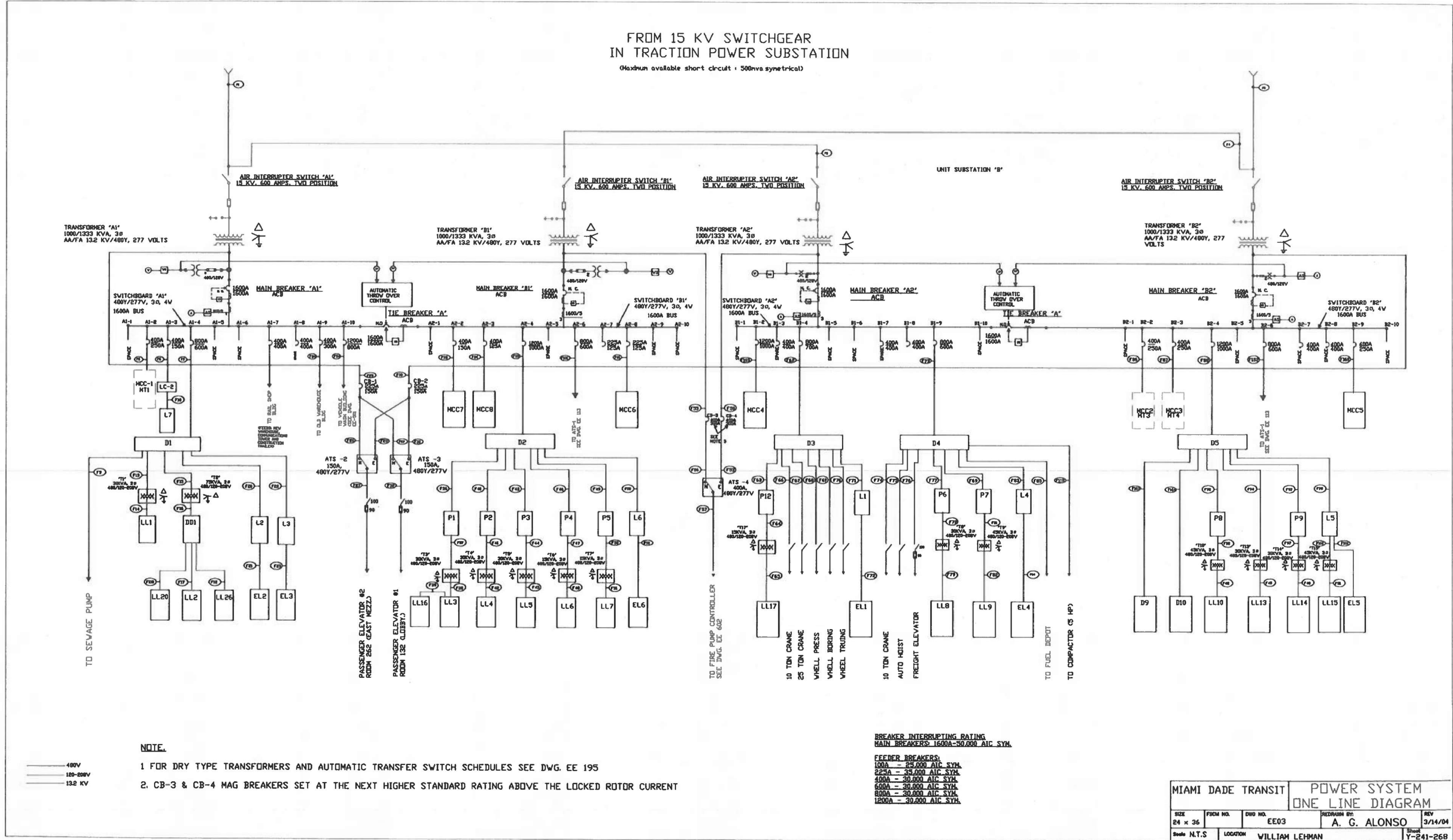
MARK	DATE	DESCRIPTION	BY

MIAMI DADE COUNTY DPTW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
ELECTRICAL DETAILS

PROJ: 200-15769-22008
DESN: JGH
DRWN: RSP
CHKD: BW

E-9501
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CONSTRUCTION

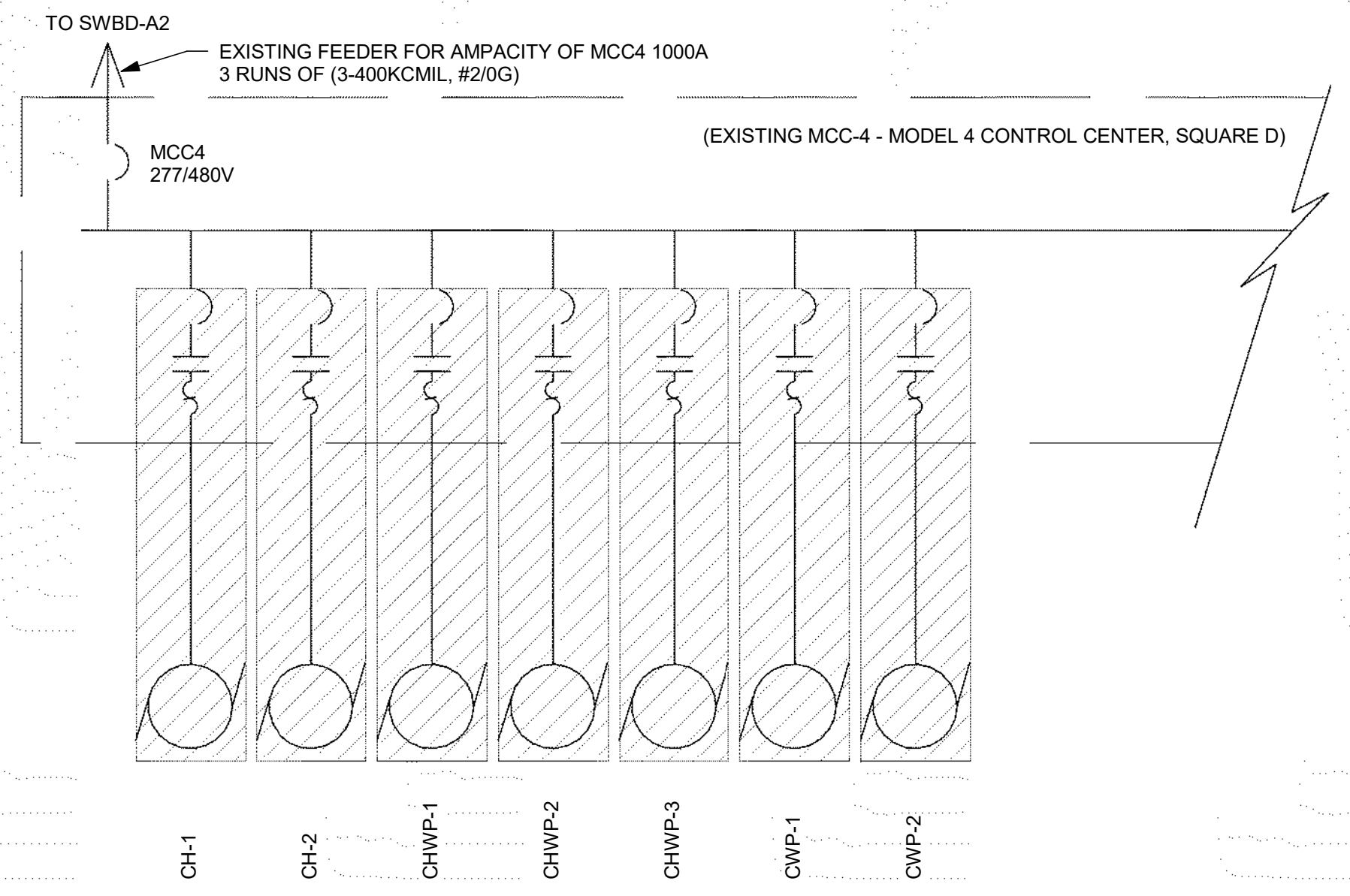


2 SINGLE LINE - ELECTRICAL
SCALE: NTS

MIAMI DADE COUNTY DPTV
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
EXISTING OVERALL SINGLE
LINE

PROJ: 200-15769-22008
DESN: JGH
DRWN: RSP
CHKD: BW

E-9601
27 of 28

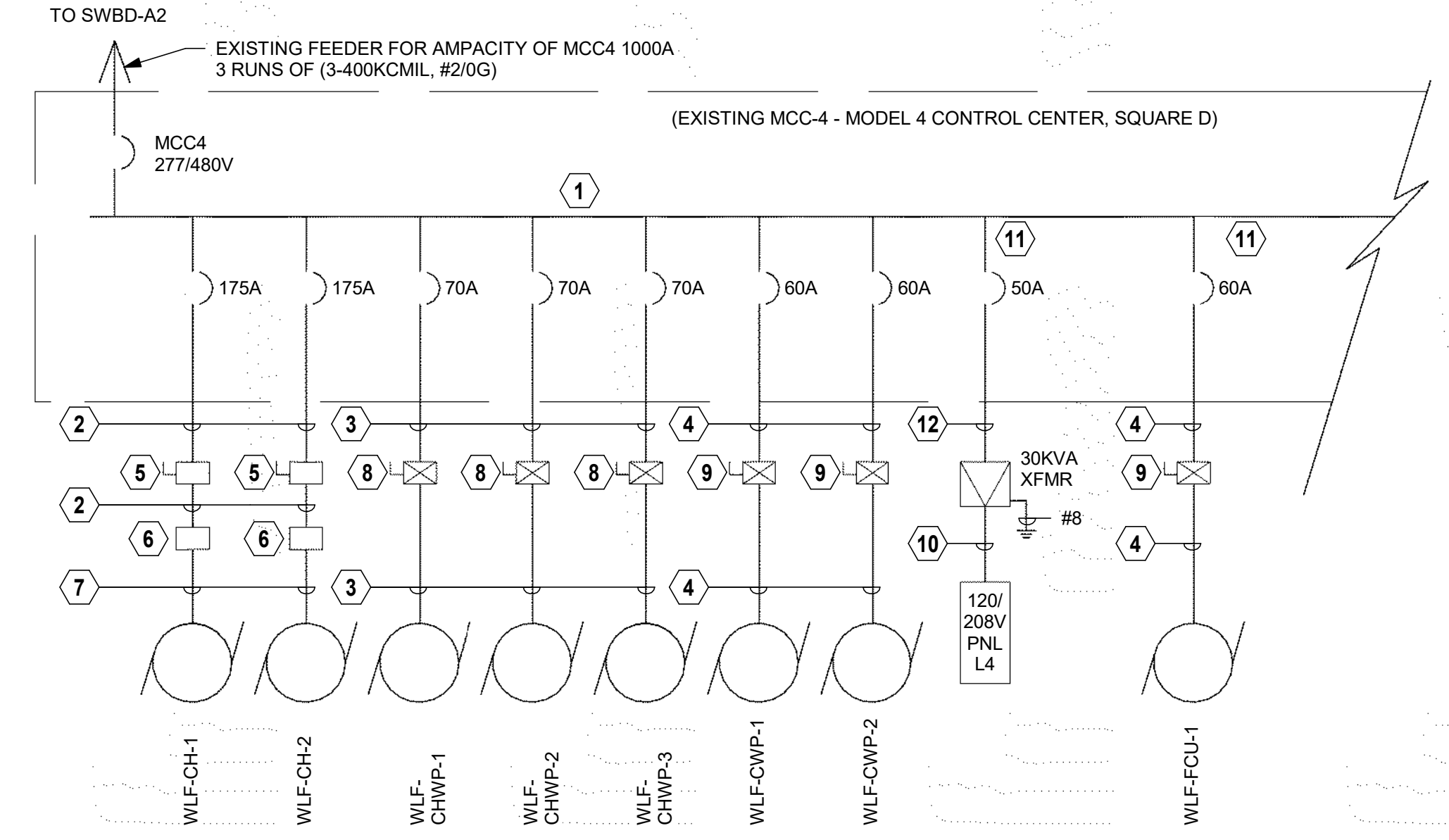


CONTRACTOR SHALL IDENTIFY ALL COMPONENTS WITHIN AFFECTED MCC BUCKET AND REMOVE COMPONENTS AS NECESSARY TO ACCOMMODATE NEW WORK. REMOVE ALL INDICATING LIGHTS, SWITCHES AND PUSHBUTTONS FROM AFFECTED MCC BUCKETS. LABEL REMOVED ITEMS AND PROVIDE TO OWNER. CONTRACTOR TO FIELD VERIFY NECESSARY SPACE FOR NEW EQUIPMENT AND PROVIDE MODIFIED MCC-4 SHOP DRAWINGS.

1 PARTIAL DEMOLITION SINGLE LINE - MCC4
E-9602 SCALE: NTS

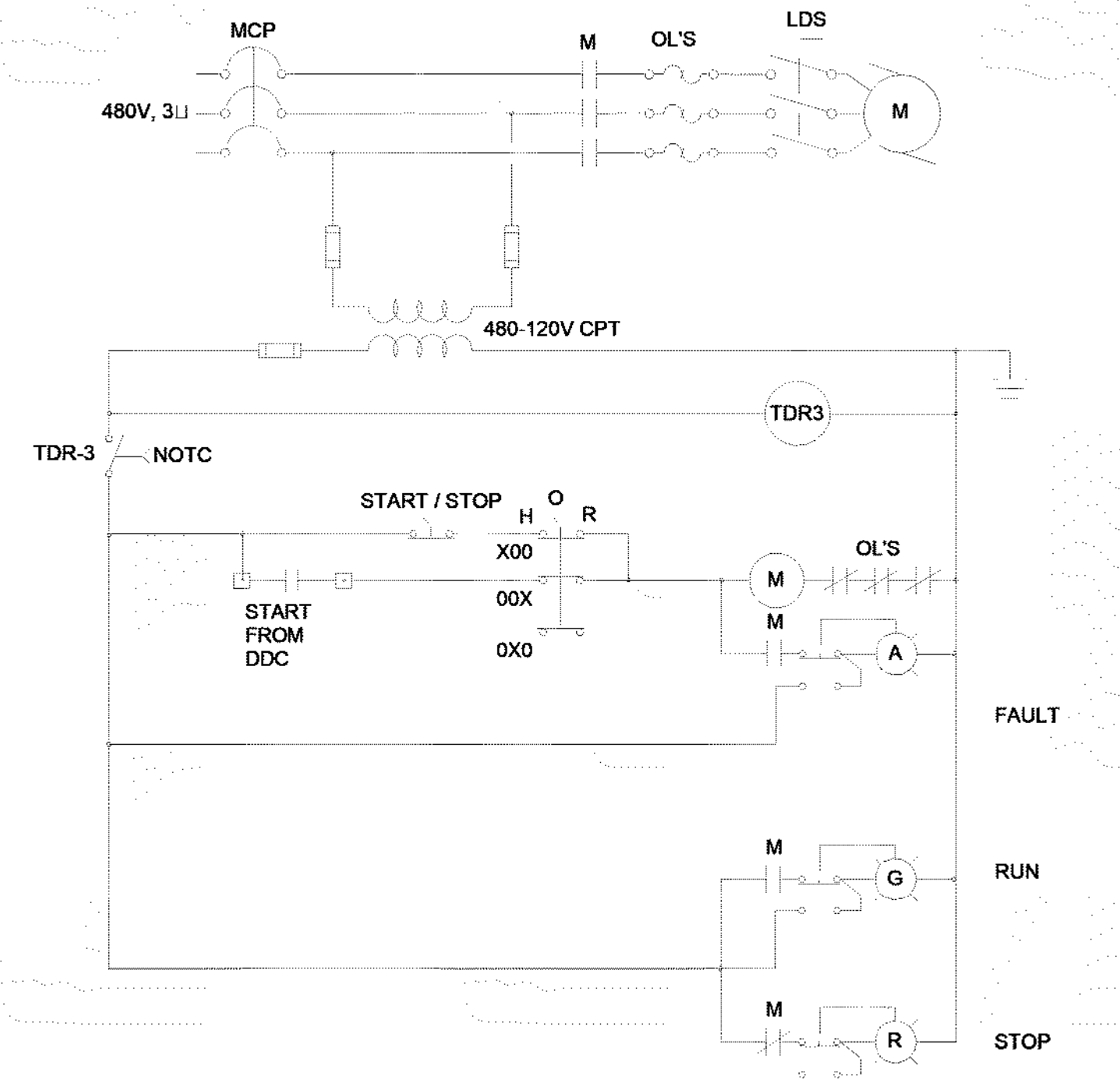


3 MCC-4 ELEVATION
E-9602 SCALE: NTS



- KEYED NOTES:**
1. VERIFY LOCATION OF THE MCC BUCKET THAT SUPPLIES EACH PIECE OF MECHANICAL EQUIPMENT INDICATED FOR DEMOLITION. MODIFY AFFECTED MCC BUCKETS AS REQUIRED TO ACCOMMODATE NEW MECHANICAL EQUIPMENT. CONFIRM REQUIRED CIRCUIT BREAKER RATINGS AND REQUIRED ANCILLIARY EQUIPMENT PRIOR WITH APPROVED MECHANICAL EQUIPMENT SUBMITTAL PRIOR TO ORDERING EQUIPMENT. PROVIDE ALL HARDWARE NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. SEAL OPENINGS IN DOORS VACATED BY INDICATING LIGHTS, SWITCHES AND PUSHBUTTONS WHICH HAVE BEEN REMOVED. MODIFICATION OF MCC SHALL MAINTAIN EXISTING UL LISTING OF EQUIPMENT. COORDINATE MODIFICATION WITH EQUIPMENT MANUFACTURER (SQUARE D) AS REQUIRED TO MAINTAIN LISTING.
 2. 2"C(#1/0, #1G)
 3. 1"C(#8, #8G)
 4. 1"C(#10, #10G)
 5. 200A THREE POLE DISCONNECT SWITCH IN NEMA 3R ENCLOSURE.
 6. VENDOR FURNISHED CHILLER CONTROL SYSTEM COMPONENTS. MOUNT AND WIRE IN COMPLIANCE WITH MANUFACTURER'S WRITTEN REQUIREMENTS.
 7. PROVIDE WIRING AND CONNECTIONS IN COMPLIANCE WITH MANUFACTURER'S WRITTEN REQUIREMENTS. INSTALLATION SHALL COMPLY WITH NEC.
 8. COMBINATION STARTER/DISCONNECT SWITCH. 60A THREE POLE DISCONNECT SWITCH WITH NEMA SIZE 2 MOTOR STARTER IN NEMA 3R ENCLOSURE.
 9. COMBINATION STARTER/DISCONNECT SWITCH. 30A THREE POLE DISCONNECT SWITCH WITH NEMA SIZE 2 MOTOR STARTER IN NEMA 3R ENCLOSURE.
 10. 2"C(#3, #6G)
 11. PROVIDE NEW BREAKER IN SPARE BUCKET
 12. 1"C(#8, #8G)

2 PARTIAL PROPOSED SINGLE LINE - MCC4
E-9602 SCALE: NTS



4 STARTER WIRING DIAGRAM
E-9602 SCALE: NTS

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BY	DESCRIPTION	DATE	MARK

MIAMI DADE COUNTY DPTW
WILLIAM LEHMAN CENTER
CHILLED WATER PLANT REPLACEMENT
ELECTRICAL SINGLE LINE - DEMOLITION - PROPOSED

PROJ: 200-15769-22008
DESIGN: JGH
DRAWN: RSP
CHKD: BW

E-9602
28 of 28

Bar measures 1 inch, otherwise drawing is not to scale