DEPARTMENTAL INPUT
CONTRACT/PROJECT MEASURE ANALYSIS AND RECOMMENDATION

☒ New Contract ☐ OTR ☐ Sole Source ☐ Bid Waiver ☐ Emergency Previous Contract/Project No. **RTQ-00103**

☐ Re-Bid ☐ Other LIVING WAGE APPLIES: ☐ YES ☒ NO

Requisition No./Project No.: **199676** TERM OF CONTRACT **180 Days**

Requisition /Project Title: **CD1: 12(2) C12 CONTACT CHAMBER 4**

Description: **SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT TANK CHAMBER 4 CONSENT DECREE PROJECT 1.12(2) PCTS No. 13252**

Issuing Department: **WASD** Contact Person: **Basdeo Budhram** Phone: **786-268-5703**

Estimate Cost: **$882,018.36** GENERAL FEDERAL OTHER

Funding Source: **General**

ANALYSIS

Commodity Codes: **630**

Contract/Project History of previous purchases three (3) years
Check here ☐ if this is a new contract/purchase with no previous history.

	EXISTING	2ND YEAR	3RD YEAR
Contractor:			
Small Business Enterprise:			
Contract Value:			

Comments:

Continued on another page (s): ☐ Yes ☐ No

RECOMMENDATIONS

	Set-aside	Sub-contractor goal	Bid preference	Selection factor
SBE			x	

Basis of recommendation:

Signed: Date sent to SBD:

Date returned to PMS:

MIAMI-DADE COUNTY, FLORIDA

BOARD OF COUNTY COMMISSIONERS

CARLOS A. GIMENEZ, MAYOR

AUDREY M. EDMONSON, CHAIRPERSON

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SDWWTP TANK REHABILITATION
FOR CHLORINE CONTACT TANK CHAMBER 4
CONSENT DECREE PROJECT 1.12(2)
PCTS No. 13252
SOLICITATION UNDER RTQ-00103
PROTECTIVE COATING SERVICES-PREQUAL

ER No. S049567

BID SET

MAY 2019

MIAMI-DADE WATER AND SEWER DEPARTMENT
KEVIN LYNKSEY, DIRECTOR

PREPARED BY
D&B ENGINEERS AND
ARCHITECTS, P.C.

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MIAMI-DADE SOUTH DISTRICT WWTP
TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER 4

TABLE OF CONTENTS (TOC)

VOLUME 1

TABLE OF CONTENTS (TOC)

VOLUME 1 (CONTINUED)

TABLE OF CONTENTS (TOC) (continued)

VOLUME 2

APPENDICES

NO TEXT ON THIS PAGE

Table of Contents

These Special Provisions are intended to modify, clarify, or quantify items within the General Terms and Conditions and Instructions to Bidders based on the unique requirements of this contract.

Compliance with the foregoing requirements shall not relieve the Contractor of his liability and obligation under this section or under any other section of this agreement.

SP 1.0 ADDITIONAL QUALIFICATIONS OF BIDDERS

In order to aid the County in making an award of the Contract, the Bidder shall be pre-qualified under County Contract RTQ-00103.

SP 2.0 INSURANCE REQUIREMENTS

Refer to requirements under County Contract RTQ-00103.

SP 3.0 LIQUIDATED DAMAGES

This project is mandated by a Consent Decree and has established construction schedule milestones that are critical for completion of this construction contract. These milestones have either “Contract Liquidated Damages”, “Consent Decree Liquidated Damages” or both associated with them.

SP 3.1 Contract Liquidated Damages

The parties to the Contract agree that time, in the completion of the Work, is of the essence. The County and the Contractor recognize and agree that the precise amount of actual damages for delay in the performance and completion of the Work is impossible to determine as of the date of execution of the Contract and that proof of the precise amount will be difficult. Therefore, the Contractor shall be assessed Contract Liquidated Damages on a daily basis for each Day that individual milestones, as specified below, are not timely achieved or that Contract Time is exceeded due to a non-excusable delay. These Contract Liquidated Damages shall be assessed, not as a penalty, but as a compensation to the County for expenses which are difficult to quantify with any certainty and which are incurred by the County due to the delay. The amount of Contract Liquidated Damages assessed shall be an amount, as stipulated below, per day for each calendar day that individual milestones as specified in the Contract are not timely achieved or that the Project is delayed due to a non-excusable delay.

In the event the Contractor fails to perform any other covenant or condition (other that time-related) of this Contract relating to the Work, the Contractor shall become liable to the County for any actual damaged which the owner may sustain on the part of the Contractor. The County reserves the right to retain these amounts from monies due to the Contractor

Failure to complete Milestone(s) 2 within the duration indicated in Table 1 below shall result in Contract Liquidated Damages.

Table 1

Milestones	Description	Duration (Calendar days from NTP)	Contract Liquidated Damages (1)
1	Accepted Safety Plan/Accepted Schedule/Company Background Check & Acquire WASD Security ID Badges	45	
2	Substantial Completion(2)	105	$300 Per Calendar Day
3	Final Completion	135	

NOTES:

(1) The above Liquidated Damages are specifically related to Contract Time. Additional Liquidated Damages may be incurred as noted in Section SP 3.2. Contract Liquidated Damages listed in this table are cumulative with those listed in Section SP 3.2.

(2) Substantial Completion entails completion of work, conducting a substantial completion inspection, resolution of all substantial completion inspection punchlist items, and turning over the facility to WASD for full beneficial use.

SP 3.2 Consent Decree Liquidated Damages

Miami-Dade County has entered into a Consent Decree (United States District Court for the Southern District of Florida, Case No. 1:12-cv-24400-FAM, herein referred to as Consent Decree) with the United States, Environmental Protection Agency, the State of Florida, and Florida Department of Environmental Protection (FDEP) (collectively "Regulatory Agencies"), to remediate its aging wastewater infrastructure. This project is intended to satisfy the requirements identified in the Consent Decree as CD Project CD 1.12. The full text of the Consent Decree is available online at:

http://www.miamidade.gov/water/library/reports/consent-decree/consent-decree-signed.pdf

The Consent Decree provides that the Regulatory Agencies may impose stipulated penalties against Miami-Dade County for failure to meet the project's Consent Decree Compliance Date, and for certain sanitary sewer overflows (SSOs). In the event the Regulatory Agencies impose such penalties against Miami-Dade County and such penalties are a result of the Contractor's lack of performance, failure to meet the Consent Decree Compliance Date, or an SSO that occurs during construction, the Contractor shall be liable to the County for such amounts as additional

Liquidated Damages ("Consent Decree Liquated Damages"). Please note these Consent Decree Liquidated Damages are in addition to the Contract Liquidated Damages and may be assessed separately and/or in combination.

(a) Failure to complete work on or before the Consent Decree Compliance Date per table below shall result in Consent Decree Liquidated Damages as listed below.

CD Project No.	Consent Decree Compliance Date
1.12	June 18, 2021

***Note: In the event the above Consent Decree Compliance Date occurs before the Substantial Completion Date established in Section SP 3.1, Table 1, the Consent Decree Liquidate Damages shall commence on the later of the two dates**

Period of Noncompliance per Violation per Day (Calendar Days from NTP):

One (1) to fourteen (14) days	$1,000
Fifteen (15) to thirty days (30) days	$2,000
Thirty one (31) to sixty (60) days	$3,000
Sixty one (61) to one hundred eighty (180) days	$4,000
More than one hundred eighty (180) days	$5,000

(b) Consent Decree Liquidated Damages for each SSO reaching waters of the United States due to a release of wastewater caused by Contractor may be assessed as:

Description	Before 4/09/2019	After 4/09/2019
1 to 10,000 gallons	$1,000	$1,000
10,000 to 250,000 gallons	$2,000	$4,000
250,000 to 1,000,000 gallons	$5,000	$10,000
Greater than 1,000,0000 gallons	$10,000	$20,000

(c) Consent Decree Liquidated Damages for each SSO NOT reaching waters of the United States due to a release caused by Contractor may be assessed as:

Description	Before 4/09/2019	After 4/09/2019
1 to 10,000 gallons	$500	$500
10,000 to 250,000 gallons	$1,000	$2,000
250,000 to 1,000,000 gallons	$2,500	$5,000
Greater than 1,000,0000 gallons	$5,000	$10,000

SP 4.0 SMALL BUSINESS MEASURES

Pursuant to Section 10-33.02 of the Code of Miami-Dade County, Florida, "a contractor who fails to meet an established CSBE goal shall submit a CSBE Make-Up Plan for approval of the [Small Business Development ("SBD")] Division Director. A Make-up Plan and a corresponding Schedule of Intent Affidavit must be submitted as part of any bid or proposal submitted for future contracts at the time of bid or proposal submittal." Failure to include the required Schedule of Intent Affidavit with bids or proposals for any future contracts shall result in the submittal being deemed non-responsive. **To verify whether your company has a CSBE make-up requirement,** please refer to the SBD webpage at:

http://www.miamidade.gov/smallbusiness/library/reports/goal-deficit.pdf

For questions regarding this requirement, contact Alice Hidalgo-Gato, Division Director, Contract Monitoring and Compliance at (305) 375-3153.

Small Business Goals for this contract are as stated in the Advertisement for Bids.

SP 5.0 COMMUNITY WORK FORCE GOALS

Not Applicable

SP 6.0 USER ACCESS PROGRAM

Not Applicable Bond Funded

SP 8.0 REVIEW OF RECORDS

In addition to the five (5) year retention period specified in this Contract, the following retention for Consent Decree projects shall apply: Until five (5) years after the termination of this Consent Decree, the contractors and agents shall preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its agents' possession or control, or that come into its or its agents' possession or control, and that relate in any manner to the Contractor or its agents performance of its obligations under this Contract. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the County, the Contractor shall provide copies of any documents, records, or other information required to be maintained under this Paragraph.

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SECTION 01005A

DEFINED TERMS

PART 1 - GENERAL

1.1 SCOPE

When used in this publication the following underlined terms shall have meaning as hereinafter defined:

A. The masculine pronoun shall include the feminine and neuter, and the singular shall include the plural.

B. "And" shall also mean "or" and "or" shall also mean "and", wherever the context or purpose so requires.

C. "Person" shall mean and include any individual, combination of individuals, partnership, society, association, joint stock company, corporation, estate, receiver, trustee, assignee, referee or any other person acting in a fiduciary or representative capacity, whether appointed by a court or otherwise.

D. Construction (Substantial) Completion shall mean completion of construction and installation of equipment or infrastructure such that the equipment or infrastructure has been placed in operation, and is expected to both function and perform as designed. This specifically includes all control systems and instrumentation necessary for normal operations and all residual handling systems are in place and operational. Miscellaneous items related to construction activities, such as restoration of surrounding areas or installation of other items not necessary for the equipment or infrastructure to function and perform as designed, is not required to be completed prior to Miami-Dade Water and Sewer Department certifying that the project has met Construction Completion. Engineer and/or Owner must inspect and certify that substantial completion has been achieved.

E. "County", "Dade County", "Miami-Dade County" or "Metropolitan Dade County (MDC)" shall mean Miami-Dade County, Florida, a political subdivision of the State of Florida, acting by and through the Board of County Commissioners, which is a party hereto and for which this Contract is to be performed.

F. "Department" shall mean the Miami-Dade Water and Sewer Department of Miami-Dade County, Florida.

G. "Director" shall mean the Director of the Miami-Dade Water and Sewer Department.

H. “Final Completion” shall mean verification by Engineer and/or Owner that all Contract work has been successfully completed by Contractor.

I. "Engineer" shall mean the Chief, Engineering Division of the Miami-Dade Water and Sewer Department or an authorized representative.

J. "Inspector" shall mean any person designated by the Engineer to examine and inspect materials and work for the purpose of insuring compliance by the Contractor with all requirements of the Plans and Specifications.

K. "Developer" shall mean the person, who has entered into an agreement with the Department to construct a Project.

L. "Contractor" or “Vendor” shall mean the party of the second part to the contract. The person, firm, or corporation, holding a current Certificate of Competency applicable to the type of work to be performed, with whom a contract has been made directly or through accredited representatives, that may have entered into a contract with the County and who is primarily liable for the acceptable performance of the work for which he has contracted and also for the payment of all legal debts pertaining to the work, or Contractor shall mean any person engaged by the Developer to supply labor, materials or equipment for use in the fulfillment of the project.

M. "Subcontractor" shall mean any person engaged by the Contractor to supply labor, materials or equipment for use in the fulfillment of the Project.

N. "Engineer of Record” shall mean the Florida-certified professional engineer engaged by the Developer or the Department to design the proposed Project.

O. "Project" shall mean and include all construction for which the Contractor is responsible under the Contract Documents, or shall mean and include all construction for which the Developer or Engineer of Record is responsible under the agreement with the Department.

P. "Plans" shall mean construction drawings prepared by the Developer or Engineer of Record for the proposed Project.

Q. "Standards Details” or “Standards” the Department’s latest published standard construction details, copies of which are bound herein.

R. "Equal” or “Approved Equal” shall mean only that material or product which is specifically approved by the Engineer as being an acceptable substitute for a material or product designated in the Specifications or by a trade name or the name of the manufacturer.

S. "Domestic” when applied to materials, shall mean materials or products produced within the continental limits of the United States.

T. "Water level" or "water table" shall mean the top elevation of the natural ground water table as it exists in the trench at any particular site and time during the installation.

U. "Surveyor" shall mean a professional surveyor registered in the State of Florida to engage in the practice of surveying.

V. Construction as used herein shall mean Maintenance Repair.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01010A

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Work Included: This Section describes the project in general, and provides an overview of the extent of the work to be performed under this Contract. Detailed requirements and extent of work is stated in the applicable Specification sections. The Contractor shall, except as otherwise specifically stated herein or in any applicable parts of the Contract Documents, provide and pay for all labor, materials, equipment, tools, construction equipment, and other facilities and services necessary for proper execution, testing, and completion of the work under this Contract.

1.2 SPECIFICATIONS

A. The Specifications included in these Contract Documents establish the minimum performance and quality requirements for materials and equipment together with the minimum standards for quality of workmanship and appearance. Generally, there has been no attempt to separate the Specification sections into groups for the work of separate subcontractors, or for work to be performed by the various trades. Should there be any question as to the interpretation of any particular Specification section or part of Specification section, such question should be directed to the Department prior to the submittal of a proposal for the work under this Contract.

B. The work described in the Specifications is intended to be comprehensive and descriptive, not an exact and complete representation of the actual finished work. Installed work shall include all accessories required to provide complete and satisfactory systems as specified, even though some items may not be specifically mentioned in the Specifications.

C. It is the intent of the Department to obtain a complete functional, and satisfactory installation under this project, and any items of labor, equipment or materials which may be reasonably assumed as necessary to accomplish this end shall be supplied whether or not they are specifically stated herein. The Contractor shall provide all materials for the project unless they are specifically called out in these specifications as being supplied by the Department. The Contractor shall also supply all sheeting, shoring, bracing and all other labor, material or equipment required to preclude damage to, or loss of functionality of, any existing facility or system.

1.3 REASONABLY IMPLIED PARTS OF THE WORK SHALL BE DONE THOUGH ABSENT FROM SPECIFICATIONS

A. Any part of the work which is not mentioned in the Specifications but which is necessary or normally required as a part of such work, or is necessary or required to make each installation satisfactorily and legally operable, shall be performed by the Contractor as incidental work without extra cost to the Department, as if fully described in the, and the expense thereof shall be included in the applicable unit prices or lump sum bid for the work.

1.4 DESCRIPTION OF WORK

A. The project consists of furnishing all materials, labor and equipment necessary to rehabilitate the walls and slabs within Chlorine Contact Chamber No. 4 at the South District Wastewater Treatment Plant. The Work shall include high pressure washing, sandblasting, repairing and recoating concrete and masonry walls and slabs. Bidder shall field-verify actual scope of work and amount of materials required to rehabilitate the tanks before submitting bid.

B. Surface preparation shall be done in accordance with the requirements of Section 03721.

C. Concrete patching and rebar repairs shall be completed per Section 03732.

D. Concrete resurfacing shall be performed per requirements in Section 03732.

E. Protective coatings shall be applied per Sections 09900.

F. The project shall include, but not be limited to, high pressure washing, sandblasting, rebar repairs and recoating, concrete patching, concrete resurfacing, repairing and recoating surfaces of the tanks; applying coatings including primer; furnishing and installing expansion joints and backer rod; providing any scaffolding, ventilation, ladders and any necessary safety equipment; transportation and handling costs; disposal of any debris; and all other appurtenances and miscellaneous items for a complete restoration of all the surfaces as shown on the drawings. Existing and new rebar shall be sandblasted to create surface profile to accept primer and coatings. All concrete surfaces as shown shall be water blasted, air blasted, sand blasted, cleaned, prepared, primed and coated; restore site to existing or better condition; together with all other miscellaneous items and appurtenant work for a complete, functional and satisfactory installation of the project located at 8950 SW 232nd Street, Miami, Florida 33190.

1.5 WORKING CONDITIONS

A. The Contractor shall use the repair materials for steel surfaces as required by paragraph 2.02 “Repair Materials” of Specifications Section 09900.

B. On-site storage space is limited.

C. Sandblasting is required on new steel installed to prepare the surface area for the coating application.

D. Certification in the application of the coating material is required with the bid to ensure proper application and a timely repair. The Department needs to have the structure repaired, coated and back in service promptly to meet operational needs.

E. The time allowed between prime and top coats is a maximum of 30 days and a minimum of 24 hours. The time allowed between pressure cleaning and primer is 24 hours or less.

F. Stripe coating is required at all corners and edges.

G. The allowable working hours are Monday through Friday between 7 am and 5 pm.

H. Electric power and water are available free of charge for small tools and lighting. Contractor shall provide portable power for the welding machines and dewatering pumps. The Contractor is required to use a floating water meter to measure the amount of water used. No charges will be made for the water used to perform the work.

I. The South District Wastewater Treatment Plant (SDWWTP) will shut down, isolate and drain the Chlorine Contact Chamber No. 4 based on the approved Contractor’s proposed schedule for constructing the work. This dewatering will be down to elevation 3.00. Below elevation 3.00’, the Contractor shall provide all labor, equipment, materials and incidentals as required to dewater down to the floors of the Influent Chamber, Weir Chamber, Outlet Well and Chlorine Contact Chambers, including the removal of all debris, as required to perform the work under this Contract. The lowest elevation being approximately 0.75+/-.

The Contractor shall be responsible for maintaining the dewatered condition throughout his construction phase of the Contract while the SDWWTP provides Maintenance of Plant Flow around the Chlorine Contact Chamber.”

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01011A

SITE CONDITIONS AND PROTECTION OF EXISTING FACILITIES

PART 1 -GENERAL

1.1 SITE INVESTIGATION AND REPRESENTATION

A. The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation; disposal, handling and storage of materials; availability of labor, water, electric power, roads; disposal of water from construction; uncertainties of weather; the conformation and conditions at the ground; the type of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this Contract.

B. The Contractor further acknowledges that he has satisfied himself as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information derived from exploratory work that may have been done by the Department or included with these Contract Documents. Any failure by the Contractor to acquaint himself with all the available information will not relieve him from responsibility for properly estimating the difficulty or cost thereof under this Contract.

C. The Contractor acknowledges that by personal field observation or other means satisfactory to himself, performed prior to the bid, he has included in the bid prices all costs for dealing with all construction problems created by observable above or on grade features on or adjacent to the site of the work whether or not these features are shown on the Plans or described in the Specifications. In instances where the observable features indicate subsurface conditions which may affect the Project work, as for example, a pavement patch or catch basin gratings indicating respectively a utility or storm sewer not shown on the Plans, the Contractor acknowledges that he has made timely, diligent, inquiry to the ENGINEER or by other means fully satisfied himself prior to the bid as to the nature of, and costs created by, the subsurface condition and included all costs therefore in the bid prices.

1.2 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

A. Where the Contractor's operation could cause damage or inconvenience to telephone, fiber optic, electrical power, oil, gas, water, sewer, irrigation system, or any other utility, the Contractor shall make all arrangements necessary for the protection of these utilities and services.

B. Notify all utility companies that are affected by the construction operation at least 48 hours in advance. Under no circumstance expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities and utility poles where necessary. Absolutely no extra compensation will be allowed for construction problems created by utility poles of whatever size, overhead electric, telephone or other lines, whether shown on the Plans or not. The Contractor is solely responsible for discerning such items in the field prior to bidding and including all costs for such work in the bid prices.

C. The Contractor and his/her subcontractors shall be solely and directly responsible to the owners and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage, which may result from the construction operations under this Contract.

D. Replace, with material approved by the Engineer, at Contractor's expense, any and all other laterals, existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract Documents and as approved by the Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01015A

INDEX OF DRAWINGS

PART 1 - GENERAL

1.1 CONTRACT DRAWINGS

A. Plans labeled **ISSUED FOR BID MAY 2019**, and any subsequent revision thereto introduced by Addenda prior to Bid, showing the work of the Contract are hereby made a part of the Contract Documents and are listed as follows:

SDWWTP Rehabilitation for Chlorine Contact Chamber No. 3
Consent Decree Project 1.12(2)
PCTS No. 13252

GENERAL

G001	COVER SHEET
G002	SYMBOLS AND ABBREVIATIONS
S100	STRUCTURAL GENERAL NOTES AND SITE PLAN
S101	CHLORINE CONTACT TANKS PARTIAL FLOOR PLAN – TANK 3 AND TANK 4
S201	TANK 3 – LANE 1 – ELEVATION VIEW
S202	TANK 3 – LANE 2 – ELEVATION VIEW
S203	TANK 3 – LANE 3 – ELEVATION VIEW
S204	TANK 3 – LANE 4 – ELEVATION VIEW
S205	TANK 3 – LANE 5 – ELEVATION VIEW
S206	TANK 3 – LANE 6 – ELEVATION VIEW
S207	TANK 3 – LANE 7 – ELEVATION VIEW
S301	TYPICAL WALL REPAIR DETAILS
S302	TYPICAL SLAB REPAIR DETAILS

B. Due to the possibility of typing errors or omissions, the above list shall not be considered as necessarily complete, nor shall the Standard Details which may be included elsewhere herein be considered as forming a complete listing of all Standard Details which may apply to this Project. Perform all work shown on all sheets of the Plans, as specified herein or necessary for a complete functional installation and no extra compensation will be made due to the omission or incorrect listing of a Drawing in this Section**.** The Contractor shall field investigate and verify as necessary for this work prior the construction**.**

PART 2 - PRODUCTS (NOT USED)
PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01090A

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 THE SUMMARY

A. Comply with the requirements of standard with date as specified herein. Standards without dates shall be understood as the Standard current at the time of bid. In case of conflict between the referenced standards, the one having the more stringent requirements shall govern.

B. In case of conflict between the referenced standards and the Project Documents, the Project Documents shall govern.

C. When no reference is made to a code, standard, or specification, the standard specifications of the ASTM, the ANSI, the ASME, the IEEE, or the NEMA shall govern.

1.2 ABBREVIATIONS

AA:	Aluminum Association.
AAMA:	Architectural Aluminum Manufacturer's Association.
AASHTO:	American Association of State Highway & Transportation Officials.
ACI:	American Concrete Institute.
AGA:	American Gas Association.
AGMA:	American Gear Manufacturer’s Association.
AIEE:	American Institute of Electrical Engineers (Now IEEE).
AISC:	American Institute of Steel Construction.
AISI:	American Iron and Steel Institute.
ANSI:	American National Standards Institute.
API:	American Petroleum Institute.
ASCE:	American Society of Civil Engineers.
ASME:	American Society of Mechanical Engineers.
ASTM:	American Society for Testing and Materials.
AWPA:	American Wood Preservers Association.
AWS:	American Welding Society.
AWWA:	American Water Works Association.
DOT or FDOT	Florida Department of Transportation.
CIPRA:	Cast Iron Pipe Research Association.
DIPRA:	Ductile Iron Pipe Research Association.
EPA:	Environmental Protection Agency (U.S.).
FED. SPEC.:	Federal Specification.
FBC:	Florida Building Code.

IEEE:	Institute of Electrical and Electronic Engineers.
NBS:	National Bureau of Standards.
NCPI:	National Clay Pipe Institute.
NEC:	National Electrical Code.
NEMA:	National Electrical Manufacturer's Association.
NESC:	National Electric Safety Code.
NEWWA:	New England Water Works Organization.
NFPA:	National Fire Protection Association.
NLMA:	National Lumber Manufacturers Association.
NSF:	National Sanitation Foundation.
OSHA:	U.S. Department of Labor, Occupational Safety and Health Association.
SAE:	Society of Automotive Engineers.
SHBI:	Steel Heating Boiler Institute.
SSPC:	Steel Structures Painting Council.
ISA:	Instrument Society of America.
TCA:	Tile Council of America.
UL:	Underwriter's Laboratories, Inc.

A. The above list shall not be considered complete, as there are other "Standards" used; however, in most cases complete titles have been given.

B. Wherever "Standards" are indicated herein for reference, the referenced portion shall have the same force and effect as if it were included herein in its entirety, latest revision if date of publication not shown.

C. When used within these specification: ”Owner or Department” shall mean the Miami-Dade Water and Sewer Department; “Director” shall mean the Director of the Miami-Dade Water and Sewer Department; and “Engineer” shall mean the Chief, Engineering Division of the Miami-Dade Water and Sewer Department, or an authorized representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01120A

SEQUENCE OF CONSTRUCTION

PART 1 GENERAL

1.1 THE SUMMARY

A. Before commencement of any work, in compliance with the requirements of Section 01150A - Project Schedules, Meetings, and Reports, submit to the Engineer for approval a detailed sequence of construction, clearly showing the interrelationship and the interdependency of work activities with one another.

B. Coordinate sequence of construction with progress schedule to ensure timely performance of the work and project completion within the specified construction time.

1.2 GENERAL NOTES

A. Contractors working at the Waste Water Treatment Plants are required to pass a background check and obtain a WASD ID Badge (See Appendix C). Subcontractors who work for more than 5 days within a 90-day period are also required to obtain the security background check and identification. The Contractor's personnel shall obtain all background checks and ID Badges prior to the issuance of the Notice to Proceed.

B. Following receipt of Notice to proceed with the work, the Contractor shall notify the Engineer at least five (5) days before he is ready to start actual construction, to allow the Department time to make arrangements for inspection of the work.

C. The Contractor's equipment must be in first class operating condition. All equipment must be properly lubricated on a special maintenance type schedule to reduce noise, including tracks, rollers, idlers, sheaves and other noise producing components. Care must be taken to prevent oil spillage of any kind or oil dripping from equipment. The Contractor shall provide a temporary electric service for his electric equipment as specified herein below, and shall pay all cost thereof, including all charges for electricity used during the entire course of the Project until its acceptance by the Department.

D. If the equipment used proves less than satisfactory and is unduly or needlessly disturbing the plant operations and staff, in the opinion of the Engineer, he will have the right to order the Contractor to immediately modify the equipment to make it satisfactory, or to change to other equipment that is satisfactory at no additional cost to the Department.

E. During construction the Contractor shall, by sprinkling with water or by other means approved by the Engineer, eliminate dust annoyance to plant staff. No additional compensation will be paid to the Contractor for any costs incurred in complying with the provisions herein.

F. Valves between the existing system and new work being installed hereunder shall only be operated by Department personnel. The Contractor's personnel, under no circumstances, shall operate any such valve. This shall also apply to valves installed during the project which are put into service prior to final acceptance (i.e. part of the project is activated).

G. All items shall be performed by the Contractor with special emphasis on the fact that numerous standard and miscellaneous construction phases are not mentioned specifically, but shall be performed by the Contractor as required for a completed Project.

H. No separate payment shall be made for the cost of labor and materials required for the removal of nightcaps, plugs, bulkheads or external blocking and bracing of adjacent mains, for the supplying of water for cleaning and testing, nor for the interconnecting work to adjacent mains unless listed separately in the Bid, and the cost of this work shall be included in other applicable items of work.

I. The Contractor shall be responsible for positively anchoring the pipe, valves and fittings against movement from internal pressure by installing thrust blocks, restrained joints, bulkheads, ties, external blocking and bracing or other devices where required, or by installing sufficient pipe beyond the valve end to serve as the thrust anchor for the section under test.

J. The Contractor is advised that he is required to furnish all labor, materials and equipment necessary to pressure test each valve furnished by either the Department or the Contractor bi-directionally, prior to installation, to the satisfaction of the Engineer. If the valves are available, the tests shall be performed prior to the start of Construction. Otherwise the tests shall be performed as soon as the valves are available to afford the maximum time for any corrective work required. The Contractor shall include all costs for this requirement under the appropriate Quotation Item(s), and no other compensation will be provided.

K. The Contractor shall fully comply with all requirements of the Permits, at no additional cost to the Department. Working hours noted in permits or the specifications are subject to change. In the event that changed working hours affect the work of the Contractor, the Contractor’s sole remedy shall be a non-compensable time extension. Said extension to be full compensation for all direct and indirect costs, including but not limited to loss of efficiency, loss of opportunity, increased bond or insurance premiums, or home office or extended overhead, incurred by the Contractor

as a result of such change, and no additional compensation shall be considered. Night work may be required as a part of the construction.

L. Backfilling and compaction shall in be kept up with the rate of pipe laying. Backfill consisting of the specified material shall be placed and properly compacted, to the degree specified hereinafter. Unless otherwise ordered or approved by the Engineer, in writing, no temporary fill, refill, or non-compacted fill shall be installed. Under no circumstances shall backfill material other than that specified or an approved equal be installed. Backfill shall be placed and compacted immediately after installation of piping.

M. All underground pipe and fittings installed under this project shall be color coded as required by FAC Rule 62-555.320(21)(b)3, using green as the predominant color. Underground plastic pipe shall have solid green walls, a co-extruded green outer skin, be white or black with green stripes. Underground concrete or metallic pipe shall be continuously paint or tape marked with a green stripe running along the top longitudinal axis of the pipe and if larger than 24-inch internal diameter shall also be marked with stripes along the longitudinal axis on both sides of the pipe. Striping shall be continuous and run the full length of the pipe. Above ground pipe shall be painted green or shall be color coded or marked like underground pipe.

1.3 SEQUENCE OF CONSTRUCTION

A. The proposed general sequence of construction (progression) is provided below. Calendar day completion dates for each Milestone are provided and coordinated with the Consent Decree Construction Milestone Dates provided in Section 01010A – Summary of Work. The Contractor shall be responsible for developing a detailed sequence of construction and schedule for review and approval by the Engineer before any work is started. The Department reserves the right to make changes to the sequence as necessary to facilitate the work or minimize any conflict with operations.

B. At the end of the Sequence of Construction and also as part of the Schedule of Values submittal, the Contractor shall clearly indicate the list of activities that will define the 50% construction completion milestone. This list will be reviewed and approved by the Engineer.

Sequence of Construction:

MILESTONE 1

1. As required by **Section 01150A – Project Schedules, Meetings, and Reports**, submit a preliminary schedule of Contractor submittals, a list of permits and licenses CONTACTOR shall obtain and required submittals, a preliminary schedule of values, a detailed

layout of field offices and sheds, a 60-day plan of operation, and a Project Overview Bar Chart.

2. Submit shop drawings for review and approval, prioritizing those items required for permitting, items on the critical path, items with long lead times, and those items which will be installed early in the construction sequencing.

3. Apply for and obtain all required permits, as required.

4. The proposed construction sequence for the Chlorine Contact Chamber Rehabilitation shall be as follows:

    1) Procurement: Purchase all approved materials for tank rehabilitation.

    2) Site mobilization.

    3) Coordinate chlorine contact chamber shutdown with plant operations.

    4) Perform rehabilitation cleaning and preparation per Specification Section 03721.

    5) Repair tank walls and floors per contract documents and manufacturer's specifications.

    6) Apply tank wall and floor coating per contract documents and manufacturer's specifications.

5. Substantial Completion.

MILESTONE 2

1. Complete punch list items and perform final inspection/acceptance of all work.

2. Submit final As-built drawings

3. Final cleanup

4. Final Completion and project closeout.

C. In performing the work in the above described sequence, all requirements of the specifications shall be strictly followed, particularly those pertaining to tests and cleanup as the work progresses.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01150A

PROJECT SCHEDULES, MEETINGS AND REPORTS

PART 1 - GENERAL

In accordance with Section 01350A Site Security, the Contractor will be required to the following Security and Safety restrictions associated with gaining access and performing work at a Miami Dade Water and Sewer (WASD) Wastewater Treatment Plant (WWTP). Any Contractor employee actively engaging in work at a WWTP must undergo WASD safety Training and obtain a WASD issued Identification Card. Additionally, if workers are involved in projects that require in excess of 5 days, the Contractor shall provide a Site Safety Plan and a schedule of activity. At least two weeks prior to the actual start of the work, the Contractor shall deliver to the County for review, in a form satisfactory to the County, a project schedule, showing dates of commencement and completion of each of the various components of the project and a schedule of material/equipment delivery dates to be incorporated into each phase of the work and a site specific Safety Plan. Within ten working days of receipt of said schedule and Safety Plan, the County's designee shall meet with the Contractor for a joint review. The Contractor will incorporate the County's comments into these documents. The Contractor shall periodically update the schedule with the current progress of the work and submit to the County with each invoice."

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01340A

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Submit to the ENGINEER for review and approval, such shop drawings, test reports and data on materials, equipment, and material samples as are required for the proper control of work, and as specified in the Specification sections.

B. Submit to the ENGINEER a complete list of preliminary data on items for which shop drawings are to be submitted as required by Section 01150A - PROJECT SCHEDULES, MEETINGS, AND REPORTS. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the ENGINEER shall in no way expressed or implied relieve the CONTRACTOR from submitting complete shop drawings and providing materials, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of shop drawings.

C. Maintain an accurate updated shop drawing submittal log which shall include the following items:

1. Submittal-Description and Number assigned.
2. Specification Section.
3. Drawings Sheet Number.
4. Date to Engineer.
5. Date returned to CONTRACTOR (from ENGINEER).
6. Status of Submittal (Approved, Approved as Noted, Rejected/Resubmit).
7. Date of Resubmittal and Return (as applicable).
8. Date material release (for fabrication).
9. Projected date of fabrication.
10. Projected date of delivery to site.
11. Status of O&M manuals submittal.

1.2 CONTRACTOR'S RESPONSIBILITY

A. The CONTRACTOR shall submit shop drawings to the ENGINEER for approval in accordance with the requirements of "Shop Drawings" of the Special Conditions with the exception that no less than seven (7) hard copies and one (1) electronic PDF copy shall be submitted. The ENGINEER will retain five (5) sets and two (2) will be returned to the CONTRACTOR.

B. Shop drawings shall be submitted for all materials and equipment to be furnished, in addition, the submission shall include the motor efficiency, and motor torque speed curves from zero to full load speed for motors over 10 hp.

C. Shop drawings shall be submitted prior to any project construction activity. In a timely fashion, well before the contemplated ordering for fabrication of special order or long lead time items or construction use of any standard element of the work, the CONTRACTOR shall furnish shop drawings for the review and approval of the Department.

D. Furnish the ENGINEER with a schedule of shop drawings submittals fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.

E. Submit to the ENGINEER all drawings and schedules sufficiently in advance of construction requirements to provide maximum time for checking and appropriate action from the time the ENGINEER receives them.

F. Prior to submission, the CONTRACTOR shall thoroughly check such drawings, satisfying himself that they meet the requirements of the Contract Documents and that they are coordinated with the arrangements set forth on other shop drawings, and shall place on them the project’s name, ER number, address, the date and his stamp of approval. Where items for which shop drawings are submitted are to meet special conditions listed in the detailed Specifications, the conditions shall be so noted on the drawing. Where there is a deviation from the Specifications, the CONTRACTOR shall note it and state the reason why a deviation is required.

G. Each and every copy of the Drawings and data shall bear CONTRACTOR's stamp showing that they have been so checked and approved. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents and the CONTRACTOR shall state the reason why a deviation is required, and the deviation noted on the transmittal sheet. If the CONTRACTOR fails to notify the ENGINEER of a deviation and that deviation mistakenly gets approved by the ENGINEER**,** the CONTRACTOR

shall be required to provide the contract specified material and/or equipment to the satisfaction of the ENGINEER**.**

H. Furnish a Certificate of Unit Responsibility, as specified in equipment specification section. Form is attached to this Section.

I. Shop drawings submitted without the required approval as specified above shall be returned without review and no extension of time will be granted for any delays caused by such improper submission.

J. All submittals shall be accompanied by a transmittal letter prepared in duplicate containing the following information:

1. Date.

2. Project Title and Number.

3. CONTRACTOR's name and address.

4. The number of each shop drawings, data, and sample submitted.

5. Notification of deviations from Contract Documents.

6. Submittal Log Number conforming to and referring to Specification Section Numbers.

7. Certification the submittal conforms to the specifications or contains deviations to the specifications.

K. Any delays or costs caused, either directly or indirectly, by non-timely submissions; submission of items differing significantly from the intent of the Plans and/or Specifications; repeated submission of or argument over, rejected elements or changes required for acceptance; arguments with the criteria or requirements of the Plans or Specifications; or any other such similar activities shall be at the sole expense of the CONTRACTOR.

L. For major equipment submittals, as defined by the ENGINEER, the CONTRACTOR shall include in the submittal a copy of the specification with each and every paragraph initialed be the CONTRACTOR indication compliance, or indication a deviation is requested followed by a request for deviation listing/form.

M. Design calculations, drawings, and materials specifications shall be supplied as specified herein and by the individual specification sections.

N. After receiving approval of the shop drawings by the ENGINEER, the CONTRACTOR shall be responsible for submitting to the City of Miami Building Department and the Miami-Dade Department of Regulatory and

Economic Resources shop drawings of all pre-manufactured items and all other shop drawings as required and obtain their approval prior to the manufacturing or installation of the submitted items. The successful bidder shall also be responsible for contesting any interpretations by the City of Miami Building Department and the Miami-Dade Department of Regulatory and Economic Resources that the Miami-Dade Water and Sewer Department considers non-acceptable. The CONTRACTOR shall include in the prices bid, all costs for permits, fees and expenses associated with the submittals, including resubmittals (if any) of such shop drawings to the City of Miami Building Department and the Miami-Dade Department of Regulatory and Economic Resources.

O. Do not begin any of the work covered by a drawing, data, or a sample returned as “AMEND-RESUBMIT” or “REJECTED-RESUBMIT” until a revision or correction thereof has been reviewed and returned to him, by the ENGINEER, with approval as “NO EXCEPTIONS TAKEN” or "MAKE CORRECTIONS NOTED”. Be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of work prior to receiving ENGINEER's approval or approval “As Noted” of the necessary shop drawings.

P. Shop drawings shall be of such character that they may be used as fabrication drawings. Prior to submission, the CONTRACTOR shall thoroughly check such drawings, satisfying himself that they meet the requirements of the Plans and Specifications and that they are coordinated with the arrangements set forth on other shop drawings, and shall place on them the Contract Number, the date and his stamp of approval. Two (2) copies will be returned to the CONTRACTOR with the ENGINEER's mark of approval thereon, or will be marked to indicate changes necessary to effect compliance with the Specifications and the remaining copies will be retained by the Department. When drawings are approved by the ENGINEER, they shall be as binding as any of the Contract Documents. Any errors or omissions on the shop drawings shall not relieve the CONTRACTOR of his responsibility. He shall correct such errors, or omissions, including any necessary additions or alterations to construction, at his expense upon notification by the ENGINEER.

Q. Be fully responsible for observing the need for and for making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposes to supply, both as they pertain to his own work, work of others, or of other Divisions herein or Trades and clearly show such changes on the shop drawings. All changes shall be clearly called out.

R. Determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with Specifications.

5. Installation and Maintenance clearances.

1.3 ENGINEER'S REVIEW OF SHOP DRAWINGS

A. Except as otherwise indicated, the ENGINEER will return prints of each submittal to the CONTRACTOR with comments noted thereon, within 20 Days following receipt by the ENGINEER.

B. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the ENGINEER by the first resubmittal on an item.

C. The Department reserves the right to withhold monies due to the CONTRACTOR to cover additional costs of the ENGINEER's review beyond the first resubmittal.

D. The ENGINEER'S maximum review period for each submittal or resubmittal will be 20 Days; thus, for a submittal that requires 2 resubmittals before it is complete, the maximum review period could be 60 Days.

E. If a submittal is returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision and resubmission will not be required.

F. If a submittal is returned marked "MAKE CORRECTIONS NOTED," the CONTRACTOR shall make the corrections on the submittal, but formal revision and resubmission will not be required. If the CONTRACTOR does not agree to abide in full with the corrections, the CONTRACTOR must notify the ENGINEER within in 5 days and the status will be revised to "AMEND-RESUBMIT".

G. Resubmittals

1. If a submittal is returned marked "AMEND-RESUBMIT," the CONTRACTOR shall revise the submittal and resubmit the required number of copies.

2. Resubmittal of portions of multi-page or multi-drawing submittals will not be accepted: For example, if a Shop Drawing submittal consisting

of 10 drawings contains one drawing noted as "AMEND-RESUBMIT," the submittal as a whole is deemed "AMEND-RESUBMIT," and 10 drawings are required to be resubmitted.

3. Every change from a submittal to a resubmittal or from a resubmittal to a subsequent resubmittal shall be identified and flagged on the resubmittal. Submittal review comments shall be addressed as numbered in the review comments and all review comments addressed.

H. Rejected Submittals

1. If a submittal is returned marked "REJECTED-RESUBMIT," it shall mean either that the proposed material or product does not satisfy the specification, the submittal is so incomplete that it cannot be reviewed, or is a substitution request not submitted in accordance with the requirements of this section.

2. In the first 2 cases, the CONTRACTOR shall prepare a new submittal and shall submit the required number of copies.

3. In the latter case, the CONTRACTOR shall submit the substitution request according to the requirements of this section.

4. The resubmittal of rejected portions of a previous submittal will not be accepted.

I. The fabrication of an item may commence only after the ENGINEER has reviewed the pertinent submittals and returned copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

J. Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as changes to the contract requirements.

K. The CONTRACTOR shall be responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques, coordinating WORK with the trades, and satisfactory and safe performance of the WORK.

L. Conformance

1. Corrections or comments made on the CONTRACTOR's Shop Drawings during review shall not relieve the CONTRACTOR from compliance with Contract Drawings and Specifications.

2. Review is for conformance to the design concept and general compliance with the Contract Documents only.

3. The ENGINEER's review will not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown. The review of drawings and schedules will be general, and shall not be construed:

   a. As permitting any departure from the Contract requirements;

   b. As relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;

   c. As approving departures from details furnished by the ENGINEER, except as otherwise provided herein.

4. The CONTRACTOR shall be responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques, coordinating WORK with the trades, and satisfactory and safe performance of the WORK.

M. Variations:

1. If the drawings or schedules as submitted describe variations and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the Department and to be so minor as not to involve a change in Contract Price or time for performance, the ENGINEER may return the reviewed drawings without noting an exception.

2. If the drawings or schedules, as submitted, describe variations and show a departure from the Contract requirements which the ENGINEER finds to be minor enough to be corrected by redlining the submittal, he shall do so and return the submittal marked "approved as noted." The redlined corrections shall be as binding on the CONTRACTOR as would be a resubmission embodying the same corrections.

N. Resubmittals will be handled in the same manner as first submittals. On resubmittals the CONTRACTOR shall direct specific attention, in writing or on resubmitted shop drawings, to revisions other than the corrections requested by the ENGINEER on previous submissions. The CONTRACTOR shall make any corrections required by the ENGINEER.

O. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Drawings or Specifications, the CONTRACTOR shall give written notice thereof to the ENGINEER.

P. When the shop drawings have been approved by the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

Q. No partial submittals will be reviewed. Submittals not complete will be returned to the CONTRACTOR for resubmittal. Unless otherwise specifically permitted by the ENGINEER, all submittals shall be made in groups containing all associated items for systems, processes or as indicated in specific specifications sections. All drawings, schematics, manufacturer's product data, certifications and other shop drawing submittals required by a system specification shall be submitted at one time as a package to facilitate interface checking.

R. The approval of shop drawings and data will be general, and shall mean that upon examination of the drawings, no variations from the Contract requirements have been discovered, and approval will not relieve the CONTRACTOR of his responsibilities as defined under the Contract. The Department’s review will not constitute an approval of dimensions, quantities and details of the material, equipment, device or item shown.

1.4 SHOP DRAWINGS

A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean CONTRACTOR's plans for materials and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature, and performance and test data, shall be considered only as supportive to required shop drawings as defined above.

B. Manufacturer's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked to identify pertinent materials, product or models. Delete information which is not applicable to the Work by striking or cross-hatching.

C. Each shop drawing shall have a blank area 3-1/2 inches by 3-1/2 inches, located adjacent to the title block. The title block shall display the following:

1. Project Title and Number.

2. Name of project building or structure.

3. Number and title of the shop drawing.

4. Date of shop drawing or revision.

5. Name of CONTRACTOR and subcontractor submitting drawing.

6. Supplier/manufacturer.

7. Separate detailer when pertinent.

8. Specification title and number.

9. Specification section.

10. Application Contract Drawing Number.

D. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, describe such variations in the letter of transmittal. If the CONTRACTOR fails to describe such variations, he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings have been reviewed and approved.

E. For all mechanical and electrical equipment furnished, provide a list including the equipment name, address of and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained.

F. All manufacturers or equipment suppliers who propose to furnish equipment or products shall submit an installation list to the ENGINEER along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and has been in operation for a period of at least five years, unless otherwise specified. Manufacturers and/or equipment which fails to meet the specified experience period will be considered if the manufacturer or supplier provides a bond or cash deposit which will guarantee replacement of the equipment or process in the event of failure or unsatisfactory service.

G. Only the ENGINEER will utilize the color "red" in marking shop drawing submittals.

1.5 REQUIRED INFORMATION

A. Transmittal Form

1. Shop Drawing submittals shall be accompanied by the ENGINEER's standard submittal transmittal form, a reproducible copy of which is available from the ENGINEER.

2. A submittal without the form, or where applicable items on the form have not been completed, will be returned for resubmittal.

B. Organization

1. Use a single submittal transmittal form for each technical specification Section or item or class of material or equipment for which a submittal is required.

2. A single submittal covering multiple Sections will not be accepted, unless the primary specification references other Sections for components: For example, if a pump Section references other Sections for the motor, shop-applied protective coating, anchor bolts, local control panel, and variable frequency drive, a single submittal would be accepted, whereas a single submittal covering vertical turbine pumps and horizontal split-case pumps would not be accepted.

3. On the transmittal form, index the components of the submittal and insert tabs in the submittal to match the components.

4. Relate the submittal components to specification paragraph and subparagraph, Drawing number, detail number, schedule title, room number, or building name, as applicable.

5. Unless otherwise indicated, match terminology and equipment names and numbers used in the submittals with those used in the Contract Documents.

C. Format

1. Minimum sheet size shall be 8-1/2 inches by 11 inches, and maximum sheet size shall be 24 inches by 36 inches.

2. Number every page in a submittal in sequence.

3. Collate and staple or bind, as appropriate, each copy of a submittal; the ENGINEER will not collate sheets or copies.

4. Where product data from a manufacturer is submitted, clearly mark which model is proposed, with complete pertinent data capacities, dimensions, clearances, diagrams, controls, connections, anchorage, and supports.

5. Present a sufficient level of detail for assessment of compliance with the Contract Documents.

6. Numbering

a. Assign to each submittal a unique number.

b. Number the submittals sequentially, with the submittal numbers clearly noted on the transmittal.

c. Assign original submittals a numeric submittal number followed by a decimal point and a numeric digit in order to distinguish between the original submittal and each resubmittal: For example, if submittal "25.1" requires a resubmittal, the first resubmittal will bear the designation "25.2" and the second resubmittal will bear the designation "25.3," and so on.

D. Disorganized submittals that do not meet the requirements of the Contract Documents will be returned without review.

E. Submit, as applicable, the following for all prefabricated or manufactured structural, mechanical, electrical, plumbing, process system, and equipment:

1. Shop drawings or equipment drawings, including dimensions, size and location of connections to other work, and weight of equipment.

2. Catalog information and cuts.

3. Installation or placing drawings for equipment, drives, and bases.

4. Supporting calculations, signed and sealed by a Florida Registered Engineer when required, for equipment and associated supports, or hangers required or specified to be designed by equipment manufacturers.

5. Signed and sealed calculations and drawings by in-house Florida Registered Professional Engineer for structural systems, indicating compliance to the structural design criteria specified in the Drawings.

6. Complete manufacturer's specifications, including materials description and paint system.

7. Performance data and pump curves.

8. Suggested spare parts with current price information.

9. List of special tools required for testing, checking, parts replacement, and maintenance. (Special tools are those which have been specially designed or adapted for use on parts of the equipment, and are not customarily and routinely carried by maintenance mechanics).

10. List of special tools furnished with the equipment.

11. List of materials and supplies required for the equipment prior to, and during startup.

12. List of materials or supplies furnished with the equipment.

13. Special handling instructions.

14. Requirements for storage and protection prior to installation.

15. Requirements for routine maintenance required prior to equipment startup.

16. List of all requested exceptions to the Contract Documents.

1.6 SAMPLES

A. Furnish, for the approval of the ENGINEER, samples required by the Specifications or requested by the ENGINEER. Samples shall be delivered to the ENGINEER as specified or directed. The CONTRACTOR shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until approved by the ENGINEER.

B. Quantity

1. The CONTRACTOR shall submit the number of samples indicated by the Specifications.

2. If the number is not indicated, submit not less than 3 samples.

3. Where the quantity of each sample is not indicated, submit such quantity as necessary for proper examination and testing by the methods indicated.

C. Identification and Distribution

1. Individually and indelibly label or tag each sample, indicating the salient physical characteristics and the manufacturer's name.

2. Each sample shall have a label indicating:

a. Name of Project.

b. Material or Equipment Represented.

c. Name of Producer and Brand (if any).

d. Location in Project

3. Upon acceptance by the ENGINEER, one set of the samples will be stamped and dated by the ENGINEER and returned to the CONTRACTOR, one set of samples will be retained by the ENGINEER, and one set shall remain at the Site in the ENGINEER's field office until completion of the WORK.

D. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.

2. Full range of color, texture and pattern.

3. A minimum of two samples of each item shall be submitted.

E. The CONTRACTOR shall schedule sample submittals such that:

1. Sample submittals for color and texture selection are complete so the ENGINEER has 45 Days to assemble color panels and select color- and texture-dependent products and materials without delay to the construction schedule; and,

2. After the ENGINEER selects colors and textures, the CONTRACTOR has sufficient time to provide the products or materials without delay to the construction schedule.

3. The Contract Times will not be extended for the CONTRACTOR's failure to allow enough review and approval or selection time, failure to submit complete samples requiring color or texture selection, or failure to submit complete or approvable samples.

F. Selection

1. Unless otherwise indicated, the ENGINEER will select colors and textures from the manufacturer's standard colors and standard materials, products, or equipment lines.

2. If certain samples represent non-standard colors, materials, products, or equipment lines that will require an increase in Contract Times or Price, the CONTRACTOR shall clearly state so on the transmittal page of the submittal.

G. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.

1.7 Approved samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the approved samples. Samples which failed testing or were not approved will be returned to the CONTRACTOR at his expense, if so requested at time of submission

1.8 MANUFACTURER'S EXPERIENCE RECORD

A. When a manufacturer's experience record is required by these specifications, the following may be provided in lieu of the specified record:

1. Manufacturers and/or equipment which does not meet the specified experience period will be considered if the manufacturer or supplier provides a bond or cash deposit valid for five years less his years of experience, which will guarantee replacement of the equipment or process in the event of failure or unsatisfactory performance or service

1.9 SUBMITTAL REQUIRED FOR FOREIGN MANUFACTURED ITEMS

A. In addition to the submittal requirements stated above, suppliers of foreign manufactured items shall submit the names and addresses of companies within the United States that maintain technical service representatives and a complete inventory of spare parts and accessories for each foreign-made item proposed for incorporation into the Work. Failure to prove the foregoing capabilities shall be cause for rejection of the foreign manufactured items.

B. Foreign manufactured equipment and materials shall in all cases be clearly and permanently marked with the manufacturer's name and country of origin of the item. The name of the U.S. importing/supplying firm is not acceptable. Shop drawing submittals of said foreign made items shall be accompanied by written information to include name and location (i.e. country, city, and street address) of the manufacturer. This requirement shall also apply to the foreign made elements of items assembled in this country from parts wholly or partially manufactured overseas.

C. The words, "permanently marked" as used in this subsection shall be construed to mean; die stamped, cast-in, welded, or otherwise marked such that the removal of the marking by any mechanical or chemical means will result in obvious permanent damage to the surface marked. These markings shall be on surfaces which are not hidden by assembly.

D. Where specified elsewhere herein or at the sole discretion of the ENGINEER, who's word shall be final, supply verification of quality, suitability or other aspects, as directed by the ENGINEER, from a Professional Engineer licensed to practice in the State of Florida or the state where the U.S. firm is located. The verification shall be signed, sealed, and dated. All costs for this verification shall be at the sole expense of the

CONTRACTOR and no extra compensation will be allowed. Verification by foreign based engineers, firms, manufacturers, etc. will not be acceptable. Verification by means of a very stringent foreign testing agency/standard (for example ISO 9000 series) may be acceptable. However, this shall again be at the sole discretion of the ENGINEER and the full burden of proof and satisfaction of the Department shall rest with the CONTRACTOR. No extra time will be permitted due to the requirement for verification and the CONTRACTOR has the sole responsibility to make his submittals with all necessary information in a timely fashion.

E. Items which are fabricated (i.e. assembled in this country from partially or wholly foreign manufactured parts) may also be required to have verification of their foreign made elements as specified for wholly foreign made items in the preceding paragraph.

F. Any items in contact with or being added to potable water shall have AWWA/NSF 61 or 60, as appropriate, certification and acceptance.

1.10 PROPOSED SUBSTITUTIONS OR "OR APPROVED EQUAL" ITEMS

A. The CONTRACTOR’s bid price shall include materials or equipment meeting the specifications. Proposed substitutions will only be considered following award of the Contract as described herein

B. Changes in products, materials, equipment, and methods of construction required by the Contract Documents which are proposed by the CONTRACTOR after award of the Contract are considered to be requests for substitutions. Where the Plans and/or Specifications designate the products of a particular manufacturer, the product specified has been found suitable for the intended use. Articles or products of similar characteristics may be offered for the approval of the ENGINEER if sufficient information is submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named, subject to the following requirements:

1. The burden of proof as to the type, function, and quality of any such substitution product, material or equipment shall be upon the CONTRACTOR.

2. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitution and the ENGINEER's decision shall be final.

3. The ENGINEER may require the CONTRACTOR to furnish additional data about the proposed substitution.

4. The Department may require the CONTRACTOR to furnish a special performance guarantee or other surety with respect to any substitution.

5. Acceptance by the ENGINEER of a substitution item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitution.

6. The CONTRACTOR shall pay all costs of implementing accepted substitutions, including redesign and changes to WORK necessary to accommodate the substitution.

C. The procedure for review by the ENGINEER will include the following:

1. Prior to proposing any substitute item, CONTRACTOR shall satisfy itself that the item proposed is: equal or better to that specified; that such item will fit into the space allocated; that such item affords comparable ease of operation, maintenance and service; that the appearance, longevity and suitability for the climate are comparable; that by reason of costs savings, reduced construction time or similar demonstrable benefit, the substitution of such item will be in Department's interest and will in no way detrimentally impact the project schedule. The burden of proof that such an item offered is equal in all respects to that specified shall be CONTRACTOR's.

2. If the CONTRACTOR wishes to provide a substitution item, the CONTRACTOR shall make written application to the ENGINEER on the "Substitution Request Form." A copy of this form is attached to the end of this Specification. Following award of contract, an electronic copy of the Substitution Request Form will be provided to the CONTRACTOR.

3. The CONTRACTOR shall certify by signing the form that the list of paragraphs on the form are correct for the proposed substitution.

4. The ENGINEER will evaluate each proposed substitution within a reasonable period of time, not to exceed 30 days.

5. As applicable, no shop drawing submittals shall be made for a substitution item nor shall any substitution item be ordered, installed, or utilized without the ENGINEER's prior written acceptance of the CONTRACTOR's "Substitution Request Form."

6. The ENGINEER will record the time required by the ENGINEER in evaluating substitutions proposed by the CONTRACTOR and in making changes by the CONTRACTOR in the Contract Documents occasioned thereby.

D. The CONTRACTOR's application shall address the following factors which will be considered by the ENGINEER in evaluating the proposed substitution:

1. Complete data substantiating compliance of proposed substitution with the requirements of the Contract Documents, including:

   a. Product identification, including manufacturer's name and address and model number of product

   b. Manufacturer's literature, identifying:

      1) Product description

      2) Reference Standards

      3) Performance, testing, and relevant engineering data

   c. Samples, if applicable

   d. List two similar projects where substitution was utilized. Provide the following information for each project:

      1) Contact person name and phone number. Contact should be able to provide information on the use of the product.

      2) Location of installation

      3) Date of installation

      4) Quantity installed

      5) Scope and description of project

2. Whether the evaluation and acceptance of the proposed substitution will prejudice the CONTRACTOR's achievement of Substantial Completion on time.

3. Whether acceptance of the substitution for use in the WORK will require a change in any of the Contract Documents to adapt the design to the proposed substitution.

4. Whether incorporation or use of the substitution in connection with the WORK is subject to payment of any license fee or royalty.

5. Whether all variations of the proposed substitution from the items originally specified are identified.

6. Whether available maintenance, repair, and replacement service are indicated. The manufacturer shall have a local service agency (within 50 miles of the site) which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24-hours.

7. Whether an itemized estimate is included of all additional costs and cost savings that will result directly or indirectly from acceptance of such substitution, including cost of redesign; claims of other contractors affected by the resulting change; and any licensing fee or royalties.

8. Whether the proposed substitute item meets or exceeds the experience and/or equivalency requirements listed in the appropriate technical specifications.

E. In making the formal request for substitution, the CONTRACTOR represents that:

1. The substitution has been investigated and it has been determined that is equal to or superior in all respects to the specified product.

2. The CONTRACTOR will provide the same warranties and bonds for the substitution as the product specified.

3. The substitution will be coordinated into the installation of the WORK and any required changes to complete the WORK in all respects as a result of the substitution will be made by the CONTRACTOR at no additional cost to the Department.

4. The CONTRACTOR waives claims for additional cost caused by the substitution, which may subsequently become apparent.

5. All cost data provided is complete and accurate.

F. Without any increase in cost to the Department, the CONTRACTOR shall be responsible for and pay all costs in connection with proposed substitutions and of inspections and testing of equipment or materials submitted for review prior to the CONTRACTOR's purchase thereof for incorporation in the WORK, whether or not the ENGINEER accepts the proposed substitution or proposed equipment or material. The CONTRACTOR shall reimburse the Department for the charges of the ENGINEER for evaluating each proposed substitution. In some instances, a credit may be due the Department. Unless specifically authorized by the ENGINEER in writing, no additional contract time will be allowed, and a decrease in time may be appropriate.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

END OF SECTION

Advancement of Construction Technology

SUBSTITUTION REQUEST
(After the Bidding Phase)

Project: _____

_____

To: _____

Re: _____

Substitution Request Number: _____

From: _____

Date: _____

A/E Project Number: _____

Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer Address: _____ Phone: _____ _____

Trade Name: _____ Model No.: _____

Installer: _____ Address: _____ Phone _____

History: ☐ New product ☐ 2-5 years old X☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

X☐ Point-by-point comparative data attached

Reason for not providing specified item: _____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: X ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

September 1996
CSI Form 13.1A

SUBSTITUTION REQUEST
(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: _____

_____

_____

_____

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

_____

_____

_____

_____

_____

_____

_____

NO TEXT ON THIS PAGE

SECTION 01350A

SITE SECURITY (PLANT)

PART 1 - GENERAL

1.1 THE SUMMARY

A. After award and prior to commencement of work, the Contractor shall meet with Department's Security Management to submit required information. Subcontractors are also required to comply with all security requirements and it shall be the responsibility of the Contractor to ensure a subcontractor is in compliance with all requirements.

B. All construction staff, visitors and material delivery vehicles will utilize the designated entrance and exit point throughout the entire duration of the Project, unless so approved and authorized otherwise by the Contractor. All vehicles entering into or leaving from a Department facility must stop at the designated entrance and exit points when entering to and exiting the site. All persons entering the site must exit from the same point that they entered.

C. All contractors, subcontractors, visitors, delivery personnel and staff shall comply with all applicable law and Miami-Dade Water and Sewer Department (Department) requirements with respect to safety and security, in particular to the requirements for access to sites and facilities. The Contractor is responsible for enforcing the prohibition of all items such as weapons, illegal drugs, alcohol, and any other illegal contraband, and the reporting of security breaches to Department Security Staff and Management.

D. All contractors, subcontractors and their staffs, visitors, County Building Inspectors and all delivery personnel, must be aware that access to a Department site is restricted to only those with assigned identification badges or day passes. All contractors, subcontractors, and staff, visitors, building inspectors, and delivery personnel shall be restricted to the area of the plant where their work or delivery is taking place. Work site restrictions shall be coordinated with the Contractor and Department Security Management prior to construction and strictly followed throughout the entire duration of the Contract.

E. Should any access be required to a location other than the primary access to the construction site, the Contractor shall be required to provide personnel, suitable to Department Security Management, to ensure that only predetermined authorized personnel are allowed access.

F. Access to chemical areas, control areas, electrical generation areas/switching areas and fuel areas will only be allowed as absolutely necessary and unescorted access to these areas will not be allowed under any circumstances.

G. Anyone requesting to access the Department site outside of regular work hours or anyone without a Department issued identification badge, including delivery personnel and building inspectors, will be treated as a visitor.

1.2 IDENTIFICATION BADGES

A. Department Security will be responsible for providing identification badges and color coded day passes for all individuals entering the facility. Each employee accessing the facility more than five (5) days in any ninety-day period will require an assigned identity badge. This badge will require a background check and be issued at a cost of $60.00 each to the Contractor. Procedures for obtaining the badge are provided at http://www.miamidade.gov/water/facility-security-procedures.asp for Non-Department Employees. Color coded day passes will be issued at the plant entrance gates for visitors, inspectors and delivery personnel. There will be no cost to the Contractor for color coded day passes. All contractors, subcontractors and their staff shall be required to obtain a Miami-Dade Water and Sewer Department identification badge or color coded day pass in accordance with Department Security Requirements. Everyone requesting access to the facility for more than five (5) days in any ninety-day period will be required to submit to Department Security a 'Non-Employee ID Card Application', the form can be downloaded from http://www.miamidade.gov/water/facility-security-procedures.asp.

1. Identification badges will be issued for those individuals who will require on-going access (more than 5 days in any 90-day period) to the site or facility.

2. A color-coded Day Pass will be provided for those individuals who only require short term access (one to two days a week to the site and to visitors and delivery personnel).

B. All individuals requesting a Department identification badge or color coded day pass must present two forms of identification, one of which with a picture. All persons driving a vehicle within the site must present a valid driver's license. Expired identification documentation or driver's license will not be considered as valid.

C. The Department reserves the right to require the use of assigned access identification badges and/or color-coded day passes for anyone requiring access to the site or facility. Issued identification badges or day passes must

be worn and displayed on an outermost garment or hard hat at all times while at a Department site. The Contractor will be charged on a per person basis for the issuance of Department identification badges and background investigations for access requirements into the facility. The fee for the background investigation is $60.00 per person. Payment for a security background investigation must be in the form of the Contractor's company check made payable to Miami-Dade Water and Sewer Department. Credit card payment will not be accepted.

D. All Department issued color-coded day passes must be turned in to security at the end of each workday when the bearer exits the site or facility. In the case of delivery personnel and visitors, as the visitor exits the plant site and when the delivery person is exiting the plant site after the last delivery of the day. Day passes are only valid for the day they are issued.

E. Department issued identification badges and color-coded day passes are the property of WASD and must be safeguarded by the Contractor. All identification badges must be returned to Department Security when they are no longer needed, i.e. the employee that the badge was issued for will not be returning to the plant site, or at the completion of the Contract. In the event of a lost or stolen, unreadable or defaced Department identification badge, the Contractor or their staff must immediately notify Department Security, indicating the details of the loss and request a replacement badge. The fee for obtaining a replacement badge is $15.00. Payment must be made in the form of the Contractor's Company check, made payable to Miami-Dade Water and Sewer Department. Credit card payments will not be accepted. Badges that cannot be read by the security badge electronic reading device at the Plant entry gates must be replaced or entry to the plant will be denied.

F. All the Contractor personnel accessing the facility for more than 5 days in any 90-day period must have a background check and all background checks must be completed prior to issuance of Notice to Proceed. The Contractor shall coordinate with Department Construction Management to accomplish this in a timely manner and not delay the work. The Contractor's cost for Department Security to complete a background check is $60.00 for each background investigation (See Paragraph D above). Contractor will not be given Notice to Proceed until all workers have been processed and approved by the Department.

G. Contractors and subcontractors are required to comply with the Department mandatory Safety Training Program. All Contractors, Subcontractors employees and onsite staff and any other persons that are to perform labor or services on the site, are required to receive the training prior to being provided with an identification badge or day pass. Department Security will provide the safety training/information.

H. Contractor shall contact Donna Fries, Department's Safety Supervisor, at (786) 268-5620 or FRIESD@miamidade.gov, to arrange for mandatory (PSM) Project Safety Management training. Note that this training must be completed prior to mobilization. The Contractor shall also be responsible for the training of all subcontractors, sub-subcontractors and personnel working on this project on site.

1.3 VISITORS

A. The Contractor shall provide Department Security with a list of scheduled visitors each day. This list must be received by Security prior to 3:00 PM on the previous day before the visitor is to access to the plant. This list must include the date and time that it was provided to security, bear the Contractor's Company name and be signed by the Contractor's Project Manager or his designated representative. In the event that someone should appear at the entry gates that is not on the Contractor's pre-submitted list, the gate security guard will call the Contractor's field office advising them who is requesting entry. The Contractor's Project Manager or his designated representative will have to go to the gate, identify the person requesting entry and verbally request a color coded day pass for the individual or individuals. All visitors must provide an acceptable photo identification documentation and be registered with security prior to entry, or provided a day pass, and be announced to the Contractor requiring their presence. All visitors requesting entry to the site must surrender their driver's license or photo identification card to Security at the gate in order to obtain a day pass. The license or photo identification card will be returned when the visitor exits the site.

B. Anyone requesting to access the project site outside of regular work hours or anyone without a Department-issued identification badge will be treated as a visitor.

1.4 PARKING/VEHICULAR SPEED

A. Department will provide a limited number of designated on-site parking spaces for the Contractor's and subcontractor's employees and administrative staff. All contractors, subcontractors and visitors must abide by posted parking signs and refrain from parking in non-designated or specifically assigned parking areas. Department Security will monitor and enforce parking regulations within the facility or site. Vehicles parked in a non-designated or restricted parking areas will be removed by Security at the vehicle owner's expense and could be barred from future entry to the site or facility. Parking spaces designated as "Visitor" are reserved for visitors only. Unauthorized vehicles found in visitor designated parking spaces will be treated the same as vehicles found in non-designated parking areas.

B. In the event the designated on-site parking reaches the full capacity level, Department Security will post "Lot Full" signs at the site entrance, directing all incoming arrivals to a secondary off-site parking lot.

C. Department Security will be responsible to open and close the secondary off-site parking lot each day. No overnight parking is allowed. All parking lot gates will be closed and locked by Security at the end of each work day. Vehicles left over night in the secondary offsite parking areas, will be towed at the vehicle owner's expense and could be prohibited from future parking.

D. Parking adjacent to any building structures, fence lines (interior or exterior), or any other non-designated parking areas will not be permitted.

E. Overnight parking of personal vehicles or delivery vehicles will not be allowed within the facility or site or Department off-site parking lots, except as specifically approved by Security. Facility and parking lot gates will be closed and locked at the end of each work day by Security. All vehicles entering the site or its proximity will travel in a safe and slow manner. The max speed allowed is 10 mph within the site or Department off-site parking lots. Violators could be denied driving privileges within the plant site or Department off-site parking lots and could be excluded from entry to the site.

1.5 DELIVERIES

A. The Contractor shall be required to provide personnel, suitable to Department Security, to verify all material deliveries at the entrance to the site property.

B. All deliveries will be made through the designated Construction Entrance between the designated hours of construction operations. Deliveries will not be accepted prior to or after the designated hours, except as approved by project Security.

C. All Contractor and subcontractor materials delivered and/or stored on site shall be restricted to locations designated by the Engineer or the representative.

1.6 DEPARTMENT SECURITY

A. Department Security will maintain an operational security monitoring and control center within the project site. Security will be responsible for access control, badge or day pass issuance, monitoring of security areas, vehicular traffic and parking, emergency response and notification in the event of emergencies and the safeguarding of County assets. Department Security management and guard staff will be on site 24/7 at designated posts in order to provide the required security levels and assist with the operational controls. The Contractor shall contact the Security Section of the Miami-

Dade Water and Sewer Department at (786) 552-8590 for further information related to security.

B. A primary emergency contact number will be provided and prominently posted at the start of the project. Contractors and subcontractors shall report any emergencies or injuries immediately directly to Department Security who will initiate the notification process with the reporter via conference call to 911. Direct dialing of 911 should not be done by any individual other than Department Security, in order to maintain proper incident management and control at the site.

1.7 GENERAL SECURITY REQUIREMENTS

A. In the event that an individual worker or subcontracting firm cannot pass the required security check for work in a restricted area of the plant, it shall be the Contractor's sole responsibility to replace said worker or the subcontracting firm. Such replacement shall be in full conformance with all County requirements, particularly those concerning small business enterprises, and satisfactory to the Engineer and all other County agencies having jurisdiction. The Contractor is advised that all workers or subcontractors carrying out construction operations where the work requires access to: a number of different site areas; chemical areas; control areas. Electrical generation and/or switching areas; and fuel areas have a high probability that a special security clearance will be required.

B. The Contractor shall include in the prices bid, all cost to comply with the security and safety requirements and regulations, as Indicated here No additional compensation or Contract time will be allowed the Contractor because of the requirements of this Section.

C. The Department reserves the right to add reasonable additional security requirements as needed and the Security Chief's decision to do so shall be final. No additional Contract time or compensation will be allowed in such instance.

D. The attention of the Contractor is hereby directed to the Florida Statutes, Section 119.071, that all Miami-Dade County plans and records, including drawings, permit records, microfilm and other depictions of any type of Miami-Dade County facilities is exempt from the public records law. It is the responsibility of a prospective contractor / Contractor, to maintain security controls of any Contract Documents including the Plans, even when providing copies to prospective sub-contractors and vendors. The prospective contractor shall maintain a record of all Contract Documents to be used in the fulfillment of the bidding of or the performance of the Contract. The Contractor shall return the same to the County representative upon completion.

E. All contractors, subcontractors and staff will safeguard against any unauthorized distribution or posting of any and all Department provided infrastructure information to any individual or organization not authorized in advance by Department management and security.

F. Department Security will notify the Contractor in writing if his/her personnel violate the security requirements. In the case of repeated violations, the Department may stop the Contractor's work until such time as the Contractor can show that he/she has taken steps, satisfactory to the Security Chief, to correct the problem.

G. The Contractor is also advised that during times of increased security levels or drills for such situations, Department Security or law enforcement agencies having jurisdiction over the site/facility may impose a "lockdown" condition which, while in effect will restrict entry and/or exit of personnel and equipment to or from the facility. If in the event such incident should occur, the Contractor, if so desired, can request a non-compensable time extension. This request must be receive by the Engineer within five working days after normal working conditions have been restored. The Engineer's decision as to the amount of time lost due to the incident and the impact of the incident on the work, if any, shall be final.

H. The use of camera photography, video or any other type of recording device is prohibited at all times at Department sites. Any request to photograph, video record or any other type or mode of recording on site shall be made in advance to Department Management, through Department Security who will inform Department Security of the authorization. Violators recorded media and/or recording devices will be confiscated by Security and they will be immediately escorted from the facility with future access denied and could face criminal prosecution.

I. The Contractor is responsible at all times, throughout the entire contract, for security of the storage and lay-down areas, and for securing and protecting all of Contractor’s materials, equipment, and tools, including Department-furnished equipment and materials and those belonging to subcontractors.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01410A

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 THE SUMMARY

A. The Department will employ and pay for services of an independent testing laboratory to perform testing concrete masonry grout, epoxy injection and expansion joint pull testing as indicated in the Contract Documents. The cost of all other testing required by the Contract Documents, including pipe pressure test, shall be the sole responsibility of the Contractor.

B. The Department may at any time elect to have materials and equipment tested for conformance with the Contract Documents.

C. Testing laboratory inspection, sampling and testing will be required for, but not limited to, the following:

1. Masonry Grout

2. Epoxy Injection

3. Expansion Joint Pull Test

4. pH Testing of Concrete

5. Concrete Roughness Testing after Sandblasting/Water Jetting

1.2 CONTRACTOR'S RESPONSIBILITIES

A. Make available, at no cost to the Department, adequate quantities of representative samples of materials proposed to be used and which require testing.

B. Cooperate with laboratory personnel and provide access to Work to facilitate the execution of its required services. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

C. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

1.3 PAYMENT FOR TESTING

A. The Department will pay for initial testing services required elsewhere in these Specifications.

B. When initial tests indicate non-compliance with the Project Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same Testing Laboratory, and all costs thereof shall be paid for by the Contractor.

C. Inspecting and testing, performed exclusively for the Contractor's convenience, shall be the sole responsibility of and shall be paid for by the Contractor.

1.4 QUALITY ASSURANCE

A. Upon completion of each test and/or inspection, promptly distribute copies of test or inspection reports to the Engineer, Contractor, to governmental agencies requiring submission of such reports, and to other persons as directed by the Engineer.

PART 2 - PRODUCTS

2.1 TEST METHODS

A. Tests and Inspections will be conducted in accordance with the requirements of these Specifications or, if not herein specified, in accordance with the latest standards of the American Society for Testing and Materials (ASTM), or other approved and recognized authorities as acceptable to the Department.

B. Requirements for testing are described in various Sections of these Specifications.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01421.3A

ABBREVIATIONS OF INSTITUTIONS

PART 1 - GENERAL

1.1 THE SUMMARY

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of the Specifications, the following acronyms or abbreviations which may appear shall have the meanings indicated herein.

1.2 ABBREVIATIONS

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABMA	American Bearing Manufacturer's Association – ABMA
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
AF&PA	American Forest and Paper Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Association
AIIM	Association for Information and Image Management
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMA	Acoustical Material Association
AMCA	Air Movement and Control Association International, Inc
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air-Conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers

ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASQ	American Society for Quality
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWCI	American Wire Cloth Institute
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
CABO	Council of American Building Officials
CDA	Copper Development Association
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CLPCA	California Lathing and Plastering Contractors Association
CMAA	A division/section of the Material Handling Industry of America
CRSI	Concrete Reinforcing Steel Institute
DCDMA	Diamond Core Drilling Manufacturer's Association
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EI	Energy Institute
EIA	Electronic Industries Alliance
EPA	Environmental Protection Agency
ETL	Electrical Test Laboratories
FCC	Federal Communications Commission
FCI	Fluid Controls Institute
FEMA	Federal Emergency Management Association
FHWA	Federal Highway Administration
FM	Factory Mutual System
FPL	Florida Power and Light
HI	Hydronics Institute, Hydraulic Institute
HSWA	Federal Hazardous and Solid Waste Amendments
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IBC	International Building Code
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
ICCEC	Electrical Code

ICC-ES	International Code Council Evaluation Service
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IFC	International Fire Code
IFGC	International Fuel Gas Code
IMC	International Mechanical Code
IME	Institute of Makers of Explosives
IPC	International Plumbing Code, Association Connecting Electronic Industries
IRC	International Residential Code
ISA	Instrument Society of America
ISDI	Insulated Steel Door Institute
ISEA	Industrial Safety Equipment Association
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
ITU-T	Telecommunications Standardization Sector of the International Telecommunications Union
LPI	Lightning Protection Institute
LRQA	Lloyd’s Register Quality Assurance
MBMA	Metal Building Manufacturer's Association
MIL	Military Standards (DoD)
MPTA	Mechanical Power Transmission Association
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
DASMA	Door and Access Systems Manufacturers Association International
NAPF	National Association of Pipe Fabricators
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NCCLS	National Committee for Clinical Laboratory Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association or National Fluid Power Association
NISO	National Information Standards Organization
NIST	National Institute of Standards and Technology
NLGI	National Lubricating Grease Institute
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PPI	Plastic Pipe Institute
RCRA	Resource Conservation and Recovery Act

RIS	Redwood Inspection Service, a division of the California Redwood Association, CRA
RMA	Rubber Manufacturers Association
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SDI	Steel Door Institute, Steel Deck Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPFA	Steel Plate Fabricator's Association
SPIB	Southern Pine Inspection Bureau
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Society for Protective Coating
SSPWC	Standard Specifications for Public Works Construction
STLE	Society of Tribologists and Lubricating Engineers
TAPPI	Technical Association of the Worldwide Pulp, Paper, and Converting Industry
TFI	The Fertilizer Institute
TIA	Telecommunications Industries Association
TPI	Truss Plate Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WDMA	National Window and Door Manufacturers Association
WEF	Water Environment Federation
WI	Woodwork Institute
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01501A

SAFETY REQUIREMENTS AND PROTECTION OF PROPERTY

PART 1 - GENERAL

1.1 CONTRACTOR'S RESPONSIBILITY FOR SAFETY

A. Conduct whatever work is necessary for safety and be solely and completely responsible for conditions of the job site, including safety of all persons (including employees) and property during the construction of the project. This requirement shall apply continuously and not be limited to normal working hours.

1.2 FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS

A. Safety provisions shall conform to the Federal and State Departments of Labor Occupational Safety and Health Act (OSHA), and all other applicable Federal, State, County, and local laws, ordinances, codes, the requirements set forth herein, and any regulations that may be specified in other parts of these specifications. Where any of these are in conflict, the more stringent requirements shall prevail. Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

B. All open excavations made in the earth shall be performed in compliance with the State of Florida Trench Safety Act, OSHA 29 CFR 1926.650, Subpart P (Chapter 90-96, Laws of Florida). The Contractor shall appoint a "competent person", in accordance with Subpart P, who shall be present at the jobsite. A "competent person" shall mean one who is capable of identifying existing and predictable 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.

C. The Contractor shall familiarize himself with the "Underground Facility Damage Prevention and Safety Act", Florida Statute 556. The Contractor shall contact the Sunshine State One-Call Center, at 1-800-432-4770, forty-eight (48) hours prior to any excavation. Failure to familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

D. Conduct operations in such a manner utilizing warning devices, such as traffic cones, barricades and warning lights that traffic, pedestrian and Department personnel are given adequate warning of hazards of the worksite as may be deemed necessary by the Department, Engineer of Record, governing agency having jurisdiction over the work or political subdivision.

1.3 SAFE ACCESS BY FEDERAL, STATE, AND LOCAL GOVERNMENT OFFICIALS

A. The Contractor shall at all times provide proper facilities for safe access to the work by authorized government officials.

1.4 CONSTRUCTION SAFETY PROGRAM

A. Develop and maintain for the duration of this project, a safety program that will effectively incorporate and implement all required safety provisions. The Contractor shall appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.

B. Certain products specified in these specifications contain warnings by the manufacturers that under certain conditions, if instructions for use are not followed, a hazardous condition may exist. It is the Contractor's responsibility to instruct his workmen in the safe use of the product, or any product substitution.

C. The duty of the Engineer of Record to conduct construction review of the Contractor’s performance is not intended to include a review or approval of the adequacy of the Contractor’s safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

1.5 SAFETY EQUIPMENT

A. As part of the safety program, maintain at office or other well-known place at the jobsite, safety equipment applicable to the work as prescribed by the governing safety authorities, all articles necessary for giving first-aid to the injured, and establish the procedure for the immediate relocation to a hospital or a doctor's care of any person who may be injured on the jobsite.

B. Perform all necessary work to protect the general public from hazards, including, but not limited to, surface irregularities or undamped grade changes in pedestrian walkway or sidewalk, and trenches or excavations in roadway. Furnish barricades, lanterns, and proper signs to safeguard the public and work.

C. The performance of all work and all completed construction, particularly with respect to ladders, platforms, structure openings, scaffolding, fall protection devices, shoring, logging, machinery guards and the like, shall be in accordance with the applicable governing safety authorities.

D. During construction, construct and at all times maintain satisfactory and substantial temporary chain link fencing, solid fencing, railings, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in streets and walkways. All such barriers shall have adequate warning lights as necessary, or required, for safety.

1.6 STORAGE OF HAZARDOUS MATERIALS

A. The Contractor is hereby cautioned that he cannot store any environmentally hazardous materials such as solvents, greases, lubricants or any other type of chemical substances at the project site. The Contractor shall be allowed to keep such materials at the site which is to be used for immediate use only.

B. The materials shall be stored and handled in a proper and safe manner and upon its use immediately dispose of the containers, cans, rags and remnants of the materials in a manner approved by the Department of Environmental Resources Management (DERM) at the Contractor's own cost. The Contractor cannot store empty containers at the site. In case of any violation, the Department will report such violation to DERM and the Contractor shall be subject to all the penalties and fines as required by State and County regulations.

1.7 (NOT USED)

1.8 TRAFFIC SAFETY AND ACCESS TO PROPERTY

A. Comply with all rules and regulations of the city, state, and county authorities regarding closing or restricting the use of public streets or highways. No public or private road shall be closed, except by express permission of the Department. Conduct the work so as to assure the least possible obstruction to traffic and normal commercial pursuits. Protect all obstructions within traveled roadways by installing approved barricades, signs, and lights where necessary for the safety of the public. The convenience of the general public and residents and the protection of persons and property are of prime importance and shall be provided for in an adequate and satisfactory manner.

B. Where traffic will pass over backfilled trenches before they are paved, the top of the trench shall be maintained in a condition that will allow normal vehicular traffic to pass over. Temporary access driveways must be provided where required. Cleanup operations shall follow immediately behind backfilling and the worksite shall be kept in an orderly condition at all times.

C. When flagmen and guards are required by regulation or when deemed necessary for safety, they shall be furnished with approved orange wearing apparel and other regulation traffic control devices.

1.9 FIRE PREVENTION AND PROTECTION

A. Perform all work in fire-safe manner. Furnish and maintain on the site adequate fire-fighting equipment capable of extinguishing incipient fires. Comply with applicable federal, local, and state fire-prevention regulations.

Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed.

B. The Contractor shall have a Hot Work Permit Program and shall complete a permit prior to cutting or welding. A Fire Watch shall be designated to help monitor the hot work operation.

1.10 TRAFFIC CONTROL AND USE OF PUBLIC STREETS

A. The Contractor shall be responsible for traffic control as specified hereinafter. Any reference to Miami-Dade County, its departments, or its published regulations, permits and data, shall be synonymous and interchangeable with other recognized governing bodies over particular areas of streets or their departments, published regulations, permits, or data. Abide by all applicable laws, regulations and codes thereof, pertaining to maintenance of public streets, detour of traffic, traffic control and other provisions as may be required for this project.

B. The Contractor shall be fully responsible for the maintenance of public streets, detour of traffic (including furnishing and maintaining regulatory and informative signs along the detour route), traffic control and other provisions, throughout the project as required by the Miami-Dade County Department of Public Works, Traffic Engineering Division (Traffic Division). Traffic shall be maintained according to corresponding typical traffic control details as outlined in the Miami-Dade County Public Works Manual. No street shall be completely blocked nor blocked more than one-half at any time, keeping the other half open for traffic without specific approval.

C. If required by the Traffic Division, employ the required number of uniformed off-duty policemen to maintain and regulate the flow of traffic through the construction area. The number of men required and the number of hours on duty necessary for the maintenance and regulation of the traffic flow shall be subject to their approval. If required for traffic control permits or agencies, the Contractor shall work odd or night hours, as required for traffic control reasons, and the cost of such work shall be considered as incidental to construction.

D. The Contractor shall provide all barricades and/or flashing warning lights necessary to warn motorist of the construction throughout the project.

E. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic safety at all times. Provide necessary access to all adjacent property during construction.

F. The contractor shall be responsible for the provision, installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Miami-Dade County Public Works Manual. In addition, provide for the resetting of all traffic control and information signing removed during the construction period.

G. Where excavations are to be made in the vicinity of signalized intersections, attention is directed to the fact that vehicle loop detectors may have been embedded in the pavement. Verify these locations by inspecting the site of the work and by contacting the Sunshine State One-Call Center at 1-800-432-4770. Any loop detector which is damaged, whether shown on the Plans or not, shall be repaired or replaced to the satisfaction of the Traffic Division.

H. Notify the Traffic Division 24 hours in advance of the construction date, and 48 hours in advance of construction within any signalized intersection.

I. Temporary pavement will be required over all cuts in pavement areas, and also where traffic is to be routed over swale or median areas. When the temporary pavement for routing traffic is no longer necessary, it shall be removed and the swale or median area restored to their previous condition.

1.11 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

A. Where the Contractor's operation could cause damage or inconvenience to railway, telephone, fiber optic, television, electrical power, oil, gas, water, sewer, or irrigation systems, the Contractor shall make all arrangements necessary for the protection of these utilities and services or any other known utilities.

B. Notify all utility companies that are affected by the construction operation at least 48 hours in advance. Under no circumstance expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities and utility poles where necessary.

C. The Contractor and his subcontractors shall be solely and directly responsible to the owner and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this project.

D. Neither the Department nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.

E. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no event shall interruption of any utility service be allowed outside working hours unless granted by the owner of the utility.

F. In the event water service lines that interfere with trenching are encountered, the Contractor may, by obtaining prior approval of the water utility, cut the service, dig through, and restore the service with similar and equal materials at the Contractor's expense and as approved by the Department.

G. Drainage culverts that are at or near right angles to a pipeline and are removed by the Contractor shall be replaced in kind at the expense of the Contractor unless otherwise noted.

H. Replace, with material approved by the Department, at Contractor's expense, any and all other laterals, existing utilities or structures removed or damaged during construction, unless otherwise provided for in these specifications and as approved by the Department.

1.12 HURRICANE PREPAREDNESS

A. General

1. During such periods of time as are designated by the National Weather Service as being a hurricane alert, the Contractor shall perform all precautions as necessary to safeguard the work and property, including the removal of all small equipment and materials from the site, lashing all other equipment and materials to each other and to rigid construction, and any other safety measures as may be directed by the Engineer.

B. Upon Notification of a Hurricane Watch

1. The Contractor should prepare or have in place a Plan of Action for the specific actions to be taken on their particular projects.

C. Upon Notification of a Hurricane Warning

1. The Contractor shall implement their Plan of Action to protect the project and the public.

2. For construction projects within the public right-of-ways, the Contractor shall suspend his construction operations, backfill all open trenches, remove all construction equipment and materials from the right-of-way, remove unnecessary traffic barricades and

signs and secure remaining barricades by "half burial" or "double sand bags".

1.13 WORKING IN CONFINED SPACES

A. Where a Contractor needs to work in a confined space, the Contractor must comply with the General Industry, OSHA Confined Space Standard, CFR 1910.146 or the equivalent Confined Space Standard in DFR 1926, Construction Standards.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01570A

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 DUST ABATEMENT

A. The Contractor shall prevent its operation from producing dust in amounts damaging to property, or causing a nuisance to persons occupying buildings in the vicinity of the Project Site. The Contractor shall be responsible for any damage resulting from dust originating from its operations. Dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the Engineer.

B. Storage Piles: Enclose, cover, water (as needed), or apply non-toxic soil binders according to manufacturer's specifications on material piles (i.e. gravel, sand, dirt) with a silt content of 5 percent or greater.

C. Active Areas of Site: Water active construction areas and unpaved roads as needed and as requested by Engineer to prevent the propagation of dust.

D. Inactive Areas of Site: Apply non-toxic soil stabilizers according to manufacturer's specifications to inactive construction areas, or water as needed to maintain adequate dust control.

E. Vehicle Loads: Cover or maintain at least 2 feet of freeboard vertical distance between the top of the load and the top of the trailer sides on trucks hauling dirt, sand, soil, or other loose materials off of the Site.

F. Roads: When there is visible track-out onto a paved public road, install wheel washers where the vehicles exit and enter onto the paved roads and wash the undercarriage of trucks and any equipment leaving the Site on each trip. Sweep the paved street at the end of each shift with a Mobil Athey or similar water spray pick-up broom-type street sweeper as necessary or as directed.

G. Vehicle Speeds: If watering of unpaved roads is not sufficient to control dust, reduce vehicle speeds to 10 mph or less on such roads.

1.2 SEDIMENTATION ABATEMENT

A. The Contractor shall be responsible for collecting, storing, hauling, and disposing of spoil, silt, and waste materials in compliance with applicable federal, state, and local rules and regulations and the Contract Documents.

B. Install and maintain erosion and sediment control measures, such as swales, grade stabilization structures, berms, dikes, waterways, filter fabric fences, and sediment basins.

C. Filter fabric barrier systems, if used, shall be installed in such a manner that surface runoff will percolate through the system in sheet flow fashion and allow sediment to be retained and accumulated.

D. Remove and dispose of sediment deposits at the designated spoil area. If a spoil area is not indicated, dispose of sediment off-Site at a location not in or adjacent to a stream or floodplain. Sediment to be placed at the spoil area should be spread evenly, compacted, and stabilized. Sediment shall not be allowed to flush into a stream or drainage way.

E. Maintain erosion and sediment control measures until final acceptance or until requested by the Engineer to remove it.

1.3 STORMWATER POLLUTION PREVENTION

A. Contractor shall minimize stormwater pollution from the Site.

1.4 RUBBISH CONTROL

A. During the progress of the Work, the Contractor shall keep the Site and other areas for which it is responsible in a neat and clean condition and free from any accumulation of rubbish. The Contractor shall dispose of rubbish and waste materials of any nature and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of rubbish and surplus materials shall be off the Site in accordance with local codes and ordinances governing locations and methods of disposal and in conformance with applicable safety laws and the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.5 SANITATION

A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.

B. Sanitary and Other Organic Wastes: The Contractor shall establish a regular daily collection of sanitary and organic wastes. Wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the Site in a manner satisfactory to the Engineer and in accordance with Laws and Regulations pertaining thereto.

1.6 CHEMICALS

A. Chemicals used on the Work or furnished for facility operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01600A

MATERIAL AND EQUIPMENT SHIPMENT, HANDLING, STORAGE, AND PROTECTION

PART 1 - GENERAL

1.1 THE SUMMARY

A. This shall include both Department furnished material and equipment (Department furnished equipment (DFE) and Contractor furnished material and equipment.

B. The Contractor is to inform all subcontractors, suppliers, and manufacturers of the requirements herein specified, and shall include expenses for the following services in his costs for compliance with the requirements hereinafter specified.

1.2 PREPARATION FOR SHIPMENT

A. When practical, equipment shall be factory-assembled. The equipment parts and assemblies that are shipped unassembled shall be furnished with an assembly plan and instructions. The separate parts and assemblies shall be factory match-marked or tagged in a manner to facilitate assembly. All assemblies are to be made by the Contractor at no additional cost to Department.

B. Machined and unpainted parts subject to damage by the elements shall be protected with an application of a strippable protective coating, or other protective method approved by the Engineer.

C. Equipment shall be packaged or crated in a manner that will provide protection from damage during shipping, handling, and storage.

D. The outside of the package or crate shall be adequately marked or tagged to indicate its contents by name and equipment number, if applicable; approximate weight; state any special precautions for handling; and indicate the recommended requirements for storage prior to installation.

1.3 PACKING AND DELIVERY OF SPARE PARTS AND SPECIAL TOOLS

A. Properly mark to identify the associated equipment by name, equipment, and part number. Parts shall be packaged in a manner for protection against damage from the elements during shipping, handling, and storage. Ship in boxes that are marked to indicate the contents. Delivery of spare parts and special tools shall be made prior to the time associated equipment is scheduled for the initial test run.

1.4 SHIPMENT

A. All equipment and material shall be shipped with freight and shipping paid FOB jobsite.

B. The Contractor shall request a 7-day advance Notice of Shipment from manufacturers, and, upon receipt of such notice, provide the Engineer with a copy of the current delivery information concerning all equipment and other items and materials of critical importance to the project schedule.

C. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.

D. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

1.5 RECEIVING

A. The Contractor shall unload and record the receipt of all equipment and materials at the jobsite.

B. All costs for receiving, inspection, handling, storage, insurance, inventory control, and equipment maintenance for both the Contractor-supplied and Department-supplied materials and equipment, shall be included in the bid price and no extra compensation will be allowed.

1.6 INSPECTION

A. Immediately upon receipt of equipment and materials at the jobsite, the Contractor shall inspect for completeness and any evidence of damage during shipment. Department's supplied equipment and material shall be inspected and inventoried together with a Department's inspector. Should there appear to be any shortage or damage, the Engineer shall be immediately notified; and the Contractor shall be fully responsible for informing the manufacturers and the transportation company of the extent of the shortage and/or damage. If the item or items require replacing or supplying missing parts, the Contractor shall take the necessary measures to expedite the replacement or supply of the missing parts.

1.7 HANDLING

A. Equipment and materials received for installation on this Project shall be handled in accordance with the manufacturer's recommendations, and in a manner that will prevent damage.

B. Pipe and fittings shall at all times be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such a manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions. No cables, lifting arms, hooks or other devices shall be inserted into the pipe or fitting. All lifting, pulling or pushing mechanisms shall be applied to the exterior of the pipe or fitting. Pipe and other material shall be distributed along areas near vehicular traffic in advance of installation, only to the extent approved by the Engineer. Pipe shall be stored on blocking or timber. It shall not be stored on rocks, boulders, or other supports which in the opinion of the Engineer are unsuitable. Such materials shall be so placed as to keep obstruction to all traffic to a minimum.

1.8 STORAGE AND PROTECTION

A. Equipment and materials shall be stored prior to installation as recommended by the manufacturer. Generally, materials such as pipe shall be stored off the ground in approved storage yards or along the line of the proposed installation, as approved by the Engineer. Items subject to the damage by the elements, vandalism, or theft shall be stored in secure buildings. Items requiring environmental control for protection shall be provided with the necessary environmentally controlled storage facilities at no cost to the Department.

B. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instructions shall be studied by the Contractor and he shall review them with the Engineer. Instructions shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.

C. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

D. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored, with the webs in a vertical position. Precast concrete shall be handled and stored in

a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

E. All mechanical, electrical and other equipment, instruments and other items subject to damage if stored outdoors (even though covered by canvas) shall be stored in a weather tight building to prevent damage. The building, even if temporary, must be satisfactory to the Engineer. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer.

2. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of final acceptance.

4. Prior to final acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

F. All bolts, nuts, gaskets and other joint materials for use in pipes shall be stored under cover.

G. Gaskets shall be stored in their original packing bags or containers, and care shall be exercised to keep them away from heat, light, oil gasoline or other petroleum products. Gaskets shall be kept clean at all times and not handled with greasy or dirty hands.

H. Plastic pipe and other elastomeric products shall be stored under cover to preclude damage by ultraviolet radiation even if the product has UV inhibitors in its compound.

I. Valves and other equipment having heating elements to eliminate moisture accumulation shall be supplied with electrical power of the required characteristics.

1.9 INSURANCE

A. The Contractor's insurance shall adequately cover the value of materials delivered but not yet incorporated into the work. The Contractor and Department shall be named as co-insured insofar as their respective interests may appear. Proof of this coverage must be submitted to the Engineer at the time request for progress or partial payments.

1.10 INVENTORY CONTROL

A. Equipment and materials shall be stored in a manner to provide easy access for inspection and inventory control. The Contractor shall keep a running account of all materials in storage to facilitate inspection and to estimate progress payments for materials delivered but not installed in the work.

1.11 EQUIPMENT MAINTENANCE PRIOR TO DEPARTMENT'S ACCEPTANCE

A. Provide the required or manufacturer's recommended maintenance during storage, during the installation, and until such time as Department accepts the equipment for full-time operation.

1.12 SALVABLE EQUIPMENT

A. Any salvable pipe, fitting, or other miscellaneous material or equipment removed during construction, and not reused in the WORK, shall be cleaned, hauled, and stored by the Contractor at his own expense, where directed by the Engineer, and shall remain the property of Department. All other material shall be disposed of by the Contractor at his own expense.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01660A

SITE ACCESS AND STORAGE

PART 1 - GENERAL

1.1 EXISTING JOB SITE

A. The work of this project is to be performed at a facility owned by Department and identified elsewhere in these documents.

1.2 EXISTING UTILITIES

A. Protection of, and relocation of existing utilities, structures and other facilities shall be in accordance with Section 01011A - Site Conditions and Protection of Existing Facilities.

B. The relocation of existing utilities, as noted on the Plans, or for the convenience of the Contractor, shall be the responsibility of the Contractor. This work shall be completed by either the forces of the existing utility or the Contractor's forces at the discretion of the responsible utility. If the work is to be performed by the Contractor, all work shall be done in accordance with the utility company's requirements. The Contractor shall also be responsible for the coordination of all existing utility relocations with the appropriate utilities. Where temporary supports or protective encasements are required during the construction, the Contractor shall be responsible for this work at no additional cost. Under no circumstances shall the Contractor be authorized extra payment for this work, and all cost for the relocation shall be the responsibility of the Contractor.

C. Any conflicts between the field investigation and the information shown on the Plans shall be brought to the immediate attention of the Engineer.

1.3 SITE ACCESS AND STORAGE

A. The Department reserves the right to enter upon, and to use, any and all portions of the Work performed hereunder (or under its other Contracts), whether completed or not, as may be required.

B. **Highway Limitations:** The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the Work. It shall be the Contractor's responsibility to construct and maintain any haul roads required for its construction operations.

C. **Temporary Crossings:** Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, parking lots, Vehicular access to all production facilities shall be maintained except when necessary construction precludes such access for reasonable periods of time.

D. **Street Use:** Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of the Work hereunder and it shall conduct its operations to not interfere unnecessarily with the Department or any other authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed plant operations without first obtaining permission of the Engineer and the Department. Where excavation is being performed in any streets, one lane shall be kept open to traffic at all times, unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the Engineer or the Department. Fire hydrants on or adjacent to the Work shall be kept accessible to fire-fighting equipment. Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of gutters, storm drain inlets, and other drainage facilities.

1.4 CONTRACTOR'S WORK AND STORAGE AREA

A. The Contractor shall limit his operations, temporary facilities and storage of equipment and materials to the project site. Should the Contractor require additional area, outside the project site, for its operations or storage, the Contractor shall make its own arrangements for any necessary additional lands or facilities necessary for the proper execution of the Work and for locating the field offices as required.

1. The Contractor may utilize private warehouse and/or office space for his storage area and/or construction field offices.

B. The Contractor shall submit to the Engineer for approval, a proposed plan and layout for all field offices, temporary facilities, and parking both for on the project site and on any additional lands obtained by the Contractor for its use during construction of the project. Prior to commencing any preparation remove, relocate and protect where necessary all existing underground and above ground facilities, pipelines, sprinkler systems, sod and all other existing installations. All these installations shall be restored to their initial conditions.

C. The Contractor shall construct and use a separate storage area for hazardous materials used in constructing the Work.

1. For the purpose of this paragraph, hazardous materials to be stored in the separate area are products labeled with any of the following

terms: Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive. In addition, whether or not so labeled, the following materials shall be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints and paint thinners, 2-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbent.

2. Hazardous materials shall be stored in groupings according to the Material Safety Data Sheets.

3. The Contractor shall develop and submit to the Engineer a plan for storing and disposing of the materials above.

4. The Contractor shall obtain and submit to the Engineer a single EPA number for wastes generated at the Site.

5. The separate storage area shall meet the requirements of authorities having jurisdiction over the storage of hazardous materials.

6. Hazardous materials that are delivered in containers shall be stored in the original containers until use. Hazardous materials delivered in bulk shall be stored in containers which meet the requirements of authorities having jurisdiction.

1.5 PARKING

A. Parking inside at any County Facility will be allocated by Department near the vicinity of the project site and in accordance with safety regulations. The Contractor shall be responsible for making its own arrangements for parking of its direct employees, subcontractors, vendors, etc. as may be necessary either on site or offsite.

B. The Contractor shall be responsible for providing the following minimum temporary parking spaces:

1. At the project site:

   a. One (1) space for the Department

   b. One (1) space for the Engineer

2. At the field office location:

   a. One (1) space for the Department

   b. Two (2) spaces for the Engineer

c. As required by regulatory agencies and permits

3. Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud, and construction materials. The Contractor shall repair breaks, potholes, low areas which collect standing water, and other deficiencies.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01700A

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 THE SUMMARY

A. Work Included: This section outlines the procedure to be followed in closing all contracts.

1.2 RELATED WORK

A. Section 01720A - PROJECT RECORD DOCUMENTS.

1.3 FINAL CLEANUP

A. The CONTRACTOR shall promptly remove from the vicinity of the completed WORK, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the WORK by the DEPARTMENT will be withheld until the CONTRACTOR has satisfactorily performed the final cleanup of the Site.

1.4 SUBSTATIAL COMPLETION AND FINAL INSPECTIONS

A. The DEPARTMENT will not issue preliminary punch lists. After final cleaning and upon written notice from the CONTRACTOR that he has inspected the work and it is substantially completed, the ENGINEER will make a substantial completion inspection with the DEPARTMENT and the CONTRACTOR present. Upon completion of this substantial completion inspection, the ENGINEER will submit to the CONTRACTOR a written final punch list of any particulars which this inspection reveals as defective or incomplete work.

B. Upon receiving written notice from the ENGINEER, the CONTRACTOR shall immediately undertake the work required to remedy the defects and complete the work to the satisfaction of the DEPARTMENT.

C. Each item in the punch list shall have a time duration agreed upon by both parties which shall not exceed 10 calendar days. Punchlist items may be eliminated individually from the list when approved by the ENGINEER.

D. When the CONTRACTOR has corrected or completed the items as listed in the ENGINEER's written notice, inform the ENGINEER, in writing, that the required work has been completed. Upon receipt of this notice, the

ENGINEER, in the presence of the CONTRACTOR, shall make the final inspection of the Project.

E. Should the ENGINEER find all work satisfactory at the time of the inspection, the CONTRACTOR will be allowed to make application for final payment in accordance with the provisions of the General Covenants and Conditions.

1. If the CONTRACTOR fails to complete any item of work within a time period equal to 100% of the agreed upon duration of time for all individual items, the ENGINEER will notify the CONTRACTOR in writing specifying the conditions pertaining thereto and directing the CONTRACTOR to comply with his directive. If the CONTRACTOR has not corrected such condition within 5 days of such notice, it shall be sufficient grounds for the ENGINEER to order the subject items discontinued and have them completely remedied in a timely manner at the expense of the CONTRACTOR.

2. No final estimate shall be issued by the ENGINEER until the ENGINEER has assured himself that the punchlist has been 100% completely finished and all other related documents are submitted.

1.5 FINAL SUBMITTALS

A. No Contract will be finalized until all of the following have been submitted and approved in conformance with Section 01720A - PROJECT RECORD DOCUMENTS.

1. Record Drawings.

2. Manufacturers' Certificates of Proper Installation.

3. Material Tests and Certifications.

4. All Test Reports.

1.6 GUARANTEES, BONDS, AND AFFIDAVITS

A. No Contract will be finalized until all guarantees, bonds, certificates, licenses, roofing warranty, C.O. and affidavits required for work or equipment as specified are satisfactorily filed with the ENGINEER.

1.7 RELEASE OF LIENS OR CLAIMS

A. No Contract will be finalized until satisfactory evidence of affidavit and release of claims have been submitted to the DEPARTMENT.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01710A

CLEANING

PART 1 - GENERAL

1.1 THE SUMMARY

A. This Section specifies the maintenance of the WORK site in a clean, orderly, hazard-free condition.

1.2 QUALITY ASSURANCE

A. Conduct cleaning and disposal operations in accordance with local ordinances and anti-pollution laws. Rubbish, volatile wastes, and other construction wastes shall be neither burned nor buried on the work site, and shall not be disposed of into storm drains, sanitary drains, streams or other waterways.

B. Final cleaning shall be accomplished either by workmen experienced in cleaning operations or by professional cleaners.

PART 2 - PRODUCTS

2.1 ON-SITE WASTE CONTAINERS

A. Provide on-site waste containers for collection of waste materials, debris and rubbish.

2.2 CLEANING MATERIALS

A. Cleaning materials shall be as recommended by the manufacturer of the surface to be cleaned.

PART 3 - EXECUTION

3.1 SAFETY REQUIREMENTS

A. Maintain work site in accordance with local ordinances and anti-pollution laws applicable to work site cleanliness and in a neat, orderly and hazard-free condition until final acceptance of the work. Catwalks, accessible underground structures, work site sidewalks and walkways adjacent to the work site shall be kept free from hazards caused by construction activities.

B. Store volatile wastes including rags in covered metal containers, and remove from work site daily.

C. Prevent accumulations of waste which create hazardous conditions.

D. Artificially ventilate spaces which are not naturally ventilated when volatile or noxious substances are present in those spaces.

3.2 INTERIM CLEANING

A. Perform cleaning every workday for duration of the Work. Structures, grounds, and areas of the work site and public and private properties shall be maintained free from accumulations of waste materials and rubbish caused by construction operations on the work site. Place waste materials and rubbish in on-site containers.

B. Remove or secure loose material on open decks and on other exposed surfaces at the end of each day's work or more often to maintain work site in hazard-free condition. Prevent dislodgement of materials due to wind and other forces.

C. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

D. Empty on-site waste containers whenever necessary so that trash overflow does not occur. Legally dispose of contents at either public or private dumping areas.

E. Control the handling of materials, debris and rubbish; do not drop or throw from heights.

F. Immediately remove spillages of fuels or oil or of construction-related materials from hauling routes or the site.

G. Perform cleaning operations so dust and other contaminants resulting from cleaning processes will not fall on wet, newly painted surfaces.

3.3 FINAL CLEANING

A. In addition to the cleaning performed above, in preparation for final inspection, remove grease, dust, dirt, rust stain from surfaces. Remove labels, fingerprints and other foreign materials from exposed exterior finished surfaces. Flush down all manhole covers and frames, valve boxes, and areas leaving such surfaces clean of all sand, laitance, etc.

B. The Contractor shall at all times during the execution of this Contract keep the work site free and clear of all rubbish and debris. As soon as the work is completed, the accumulated rubbish or surplus materials shall be promptly removed. The Contractor shall also restore in an acceptable manner all property, both public and private, which has been displaced or damaged during the prosecution of the work, and shall leave the site and vicinity unobstructed and in a neat and presentable condition.

C. In the event of delay exceeding two days after written notice is given to the Contractor by the Engineer to remove such rubbish or materials or to restore displaced or damaged property, the Engineer may employ such labor and equipment as he may deem necessary for the purpose, and the cost of such work, together with the cost of supervision, shall be charged to the Contractor and shall be deducted from any monies due him.

D. The project shall not be considered as having been completed until all rubbish and surplus materials have been removed and disposed of properly.

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 01720A

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 THE SUMMARY

A. The CONTRACTOR shall maintain at the site one record copy of the following:

1. Record Drawings. Record Drawings as used herein shall mean a drawing that reflects construction or design changes.

2. Record Specifications.

3. Addenda.

4. Change Orders and other modifications of the Contract.

5. ENGINEER's written orders or instructions.

7. Field test records.

8. Construction photographs.

B. The records listed above are to be made available for the ENGINEER’s review at all times for all projects.

1.2 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

1.3 RECORDS

A. Label each document "PROJECT RECORD" in neat large printed letters.

1. Do not conceal any work until as-built information is recorded by the CONTRACTOR's and, if so required, by the Department.

1.4 DRAWINGS

A. During the life of the Contract, maintain records of all deviations from the Plans and Specifications and prepare therefrom As-Built Record Drawings showing correctly and accurately all changes and deviations made during construction to reflect the work as it was actually constructed. It is the

responsibility of the CONTRACTOR to check the As-Built Record Drawings for errors and omissions prior to submittal to the Department and certify in writing that the As-Built Record Drawings are correct and accurate,

B. Certification: The CONTRACTOR shall certify on as-built record drawings all other actual constructed details and information as may be required by the Department.

C. Drawings on Magnetic Media: The Department requires the submittal of as-built drawings in AutoCAD 2015 for Windows format or later. Graphical information contained on magnetic media shall be the same as provided on plan sheets. Magnetic media shall be delivered to the office of the Chief, Engineering Division, at 3575 S. LeJeune Road, Miami, Florida 33146 or by mail at P. O. Box 330316, Miami, Florida 33233-0316. A letter of transmittal shall be provided, containing a list of all files and data being provided. Since the drawings for this tank are not electronically available, we will substitute this requirement for a set of redline drawings and a final written report indicating the areas repaired, methods and location.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. Codes and Standards: Comply with the latest edition of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 117 - Tolerances for Concrete Construction and Materials.
2. ACI 301 - Specifications for Structural Concrete for Buildings.
3. ACI 315 - Details and Detailing of Concrete Reinforcement.
4. ACI 318 - Building Code requirements for Reinforced Concrete.
5. ACI 439.3R - Mechanical Connection of Reinforcing Bars.
6. AWS Dl.4 - Structural Welding Code Reinforcing Steel.
7. CRSI - Manual of Standard Practice.
8. CRSI - Placing Reinforcing Bars.
9. Wire Reinforcement Institute, Manual Standard Practice.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. A82 - Specification for Steel Wire, Plain, for Concrete Reinforcement.
2. A184 - Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
3. A185 - Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
4. A496 - Specification for Steel Wire, Deformed, for Concrete Reinforcement.
5. A497 - Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

6. A615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

7. A775 - Specification for Epoxy-Coated Reinforcing Steel Bars.

8. C1116 - Specification for Fiber-reinforced Concrete and Shotcrete.

1.3 SUBMITTALS

A. General:

1. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement.

a. Comply with ACI 315 showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement and accessories.

b. Include special reinforcement required at openings through concrete structures.

2. Shop drawings made from sepias (or other reproductive methods) of the structural drawings will not be accepted and shall be cause for resubmittal.

B. Selection of splices: Splices shall be full tension, unless noted otherwise.

1. Splices noted on the drawings to be compression splices shall be furnished by one of the following:

a. Compression lap splices according to ACI 315.

b. Mechanical compression only connectors according to ACI 439-3R, staggered 1/2 Class "C" lap length and maintaining not less than 1/4 the total tensile capacity of any column face.

c. Full penetration welds staggered not less than 18 diameters.

2. Splices shown on the drawings as either Class "A" or Class "B" may be one of the following:

a. Class "B" lap splices.

b. Class "A" (but not less than compression lap) lap splices staggered not less than one Class "B" lap length.

1) Exception: This shall not be allowed when shown as class "B" in a location, which by design, has already

accounted for other continuing bars or staggered splices.

c. Appropriate mechanical connectors according to ACI 439-3R staggered not less than 24 diameters.

d. Full penetration welds staggered not less than 24 diameters.

3. Unless otherwise noted in the drawings, reinforcing shall be spliced to develop the full strength of the bar in either tension or compression. Those splices shall be furnished by one of the following:

a. Class "B" lap splices where only 1/2 of the total rebars are spliced at any one floor.

b. Full penetration welds staggered not less than 36 diameters.

c. Appropriate mechanical connectors according to ACI 439-3R staggered not less than 36 diameters.

4. Total steel at lap splices shall not exceed 8 percent for columns or shear wall cores containing the spliced bars.

a. All bars may be lapped at one section for up to 4 percent steel.

b. 1/2 of the bars may be lapped for up to 5.3 percent steel.

c. 1/3 of the bars may be lapped for up to 6 percent steel.

d. Above 6 percent steel, other splice choices shall be used.

5. Where staggered lap splices are used, provide a mixture of bar sizes as appropriate where vertical bar size changes on the drawings.

6. Where different size bars are lap spliced, the length of splice may be based on the smaller bar size. If there is a larger quantity of the smaller bar size, the splice length shall be based on the larger bar.

7. It shall be the responsibility of the reinforcing detailer to determine the concrete strength at the point of a lap splice, the bar position (top or other), bar spacing, confinement condition based on ties or stirrups or edge condition to select the proper lap length.

8. Increase laps for bundled bars according to ACI 318, with number based on total bars in group including lapped bars.

C. Detailing of Splices: Placing shop drawings shall specifically show splice lap lengths where they occur. Bar diameter lap tables and references to other charts are not acceptable.

D. Staggered Laps Required: Provide staggered laps in any member as necessary to keep space between bars within splice zone at least 1 inch or 1 bar diameter clear.

E. Detailing of Bar Placement: For any bar other than those placed at an edge condition, between edge condition or openings, or any other location where the bar cannot be shifted longitudinally, a dimension shall be shown from an identifiable building grid, wall, or edge to at least one end of the bar.

F. Congested Areas of Placement: For any conditions resulting in bar spacing less than 2 diameters clear or where the placement of bars in one member requires critical templating to allow bar placement in an intersecting member, furnish details of sufficient scale to show clearances, spacing, and arrangements for properly placing those bars.

G. Accessories: Show accessories, supports, chairs, bolsters, and spacers necessary to complete the installation. Where supports are beyond the scope of CRSI detailing standards and custom designed supports are required, provide engineering calculations demonstrating the capacity of the system.

H. Flat Plates: Provide not less than 3 separate drawings of each plate separately showing bottom bars, top bars, and accessories.

I. Welding Submittals:

1. If welding of reinforcing bars is to be included as part of the work, submit the following:

    a. A complete welding procedure specification according to AWS Dl.4.

    b. A certified chemical analysis of the steel to be welded.

    c. Carbon equivalence calculations according to AWS Dl.4.

    d. Qualification papers for welders who will be employed on the project. Welders shall have passed a qualification test within a 12 month period before the work or furnish a statement from a testing agency acceptable to A/E that they have observed or tested that welder's work under similar requirements within the past 6 months.

1.4 SUBSTITUTIONS

A. Reinforcing Splicing:

1. Splices shown in the drawings shall be considered mandatory for base bid purposes.

2. Alternative methods of providing for splices are available within the constraints of this specification and ACI 318.

3. If alternative splices are desired, the shop drawing submitted shall clearly indicate the change and include authorization by any other subcontractors involved in the change.

PART 2 - PRODUCTS

2.1 REINFORCING MATERIALS

A. Comply with Chapter 5 of ACI 301.

B. Reinforcing Steel:

1. Bars #3 through #11 shall be deformed bars according to ASTM A615 Grade 60 and according to the additional requirements of Paragraph 5.2.2.1 of ACI 301.

2. Bars #2 in size shall be plain round meeting A615/A-96a Grade 40.

3. Welded wire fabric shall be of plain wire. Welded wire fabric shall be galvanized at exterior exposed concrete.

4. Unless indicated otherwise the minimum concrete protective cover specified in Paragraph 5.7.1 of ACI 301 is the specified cover for this project unless indicated otherwise.

C. Epoxy-Coated Reinforcing Bars: ASTM A775.

D. Form-Saving Splice Connectors: Flanged devices to allow insertion of threaded reinforcing bars into a previously formed face. Available products include, but are not limited to:

1. Form Saver by Lenton.

2. DB-SAE Splices System by Dayton Superior.

3. Rebar Flange Coupler by Williams Form Engineering Corp.

E. Mechanical Connectors and Splice Devices: Proprietary products suitable for the use intended and listed in ACI 439-3R-83.

F. Steel Wire: ASTM A82, plain, cold-drawn, steel.

G. Fabricated Deformed Steel Bar Mats: ASTM A184.

H. Welded Steel Wire Fabric: ASTM A185.

I. Deformed Steel Wire: ASTM A496.

J. Welded Deformed Steel Wire Fabric: ASTM A497.

K. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI Class C or Class A as required acceptable.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2. For exposed-to-view concrete surfaces and with legs of supports in contact with forms, provide supports with legs, either plastic protected according to CRSI, Class 1 or stainless steel protected according to CRSI, Class 2.

3. Provide custom supports as required to support top layer of mats and other special conditions not provided for within CRSI standards.

L. Fiber Reinforcement:

1. Manufacturers:

a. Fibermesh by Protex

b. Forta-Ferro by Forta Corporation, Grove City, PA.

2. Comply for use in plain concrete as defined in ACI 318.1. and the following:

a. Fibers shall not be used as a replacement for any reinforcement required for structural purposes.

b. Blend fibers into the concrete mix according to manufacturer s written instructions.

c. Provide control joints according to Section 5.2 of ACI 318.1.

d. Fibers shall comply with ASTM C1116-95.

PART 3 - EXECUTION

3.1 PLACING REINFORCEMENT

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as specified.

B. Clean reinforcement of loose rust and mill scale, dirt, and other materials that reduce or destroy bond with concrete.

C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers as required.

D. When any reinforcing bar is placed projecting either horizontally or vertically from a given element to subsequently lap with other reinforcing bar, verify the detailed lap length will be achieved.

1. Report any deviation to the A/E for correction before placing concrete in the first element.

2. Bar projections resulting in laps shorter than the detailed laps shall be considered rejected, and corrective measures shall be taken at the direction of the A/E with no additional cost to the Board.

E. Place reinforcement to obtain at least minimum coverages for concrete protection.

1. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations.

2. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

F. Install welded wire fabric in as long lengths as practicable.

1. Lap adjoining pieces at least one full mesh plus 2 inches and wire splices.

2. Offset end laps in adjacent widths to prevent continuous laps in either direction.

G. Provide the A/E with not less than 48 hours' notice before starting any welding of reinforcing bars.

1. Welding of reinforcing bars shall only be allowed under the direct supervision of the A/E.

2. Welding of crossing reinforcing bars is not allowed.

3. Any bars with unauthorized or unacceptable welds shall be replaced at no additional cost to the Board.

END OF SECTION

SECTION 03610

GROUTING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Furnish material, equipment, labor, services required to provide non-shrink grout. Work includes, but is not limited to grouting under steel and mechanical equipment base plates, filling of fence and rail posts sleeves, grouting of piping, and wherever else shown on Drawings.

1.2 RELATED SECTIONS

A. Unit Masonry, Section 04200.

1.3 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society of Testing and Materials (ASTM) Standards, latest editions.

ASTM C109 Test Method for Compressive Strength of Hydraulic Cement Mortars.

ASTM C827 Test Method for Early Volume Change of Cementitious Mortars.

ASTM C1107 Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).

B. Army Corp of Engineers

CRD C-621 Specification for Non-Shrink Grout.

1.4 SUBMITTALS

A. Product Data

1. Submit manufacturer's information on the non-shrink grout, including mixing and installation instructions for each type of application.

B. Quality Control Submittals

1. Contractor Qualifications

a. Provide proof of Contractor qualifications specified under “Quality Assurance”.

1.5 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer: Company specializing in the production of grout shall have a minimum of five years experience.

2. Installer: Company specializing in performing the work of this section shall have three years minimum experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be delivered in manufacturer’s sealed and undamaged packaging. Each package shall contain clear and legible labels that meet requirements of local, state and federal regulations identifying manufacturer’s name, product name, quantity of material, and batch number.

B. Protect material from the elements and from other damage at site.

C. Replace and pay for material and work damaged to the satisfaction of the Authority.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not apply grout at temperatures below 40^{o}F. Follow manufacturer's recommendations for placement temperatures, which is typically at an optimum range of 50^{o}F to 80^{o}F. Provide hot and cold weather procedures at other temperatures.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Grout

1. Sika Corp., Lyndhurst, NJ 07071

2. Euclid Chemical Company, Cleveland, OH 44110

3. Five Star Products, Inc., Fairfield, CT 06824

2.2 MATERIALS

A. Grout

1. Grout shall be non-shrink, non-metallic, cement based material meeting ASTM 1107 and CRD C-621 with the following characteristics:

   a. Minimum compressive strength of 6000 psi @ 28 days when testing in accordance with ASTM C109 or CRD C-621.

   b. Slight positive expansion when tested in accordance with CRD C-621 or ASTM C827.

2. Products:

   a. SikaGrout 212 by Sika Corp.

   b. Dry Pack Grout and NS Grout by Euclid Chemical Company

   c. "Five Star Grout" by U.S. Grout Corp.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine all adjoining work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Authority any conditions that prevents the performance of this Work.

B. Repair surfaces to receive grout as approved by the Engineer of Record to ensure that the maximum allowed thickness of material is not exceeded.

3.2 SURFACE PREPARATION

A. Concrete surface shall be free of all loose material.

B. Steel shall be clean and free of corrosion.

C. Surfaces shall be free of oil, grease, loose paint, corrosive deposits, dust, laitance and other contaminants.

D. Sleeves and holes shall be clean of water, dust and debris.

3.3 APPLICATION

A. Perform all grouting in accordance with the recommendations of ACI, CSI, and the grout manufacturer's published specifications for site preparation, product mixing, and placing. For grouting in weather below 50^{o}F, contact manufacturer for cold weather instructions.

B. Arrange with the manufacturer of the grout for the services of a qualified field representative to instruct the work crews in the mixing of components, preparation of surfaces, technique of installation, and inspection procedures.

C. Place grout at a no more than “flowable” consistency, carefully using the manufacturer’s recommended water content.

D. Locations

1. Provide grout 1" thick minimum, 2” thick maximum, unless otherwise specified, under column base plates and beam bearing plates. Work grout under plates to provide full and even bearing. Grouting is to be done prior to placement of any concrete on the structure.

2. Provide grout for grouting fence ~~poles~~ posts into sleeves. Grout is to be placed at a “plastic” consistency and crowned at the post to shed water away from the post onto the adjoining concrete surface.

3. Provide grout for grouting bars in concrete and for "Dry Packing". Follow manufacturer's procedure for mixing and installation.

4. Provide grout under equipment bases.

5. Provide for grouting in pipes entering precast units.

6. Provide grout wherever else it is indicated on Drawings or Specifications.

E. Follow manufacturer's instructions for curing.

3.4 PROTECTION AND CLEANING

A. Clean all adjacent area of excess material and clean all floors and walls of powder and droppings.

3.5 FIELD QUALITY CONTROL

A. The Contractor's will inspect the grouting procedure and take cube specimens to test compressive strength.

B. The Engineer will inspect and reject any that are of inadequate strength or contains cracks or other defects. These areas shall be fixed at contractor's expense.

C. Engage the services of the material manufacturer's representative to instruct in the proper mixing and usage of the material to ensure the grout is placed at the correct consistency and manner.

+ + END OF SECTION + +

NO TEXT ON THIS PAGE

SECTION 03710

REMOVING EFFLORESCENCE FROM CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. This specification provides guidance on removing efflorescence from concrete using chemical solvents.

B. Efflorescence is a condition wherein white deposits form on the surface of the concrete. These deposits often contain calcium, sodium and potassium hydroxides or carbonates, bicarbonates, chlorides and sulfates of calcium and magnesium.

C. The surface deposits may originate as soluble compounds within the concrete or in the soil. These compounds combine with water and gradually migrate in solution to the wall surface, where they remain when the water evaporates. Surface deposits may also result from acid etching with hydrochloric acid, which is sometimes applied to roughen the concrete surface.

D. Surface deposits originating from within the concrete are usually soluble and may be removed by scrubbing with water alone or washing with water under high pressure.

E. Surface deposits composed mainly of calcium acid carbonate and magnesium acid carbonate from the soil or of calcium hydroxide should be washed off with water as soon as possible. These deposits are water-soluble for only a brief period of time after reaching the atmosphere, after which the carbon dioxide converts them to water-insoluble calcium carbonate and magnesium carbonate, which are impossible to remove without the use of acids.

F. Safety Precautions:

1. DO NOT save unused portions of stain-removal materials.

2. DO NOT store any chemicals in unmarked containers.

3. NOTE: EXCELLENT VENTILATION MUST BE PROVIDED WHEREVER ANY SOLVENT IS USED. USE RESPIRATORS WITH SOLVENT FILTERS.

4. No use of organic solvents indoors should be allowed without substantial air movement. Use only spark-proof fans near operations involving flammable liquids.

5. Provide adequate clothing and protective gear where the chemicals are indicated to be dangerous.

6. Have antidote and accident treatment chemicals readily available where noted.

PART 2 - PRODUCTS

2.1 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they tend to be less expensive. Common names are indicated below by an asterisk (*).

A. Use one of the following solvents (see Section 3.02 A. below for mixing proportions):

B. Acetic Acid ($C_2H_4O_2$):

1. A colorless pungent liquid acid that is the chief acid of vinegar and that is used especially in synthesis (as of plastics).

2. Other chemical or common names include Vinegar acid*. (Vinegar itself, which contains about 4% acetic acid, may be suitable for some purposes requiring acetic acid.)

3. Potential hazards: CAUSTIC TO FLESH; CORROSIVE TO CONCRETE, STEEL, WOOD AND GLASS.

4. Available from chemical supply house (both commercial and scientific), drugstore or pharmaceutical supply distributor, grocery store or supermarket, or hardware store.

-OR-

Hydrochloric Acid (30-35%):

1. A strong corrosive irritating acid.

2. Other chemical or common names include Chlorhydric acid; Hydrogen chloride; Muriatic acid* (generally available in 18 degree

and 20 degree Baume solutions); Marine acid*; Spirit of salt*; Spirit of sea salt*.

3. Potential Hazards: TOXIC, CAUSTIC TO FLESH; CORROSIVE TO CONCRETE, STEEL, WOOD AND GLASS; FLAMMABLE.

4. Available from chemical supply house, drugstore or pharmaceutical supply distributor, or hardware store.

OR-

Phosphoric Acid (H3PO4):

1. A syrupy or deliquescent tribasic acid used especially in preparing phosphates (as for fertilizers), in rust-proofing metals, and as a flavoring in soft drinks.

2. Other chemical or common names include Orthophosphoric acid.

3. Potential Hazards: CAUSTIC TO FLESH; CORROSIVE TO CONCRETE, STEEL, WOOD AND GLASS.

4. Available from chemical supply house or hardware store.

C. Calcium Hydroxide:

1. Other chemical or common names include Calcium hydrate*; Hydrated lime*; Lime hydrate*; Slaked lime*.

2. Potential Hazards: SKIN IRRITANT; AVOID INHALATION OF THE DRY POWDER.

3. Available from chemical supply house, construction materials yard, construction specialties distributor, garden and lawn supply center, or hardware store.

D. Filler material such as paper pulp.

E. Mineral water.

F. Plastic sheeting.

G. Clean dry towels for blotting the area after treatment.

H. Masking tape.

I. Accessible source of water, soap and towels for washing and rinsing in case of emergencies associated with the use of chemicals.

2.2 EQUIPMENT

A. Glass or ceramic container for mixing the poultice solution.

B. Rubber of plastic pale for mixing the acid and water solution.

C. Wooden utensil for stirring the ingredients.

D. Wood or plastic spatula.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection:

1. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.

2. Whenever acid is used, the surface should be thoroughly rinsed with water as soon as its action has been adequate. Otherwise it will continue etching the concrete even though the stain is gone.

3.2 ERECTION, INSTALLATION, APPLICATION

NOTE: DO NOT TRY MORE THAN ONE TREATMENT ON A GIVEN AREA UNLESS THE CHEMICALS USED FROM PRIOR TREATMENT HAVE BEEN WASHED AWAY.

A. Mix in a glass or ceramic bowl one of the following combinations:

1. 1 part hydrochloric acid in 19 parts water, OR

2. 1 part phosphoric acid in 9 parts water, OR

3. 1 part phosphoric acid plus 1 part acetic acid in 19 parts water.

CAUTION: ALWAYS ADD ACID TO WATER RATHER THAN VICE-VERSA. ADDING WATER TO CONCENTRATED ACID CAN CAUSE THE WATER TO BECOME SUPER-HEATED AND TURN TO STEAM, WHICH CAN RESULT IN ACID SPLASHING ON THE USER.

B. Saturate the concrete with clean, clear water.

C. Begin by using the first mixture listed above and apply to the affected concrete surface with a stiff, non-metallic bristle brush.

D. Thoroughly rinse the area with clean, clear water and allow to dry.

E. If the first mixture is unsuccessful in adequately removing the efflorescence, repeat the treatment using the other mixtures listed in the order displayed until successful results are achieved.

F. For concrete heavily laden with potential efflorescence:

1. Remove all visible surface salts, following Steps A-E directly above.

2. Follow by applying a poultice of paper pulp saturated in water and allow to dry.

3. Remove the dried poultice using a wood or plastic spatula.

4. Thoroughly rinse the surface with clean, clear water and allow to dry.

5. Repeat as necessary to achieve the desired level of cleanliness.

3.3 ADJUSTING/CLEANING

A. If there is a supply of dilute acid to be disposed of when work is complete, neutralize it by stirring in 3 pounds of powdered calcium hydroxide for every gallon of the dilute (1-3) acid. The resulting solution is a harmless mixture of calcium hydroxide and calcium fluoride. Check the resulting pH and adjust if necessary before disposing the excess cleaning solution.

+ + END OF SECTION + +

NO TEXT ON THIS PAGE

SECTION 03721

PREPARATION FOR RESURFACING CONCRETE AND CMU

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preparation of concrete and CMU surfaces to be rehabilitated.

B. Work in this Section includes Water Pressure cleaning, abrasive blast cleaning, concrete removal and testing for pH, moisture content, and soundness of concrete.

1.2 RELATED SECTIONS

A. Section 01010 - Summary of the Work.

B. Section 01410A - Testing and Testing Laboratory Services

C. Section 03732 - Concrete Repair: Rehabilitation or Restoration of concrete after preparation for resurfacing.

1.3 SCHEDULING

A. Perform abrasive blast cleaning and water pressure cleaning of work between the hours of 7 am to 5 pm.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Blasting Sand: Clean sand blasting sand free of impurities passing through 200 sieve.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work.

3.2 PREPARATION

A. Prepare and protect adjacent work from damage.

3.3 REHABILITATION CLEANING

A. Prior to any rehabilitation work, the concrete surface shall be thoroughly cleaned to produce a clean interior surface free of all coatings, sand, rock, roots, sludge or other deleterious materials.

B. During all cleaning and preparation operations all necessary precautions shall be taken to protect the concrete surface from damage). During these operations, precautions shall also be taken to insure that no damage is caused to public or private property adjacent to or served by these structures.

C. All sludge, dirt, sand, rock, grease, roots and other solid or semi-solid materials resulting from cleaning or surface preparation operations shall be removed from the immediate work site where it was removed.

D. All waste materials and debris removed during these operations shall be, if sufficiently dewatered (at least 20 percent solids and no visible moisture), conveyed directly to the County's Class I sanitary landfill, the South Dade Solid Waste Disposal Facility, 24000 S.W. 97th Avenue, Dade County, Florida. Solids which are too wet for direct deposit at the landfill shall be conveyed to and deposited at the Miami Dade County's South District Waste Water Treatment Plant located at 8950 S.W. 232nd Street, Miami Dade County, Florida, which is the Plant's "cleanout" pad established to receive and drain/dry this material. All cost for such removal and disposal, including tipping fees to either site, shall be paid by the Contractor, and shall be included in the prices quoted under the various Quotation Items and no other compensation will be provided. Under no circumstances shall sludge or other debris removed during these operations be dumped or spilled into the streets, ditches, storm drains or other sanitary sewers.

E. The Contractor is advised that he shall not dispose of this material by legal or illegal dumping on private or public property, by sale to others, or any means other than those given above.

F. Any load of material, or any portion thereof, disposed of in a non-permitted fashion will result in a charge to the Contractor in the amount of $200.00 per load, or any portion thereof, which sum will be deducted by the Department from any monies due the Contractor. This charge is in addition to any other damages specified elsewhere.

G. The Contractor shall keep his haul route and work area(s) neat and clean and reasonably free of odor, and shall bear all responsibility for the clean-up of any spill which occurs during the transport of cleaning/surface preparation by-products and the clean-up of any such material which is authorized by or pursuant to this Contract and in accord with applicable laws and regulations. The Contractor shall immediately cleanup any such spill, or waste. If the Contractor fails to cleanup such spill or waste immediately, the County shall have the right to cleanup or arrange for its cleanup and may charge to the Contractor all costs, including administrative cost and overhead, incurred by the County in connection with such cleanup. The County may also charge the Contractor any cost incurred or penalties imposed on the County as a result of any spill, dump or discard. Under no circumstances is this material is to be discharged into the waterways or any place other than where authorized to do so by the appropriate authority. The term "Contractor" as used in this section shall include the Contractor's subcontractors and other Contractors.

H. The general requirements for vehicles hauling such waste materials are as follows: Transport vehicles must be of type(s) approved for this application by Dade County, HRS, and the State of Florida FDOT. General requirements are that the vehicles have watertight bodies, that they be properly equipped and fitted with seals and covers to prohibit material spillage or drainage, and that they be cleaned as often as is necessary to prevent deposit of material on roadways. Vehicles must be loaded within all legal weight limits and operated safely within all traffic and speed regulations.

I. The routes used by the Contractor for the conveyance of this material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

3.4 PREPARATION AND INSPECTION OF CONCRETE SURFACES

A. Preparation of Concrete Surfaces

1. Pressure Cleaning: The Contractor shall remove grease, grime, sludge, loose and deteriorated concrete loose coatings and contaminants in the areas that are to be lined by Pressure Cleaning. The cleaning operation shall conform to:

   a. Pressure Cleaning shall be used to provide a clean, contamination-free, roughened and sound surface.

   b. Equipment shall sustain water pressures between 4,000 – 5,000 psi at the nozzle.

c. Use the equipment in accordance with the manufacturer's instructions. Organize the work to thoroughly cover the area specified for repair.

d. Particulate waste created by pressure cleaning shall be removed and disposed of in accordance with this Section. All of the waste or debris created shall be reclaimed and not allowed to move on downstream.

e. The pressure cleaning operation shall conform to all local, state and federal air quality standards and regulations.

2. SSPC-SP13 / NACE No.6 Surface Preparation of Concrete: The Contractor shall remove loose and deteriorated concrete and all existing coatings and contaminants by WET Abrasive Blast Cleaning, and/or Mechanical Cleaning in accordance with SSPC-SP13 / NACE No.6 the Surface Preparation of Concrete.

a. Prior to preparing the surface,

b. Prior to preparing the surface, care shall be taken to prevent damage to structures and equipment. Pumps and valves shall be shielded, covered, or otherwise protected to prevent the entrance of sand.

c. Determine type of nozzle, nozzle pressure, and blasting techniques required for a light sand blast: expose fine aggregate with occasional exposure of coarse aggregate; maximum 1/16-inch reveal.

d. It is intended that the sandblasting will alter the profile of the concrete to achieve a minimum ICRI-CSP5 or greater on all CIP walls and overhead concrete, ICRI-CSP6 on all CMU walls, and an ICRI-CSP3 or greater on the floor.

e. After sandblasting, cracks, voids, dust and spent sand shall be removed from the surfaces by pressure cleaning.

f. The sandblasting operation shall conform to all local, state and federal air quality standards and regulations

3.5 REMOVAL OF DETERIORATED CONCRETE

A. Removing Deteriorated Concrete: After pressure cleaning and sandblasting, damaged concrete substrates shall have all contaminated concrete removed by scabbling, chipping, grinding, brushing, blasting or

other methods to a depth where all the white calcium sulfate is removed and only hard grey concrete with a surface pH at 9.0 or above.

B. Any reinforcing steel exposed by removing deteriorated concrete shall be thoroughly cleaned by sandblasting to remove all contaminated concrete and rust particles.

C. Immediately after the cleaned reinforcing steel is inspected and accepted by the Engineer, the Contractor shall place a protective coating on the exposed reinforcing steel per Specification Section 03732.

D. When the deteriorated concrete is removed, the Contractor shall thoroughly clean the surface to remove all fines and deleterious materials that will adversely affect the bond of the proposed repair material.

3.6 INSPECTION OF SURFACES

A. Inspection of Concrete Surfaces: All surfaces where deteriorated concrete has been removed will require inspection by the Engineer and repair product manufacturer's representative. The repair product manufacturer's representative shall approve in writing that the concrete surface is sound prior to commencement of the repair operation. The surfaces will be tested for roughness, acidity and moisture. Roughness shall be in accordance with the manufacturer's product specifications. If the pH of the surface is less than 9.0 additional concrete shall be removed to a depth where the surface reading is equal to or greater than a pH of 9.0. Moisture readings for the surface of the concrete will be performed to verify the specification requirements of the manufacturer of the repair and coating materials.

3.7 REPAIR AND ACCEPTANCE OF CONCRETE SURFACE

A. Repair Concrete after WET abrasive blast cleaning through methods specified in Section 03732.

B. Acceptance: The Contractor and/or Manufacturer's Representative shall measure the surface pH, moisture content and temperature of the prepared concrete surface prior to beginning the coating operation.

C. Prior to the application of the coating product, the Engineer and coating manufacturer's representative shall inspect the different surfaces and test results. The coating manufacturer's representative must approve in writing that the surfaces are sound prior to the application of the coating.

3.8 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed by the Engineer and coating manufacturer's representative and per coating manufacturer's published written instructions so as not to void any warranties provided.

B. Final Surface Inspection: Check surface pH and moisture content of the concrete to comply with the requirements of the coating manufacturer for pH and moisture content.

C. Test concrete for calcium chloride and moisture content during the execution of the Work.

END OF SECTION

SECTION 03732

CONCRETE REPAIR

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Preparation of concrete and application of repair materials.

B. Rehabilitation and Restoration of concrete surfaces.

C. Repair of concrete internal reinforcement.

1.2 RELATED SECTIONS

A. Section 03200 – Concrete Reinforcement.

B. Section 03721 - Preparation for Resurfacing Concrete.

1.3 REFERENCES

A. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.

B. ANSI/AWS D1.4 - Structural Welding Code for Reinforcing Steel.

C. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

D. ASTM C33 - Specifications for Concrete Aggregates.

E. ASTM C150 - Portland Cement.

F. ASTM C404 - Aggregates for Masonry Grouts.

G. ASTM C882 - Bond Strength of Epoxy Resin Systems Used with Concrete.

H. ASTM D638 - Test Method for Tensile Properties of Plastics.

I. ASTM D695 - Compressive Properties of Rigid Plastics.

J. ASTM D790 - Flexural Properties of Plastics and Electrical Insulating Materials.

1.4 SUBMITTALS

A. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

B. Manufacturer's Certificate: Certify that specified products meet or exceed specified requirements.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of structural reinforcement repairs, type of repair, and extent.

1.6 QUALITY ASSURANCE

A. Perform welding work in accordance with ANSI/AWS D1.4.

1.7 QUALIFICATIONS

A. Materials Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.

B. Applicator: Company specializing in concrete repair approved by manufacturer.

C. Design reinforcement splices under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Florida.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01600A and 1660A.

B. Comply with instructions for storage, shelf life limitations, and handling.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Tnemec Company, Thiokol or approved equal.

2.2 PATCHING MATERIALS

A. Concrete Patching Material: Tnemec Series 217 MortarCrete, or approved equal.

1. Compressive Strength: ASTM C579 – No less than 8,950psi @ 24 hours.

2. Initial Set – 60 minutes.

3. Final Set – 90 minutes.

4. To Topcoat – 12 hours.

B. Concrete Resurfacing Epoxy: Tnemec Series 218 MortarClad or Saueriesen 208 Modified Epoxy Cement., or approved equal.

C. Bonding Agent: Not required.

D. Color: Gray

E. Water: Clean and potable.

2.3 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615, 60 ksi yield grade billet-steel deformed bars, epoxy finish.

B. Stirrup Steel: ANSI/ASTM A82.

C. Splicing Sleeves: Bar Grip or equal for the size of bar been spliced.

2.4 MIXING MORTARS

A. Mix mortars in accordance with manufacturer's instructions for purpose intended.

B. Mix components in clean equipment or containers. Conform to pot life and workability limits.

2.5 JOINT SEALANT

A. Thiokol 2235M HP High Performance Joint Sealant System or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

A. Clean concrete surfaces of dirt, laitance, corrosion, or other contamination; wire brush using water; rinse surface and allow to dry.

B. Flush out cracks and voids with water to remove laitance and dirt.

C. Provide temporary entry ports spaced to accomplish movement of fluids between ports; no deeper than the depth of the crack to be filled or port size diameter no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.

D. For areas patched with epoxy mortar, remove any broken, unsound or deteriorated substrate until solid concrete is found. The sound substrate must be clean with the appropriate surface profile for the specified material installation. Remove corrosion from steel. Clean surfaces mechanically; wash and rinse with water

E. Sandblast clean the exposed reinforcement steel surfaces. Mechanically cut away damaged portions of bar.

3.3 REPAIR WORK

A. Repair exposed structural, shrinkage, and settlement cracks of concrete as indicated on Drawings by patching with Tnemec Series 218 MortarClad. Clean sand can be added to thicken the material for deeper cracks.

B. Repair spalling. Fill voids flush with surface. Apply surface finish.

C. Repair of Damaged Reinforcing Bars:

1. Repair all existing rebar in accordance with ICRI Guidelines 310.1R.

2. Remove deteriorated concrete surround the steel reinforcement bars, including ¾” around the entire circumference of rebar, and sawcut for termination in accordance with Tnemec Series 217 Application Guide.

3. To all exposed rebar, abrasive Blast Clean to an SSPC-SP10 / NACE No.2 Near-white blast cleaning or SSPC-SP11 Power Tool Cleaning to Bare Metal.

4. After cleaning, coat existing and new rebar work with 5.0 to 7.0 mils DFT of Tnemec Series N69 HI Build Epoxoline II. Protect surrounding concrete to prevent coating of concrete during coating of rebar.

5. Where damaged rebar's are found, cut and replace with the same diameter rebar's spliced not less than 18", for #5 or smaller, and 24" for #6 and larger. If most of the reinforcement in the wall is damaged, all rebar's shall be cut, and a new reinforcing mat shall be placed on the whole wall area attached to the existing concrete with ½ inch diameter studs @ 24" o.c. each way; or

6. Where damaged rebar's are found, cut and replace with the same diameter rebar's attached to the existing reinforcement with bar-grip sleeve splices. Fit the press around the coupler and bar, and hydraulically push the inner die toward the outer die in order to deform a segment of the coupler onto the rebar along the length of the coupler."

7. Reinforcing steel shall at all times be protected from conditions conducive to corrosion until concrete is placed around it.

8. The surfaces of all reinforcing steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcing shall be re-inspected and, if necessary re-cleaned.

9. Rebuild substrate using Tnemec Series 217 MortarCrete flush to concrete plane.

3.4 REPAIR AND ACCEPTANCE OF CONCRETE SURFACE

A. Concrete Repair

1. Repair of Concrete Surfaces:

a. Cast in Place concrete vertical and overhead surfaces which are to receive a protective coating system shall be resurfaced using Tnemec Series 218 MortarClad or Sauereisen 208 Epoxy Cement to fill voids and bugholes while creating a monolithic surface to be coated and alleviate outgassing. The

Contractor shall rebuild the concrete surfaces to their original lines and shapes where damaged concrete has been removed as stated above.

b. CMU Block and all areas in need of deep repairs MUST be repaired with Series 217 MortarCrete final finish shall be flat and smooth by wood float or steel troweling – a broom finish will not be accepted. Once cured for a minimum 12 hours, laitance must be removed and the surface profile must be achieved in accordance with SSPC-SP13 / NACE No.6 the Surface Preparation of Concrete. TO ENSURE THE REMOVAL OF LAITENCE AND CURING FINES, ANY SINGLE COMPONENT REPAIR MORTAR MUST BE FINISHED SMOOTH AND ALTERED TO ACHIEVE THE RECOMMENDED SURFACE PROFILE BY WET ABRASIVE BLAST CLEANING.

2. Cement Patching Compound: Tnemec Series 217 MortarCrete shall be used to repair the deteriorated concrete surfaces. The patching compound must be accepted by the protective lining manufacturer and the Engineer as to compatibility with the protective lining. The Contractor shall follow the instructions and recommendations of the patching compound manufacturer as to application, giving special attention to their time requirements, depth of repair, surface preparation procedures and curing time.

3. Structural Concrete Repair:

a. Structural concrete repair shall be used to repair deteriorated concrete surfaces with fill depths greater than 2 inches that have the existing reinforcing corroded away and at areas as may be required by the Engineer. The areas shall be repaired using Tnemec Series 217 MortarCrete placed as specified above along with reinforcing steel as needed.

b. All surfaces where structural concrete repair materials will bond with existing concrete shall be a minimum ICRI-CSP6 and include a minimum ¼ inch termination point. Tnemec Series 217 MortarCrete shall not be feathered.

4. Finish of Repaired Surfaces:

a. General: The repaired concrete surface shall in general have a finish that will match the uncorroded surface.

b. Surface Finish: "Ordinary Surface Finish" shall approximate the required finish for the protective lining system.

c. Procedure for Finishing: The final finish shall be flat and smooth by wood float or steel troweling – A BROOM FINISH WILL NOT BE ACCEPTED, since doing so creates access curing fines and overworking of the material.

5. Curing: Tnemec Series 217 MortarCrete must be kept damp for at least 2 hours after the application to minimize hydration cracks. Concrete curing compounds are not allowed. The Contractor shall protect the newly repaired concrete from scarring or other damage. Once cured for a minimum 12 hours, laitance must be removed and the surface profile must be achieved in accordance with SSPC-SP13 / NACE No.6 the Surface Preparation of Concrete. TO ENSURE PROPER ADHESION AND LAITENCE/CURING FINES ARE REMOVED, ANY SINGLE COMPONENT REPAIR MORTAR MUST BE FINISHED SMOOTH AND ALTERED TO ACHIEVE THE RECOMMENDED SURFACE PROFILE BY WET ABRASIVE BLAST CLEANING.

6. Cleanup:

a. The Contractor shall provide a continuous cleanup operation for the concrete repair work. Sand, concrete debris, and other materials shall be removed daily from areas of the Pump Station.

b. At completion of the concrete repair work, remove all construction equipment, surplus material, debris and sand; wash down and sweep the area clean, prior to beginning the protective lining application. The Contractor is also required to provide a collection system to prevent materials, debris and other materials from entering the flow of any part of the sewer system.

B. Acceptance: The Contractor shall measure the surface pH, moisture content and temperature of the prepared concrete surface prior to beginning the lining operation. The acceptable ranges, as recommended by the lining manufacturer, shall be used to determine the choice of primer to be applied. The Contractor shall also check the concrete surfaces for residual laitance by visual inspection with magnification if necessary and by primer application on suspect areas. If the primer does not penetrate the concrete surface by turning the surface dark and the laitance area can be visually detected; the Contractor shall not accept the surface and shall have the area sandblasted or water blasted again for laitance removal.

Prior to application of the lining product, the Engineer and a repair product manufacturer’s representative shall inspect the surface with the Contractor.

The product manufacturer's representative shall approve in writing that the surface is acceptable prior to the lining application.

3.5 INJECTION - EPOXY RESIN ADHESIVE

A. Surface Preparation: Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials.

Concrete - Blast clean, shot blast or use other approved mechanical means to provide an open roughened texture. Gravity feed cracks should be cut to form a vee form along the crack.
Steel - Should be cleaned and prepared thoroughly by blast cleaning.

B. Application:

1. To gravity feed cracks:

   a. Blow vee-notched crack clean with oil-free compressed air.

   b. Pour product into vee-notched crack. Continue placement until completely filled. Seal underside of slab prior to filling if cracks reflect through

   c. Remove temporary seal and excess adhesive.

   d. Clean surfaces adjacent to repair and blend finish.

2. To pressure-inject cracks:

   a. Use automated injection equipment or manual method.

   b. Set appropriate injection ports based on system used. Seal ports and crack.

   c. Inject with steady pressure; begin injection at lower entry port and continue until adhesive appears in adjacent entry port. Continue from port to port until entire crack is filled.

   d. Do not inject cracks greater than 1/4 in.

   e. Remove temporary seal and excess adhesive.

   f. Clean surfaces adjacent to repair and blend finish.

3. Product: Sikadur 35 Hi-Mod LV by Sika, Masterinject 1500 by BASF or approved equal.

3.6 APPLICATION OF JOINT SEALANT

A. Considerations and Limitations

1. Do not thin with solvents unless advised to do so by manufacturer.

2. Confirm product performance in specific chemical environment prior to use.

3. Prepare substrate according to “Surface Preparation” portion of this document.

4. Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest or inhale. Refer to Material Safety Data Sheet for detailed safety precautions.

5. For industrial/commercial use. Installation by trained personnel only.

B. Surface Preparation

1. Concrete:

a. Apply only to clean, dry and sound concrete substrates that are free of all coatings, sealers, curing compounds, oils, greases or any other contaminants. New concrete should be cured a minimum of 28 days.

b. Concrete that has been contaminated with chemicals or other foreign matter must be neutralized or removed.

c. Remove any laitance or weak surface layers.

d. Concrete should have a minimum surface tensile strength of at least 300 PSI per ASTM D-4541.

e. Surface profile shall be CSP-3 to CSP-5 meeting ICRI (International Concrete Repair Institute) standard guideline #03732 for coating concrete, producing a profile equal to 60-grit sandpaper or coarser. Prepare surface by mechanical means to achieve this desired profile.

2. Steel:

a. For immersion service, “White Metal” abrasive blast with an anchor profile of 2–4 mils in accordance with Steel Structures Painting Council Specification SP-5-63 or NACE No. 1 is required. For splash and spillage exposure, “Near White” SP-10-63 or NACE No. 2 is required.

b. Refer to PolySpec Surface Preparation Guidelines for more details.

C. Installation Steps

1. BASE SYSTEM: Thiokol 2235M HP High Performance Joint Sealant System or approved equal.

a. Prime surface with Thiokol 5050 Primer. See data sheet for application details.

b. Install a backer rod into the joint; the backer rod should be compressed 25%. When a backer rod is not feasible, bond breaker tape is acceptable.

NOTE: Ideally, the joint depth should be one half the joint width.

c. Add Component B to Component A and mix at slow speed (250–300 RPM) with a 1/2” drill 2 part sealant mixing paddle until material is completely blended. Scrape down sides of container and mixing paddle periodically during mixing; thorough blending of the components is essential for maximum performance of the sealant.

NOTE: Typical mixing time is 3–5 minutes.

d. Thiokol 2235M is supplied in a non-sag consistency that will gun easily with conventional caulking equipment. Fill joint completely. The best installation is done with a bulk caulk gun such as an Albion model # DL-45-T13 or suitable equal.

NOTE: Proper width to depth ratios must be maintained.

e. Immediately after application, dry tool the sealant using a spatula. Use light pressure to ensure positive and complete contact of the sealant to the joint surfaces. Non-sag sealants should be tooled with a suitable sealant spatula with a rounded tip similar to the 258 series by Albion to provide a concave finish thereby creating the desired hour-glass

configuration. Spatulas should be slightly wider than the width of the expansion joint.

NOTE: Care must be taken to avoid contamination of open joints. Blocking may be required.

3.7 APPLICATION - EPOXY MORTAR

A. Trowel apply mortar mix to thickness recommended by manufacturer. Tamp into place filling voids at spalled areas.

B. For patching honeycomb, trowel mortar onto surface, work mortar into honeycomb to bring surface flush with surrounding area. Finish trowel surface to match surrounding area.

C. Cover exposed steel reinforcement with epoxy mortar, and terminate no less than ¼ inch.

3.8 FIELD QUALITY CONTROL

A. All field inspection and testing required by the Contract Documents will be performed by the Contractor.

B. Test concrete for calcium chloride content during the execution of the Work.

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 04100

MORTAR

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. The Contractor shall furnish all labor, materials, equipment and incidentals required to provide mortar as shown and specified.

2. This Section specifies the mortar for masonry materials specified in Section 04201, “Unit Masonry Construction.”

B. Related Work Specified Elsewhere:

1. Section 04201, “Unit Masonry Construction.”

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Wherever a fire resistance classification is shown or scheduled for unit masonry construction (4-hour, 3-hour and similar designations), provide mortar in proportions complying with the requirements established by UL and the New York State Uniform Fire Prevention and Building Code.

B. Source Quality Control: Do not change source or brands or mortar materials during the course of the Work.

C. Presubmittal Meeting: Before submitting samples for approval, the Contractor and his supplier shall meet on-site with the Engineer to review existing masonry to be matched and preview proposed products.

D. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. ASTM C 91, Masonry Cement.

2. ASTM C 136, Sieve or Screen Analysis of Fine and Coarse Aggregates.

3. ASTM C 144, and ASTM C 404, Aggregate for Masonry Mortar.

4. ASTM C 150, Portland Cement.

5. ASTM C 207, Hydrated Lime for Masonry Purposes.

6. ASTM C 270, Mortar for Unit Masonry.

1.3 SUBMITTALS

A. Samples: Submit for approval samples of each type of colored mortar, showing the range of color which can be expected in the work. Label samples to indicate type and amount of colorant used. Engineer's review will be for color only. Compliance with all other requirements in the exclusive responsibility of the Contractor.

B. Manufacturer's Data: Submit for approval, copies of manufacturer's specifications and instructions for each manufactured product.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials: Manufactured materials, such as cement and lime, shall be delivered and stored in their original unopened containers, plainly marked with identification of materials and manufacturer.

B. Storage of Materials:

1. Store mortar materials off the ground in a dry location and under a properly constructed shelter using tarpaulin, felt paper, or polyethylene sheets to prevent damage by the elements. Containers showing evidence of damage will be rejected.

2. Protect liquid admixtures from freezing.

3. Store aggregates in separate bins.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement:

1. ASTM C 150, Type I, nonstaining, without air entraining and of natural color or white, to produce the required color of mortar or grout.

2. Use ASTM C 150, Type III, high early strength, for laying masonry when outside temperature is less than 50°F.

3. Provide nonstaining portland cement, without air entraining and of natural color or of the color required to be compatible with the required colored mortar pigment selected by Engineer.

4. Product and Manufacturer: Provide one of the following:

   a. Speed Portland Cement and Hi-Speed Portland Cement by Louisville Cement Company.

   b. Atlas Type I Atlas Type III Portland Cement by Lehigh Portland Cement Company.

   c. Or equal.

5. Product and Manufacturer: Provide one of the following:

   a. White Portland Cement by Ideal Basic Industries.

   b. Atlas White Portland Cement Type I and Type III by Lehigh Portland Cement Company.

   c. Or equal.

B. Masonry Cement: Provide the following for masonry cement mortars:

1. ASTM C 91, Type S; proportioned as specified to comply with ASTM C 270.

2. Maximum Air Content, ASTM C 91: 18 percent.

3. Nonstaining and of the color required to be compatible with the required colored mortar pigment selected by Engineer.

4. Product and Manufacturer: Provide one of the following:

   a. Brixment-in Color Type S by Louisville Cement Company.

   b. Atlas Custom Color Masonry Cement Type S by Lehigh Portland Cement Company.

   c. Or equal.

C. Hydrated Lime: ASTM C 207, Type S, or lime putty ASTM C 5.

D. Sand Aggregates:

1. ASTM C 144, except for joints less than 1/4-inch use aggregate graded with 100 percent passing the No. 16 sieve.

2. White Mortar Aggregates: Provide natural white sand or ground white stone for portland cement lime mortars.

3. Colored Mortar Aggregates: Provide ground marble, granite or other sound stone, as required to match the sample approved by Engineer for portland cement lime mortars.

E. Colored Mortar Pigments: Provide the following for portland cement lime mortars:

1. Commercial iron oxide, manganese dioxide, ultramarine blue, chromium oxide, or carbon black, compounded for use in mortar mixes.

2. Do not exceed pigment to cement ratios, by weight of 1 to 35 for carbon black and 1 to 7 for other pigments.

3. Product and Manufacturer: Provide one of the following:

a. Truetone Mortar Colors by Frank D. Davis Company Subsidiary Rockwood Industries Incorporated.

b. Sonobrite by Sonneborn Building Products Division Rexnord Chemical Products Incorporated.

c. Or equal.

4. Submit complete selection of manufacturer's standard and custom colors for final selection by Engineer.

F. Water: Free from injurious amounts of oils, acids, alkalis, or organic matter, and clean, fresh and potable.

G. Waterproofing Admixture:

1. Proportion: In strict accordance with manufacturer's instructions.

2. Product and Manufacturer: Provide one of the following:

a. Omicron by Master Builders Co.

b. Hydroxide Powder by Sonneborn Building Products.

c. Or equal.

2.2 MORTAR MIXES

A. General:

1. Antifreeze Admixture or Agents: Not permitted.

2. Calcium chloride: Not permitted.

B. Fire Resistant Mortar:

1. Standard: UL Design Numbers 0901, 0902, 0903, 0904, 0905, 0906, 0907 and 0908.

2. Proportion: Use 1 part portland cement, 3 parts clean sand, and 15 percent hydrated lime (by cement volume).

C. Mortar for All Other Unit Masonry: Comply with ASTM C 270 Table 2, except limit materials to those specified herein, do not substitute ASTM C 91 masonry cement for ASTM C 150 portland cement without an approved Shop Drawing review by Engineer and limit cement to lime ration by volume as follows:

1. Type M:

a. Portland Cement Lime Mortar; provide the following proportions by volume:

1) Portland Cement: 1 part.

2) Hydrated Lime or Lime Putty: 1/4 part.

3) Aggregate Ratio (measured in damp loose condition): not less than 2-1/4 and not more than 3 times the sum of the volumes of cement and lime.

4) Maximum Air Content, ASTM C 270: 12 percent.

b. Portland Cement Masonry Mortar; provide the following proportions by volume:

1) Portland Cement: 1 part.

2) Masonry Cement: 1 part.

3) Aggregate Ratio (measured in damp loose condition): Not less than 2-1/4 and not more than 3 times to sum of the volumes of cement and lime.

4) Maximum air content, ASTM C 270: 18 percent.

c. Property Specification:

1) Average Compressive Strength, ASTM C 270: 2,500 pounds per square inch.

2) Minimum Water Retention, ASTM C 270: 75 percent.

2. Type S:

a. Portland Cement Lime Mortar; provide the following proportions by volume:

1) Portland Cement: 1 part.

2) Hydrated Lime or Lime Putty: Over 1/4 to 1/2 maximum.

3) Aggregate Ration (measured in damp loose condition): Not less than 2-1/4 and not more than 3 times the sum of the volumes of cement and lime.

4) Maximum air content, ASTM C 270: 12 percent.

b. Portland Cement Masonry Mortar; provide the following proportions by volume:

1) Portland Cement: 1/2 part.

2) Masonry Cement: 1 part.

3) Aggregate Ratio (measured in a damp loose condition): Not less than 2-1/4 and not more than 3 times the sum of the volumes of cement and lime.

4) Maximum air content, ASTM C 270: 18 percent.

c. Property Specification:

1) Average Compressive Strength, ASTM C 270: 1,800 pounds per square inch.

2) Minimum Water Retention, ASTM C 270: 75 percent.

D. Colored Pigmented Cement Mortar: For portland cement lime mortars proportion pigments with other ingredients as follows:

1. Mix to match sample approved by Engineer.

2. For black mortar mix with 1/8 part black iron oxide per part of portland cement and reduce lime content to not more than 1/10 part.

E. Stearate Additive: Add to mix in amount equal to not more than 3 percent of the weight of cement.

PART 3 - EXECUTION

3.1 PREPARATION

A. Measurement of Materials:

1. Mortar Cement and Hydrated Lime: Batched by the bag.

2. Sand: Batched by volume in suitably calibrated containers, provided proper allowance is made for bulking and consolidation and for weight per cubic foot, of contained moisture.

3. Proportion of volumetric Mixtures: One 94 pound sack of portland cement or one 50 pound sack of hydrated lime constitute nominal one cubic foot.

4. Shovel measurement: Not permitted.

B. Mortar Mixing:

1. Type of Mixer: Machine mix in approved mixer in which the quantity of water is accurately and uniformly controlled.

2. While mixer is in operation add approximately 3/4 the required water, 1/2 the sand, all the cement, then add remainder of sand.

3. Allow batch to mix briefly then add water in small quantities until satisfactory workability is obtained.

4. Mix for not less than five minutes after all materials have been added.

5. Hydrated Lime for Mortar Requiring Lime Content: Use dry-mix method. Turn over together the materials for each batch until the even color of the mixed, dry materials indicates that cementitious material has been thoroughly distributed throughout the mass, then add water to obtain required plasticity.

6. Lime putty if approved for use shall be prepared in accordance with ASTM C 5.

7. Waterproofing Admixture: Add to mortar mix for all exterior masonry in strict accordance with manufacturer's instructions.

8. The mixer drum shall be completely emptied before recharging the next batch.

9. Limit batch size to avoid retempering. Retempering of mortar shall not be permitted.

10. Mixers, wheelbarrows, mortar boards, etc., shall be kept clean.

3.2 INSTALLATION

A. Refer to Section 04201, Unit Masonry Construction.

PART 4 – PAYMENT

4.1 MEASUREMENT AND PAYMENT

A. No separate payment for the item, “Mortar,” will be made. The costs of same shall be included in the Base Bid.

+ + END OF SECTION + +

SECTION 04201

UNIT MASONRY CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall furnish all labor, materials, equipment and incidentals required to provide unit masonry construction as shown and specified.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the masonry.

C. Related Work Specified Elsewhere:

1. Section 04100, Mortar.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Wherever a fire-resistance classification is shown or scheduled for unit masonry construction (4-hour, 3-hour, and similar designations), comply with applicable requirements for materials and installation established by UL and other governing authorities.

B. Codes and Reference Standards: Comply with the applicable requirements of the New York State Uniform Fire Prevention and Building Code for the types of masonry construction shown and the following standards:

1. ANSI A41.1 R70 Code Requirements for Masonry

2. ACI 531.1 Specifications for Concrete Masonry Construction

3. Brick Institute of America, “Technical Notes on Brick and Tile Construction”

4. Brick Institute of America, Technical Bulletin 1A, “Construction and Protection Recommendations for Cold Weather Masonry Construction”

5. Brick Institute of America, Technical Notes on “Cleaning Clay Products Masonry”

6. National Concrete Masonry Association, “Guide Specifications” and “Technical Bulletins”

7. UL, Design Numbers U901 through U908.

C. Construction Tolerances: In accordance with ACI 531.1 and the following:

1. Variation from Plumb: For lines and surfaces of columns, walls and arrises, do not exceed 1/4-inch in 10 feet, or 3/8-inch in a story height or 20 feet maximum, nor 1/2-inch in 40 feet or more. Except for external corners, expansion joints and other conspicuous lines, do not exceed 1/4-inch in any story or 20 feet maximum, nor 1/2-inch in 40 feet or more.

2. Variation from Level: For lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4-inch in any bay or 20 feet maximum, nor 3/4-inch in 40 feet or more.

3. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown. Do not exceed minus 1/4-inch nor plus 1/4-inch.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials:

1. Deliver all materials to the site in the manufacturer’s original unbroken, undamaged and unopened packaging with labels bearing the name of the manufacturer and the product. Masonry units and brick shall be factory packaged and strapped, delivered to the site and stored on skids.

B. Storage of Materials:

1. Protect masonry materials during storage and construction with a properly erected shelter from wetting by rain, snow or groundwater and from soilage or intermixture with earth or other materials.

2. Store and handle all materials to prevent inclusion of water or foreign matter and to prevent damage of any nature. Packaged units to be kept in original unopened packages until time for use.

3. Distribute materials on floor slabs to prevent overloading. Designated live loads shown for floor shall not be exceeded.

C. Handling Materials:

1. Handle materials in a manner that minimizes chips, cracks, voids, discolorations or other defects which might be visible or cause staining in finished work.

1.4 JOB CONDITIONS

A. Environmental Requirements: Do not place any masonry when air temperature is 40°F and falling. Masonry may be placed when air temperature is 32°F and rising. In either case, it may not be placed if temperature is expected to drop below 32°F during next 72 hours unless adequate protection is provided as specified in 1.4.B.4.b. below.

B. Protection:

1. Protect partially completed masonry against weather, when Work is not in progress, by covering top of walls with strong, waterproof, nonstaining membrane. Extend membrane at least 2 feet down both sides of walls and hold securely in place.

2. Do not apply uniform floor or roof loading for at least 3 days after completing masonry columns or walls.

3. Do not apply concentrated loads for at least 7 days after completing masonry columns or walls.

4. Cold Weather Protection:

a. When surrounding air temperature is 48°F to 40°F, protect masonry construction from rain or snow for a minimum of 48 hours by covering with nonstaining weathertight membrane.

b. When surrounding air temperature is 40°F and below, maintain masonry construction temperature above 40°F for a minimum of 48 hours by enclosure and supplementary heat, electric heating blankets, infrared lamps, or other methods acceptable as directed by the Engineer.

5. Hot Weather Protection: Protect masonry construction, by methods acceptable to Engineer, from direct exposure to wind and sun when the surrounding air temperature is 99°F in the shade with relative humidity less than 50 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Refer to the following Sections for required masonry materials.

1. Section 04100, Mortar.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which unit masonry Work is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.

3.2 PREPARATION

A. Clean dirt, debris, oil, grease and other materials which would effect the bond of mortar from all surfaces to receive work under this Section.

B. Wetting of Masonry Units:

1. Glazed Structural Tile: Wet units which display an absorption rate of 12 percent or more when immersed for 1-hour in boiling water.

2. Brick: Wet brick having ASTM C 67 absorption rates greater than 0.25 ounce per square inch per minute.

a. Determine absorption by placing 20 drops of water inside a circle the size of a quarter on typical units. If water is absorbed within 1 1/2 minutes, wet brick before laying.

3. Use wetting methods which ensure that each masonry unit is nearly saturated but surface dry when laid.

4. Except for absorbent units specified to be wetted, lay masonry units dry. Do not wet concrete masonry units.

3.3 INSTALLATION, GENERAL

A. Thickness: Build walls, and other masonry construction to the full thickness required to match existing.

B. Leave openings for equipment, piping, ducts, and other items to be installed subsequent to starting of masonry Work. After installation of said items, complete masonry Work to match Work immediately adjacent to openings.

C. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining Work neatly. Use full size units without cutting wherever possible.

D. Matching Adjacent Existing Masonry Work: Match coursing, pattern bond, color and texture of new masonry work with adjacent existing work.

3.4 LAYING MASONRY WALLS

A. General:

1. Mortar Types: Unless otherwise indicated, use mortar as specified in Section 04100, Mortar, and as follows:

   a. For all Work, use Type S mortar.

   b. Use Type M mortar to fill voids for structurally reinforced walls.

   c. Do not use mortar which has begun to set or, if more than 1/2-hour, has elapsed since initial mixing. Retemper mortar during the 1/2-hour period only as required to restore workability.

2. Layout walls in advance for accurate spacing of surface pattern bond with uniform joint widths and to properly locate openings, expansion joints, returns and offsets. Avoid the use of less than half-size units at corners, jambs and wherever possible at other locations.

3. Lay up walls plumb and true to comply with specified tolerances, with courses level, accurately spaced and coordinated with other Work.

4. Pattern Bond: Lay exposed masonry in running bond and as shown to match adjacent existing masonry. Lay concealed masonry with all units in a wythe bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than 4-inch horizontal face dimensions at corners or jambs.

B. Mortar Bedding and Jointing:

1. Lay solid masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

2. Lay horizontal cell clay tile units greater than 4 inches in thickness with divided bed joints. Keep drainage channels, if any, free of mortar. Form head joints with sufficient mortar so that excess will be squeezed out as units are placed in position. Butter both sides of

units to be placed, or butter one side of unit in place and one side of unit to be placed.

3. Lay vertical cell clay tile units with divided head joints. If exposed to weather, do not place with continuous mortar joints through wall.

4. Bed and lay brick and concrete masonry units at the proper angle with fully slushed joints.

5. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout.

    a. Maintain 3/8-inch joints, except for minor variations required to maintain pattern bond.

    b. Lay structural glazed tile, to match existing.

6. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials, unless otherwise shown.

7. Tool exposed joints slightly concave, to match existing. Rake out mortar in preparation for application of caulking or sealants where required.

8. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

C. Collar Joints:

1. Fill the vertical space between wythes solidly with mortar by parging the in-place wythe and shoving units into the parging, for the following masonry work:

    a. All walls, except cavity walls, and interior walls and partitions.

D. Stopping and Resuming Work:

1. Rake back 1/2-brick length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly, if required, and remove loose masonry units and mortar prior to laying new masonry.

E. Interior Walls – NOT USED

F. Cavity Walls – NOT USED

G. Horizontal Joint Reinforcing:

1. Provide continuous horizontal joint reinforcing as shown and specified. Fully embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8-inch on exterior side of walls and 1/2-inch at other locations. Lap reinforcement a minimum of 6 inches at ends of units. Do not bridge control and expansion joints with reinforcing.

2. Reinforce all walls with continuous horizontal joint reinforcing unless specifically noted or specified to be omitted.

3. Provide continuity at corners and wall intersections by use of prefabricated “L” and “T” sections. Cut and bend units in accordance with manufacturer’s written instructions for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

4. Space continuous horizontal reinforcing as follows:

   a. For multi-wythe walls, solid or cavity, where continuous horizontal reinforcing also acts as structural bond or tie between wythes, space reinforcing as required by code but not more than 16 inches on centers vertically.

   b. For single wythe walls, space reinforcing at 16 inches on centers vertically, unless otherwise shown.

   c. For parapets, space reinforcing at 8 inches on centers vertically, unless otherwise shown.

5. Reinforce masonry openings greater than 12 inches wide, with horizontal joint reinforcing placed in two horizontal joints approximately 8 inches apart, immediately above the lintel and immediately below the sill. Extend reinforcing a minimum of 24 inches beyond jambs of the opening.

   a. In addition to wall reinforcing, provide additional reinforcing at openings as required to comply with the above.

H. Anchoring Masonry Work:

1. Provide anchoring devices of the type shown and as specified. If not shown or specified, provide standard type for facing and back-up involved.

2. Anchor masonry to structural members where masonry abuts or faces such members to comply with the following:

   a. Provide an open space not less than 1/2-inch in width between masonry and structural member, unless otherwise shown. Keep open space free of mortar or other rigid materials.

   b. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to structure. Provide anchors with flexible tie sections, unless otherwise shown.

   c. Space anchors as shown, but not more than 16 inches on center vertically and 36 inches on center horizontally.

3. Anchor single wythe masonry veneer to backing with metal ties as follows:

   a. Anchor veneer to structural members with metal anchors embedded in masonry joints and attached to structure. Provide anchors with flexible tie section, unless otherwise shown.

   b. Anchor veneer to concrete back up with dovetail anchors.

   c. Anchor veneer to existing concrete and masonry backup with corrugated anchors attached with stainless steel expansion bolts.

I. Control Joints:

1. Provide vertical expansion, control and isolation joints in masonry where shown. Build in related items as the masonry Work progresses. Rake out mortar in preparation for application of caulking and sealants.

   a. Build flanges of factory-fabricated neoprene control joint into brick masonry and premolded control joint strips into concrete unit masonry.

b. Build in compressible fillers As specified and where shown. Install in accordance with manufacturer's written instructions.

2. Control Joint Spacing: Where location of control joints are not shown, place vertical joints spaced not to exceed 50 feet on centers for clay masonry or 35 feet on centers for concrete masonry wythes if reinforced. Locate control joints in the masonry Work as shown and including the following:

a. At structural column or joint between bays.

b. Above expansion or control joints in the supporting structure.

c. Above major openings at end of lintels upward and below at ends of sills downward. Place at one side of jamb for openings less than 6 feet wide and at both sides for openings over 6 feet wide.

d. At vertical chases, recesses and other points of reduction in wall thickness.

e. At locations where masonry wall height changes by more than 20 percent.

f. Where masonry abuts supporting structure.

g. At a distance equal to 1/2 the wall height from corners or intersections with other masonry.

h. Submit joint locations to Engineer for approval.

J. Lintels:

1. Provide steel lintels where shown, and specified in Section 05504, Miscellaneous Metal Fabrications.

2. Provide masonry lintels where shown and wherever openings of 16 inches or more are shown without structural steel lintels. Provide precast or formed in place masonry lintels. Thoroughly cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.

a. Unless otherwise shown, provide one horizontal reinforcing bar for each 4 inches of wall thickness, of size-number not less than the number of feet of opening width.

b. For hollow masonry unit walls, use specially formed “U” shaped lintel units with reinforcing bars placed as shown, filled with Type M mortar.

3. Provide minimum bearing at each jamb, of 4 inches for openings less than 6 feet wide, and 8 inches for wider openings.

K. Flashing of Masonry Work:

1. Provide concealed flashings in masonry Work as shown. Prepare masonry surfaces smooth and free from projections which might puncture flashing. Place through wall flashing on bed of mortar and cover with mortar. Seal flashing penetrations with mastic before covering with mortar. Terminate flashing 1/2-inch from face of wall, unless otherwise shown.

a. Extend flashings beyond edge of lintels and sills at least 4 inches and turn up edge on sides to form pan to direct moisture to exterior.

b. Install elastic flashings in accordance with manufacturer’s instructions.

2. Provide weep holes in the head joints of the first course of masonry immediately above concealed flashings. Space 24 inches on center, unless otherwise shown.

3. Install reglets and nailers for flashing and other related work where shown to be built into masonry Work.

4. Install emergency scuppers as shown.

3.5 CUTTING AND REMOVING EXISTING MASONRY

A. Wherever existing masonry is shown to be cut and removed, use methods that will produce sharp, true edges to accept new abutting work. Remove existing masonry in pattern shown.

3.6 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point up all joints at corners,

openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.

C. Cleaning Glazed Masonry Work:

1. After laying glazed structural tile units, wipe off excess mortar with a soft cloth. Clean glazed surfaces as recommended by the unit masonry manufacturer and rinse with clear water. Do not use acid-cleaning agent, abrasive tools or powders, or metal cleaning tools and brushes, unless specifically recommended by the manufacturer in writing.

D. Cleaning Exposed, Unglazed Masonry Surfaces:

1. Wipe off excess mortar as the Work progresses. Dry brush at the end of each day's work.

2. Final Cleaning: After mortar is thoroughly set and cured, clean sample wall area of approximately 20 square feet as described below. Obtain Engineer's acceptance of sample cleaning before proceeding to clean remainder of masonry work.

a. Dry clean to remove large particles of mortar using wood paddles and scrappers. Use chisel or wire brush if required.

b. Presoak wall by saturating with water and flush off loose mortar and dirt.

c. Scrub down wall with stiff fiber brush and a solution of 1/2 cup of trisodium phosphate and 1/2 cup of household detergent dissolved in 1 gallon of water.

d. Rinse walls, using clean, pressurized water, to neutralize cleaning solution and remove loose material.

e. Acid cleaning of masonry will not be permitted.

E. Protection:

1. Protect the masonry Work from deterioration, discoloration or damage during subsequent construction operations.

2. When work on any brick or block masonry is finished for the day or discontinued on account of rain or snow, or where top of new work is likely to be damaged by storms, sloping planks covered with tarred felt shall be placed over the top of walls.

PART 4 - PAYMENT

4.1 MEASUREMENT AND PAYMENT

A. No separate payment for the item, “Unit Masonry Construction,” will be made. The costs of same shall be included in the Base Bid.

+ + END OF SECTION + +

SECTION 04510

MASONRY CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Provide all masonry cleaning Work as indicated on the Drawings and as specified herein, including, but not limited to the following:

1. Masonry cleaning related to repair and replacement of the tank walls.

1.2 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1.3 SUBMITTALS

A. Product Data:

Cleaning materials manufacturers' catalog sheets, specifications, and application instructions.

B. Quality Control Submittals:

1. Cleaning Subcontractor's Qualifications Data:

a. Firm name, address, and telephone number.

b. Period of time firm has performed masonry cleaning work, and names and addresses of the required number of similar projects completed by the firm.

2. Cleaners Qualifications Data:

a. Name of each person who will be performing the Work of this Section.

b. Employer's name, address, and telephone number.

c. Names and addresses of the required number of similar projects that each person has worked on which meet the experience criteria.

3. Cleaning Procedure: Proposed cleaning procedure for cleaning masonry including each step in the cleaning process, type of scaffolding, and type, size and location of equipment.

C. Submit a schedule of cleaning activities for each type of masonry to be cleaned. (Include location and a description of the cleaning sequence, all products, equipment and scaffolding, etc. to be used.

D. Submit a description of Protection Procedures for each condition and surface which requires protection.

1.4 QUALITY ASSURANCE

A. Cleaning Contractor's Qualifications:

The firm performing the Work of this Section shall have been regularly engaged in masonry cleaning work for a minimum of five years, and shall have completed 5 similar projects using the cleaning method specified.

B. Cleaners' Qualifications:

The persons cleaning the masonry and their supervisors shall be personally experienced in the required method of masonry cleaning, and shall have worked on 5 similar projects within the last 3 years.

C. Field Examples:

1. Before the building cleaning operations are started, clean a sample panel of approximately 100 square feet of each type of masonry required to be cleaned at a location on the building directed by the Authority's Representative. If the sample panel is not satisfactory, as determined by the Authority's Representative, modify the cleaning procedure and clean another sample panel. Continue cleaning sample panels until satisfactory results are obtained and approved by the Authority's Representative. When a final approval is obtained, go back and re-clean all previously rejected panels.

    a. For cleaning procedures other than specified, but which generally follow the method(s) specified, submit proposed procedure for approval and clean additional sample panels adjacent to the above sample panels for comparison of results.

2. Approved panels and procedures will become the cleaning standard for the Work of this Section.

3. Cover the approved sample panels with six mil polyethylene plastic mounted on wood frames of adequate size and strength to protect

the panels until the completion of Work. The cover shall be easily removable for comparison with completed Work.

D. If unusual types of soiling agents are encountered, consult with the Authority's Representative before proceeding with the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver cleaning materials in manufacturer's packaging, with instructions for use.

B. Store, protect, and handle cleaning materials in accordance with manufacturer's instructions.

1.6 PROJECT CONDITIONS

A. Environmental Requirements:

1. Make necessary provisions for the diversion and disposal of cleaning water and solutions, including the furnishing of pumps if required. Take precautions as required to prevent damage and contamination resulting from run off of cleaning solution.

2. Do not wet or wash down masonry surfaces when the temperature is below 40°F or may drop below 40°F within 24 hours.

B. Existing Conditions:

1. Take necessary precautions and protective measures to prevent injury to people and damage to property in areas adjacent to the Site, including damage due to wind drift of cleaning materials.

2. Pumping equipment will not be allowed in or on the building.

3. Ensure that painted surfaces (such as exterior doors, windows, window sills, etc.) are not affected by the washing, except for those surfaces designated by the Authority for cleaning.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Materials:

Liquid detergents and water, and solutions of chemical cleaning agents and additives, that will remove the dirt, grime, carbon, surface residues, stains, graffiti, and other foreign material from the masonry surfaces, but will not damage the masonry.

B. Do not use abrasive blasting aggregate cleaning method, or low pressure micro-abrasive powder process or any other cleaning method until written permission is given by the Authority.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection:

1. Protect windows, doors, fixtures, air conditioners, roofing, flashings, painted surfaces and other adjacent surfaces not required to be cleaned, from damage.

2. Protect landscaping, paving, and other improvements near the building from damage.

3. Construct temporary sidewalk sheds at building entrances and other areas to divert cleaning materials and debris away from entrance ways and to provide sheltered access to the building.

B. Surface Preparation:

1. Remove vines, bird nests, stalactite deposits, and heavy accumulations of dirt, bird droppings and other foreign materials from surfaces required to be cleaned. Remove material from the site.

2. Perform this preliminary cleaning by brushing, sweeping, wiping, scraping, vacuuming, and other approved methods as required by existing conditions. Use tools that will not damage the masonry.

3.2 CLEANING MASONRY

A. Chemical Solutions or Liquid Detergent and Water:

1. Prewet the masonry surfaces with water.

2. Prepare cleaning solutions and operate pressure spray equipment in accordance with cleaning materials manufacturer's recommendations, unless otherwise indicated.

a. Clean areas not accessible to spray equipment with bristle brushes.

B. Water Cleaning Methods:

1. Low pressure (water soak) for limestone and marble.

2. Medium pressure: Use 200 psi to 600 psi.

C. Clean masonry equal in appearance to the approved sample panels.

D. Clean masonry free of dirt, grime, soot, carbon, efflorescence, moss, stains, graffiti, tendrils, and other foreign materials. Leave masonry uniformly clean and undamaged.

E. Clean all features and appurtenances of the masonry such as sills, arches, lintels, returns, reveals, projecting courses, coping, entablature work, back of parapets and balustrades, balconies, friezes, fascias, cornices, chimneys and other features, except for those building features which are painted and are not included in the scope of work.

F. Thoroughly rinse off the masonry surfaces with water.

3.3 CLEAN-UP

A. Clean and restore sidewalks, paving, and lawns soiled or damaged as a result of the cleaning operations. Remove all protective materials.

END OF SECTION

NO TEXT ON THIS PAGE

SECTION 04520

MASONRY RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Provide all masonry restoration Work as indicated on the Drawings and as specified herein.

1.2 RELATED SECTIONS

A. Masonry Cleaning Section 04510

1.3 REFERENCES

References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

A. American Society for Testing and Materials (ASTM)

A240 Standard Specification for Heat-Resisting Chromium and Chromium Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.

A580 Standard Specification for Stainless and Heat-Resisting Steel Wire.

C67 Standard Methods of Sampling and Testing Brick and Structural Clay Tile.

C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or 50 MM Cube Specimens).

C126 Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.

C144 Standard Specification for Aggregate for Masonry Mortar.

C150 Standard Specification for Portland Cement.

C207 Standard Specification for Hydrated Lime for Masonry Purposes.

C270 Standard Specification for Mortar for Unit Masonry.

C404 Standard Specification for Aggregates for Masonry Grout.

C476 Standard Specification for Grout for *Reinforced* and Nonreinforced Masonry.

C780 Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

C979 Standard Specification for Pigments for Integrally Colored Concrete.

B. Brick Industry of America (BIA): BIA Technical Notes

1.4 SUBMITTALS

A. Product Data

1. Portland Cement: Brand and manufacturer's name.

2. Lime: Brand and manufacturer's name.

3. Mortar Pigments: Brand and manufacturer's name.

4. Packaged Products: Manufacturer's specifications and application instructions.

5. Sand: Location of pit, name of owner, and previous test data.

6. Masonry reinforcement, anchors and helical masonry ties.

B. Samples

Deliver to the Site for comparison with existing masonry.

1. Mortar for Exposed Joints and Cracks: Each required type, minimum 12" long by full thickness, showing finish and color.

C. Quality Control Submittals

1. Schedule of Uses: By mortar type.

2. Certificates

a. Furnish notarized Building Department affidavit from masonry manufacturer (Form 10H) stating materials delivered to project comply with the Specification requirements.

1.5 QUALITY ASSURANCE

A. Qualifications

1. Company specializing the Work of this Section shall have a minimum of three years' experience and at least three successful projects with similar quantity of materials. References shall list address and completion date of project and the name and telephone number of contact person.

2. Technicians performing the work must pass the mock-up test indicated in Paragraph D.4 below.

B. Regulatory Requirements

Building Code: Work of this Section shall conform to all requirements of the NYS Building Code and all applicable regulations of governmental authorities having jurisdiction, including safety, health, noise, and anti-pollution regulations. Where more severe requirements than those contained in the Building Code are given in this Section, the requirements of this Section shall govern.

C. Certification

Masonry construction shall conform to the material acceptance, certification and inspection requirements of Local Building Code.

D. Mock-ups

1. Prior to performing the Work of this Section, prepare at the job site sample panels of not less than 12 sq ft for each type of masonry restoration Work required, including cutting of joints prior to and after pointing. Sample panels shall be at locations indicated on the Drawings or where directed by the Owner's Representative. Inconspicuous locations will be chosen, except where it is necessary to choose other locations to be representative of brick color, joint size, mortar color, and other aspects of masonry appearance.

2. Clean masonry and mortar of the mock-up area and surrounding area to expose the true color of the masonry prior to preparing sample panels. Cleaning materials shall not damage masonry surface. Do not proceed further with the Work until the sample panel has been approved by the Owner's Representative. Approved samples will be used as quality standards for the Work. Maintain approved samples at the Site until the Work is completed. Once the panel is approved, do not change materials or proportions of mortar mixes unless approved by the Architect or Engineer of Record.

Sample panels may be a portion of existing masonry that is to be restored, at a location directed by the Owner's Representative.

3. All technicians performing masonry removal and joint cutting must successfully complete five linear feet of cutting and raking of mortar joints in the presence of the Owner's representative. Unsuccessful performance of this test is ground for the rejection of the technician for this project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaged Products

1. Deliver materials to the site in manufacturer's original, sealed containers. Do not deliver materials that have exceeded shelf life limitation set forth by the manufacturer. Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable). This includes individual bags of pre-bagged mortar mixes.

2. Comply with manufacturer's printed instructions for storing and protecting materials.

B. Bulk Aggregate

Store in a manner which will keep aggregate clean and protected from the weather elements.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Construction Requirements

1. Cold weather construction provisions of TMS 602/ACI 530.1/ASCE 6 Article 1.8C shall be implemented when either the ambient temperature falls below 40°F or the temperature of masonry units is below 40°F.

2. Salt or other chemicals for lowering the freezing temperature of the mortar shall not be used.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Reinforcement and Ties

1. Hohmann & Barnard, Inc., Hauppage, N.Y.

2. Dur-O-Wall, Arlington Heights, IL.

3. Helifix North America Corporation (Rep.: Patrick Sweeney, 888 992-9989)

4. Blok-Lok Ltd. (Rep.: Scott Burns, 800 561-3026),

B. Mortar Coloring

1. "SGS" Mortar Colors, Solomon Grind-Chem Services, Inc.

2. "True Tone Mortar Colors", Davis Colors, Rockwood Industries, Inc.

3. "Flamingo Colors" The Riverton Corporation.

4. Approved equal.

C. Masonry Cleaner

1. ProSoCo, Inc., South Plainfield, N.J.

2. Sure-Kleen

3. Approved equal

D. Restoration Mortar

1. Cathedral Stone Products

2. Edison Coatings, Inc.

3. Approved equal

2.2 MATERIALS

A. Base Materials

1. Portland Cement: Type I - ASTM C150.

2. Sand for Mortar Mix Sand shall be natural sand matching the gradation and color of the existing mortar aggregate - ASTM C144.

3. Hydrated Lime - ASTM C207 Type "S".

4. Water: Shall be clean potable water free of injurious foreign matter conforming to the requirements of Section BC 1903.4.

5. Mortar Coloring: Provide pure mineral pigments, natural and synthetic iron oxides, and chromium oxides compounded for use in mortar mixes. Material shall conform to ASTM C979. Coloring shall not contain alkalyde salts. No liquid colorants shall be permitted.

6. Premixed sand and lime for mortar mixes is not permitted. The use of batched material by Spec-Mix and factory-packaged cement-lime-pigment by major mortar manufacturers is permitted. Each individual bag of material shall have the manufacturer's label identifying the mortar type.

7. No air-entraining admixtures or material containing such shall be permitted in the mortar. Also, no anti-freeze compounds, calcium chloride, or other compounds, unless expressly permitted otherwise, shall be permitted in the mortar.

B. Masonry Repair Mortar:

1. Material shall be capable of filling the holes created due to the installation of the helical masonry ties in bricks. Material shall match properties of the existing natural material, be freeze-thaw resistant and shall be color to match the existing bricks.

2. Masonry repair mortar for bricks shall be Jahn Repair Mortar M100 as manufactured by Cathedral Stone Products, **Mimic by Conproco,** or Custom Series 45 as manufactured by Edison Coatings, Inc. or approved equal.

2.3 MIXES

A. Mortar Types

1. All Mortar:

a. Comply with ASTM C270 and BIA-M1-88**.**

b. Provide Type I Portland cement. Masonry cement shall not be used as a substitute.

c. Preconstruction testing with the proportions carefully monitored is to be used to establish the upper end of the strength range of the mortar, which should generally be near the minimum strength of the next higher strength mortar.

d. The maximum strength of each mortar shall generally not exceed the minimum strength of the next higher strength mortar type. Preconstruction testing will determine the general range of strengths to be found and may end up higher than the threshold above.

e. Air content of mortar shall be less than 12%.

2. Rebuilding/Setting Mortar; Type N: 1 part Portland cement, 1 part lime, 6 parts dry sand. Minimum compressive strength shall be 750 psi.

3. Repointing Mortar:

a. Brick and sandstone; Type O:

1) 1 part Portland Cement.

2) 2 parts lime.

3) 7 parts sand.

B. Mortar Color

For exposed mortar, select materials (complying with the requirements) and proportion pigments with other ingredients as necessary to match the color and texture of existing corresponding materials. White Portland cement and colored aggregates similar to the existing may be used as required to accomplish the matching of mortar color desired.

2.4 SOURCE QUALITY CONTROL

A. Preconstruction Testing

1. Preconstruction testing of mortar properties will be done in accordance with ASTM C780. The Contractor shall assist the Owner's laboratory by any means necessary and shall provide the mock-up prior to beginning the installation work to allow for adjustments of the mix if necessary. Do not proceed with masonry work until the preconstruction testing is completed. Contractor shall mix mortar as it intends for the actual construction.

2. Compressive strength tests of field mixed mortar and factory batched/prepackaged mortar are to be done during construction of the mock-up, or earlier if desired by the Contractor, to provide a benchmark for the strength based on actual field conditions and proportioning of the mortar. If mortar strengths are too high or too low, proportions and material source may be required to be modified if directed by the Architect or Engineer of Record.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine all adjoining Work on which this Work is in anyway dependent for proper installation and workmanship. Report to the Owner any conditions that prevent the performance of this Work.

3.2 PREPARATION AND PROTECTION

A. Protection

1. Protect adjacent surfaces not being restored. Protect sills, ledges, and projections from material droppings. Also protect any painted surfaces that are not included in the Work from impact or damage.

2. Remove excess mortar from walls as soon after laying units as practicable to prevent staining and to facilitate cleaning of wall.

3. Brace walls as needed until sufficiently set, or until intersecting walls provide lateral support.

4. Scaffolding shall not be supported from a parapet wall on which work is being performed.

5. Work on the exterior face of a parapet wall shall not be done concurrently with work on the interior face of the parapet wall.

B. Surface Preparation

1. Prepare surfaces to be restored in compliance with product manufacturer's printed instructions and as specified.

2. Remove dirt, dust, and foreign material from surfaces to be restored.

3. Clean areas to be restored with compressed air or water flushing, except as otherwise recommended by the mortar manufacturer.

C. Material Preparation

1. Do not further wet concrete masonry units and stone that are already wet.

2. Wet bricks that have a high initial absorption rate (greater than 20 g/min). Wet bricks until water runs off. Install bricks when surface is slightly damp.

3. Prepare exposed mortar to match the color and appearance of existing adjoining mortar.

3.3 MIXING PROCEDURE FOR MORTAR

A. Measure material by volume or equivalent weight. In measuring by volume, use a container to measure ingredients. Do not measure by shovel.

B. Rebuilding/Setting Mortar

1. Mix ingredients in a clean mechanical mixer for a minimum of 3 minutes, maximum of 5, with the minimum amount of water to produce a workable consistency.

2. Mortar that has stiffened because of evaporation of water from the mortar may be retempered only once, and only during the first hour of placement to restore the required consistency. Use mortar within $2^1/_2$ hours of its initial mixing; tempering is permitted only once and during the first hour only. Limit amount of mortar batched at one time to stay within these requirements.

C. Pointing Mortar

1. Add sufficient water to dry mix to produce a damp mix that will retain it shape when pressed into a ball by hand. Mix from 3 to 7 min. in a mechanical mixer.

2. Let mortar stand for not less than 1 hour nor more than 11/2 hours for prehydration. Add sufficient water to bring mortar to proper consistency for tuck-pointing, somewhat drier than mortar used for laying units.

3. Use mortar within 21/2 hours of its initial mixing; tempering is permitted only once after bringing mortar to proper consistency. Limit amount of mortar batched at one time to stay within these requirements.

D. For prepackaged masonry repair mortar, mix with water or manufacturer's polymer in proportions defined by manufacturer to provide the required consistency.

3.4 REPOINTING JOINTS

A. The Contractor shall take all precautions required to ensure the original appearance of the building is maintained (not changed) and the existing brick is not damaged. The new mortar shall match the original in color & texture and the new joint shall match the existing joint tooling, size and profile. For joints that are set back from the brick face (raked joints), provide a sloping joint starting at the original depth at the top and sloping to the brick face at the bottom that will prevent water sitting on the brick while maintaining the intended shadow line.

B. Rake or cut out joints to a minimum uniform depth of 3/4" and until sound surface is reached. Do not spall edges of masonry units or widen joints. Replace all brick damaged by such operations with new to match color, size, and texture.

1. The Contractor has the option of removing existing mortar from historic masonry surfaces using either hand held non-power tools for all joints or a combination of power tools/hand held non-power tools for horizontal joints & non-powered hand held tools for vertical joints. Removal of mortar shall be done without damaging the existing masonry units.

a. Mortar Removal with Hand Held Non-Power Tools

1) Use chisels with $1^1/_2$” maximum heads for cutting out the mortar. Sharpen chisels hourly to minimize chipping. One quarter inch chip per linear yard of cutting is the minimum standard of acceptable skill. Additional damage may be grounds for removal of the technician from the project.

b. Mortar Removal with Combination of Power Tools & Hand Held Non-Power Tools

1) Use of power tools is permitted only on horizontal joints thicker than 1/8”. Hand rake head (vertical) joints and any joints less than or equal to 1/8” in thickness. The width of the chisel must not exceed three quarters of the width of the mortar joint. The pneumatic carving tool is preferable for raking narrow joints. Sharpen

chisels hourly to minimize chipping. Masonry saw shall have a vacuum attachment to reduce dust.

2) Existing mortar from horizontal joints may be removed by first cutting the center of the joint using either:

a $4^1/_2$" (maximum) angle grinder, such as Type 100 Black and Decker Industrial Heavy Duty slow speed grinder or equal, with a 4" maximum 1/8" thick diamond blade circular head.

or

a Barre Short Stroke Pneumatic Carving Tool (type S or D with a Splitter or Cape Chisel) as manufactured by Trow and Holden Co., Barre, VT 05641.

3) Hand rake out the mortar after a single pass has been made with the angle grinder or carving tool. Use chisels with 1-1/2" maximum heads for cutting out the mortar. Sharpen chisels hourly to minimize chipping. One quarter inch chip per linear yard of cutting is the minimum standard of acceptable skill. Additional damage may be grounds for removal of the technician from the project.

2. Cut the mortar and joint filler cleanly from the sides of the joints, leaving square corners. Flush joints clean with water or compressed air.

C. Dampen joints slightly before application of mortar, making sure there is no free water. Pack pointing mortar tightly in joints in thin layers (1/4" max.), with each layer "thumbprint hard" before applying the next layer. Tool joints to match existing adjoining joints.

1. Where joint sealant is required, backpack the joints tightly out to a uniform depth of 1/4", or as indicated on Drawings. Refer to Section 07900 for sealants. Apply bondbreaker tape prior to installing sealants.

D. Cure mortar by maintaining in a damp condition for at least 72 hours.

3.5 FIELD QUALITY CONTROL

A. If the masonry work is not designated for Special Inspection, the masonry work will be subject to Quality Control Inspection, with testing and inspection

similar to that listed below for Special Inspection. Inspections performed by the Owner do not relieve the Contractor of its obligation to conform to all requirements specified in this Section.

B. The Inspector will make inspections and any testing deemed necessary. Mortar suspected or tested to be too strong or too weak will be subject to petrographic analysis or other methods deemed necessary by the Engineer of Record and Inspector. The Contractor shall pay for all tests if they verify improper work. Inspections will include, but not be limited to, the following:

1. Proper depth of mortar cutting for pointing.

2. Proper installation of mortar, including proportioning and mixing. Those mortar properties listed in the Appendix of ASTM C780 are to be tested at the discretion of the Inspector or the Architect/Engineer of Record Mortar strengths, when tested, will be determined in accordance with ASTM C780 using cylinders.

C. The Architect or Engineer of Record will analyze any results not found to be in conformance with the applicable ASTM, industry practice, and the Specifications and determine if the masonry in question is to be removed and redone.

D. Cooperate with the Inspector and the Testing Laboratory performing Inspection testing.

E. The Contractor's engineer shall monitor the restoration procedure to ensure compliance with the "methods of operation" and to ensure safety of the structure**.**

3.6 PROTECTION AND CLEANING

A. Protect face of adjacent walls and surfaces from water, mortar, and grout used for terra cotta installation.

B. Remove excess mortar and mortar smears as work progresses.

C. After mortar has cured (a minimum of 30 days), clean soiled surfaces with detergent and clean water. Use fiber brushes and cloths. Do not use metallic tools or acids. Perform a mock-up of the cleaning procedure.

END OF SECTION

SECTION 09900

HIGH PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The Contractor shall furnish all labor, tools, materials, equipment, scaffolding or other structures and incidentals required for coating the indicated concrete and CMU surfaces within Chlorine Contact Chamber No. 4, as shown on the Contract Drawings.

B. The work includes coating and finishing of all slabs, walls, and all other surfaces required to be coated unless otherwise specified herein or on the Drawings. The omission of minor items in the Schedule of Work shall not relieve the Contractor of his obligation to include such items where they come within the general intent of the Specification as stated herein.

C. Related Documents: General Provisions of the Contract, including the General and Supplementary Conditions, apply to this Section.

D. All work shall be done in strict accordance with this Specification, the Design Drawings and the manufacturer's recommendations.

1.2 DEFINITIONS

A. Field Painting is the painting of new or rebuilt items at the job site. Field painting shall be the responsibility of the Contractor.

B. Shop Painting is the painting of new or rebuilt items in the shop prior to delivery to the jobsite.

C. Abbreviations The abbreviations and definitions listed below, when used in this specification, shall have the following meanings:

1. SSPC - The Society for Protective Coatings

2. Exterior - Outside, exposed to weather

3. Interior Dry - Inside, concealed or protected from weather

4. Interior Wet - Inside, subject to immersion services

5. ASTM - American Society of Test Materials

6. NACE - National Association of Corrosion Engineers

7. NSF - National Sanitation Foundation

8. AWWA - American Water Works Association

9. ICRI - International Concrete Restoration Institute

10. NAPF – National Association of Pipe Fitters

11. Dry Film Thickness shall be in Mils

1.3 RESOLUTION OF CONFLICTS

A. It shall be the responsibility of the Contractor to arrange a meeting prior to the start of any coatings applications between the Contractor, the Coating Manufacturer, whose products are to be used, and the Owner. All aspects of surface preparation, application and coating systems as covered by this Specification will be reviewed at this meeting.

B. Clarification shall be requested promptly from the Owner when instructions are lacking, conflicts occur in the Specifications, or the procedure seems improper or inappropriate for any reason.

C. Copies of all manufacturer's instructions and recommendations shall be furnished to the Owner by the Contractor.

D. It shall be the responsibility of the Coating Manufacturer to have their representative meet in person with the Contractor and Owner before and during the job as a consultant on proper preparation and application of the coating materials unless a meeting is determined to be unnecessary by the Owner.

1.4 SUBMITTALS

A. Submit manufacturer’s technical data and product literature indicating that the products comply with specified requirements.

B. Submit all test reports generated for required inspections and testing.

C. Submit Rehabilitation Plan which outlines the plan detailing, methods, materials and procedures for the rehabilitation.

1.5 QUALITY ASSURANCE

A. Qualifications: A qualified contractor is defined as one with:

1. A minimum of five years of experience in installing similar systems.

2. Demonstrated financial stability in warranting work.

3. Approved by the manufacturer.

B. There will be a pre-job meeting attended by all personnel including Department, Contractor/Sub-contractor, Safety Engineer, Inspector and Coating Manufacturer Representative.

C. All inspections of the installation shall be recorded and shall include the following information: Time of day.

1. Weather conditions, (air and surface, humidity).

2. Description of surface preparation.

3. Thickness per coat.

4. Visual inspection of workmanship.

D. The manufacturer's factory representative shall submit all inspection reports to the Engineer within five days of each site visit documenting its observations and certifying the suitability of the applicator's work for the coating application.

E. The manufacturer shall provide a final inspection of the completed work prior to issuance of the specified warranty.

1.6 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the jobsite in their original, unopened containers with the proper, fully legible labels with product identification, printed instructions, lot numbers and shelf life expiration date for each component.

B. Materials should be stored in their tightly sealed original containers in a dry place at temperatures between 65 and 80 degrees F. out of direct sunlight, heat or other hazards.

1.7 WARRANTY

A. Manufacturer shall warrant that its products are free from defects. Manufacturer shall provide a materials warranty to the owner for a period of three (3) years from the date of manufacture. Liability, if any, is limited to product replacement.

B. The manufacturer and the contractor may also provide a joint warranty for the product installation for a period of three (3) years from date of installation. The contract shall specifically stipulate what constitutes a failure of the coating system and the operating conditions for the coating system. Liability, if any, for the manufacturer is limited to product replacement and, for the contractor, re-installation costs. This warranty specifically excludes liabilities for consequential or incidental damages.

C. Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during the warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without any additional cost to the Department.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Effective oil and water separators shall be used in all compressed air lines serving spray painting and sandblasting operations to remove oil or moisture from the air before it is used. Separators shall be placed as far as practicable from the compressor.

B. All equipment for application of the paint and the completion of the work shall be furnished by the Contractor in first-class condition and shall comply with recommendations of the paint manufacturer.

C. Contractor will make available to the Owner a "Nordson-Mikrotest" or "Positest" dry film thickness gauge for ferrous metal and an OG232 "Tooke" gauge or equal for non-ferrous and cementitious surface, to be used to inspect coatings by the Owner and Contractor.

2.2 MATERIALS

A. All materials specified herein are manufactured by the TNEMEC Company, Inc., North Kansas City, Missouri, or approved equal.

B. Substitutions which decrease the total film thickness, change the generic type of coating, or fail to meet the performance criteria of the specified materials shall not be approved. Concrete Repair Materials, prime and finish coats of all surfaces shall be furnished by the same manufacturer.

C. Colors, where not specified, shall be as selected by the Owner.

2.3 REFERENCES

A. This section contains references to the governing standards and documents listed below. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the more stringent of the requirements shall prevail.

B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of receipt of Bids. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents,

the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued, or replaced.

C. Referenced publications found within this specification shall be the latest revision unless otherwise specified; and applicable parts of the referenced publications shall become a part of this specification as if fully included.

D. ASTM International (ASTM):

1. ASTM B117 – Salt Spray (Fog)
2. ASTM C140 – Water Absorption (Applied to Cast Mortar Cubes)
3. ASTM C307 – Tensile Strength, Elongation, Modulus of Elasticity
4. ASTM C531 – Thermal Expansion
5. ASTM C579 – Compressive Strength
6. ASTM C580 – Flexural Strength and Modulus of Elasticity
7. ASTM C67 – Water Absorption (Applied to Fire Clay Brick)
8. ASTM C793 – Accelerated Weathering
9. ASTM C97 – Water Absorption (Applied to Ohio Sandstone)
10. ASTM D1014 – Exterior Exposure
11. ASTM D2047 – Coefficient of Friction
12. ASTM D2240 - Hardness
13. ASTM D2247 - Humidity
14. ASTM D2370 – Tensile Strength, Elongation, Modulus of Elasticity
15. ASTM D2794 - Impact
16. ASTM D3273 – Fungal/Mold/Mildew Resistance
17. ASTM D4060 - Abrasion
18. ASTM D4141, Method C (EMMAQUA) – Exterior Exposure
19. ASTM D4541 – Adhesion

20. ASTM D4585 – Humidity
21. ASTM D4587 – QUV Exposure
22. ASTM D522 – Flexibility and Elongation
23. ASTM D5590 – Fungal/Mold/Mildew/Algal Resistance
24. ASTM D5894 – Cyclic Salt Fog/UV Exposure
25. ASTM D624 – Tear Strength
26. ASTM D638 – Tensile Strength, Elongation, Modulus of Elasticity
27. ASTM D648 – Deflection Temperature
28. ASTM D6695 – Xenon Arc Weathering
29. ASTM D695 – Compressive Strength
30. ASTM D7234 - Adhesion
31. ASTM D790 – Flexural Strength and Modulus of Elasticity
32. ASTM D870 – Immersion
33. ASTM G85 – Prohesion

E. NACE International (NACE):

1. NACE TM-01-74

F. Federal Specification (FED):

1. FED TT-C-555B - Wind Driven Rain

G. Military and Government Specs & Standards:

1. MIL D3134 – Impact

H. British Standard:

1. BS EN 598: 2007+A1: 2009 - Rocking Abrasion

I. American Association of State Highway and Transportation Officials

1. AASHTO T-259 – Chloride Ion Penetration

PART 3 - EXECUTION

3.1 INSPECTION OF SURFACES

A. Before application of the prime coat and each succeeding coat, all surfaces to be coated shall be subject to inspection by the Owner. Any defects or deficiencies shall be corrected by the Contractor before application of any subsequent coating in accordance with the manufacturer's instructions and Section 03721 of these Specifications.

B. Samples of surface preparation and of painting systems shall be furnished by the Contractor to be used as a standard throughout the job, unless omitted by the Owner.

C. The Contractor shall follow the Manufacturer's latest printed recommended minimum and maximum recoat times. If the maximum recoat time has been exceeded, the Contractor shall follow the Manufacturer's latest printed instructions.

D. Coating thickness shall be determined by the use of a properly calibrated "Nordson-Mikrotest" or "Positest" Coating Thickness Gauge (or equal) for ferrous metal. Please note that a "Tooke" gauge may be used on cementitious surfaces, and that use of the "Tooke" gauge is classified as a destructive test.

E. Before performing any destructive tests on a newly applied coating system, the Owner and Contractor shall determine which of them is responsible for the cost of repairing the damaged coatings.

3.2 STANDARDS FOR SURFACE PREPARATION

A. SSPC-SP1: Solvent Cleaning: Remove all grease, oil, salt, acid, alkali, dirt, dust, wax, fat, foreign matter and contaminates, etc. by one of the following methods: steam cleaning, alkaline cleaning, or volatile solvent cleaning.

B. SSPC-SP2: Hand Tool Cleaning: Removal of loose rust, loose mill scale and loose paint to a clean sound substrate by hand chipping, scraping, sanding and wire brushing.

C. SSPC-SP3: Power Tool Cleaning: Removal of loose rust, loose mill scale and loose paint to a clean sound substrate by power tool chipping, descaling, sanding, wire brushing and grinding.

D. SSPC-SP5/NACE No.1: White Metal Blast Cleaning: Complete removal of all mill scale, rust, rust scale, previous coating, etc., leaving the surface a uniform gray-white color.

E. SSPC-SP6/NACE No.3: Commercial Blast Cleaning: Complete removal of all dirt, rust scale, mill scale, foreign matter and previous coating, etc., leaving only shadows and/or streaks caused by rust stain and mill scale oxides. At least 66% of each square inch of surface area is to be free of all visible residues, except slight discoloration.

F. SSPC-SP7/NACE No.4: Brush-Off Blast Cleaning: Removal of rust scale, loose mill scale, loose rust and loose coatings, leaving tightly-bonded mill scale, rust and previous coatings. On concrete surfaces, brush-off blast cleaning shall remove all laitance, form oils and solid contaminates. Blasting should be performed sufficiently close to the surface so as to open up surface voids, bugholes, air pockets and other subsurface irregularities, but so as not to expose underlying aggregate.

G. SSPC-SP10/NACE No.2: Near-White Blast Cleaning: Removal of all rust scale, mill scale, previous coating, etc., leaving only light stains from rust, mill scale and small specks of previous coating. At least 95% of each square inch of surface area is to be free of all visible residues and the remainder shall be limited to slight discoloration.

H. SSPC-SP11: Power Tool Cleaning to Bare Metal: Complete removal of rust, rust scale, mill scale, foreign matter and previous coatings, etc., to a standard as specified on a Commercial Grade Blast Cleaning (SSPC-SP-6, NACE-3) by means of power tools that will provide the proper degree of cleaning and surface profile.

I. SSPC-SP13/NACE No.6: Surface Preparation of Concrete: Provides requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems.

1. International Concrete Restoration Institute (ICRI):

a. ICRI 320.1R - Exposed Reinforcing bar (Rebar) Repair

b. ICRI-CSP 1 - Concrete Surface Profile 1

c. ICRI-CSP 2 - Concrete Surface Profile 2

d. ICRI-CSP 3 - Concrete Surface Profile 3

e. ICRI-CSP 4 - Concrete Surface Profile 4

f. ICRI-CSP 5 - Concrete Surface Profile 5

g. ICRI-CSP 6 - Concrete Surface Profile 6

J. SSPC-SP14/NACE No.8: Industrial Blast Cleaning: An industrial blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, and dirt. Traces of tightly adherent mill scale, rust, and coating residues are permitted to remain on 10% of each unit area of the surface if they are evenly distributed.

K. SSPC-SP15: Commercial Grade Power Tool Cleaning: A commercial grade power tool cleaned steel surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, rust, coating, oxides, mill scale, corrosion products, and other foreign matter, except as noted. Random staining shall be limited to no more than 33 percent of each unit area of surface as defined.

L. Visual standards "Pictorial Surface Preparation Standards for Painting Steel Surfaces", and the National Association of Corrosion Engineer, "Blasting Cleaning Visual Standards" TM-01-70 and TM-01-75 shall be considered as standards for proper surface preparation.

M. NAPF 500-03-04: External Pipe Surface: When viewed without magnification, the exterior surfaces shall be free of all visible dirt, dust, loose annealing oxide, rust, mold, coatings, and other foreign matter.

N. NAPF 500-03-05: Fitting Blast Clean #2: When viewed without magnification, no more than 5% staining may remain on the surface and the exterior surfaces shall be free of all visible dirt, dust, annealing oxide, rust, mold, coatings, and other foreign matter.

3.3 SURFACE PREPARATION

A. The surface shall be cleaned as specified for the paint system being used.

B. All cleaning shall be as outlined in the Society for Protective Coatings (SSPC) Surface Preparation Specification, National Association of Corrosion Engineers (NACE), and the International Concrete Repair Institute (ICRI) unless otherwise noted.

C. If surfaces are subject to contamination, other than mill scale or normal atmospheric rusting, the surfaces shall be checked for chloride contamination, pressure washed, and acid or caustic pH residues neutralized, in addition to the specified surface preparation.

D. Oil, grease, soil, dust, etc., deposited on the surface preparation that has been completed shall be removed prior to painting according to SSPC-SP1 Solvent Cleaning under this Specification.

E. In the event that an existing coating's max recoat window has been exceeded, all surfaces to be overcoated must be thoroughly and uniformly de-glossed and scarified before the application of additional coatings.

F. All surfaces must be clean and dry prior to the application of any coatings.

3.4 PRETREATMENTS

A. When specified, the surface shall be pretreated in accordance with the specified pretreatment prior to application of the prime coat of paint.

3.5 STORAGE

A. Materials shall be delivered to the job site in the original packages with seals unbroken and with legible unmutilated labels attached. Packages shall be available for inspection by the Owner. All coating materials shall be stored in accordance with the Manufacturer's latest written recommendations. The Contractor is responsible for following the Manufacturer's suggested storage temperatures and conditions. The Contractor shall be solely responsible for the protection of the materials stored by himself at the job site. Empty coating cans shall be neatly stacked in an area designated by the Owner and removed from the job site on a schedule determined by the Contractor. Owner may request a statement from Contractor and/or Manufacturer detailing all materials used on the Project.

3.6 PREPARATION OF MATERIALS

A. Mechanical mixers, capable of thoroughly mixing the pigment and vehicle together, shall mix the paint prior to use where required by manufacturer's instructions; thorough hand mixing will be allowed for small amounts up to one gallon. Pressure pots shall be equipped with mechanical mixers to keep the pigment in suspension, when required by manufacturer's instructions. Otherwise, intermittent hand mixing shall be done to assure that no separation occurs. All mixing shall be done in accordance with SSPC Vol. 1, Chapter 4, "Practical Aspects, Use and Application of Paints" and/or with manufacturer's recommendations.

B. Thinners shall be as recommended by the manufacturer and shall be added or discarded strictly in accordance with the manufacturer's instruction. Partial kits may only be used when components are accurately measured and mixed per the Manufacturer's latest written recommendations.

3.7 APPLICATION

A. Paint shall be applied only on thoroughly dry surfaces and during periods of favorable weather, unless otherwise allowed by the paint manufacturer.

Except as provided below, painting shall not be permitted when the atmospheric temperature is outside the limit of the manufacturer's latest written recommendations, or when freshly painted surfaces may be damaged by rain, fog, dust, or condensation, and/or when it can be anticipated that these conditions will prevail during the drying period.

B. No coatings shall be applied unless surface temperature is a minimum of 5°F above dew point; temperature must be maintained during curing.

C. See coating schedule for actual coating systems to be used on this project.

3.8 DEW POINT CALCULATION CHART

DEW POINT CALCULATION CHART

Ambient Air Temperature - Fahrenheit

Relative Humidity

	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	76	84	95	104	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	29	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	15	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83

SURFACE TEMPERATURE AT WHICH CONDENSATION OCCURS

Dew Point

Temperature at which moisture will condense on surface. No coatings should be applied unless surface temperature is a minimum of 5°F above this point. Temperature must be maintained during curing.

Example

If air temperature is 70°F and relative humidity is 65%, the dew point is 57°F. No coating should be applied unless surface temperature is 62°F minimum.

A. No coating shall be applied unless the relative humidity is below 85%.

B. Suitable enclosures to permit painting during inclement weather may be used if provisions are made to control atmospheric conditions artificially inside the enclosure, within limits suitable for painting throughout the painting operations.

C. Field painting in the immediate vicinity of, or on, energized electrical and rotating equipment, and equipment and/or pipes in service shall not be performed without the approval of the Owner.

D. Extreme care shall be exercised in the painting of all operable equipment, such as valves, electric motors, etc., so that the proper functioning of the equipment will not be affected.

E. The Contractor's scaffolding shall be erected, maintained and dismantled without damage to structures, machinery, equipment or pipe. Drop cloths shall be used where required to protect buildings and equipment. All surfaces required to be clear for visual observation shall be cleaned immediately after paint application.

F. For ferrous metals, the prime coat shall be applied immediately following surface preparation and in no case later than the same working day. All paint shall be applied by brushing, paint mitt and roller, conventional spraying, or airless spraying, using equipment approved by the paint manufacturer.

G. Surfaces that will be inaccessible after assembly shall receive either the full specified paint system or three shop coats of the specified primer before assembly.

H. Unless otherwise specified, each full coat within a coating system shall be of a different or alternating color.

I. Finish colors shall be selected by the Owner and shall be factory mixed (i.e., there shall be no tinting by the Contractor, unless authorized by the Owner).

J. All edges and weld seams in immersion service shall receive a "stripe coat" (applied by brush) of the 2nd coat prior to application of the full 2nd coat.

K. All open seams in the roof area of tanks shall be filled after application of the topcoat with a flexible caulking such as Sika Flex 1A.

3.9 WORKMANSHIP

A. Painting shall be performed by experienced painters in accordance with the recommendations of the paint manufacturer. All paint shall be uniformly applied without sags, runs, spots, or other blemishes. Work which shows

carelessness, lack of skill, or is defective in the opinion of the Owner, shall be corrected at the expense of the Contractor.

B. The Contractor shall provide the names of at least three other projects of similar size and scope that they have successfully completed under their current company name.

3.10 APPLICATION OF PAINT

A. By Brush and/or Rollers

1. Top quality, properly styled brushes and rollers shall be used. Rollers with a baked phenol core shall be utilized.

2. The brushing or rolling shall be done so that a smooth coat as nearly uniform in thickness as possible is obtained. Brush or roller strokes shall be made to smooth the film without leaving deep or detrimental marks.

3. Surfaces not accessible to brushes or rollers may be painted by spray, by dauber or sheepskins, and paint mitt.

4. It may require two coats to achieve the specified dry film thickness if application is by brush and roller.

B. Air, Airless or Hot Spray

1. The equipment used shall be suitable for the intended purpose, shall be capable of properly atomizing the paint to be applied and shall be equipped with suitable pressure regulators and gauges.

2. Paint shall be applied in a uniform layer, with a 50% overlap pattern. All runs and sags should be brushed out immediately or the paint shall be removed and the surface resprayed.

3. High build coatings should be applied by a cross-hatch method of spray application to ensure proper film thickness of the coating.

4. Areas inaccessible to spray shall be brushed; if also inaccessible to brush, daubs or sheepskins shall be used, as authorized by the manufacturer.

5. Thinners shall be as recommended by the manufacturer and shall be added or discarded strictly in accordance with the manufacturer's instruction.

6. Nozzles, tips, etc., shall be of sizes and designs as recommended by the manufacturer of the paint being sprayed.

7. The first coat on concrete surfaces in immersion service should be sprayed and back rolled.

3.11 PROTECTION AND CLEANUP

A. It shall be the responsibility of the Contractor to protect at all times, in areas where painting is being done, floors, materials of other crafts, equipment, vehicles, fixtures, and finished surfaces adjacent to paint work. Cover all electric plates, surface hardware, nameplates, gauge glasses, etc., before start of painting work.

B. At the option of the Owner during the course of this project, the Contractor will contain all spent abrasives, old paint chips, paint overspray and debris by means suitable to the Owner, including, but not limited to, full shrouding of the area.

C. If shrouding is required, the Contractor must provide a complete design of the intended shroud or cover. Care must be taken not to modify or damage the structure during the use of the shroud. If damage should occur, the Contractor is held responsible for all repairs.

D. At completion of the work, remove all paint where spilled, splashed, spattered, sprayed or smeared on all surfaces, including glass, light fixtures, hardware, equipment, painted and unpainted surfaces.

E. After completion of all painting, the Contractor shall remove from job site all painting equipment, surplus materials and debris resulting from this work.

F. The Contractor is responsible for the removal and proper disposal of all hazardous materials from the job site in accordance with Local, State and Federal requirements as outlined by the Environmental Protection Agency.

G. A notarized statement shall be presented to the Owner that all hazardous materials have been disposed of properly including, but not limited to: name of disposal company, disposal site, listing of hazardous materials, weights of all materials, cost per pound and EPA registration number.

3.12 TOUCH-UP AND TOUCH-UP MATERIALS

A. All areas which require field touch-up after erection, such as welds, burnbacks, and mechanically damaged areas, shall be prepared per the Manufacturer’s latest written recommendations.

B. Strict adherence to manufacturer's complete touch-up recommendations shall be followed. Any questions relative to compatibility of products shall

be brought to the Owner and Manufacturer's attention. Otherwise, Contractor assumes full responsibility.

C. The Contractor shall provide, at the end of the Project, at least one (1) gallon of each generic topcoat in each color as specified by the Owner for future touch-up. Two gallons may by required for (2) component materials.

3.13 ON-SITE INSPECTION

A. During the course of this Project, the Owner will reserve the option of incorporating the services of a NACE Level III inspection service. The inspection service will be responsible for assuring the proper execution of this Specification by the successful Contractor.

3.14 CONCRETE & MASONRY

A. Immersion

1. System No. 22-1: Modified Polyamine Epoxy

a. Minimum Performance Requirements for Cementitious Epoxy Resurfacer:

1) Bond Strength: ASTM D7234 (50 mm dolly) – No less than 500psi adhesion to concrete.

2) Epoxy Modified Cementitous Mortar.

3) Feather edge capabilities (1/32”).

b. Minimum Performance Requirements for Prime Coat:

1) Salt Spray: ASTM B117 - No blistering, cracking, rusting or delamination of the film and no creepage at the scribe after 5000 hours

2) Cyclic Salt Fog/UV Exposure: ASTM 5894 - No blistering, cracking, rusting or delamination of the film after 10,000 hours.

c. Minimum Performance Requirements for Topcoat:

1) Product must be able to be applied in one single-coat application from 22.0 to 27.0 mils dry film thickness.

2) VOC Content: 0.10 lbs/gallon (12 grams/litre)

3) Immersion: ASTM 870 – No blistering, cracking, rusting or delamination of film after 2,000 hours continuous immersion in deionized water at 140°F (60°C), average of three tests.

4) Salt Spray: ASTM B117 - No blistering, cracking, rusting or delamination of the film and no creepage at the scribe after 10,000 hours.

5) Cyclic Salt Fog/UV Exposure: ASTM D5894 – No blistering, cracking, rusting or delamination of film and no more than 1/32" rust creepage at scribe after 10,000 hours exposure.

6) Humidity: ASTM D4585 – No blistering, cracking, rusting, or delamination of film after 2,000 hours exposure.

2. Surface Preparation: See Section 03721 Preparation for Resurfacing Concrete and CMU.

3. Concrete Repair: See Section 03732 Concrete Repair.

4. Prime Coat: Series N69 HB Epoxoline 6.0 – 8.0 mils
Topcoat: Series 22-1218 Light Blue Epoxoline 24.0 - 32.0 mils
Total Dry Film Thickness: 30.0 - 40.0 mils

Notes:
1. Series 73-B7719 Light Blue EnduraShield shall be applied as a sacrificial UV topcoat to all areas above the waterline (EL. 9.75').
2. Series N69 HI Build Epoxoline II shall be spray applied and backrolled.
3. Series 22 is to be spray applied only.
4. Allow Series 22 to cure for a minimum of 5 days at 75°F prior to service.
5. Color shall be 22-1218 Light Blue to match CCC 1.

END OF SECTION

APPENDIX "A"

ENVIRONMENTAL RESOURCE MANAGEMENT
DADE COUNTY - NOTICE TO ALL CONTRACTORS

(1 Page)

Miami Dade County, Florida
Regulatory and Economic Resources
701 NW 1st Court, Suite 600
Miami, Florida 33136
(305) 372-6681

NOTICE TO ALL CONTRACTORS INVOLVED IN ANY CONSTRUCTION ACTIVITY WHICH REQUIRED DEWATERING WITH ULTIMATE DISCHARGE INTO A CANAL, LAKE, DITCH, OR STORM SEWER WHICH DISCHARGES INTO AN OPEN BODY OF WATER OR BISCAYNE BAY.

Please be aware that if you are involved in any construction activity as above described, you are required to provide all necessary measures in order to maintain turbidity in the receiving body of water within acceptable limits as established by the Florida Building Code. You must present a separate plan to be included with your building plans indicating your propose measures or apply for a permit from the Regulatory and Economic Resources Department before your construction plans will receive final approval, as required by Miami Dade County Code of Ordinance Chapter 24 Section 48.1 (1)(e). For additional information, please contact Ms. Maria Molina, P.E., Chief Water Control Section of the RER Division of Environmental Resources Management.

APPENDIX "B"

STANDARD DETAILS

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APPENDIX "C"

WASD ID CARD SECURITY PROCEDURES
NON-WASD EMPLOYEES

(29 Pages)

MIAMI-DADE WATER AND SEWER DEPARTMENT

3071 SW 38 Av, Miami, Fl 33146

WASD ID CARD SECURITY PROCEDURES NON-WASD EMPLOYEES 070109

ENCLOSED:

1. WASD Security Phone Numbers
2. Security Home Page
3. Memorandum Director for Non WASD Employees
4. Required Documents to Obtain WASD ID Card
5. Request for Release/Company History Form
6. Company Signature Authorization Letter
7. Employee Request for WASD ID Card
8. Non-WASD ID Card Application
9. FEES for WASD ID Card
10. Cover Sheet – Miami-Dade Ordinance 02-68 Chap 32
11. Article IX Security at Miami-Dade Water and Sewer Department

MIAMI-DADE WATER AND SEWER DEPARTMENT

3071 SW 38 Av, Miami, Fl 33146

WASD Security Phone Numbers

Security Chief:	**Aubrey Johnson**	**786-552-8458**
Security Section Secretary:	**Mercy Merejildo**	**786-552-8711**
Security Admin Officer	**Lilian Caban**	**786-552-8585**
ID Room Coordinator	**Jack Speers**	**786-552-8271**

Security
Home Page
ID Badge
Advisory Notices
Forms

Welcome To The Security Home Page!

The ID Office is located at 3071 SW 38th Ave., Suite 152, Miami, FL 33146 (Douglas Road Administration building). The phone number is 786-552-8271, Fax is 786-552-8778.

Hours of Operations are by appointment:

- 9:00 AM - 12:00 PM and 1:00 PM - 4:00 PM on Monday, Tuesday, Thursday, Friday.
- Wednesday 9 AM - 12:00 PM and 1:00 PM - 4:00 PM Walk in day.

Pursuant to Ordinance No. 02-68 (Article IX, Chapter 32 of the Miami-Dade County Code) all persons entering a Miami-Dade Water and Sewer facility are subject to established security restrictions.

Water and Sewer Department Employees

1. All persons permanently employed with the Miami-Dade Water and Sewer Department (WASD) are required to obtain a WASD issued picture ID badge.
2. As per County Ordinance No. 02-68 (Article IX, Chapter 32 of the Miami-Dade County Code) any applicant for a WASD ID badge who, within the last five (5) years has had a felony conviction or against whom a finding of guilty has been entered on a felony charge will not be issued an ID badge for a restricted area except in those cases governed by Article IX, Chapter 32, Section 32-174.4 (g) of the Miami-Dade County Code.
3. An annual fingerprint-based criminal history check will be conducted upon renewal of the ID badge for those employees with access to designated restricted areas.
4. ID badges must be displayed at all times when accessing or working within WASD designated facilities. ID Badges must be worn conspicuously on the outer garment of the bearer, in plain view above the waist at all times.
5. All lost or stolen ID cards must be reported immediately WASD Security. Police report must be sumitted within 10 business days.
6. Badges must be returned to WASD Security upon termination of employment.

Non WASD Employees

1. Access to all Miami-Dade Water and Sewer Department sites is controlled access. All Non WASD employees required to enter a WASD facility more than 5 days in a 90 day period will be required to obtain a WASD issued ID badge.
2. All Non WASD personnel are subjected to a Criminal History Back Ground Check.
3. After award and prior to commencement of work, the Contractor , Vendor, Consultant etc. shall meet with the Plant Superintendent and MDWASD Security Management to submit required information and review security parameters related to the project.
4. All Contractors, Vendor, Consultants etc. awarded MDWASD contracts must comply with Miami-Dade County Ordinance 02-68 dated 4-23-02, Article IX, of Chapter 32 of the Miami-Dade County Code of Ordinances. The applicability of Article IX of Chapter 32 provisions follows:

   Any permission granted to a person, corporation, partnership, or other legal entity by the Board, County Manager or Director, directly or indirectly, expressly or by implication, to enter upon a WASD facility or restricted area, is conditioned upon compliance with this Article and operational directives and the payment of any and all fees and charges established and payable to the County; such fees and charges shall include any and all fees or charges established or approved by the Board or the County Manager and entry on WASD property by any person shall be deemed to constitute an agreement by such person to comply with such rules and regulations and to pay any such fees and charges.

   It shall be unlawful for any person to do or commit any act forbidden by or to fail to perform any act required by these rules and regulations or to fail to pay any fees established and payable pursuant to this Article.

   The Department, through its Directors, may from time to time cause to be issued operational directives applicable to WASD property. If any such operational directive contains a requirement

that fees and charges shall be paid for any operation or use of a WASD facility or property as defined in the operational directive, such fees and charges shall be established in accordance with the provisions of this Article.

Visitors

1. All visitors to Miami-Dade Water and Sewer facilities must be invited guests of the Miami-Dade Water and Sewer Department.
2. All persons to whom a Miami-Dade Water and Sewer ID badge has not been issued will be issued a visitor's badge.
3. All visitor badges are valid for the day of issuance only. Visitor badges are intended to be recovered and must be returned by the visitor upon existing.
4. Visitors shall only be authorized access to those areas specific to their business. Unauthorized roaming through other areas of a plant or facility is prohibited.
5. All visitors to a WASD designated restricted access area must be issued an appropriate badge and escorted by an individual with access to that specific restricted access area. They must remain accompanied by the escort at all times. There will be no exceptions to this requirement.
6. ID Badges must be worn conspicuously on the outer garment of the bearer, in plain view above the waist at all times. The contracted security guard force staff will enforce this requirement.
7. All visitors required to enter a restricted access area more than five days in any given 90 day period will be required to obtain WASD-issued ID badge.
8. Visitor vehicles must park in designated areas.
9. Special rules apply to Day Laborers.

Contractors/Day Laborers

1. Temporary labor badges are issued at the facility checkpoint.
2. Temporary badges are issued for single day and for specific areas of access only.
3. ID Badges must be worn conspicuously on the outer garment of the bearer, in plain view above the waist at all times. The contracted security guard force staff will enforce this requirement.
4. Day Laborers must park in designated parking areas.

Vehicles

1. Vehicles will enter only through the facility security checkpoints.
2. Vehicles will be parked in designated areas within the facility.

Memorandum

MIAMI-DADE COUNTY

Date: June 1, 2009

To: Vendors, Contractors, Consultants and non Water and Sewer Department employees

From: John W. Renfrow, P.E., Director, Water and Sewer Department

Subject: Water and Sewer Department Identification Card Application and Renewal Process

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Effective Monday, June 01, 2009, all vendors, contractors, consultants and non Water and Sewer Department (WASD) employees will be required to renew their identification cards annually. This requirement is mandated by the Code of Miami-Dade County, Chapter 32. In keeping with the Code, the identification cards will expire annually specifically, on the last day of the birth month of the identification cardholder or the end of the WASD contract date, whichever comes first. Current cardholders with birthdays in August and which have 2009 or 2010 expirations date on the card are now required to renew their identification cards in June 2009. If your card is set to expire in August 2009-2010, you must begin the renewal process in June 2009. All WASD identification cards must be renewed 90 days before the expiration date.

In order to get a new or renew your WASD identification card, please go to Miami-Dade County's website, www.miamidade.gov/wasd, and link to the Security page. You will find all the necessary forms and policy as it relates to WASD identification cards. Below is the list of forms and/or documents that are required for the issuance of a WASD identification card.

- Authorization Letter (on your company letterhead). A sample letter with the suggested language is on the website. Please submit your authorization letter to: Miami-Dade County Water and Sewer Department, ID Room Coordinator, 3071 SW 38th Avenue, Suite 152, Miami, FL 33146. The original letter must be on file in the identification office in order to issue cards to employees.

- Request for Release of Plans/Company Background History Check. Complete and submit for each employee requesting a WASD identification card.

- WASD Safety Briefing. Some WASD facilities require a WASD Safety Briefing prior to the issuance of a WASD identification card. To determine if your employee requires a WASD Safety Briefing, please contact one of the WASD Safety Specialist at 786-552-8582, regarding compliance with this section.

- Non-WASD Employee Identification Card Application. Complete an identification card application for each employee.

Please note that applications with missing, incomplete or incorrect information will be returned and not processed until all errors are corrected.

When an identification card applicant arrives at the WASD identification room, they will be required to sign and date the application in the presence of WASD staff. Applicants must provide a valid U.S. driver's license, social security card or other approved government issued identification at the time the application is signed and witnessed by WASD staff. Miami-Dade County Ordinance 02-68 specifically states that WASD staff must make copies of all original documents. Copies are not acceptable. Applicants are required to pay all applicable fees associated with the issuance of the WASD identification card.

Thank you for your cooperation in this matter. Should you have any additional questions, please contact the Water and Sewer Security Unit at 786-552-8271.

MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
3071 SW 38 Av, Miami, Fl 33146

REQUIRED DOCUMENTS TO OBTAIN A MIAMI-DADE WATER AND SEWER DEPARTMENT (WASD) IDENTIFICATION BADGE

In order to facilitate the identification badge issuance process, please ensure that you have the necessary documents required to obtain an identification badge.

New / Renewal Applicants:

All new applicants requesting a Water and Sewer Department identification badge must present the following documents listed below:

1. **NON-Miami-Dade Water and Sewer Department employees.**

   - Request for Release of Plans / Company Background History Check
   - Company Officer authorized signature letter for ID badge request.
   - Request for Miami-Dade Water and Sewer Department identification badge. (one for each applicant ID request)
   - **Non-WASD Employee Application** completed (with every ID badge issued) (with original signatures).
   - Applicable Non WASD application payments included.
   - **Social Security Card or letter from Social Security Administration (no copies)**
   - Proof of Legal Status and Employment Eligibility in the United States
   - **State Drivers License (valid) or other acceptable documents listed below in # 3. (must be original documents)**
   - **All WASD FEES must be paid for at time of application.**

2. **Miami-Dade Water and Sewer Department employees.**

   - WASD **Employee Application** completed (with every ID badge issued) (with original signatures).
   - WASD ID badge Request FORM: Request for Restricted/Limited Restricted Access/Lost/Stolen etc. (if applicable) (with applicable sections filled in) signed by employees WASD Division Chief properly filled out.
   - WASD ID badge Request Form for Student Inter (if applicable) (with applicable sections filled in) signed by employees WASD Division Chief or designated party.
   - **NO** application cost to WASD employees. (if applicable)
   - **Social Security Card or letter from Social Security Administration (no copies)**
   - Proof of Legal Status and Employment Eligibility in the United States
   - **State Drivers License (valid) or other acceptable documents listed below in #3. (must be original documents)**

- **All WASD FEES must be paid at time of application (if applicable)**

Note: ALL AREAS OF THE WASD APPICATION AND SUPPORTING DOCUMENTS BE COMPLETED, TYPED OR PRINTED IN INK (Blue/Black). THE MIAMI-DADE WATER AND SEWER DEPARTMENT WILL NOT ACCEPT ANY FORM IF IT IS ALTERED (No correction fluid), TORN, FOLDED, BENT OR OTHERWISE DEFACED. THE APPLICATION AND SUPPORTING DOCUMENTS FILLED OUT FOR THE IDENTIFICATION BADGE MUST BE ORIGINAL AND PROCESSED WITHIN 30 DAYS OF THE DATE THEY SIGNED BY THE APPLICANT AND AUTHORIZED COMPANY REPRESENTATIVE (S)

3. A list of acceptable documents follows: (No copies)

- U.S. Passport (unexpired or expired)
- Certificate of U.S. Citizenship (USCIS Form N-560 or N-561)
- Certificate of Naturalization (USCIS Form N-550 or N-570)
- Permanent Resident Card or Alien Registration Receipt Card with photograph (USCIS Form I-151 or I-551)
- Unexpired Temporary Resident Card (USCIS Form I-688)
- Unexpired Employment Authorization Card (USCIS Form I-688A)
- Unexpired Reentry Permit (USCIS Form I-327)
- Unexpired Refugee Travel Document (USIS Form I-571)
- Unexpired Employment Authorization Document Issued by USCIS that contains a photograph (USCIS Form-I688B)
- Original or certified copy of Birth Abroad issued by the Department of State (Form FS-545 or Form DS-1350)
- Unexpired foreign passport with I-551 stamp or attached Form I-94 indicating unexpired employment authorization
- Original or certified copy of a birth certificate issued by a state, county, municipal authority or outlying possession of the United States bearing an official seal
- Native American tribal document
- U.S. Citizen ID Card (USCIS Form I-197)
- ID Card for use of Resident Citizen in the United States.

Identification Badge Renewal:

4. Non-Miami-Dade Water and Sewer Department employees.

- Same procedures outlined in # 1 above after submitting required documentation.
- **$55.00** cash, cashier's check, money order or company check, credit card (exact amount only) for renewal.

5. Miami-Dade Water and Sewer Department employees.

- Same procedures outlined in # 2 above after submitting required documentation at **NO COST**.

Lost / WASD Identification Badge:

6. Non-Miami-Dade Water and Sewer Department employees.

- Same procedures outline in # 1 above after submitting required information.
- $15.00 cash, cashier's check, money order or company check, credit card (exact amount only) for replacement cost of Identification badge.

7. Miami-Dade Water and Sewer Department employees.

- Same procedures outline in # 2 above after submitting required information.
- **$15.00** cash, cashier's check, money order or company check, credit card (exact amount only) for replacement cost of Identification badge.

Stolen / WASD Identification
NON Miami-Dade Water and Sewer employees.
Miami-Dade Water and Sewer employees.

- **Replacement FEE waived with Police Report for stolen WASD ID badge.** (The Identification Section will re-issue the identification badge with a case number pending a copy of the police report.) (Not required for Lost ID badge) Within two weeks (10 business days). To avoid a replacement charge, the employee must provide a copy of the police report to the Identification section. Failure to do so may result in the deactivation of the identification badge until the Police Report is furnished by the employee or the replacement FEE is paid. Once the replacement FEE is paid there are NO refunds.

Note: A lost or stolen identification badge **MUST BE** immediately reported to the Identification Section. This will prevent someone else from gaining access to WASD facilities using your identification badge.

MIAMI-DADE COUNTY

Request for Release of Plans / Company Background History

To ensure the timely release of information with public records exemption, including plans for county facilities, please complete the following form and submit, along with the written request of the interested party, to Miami-Dade County Police Detective Gisel C Arias by fax at 305-470-3895 or e-mail at IOC@MDPD.COM

Project:
Contract Number:
Dates of Contract: **From:** (mm/dd/yyyy) **To:** (mm/dd/yyyy)
Project Manager: **Phone:** **Fax:**

Property & Location:

Requestor:
(Company name as filed, address. Include telephone number & fax)
E:mail address:

Name(s) & Date(s) of Birth of all Corporate Agent(s), Officer(s) & Director(s)

Justification
(types of plans & use by request)

Department: WASD

Dept. Contact Person:
WASD Security Department
(include telephone number & fax)
Aubrey Johnson 786.552.8458 Fax 786-552.8778
Jack Speers 786.552.8271 Fax 786.552.8778
E:mail: wasdid@miamidade.gov

The requesting department concurs with this request and hereby seeks authorization to issue the requested documents.

Department Director (name & signature) Date

Reviewed/No Concerns:

Michael Ronczkowski, Major Date
Miami-Dade Police Department 050109

USING YOUR OWN COMPANY'S LETTERHEAD PLEASE FOLLOW THE FORMAT BELOW

AUTHORIZATION LETTER - SUGGESTED LANGUAGE

Date
ID Room Coordinator
Miami-Dade Water and Sewer Department
3071 SW 38th Ave. Suite 152
Miami, Florida 33146

Dear Sir/Madam:

The names signed below are authorized signatures for Miami-Dade Water and Sewer Department (WASD) identification card requests. No other signatures are to be honored. The authorized company representatives listed below will notify you immediately of any changes. The authorized company representatives acknowledge that in signing a WASD identification card request, the authorized party is certifying that the applicant is employed by _____ and that the applicant is being submitted for a WASD identification card in accordance with Ordinance 02-68, and Article IX, Chapter 32 of the Code of Miami-Dade County. Additionally, we certify that we are knowledgeable of the requirements as set forth in the above Ordinance related to Criminal History Records Checks rules and agree to comply with all provisions of these rules prior to requesting an identification card for our employees. We also agree that this applicant will use the WASD identification card only to conduct official business for this company. Finally, _____authorized representatives agree to return all WASD identification cards immediately upon expiration or termination of the employee or contract. The authorized company representatives understand that failure to comply with the above may result in the suspension of WASD identification card privileges to our company.

Sincerely,

Signature of Company Representative

Print Name & Title

Note: A maximum of two Authorized Signatures are allowed and must be properly listed below. Any additional signatures will cause this document to be invalid

1. Name: _____ 2. Name_____

Signature _____ Signature_____
Title _____ Title _____

COMPANY LETTERHEAD

Date
ID Room Coordinator
Miami-Dade Water and Sewer Department
3071 SW 38th Ave. Suite 152
Miami, Florida 33146

Re: Request for a Miami-Dade Water and Sewer Department (WASD) Identification Card

Dear Sir/Madam:

Company name here
_____acknowledges that in signing this letter for the request for a WASD ID Card, the authorized party is employed by this company. Additionally, it is agreed that this applicant will use his/her WASD ID Card only to conduct business for this company. Finally, it is agreed that Name of Employee will return the WASD ID Card immediately, upon expiration of the card or termination of employment or the contract. It is understood that failure to comply with the above may result in the suspension of WASD ID Card privileges to our company.

1. Employee Information:

Last Name	First Name	Full Middle Name
Date of Birth	Driver's License # Exp. Date	State of Issuance
WASD Contract #	Start Date: (mm/dd/yyyy)	End Date: (mm/dd/yyyy)

2. Reason to request a WASD ID Card:

☐ New ☐ Renewal ☐ Change Company

☐ Damage/mutilated ☐ Name Change ☐ WASD Safety Class Required
Date Completed: _____

☐ Lost/Stolen Police Report # _____ **WASD Safety Officer:** _____

3. Type of WASD ID Card Requested: ☐ **RFID** Access Card

☐ Non-restricted access ☐ Restricted Access ☐ Specify Reason For Restricted Access

Sincerely,

_____
Authorized Signature of Company Representative

_____
Printed Authorized Company Representative Name

_____
Title Phone Number

SS# Last 4_____

Miami-Dade Water & Sewer Department
NON-Employee ID Card Application

MIAMI-DADE COUNTY

SECTION I- APPLICANT INFORMATION

APPLICATION DATE:			
LAST NAME:	FIRST NAME:		
MIDDLE NAME:	ALIAS OR NICKNAME: ☐ NONE		
HOME PHONE #:	WORK PHONE #:	CELL PHONE #:	
DATE OF BIRTH:	PLACE OF BIRTH: City/State (IF NOT U.S. BORN, PROVIDE PROOF OF WORK ELIGIBILITY)		
HEIGHT:	WEIGHT:	RACE: WHITE-BLACK-OTHER (WRITE IN)	
HAIR COLOR:	EYE COLOR:	GENDER: FEMALE ☐ MALE ☐	
SOCIAL SECURITY:	CITIZEN OF WHAT COUNTRY:		
DRIVER'S LICENSE #:	STATE	ISSUED DATE	EXPIRE DATE
E-MAIL ADDRESS: ☐ NONE			

NOTE: ALL AREAS MUST BE COMPLETED, TYPED OR PRINTED IN INK (BLUE/BLACK). THE MIAMI-DADE WATER & SEWER DEPARTMENT WILL NOT ACCEPT THIS FORM IF IT IS ALTERED (NO CORRECTION FLUID), TORN, FOLDED, BENT OR OTHER WISE DEFACED. THE APPLICATION MUST BE PROCESSED WITHIN 30 DAYS OF THE DATE IT IS SIGNED BY THE AUTHORIZED COMPANY REPRESENTIVE (S).

EMAIL: wasdid@miamidade.gov **Phone: 786-552-8271 Fax: 786-552-8778**

FOR OFFICIAL USE ONLY 050109

ACCEPTED ORIGINAL DOCUMENTS:

- ☐ **U.S. PASSPORT/U.S.BIRTH CERTIFICATE NATURALIZATION CERTIFICATE**
- ☐ **VALID U.S. STATE DRIVER'S LICENSE**
- ☐ **VALID U.S. STATE ID CARD**
- ☐ **WORK AUTHORIZATION EXP. DATE**
- ☐ **OTHER**
- ☐ **SOCIAL SECURITY CARD**
- ☐ **ALIEN REG.#** _____

PAYMENTS:

- ☐ **$60.00 NEW ID / EXPIRED ID**
- ☐ **$55.00 RENEWAL**
- ☐ **$25.00 CHANGE OF COMPANY**
- ☐ **$15.00 LOST/STOLEN**
- ☐ **REQUIRES POLICE REPORT WITHIN 10 DAYS**
- ☐ **DAMAGE/REPLACEMENT (NO CHARGE)**
- ☐ **RECEIPT#** _____
- ☐ **CASH** ☐ **PRE-PAID** ☐ **COMPANY CHECK**
- ☐ **MONEY ORDER**

HAVE YOU LIVED AT YOUR CURRENT ADDRESS FOR MORE THAN 5 YEARS?

☐ **YES** ☐ **NO**

PLEASE PROVIDE RESIDENTIAL HISTORY FOR THE PAST FIVE (5) YEARS, STARTING WITH CURRENT ADDRESS BELOW:

☐ **FINGERPRINT TAKEN PICTURE TAKEN** ☐

☐ **ACCEPTED ID CARD APPLICATION**

☐ **REJECTED ID CARD APPLICATION**

PROCESSED BY:_____

Date:_____

APPLICANT RESIDENTIAL HISTORY (MM/DD/YYYY)

FROM DATE:	**END DATE:**	
HOME ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
FROM DATE:	**END DATE:**	
HOME ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**
FROM DATE:	**END DATE:**	
HOME ADDRESS:		
CITY:	**STATE:**	**ZIP CODE:**

SS# Last 4_____

Miami-Dade Water & Sewer Department
NON-Employee ID Card Application

MIAMI-DADE COUNTY

SECTION II- APPLICANT CURRENT EMPLOYMENT INFORMATION			
EMPLOYER NAME:			FOR OFFICIAL USE ONLY
EMPLOYER ADDRESS:			**CARD TYPE:** ☐ YELLOW ☐ YELLOW/RED – RESTRICTED ☐ RESTRICTED ACCESS AREA: (ALL FACILITIES) ☐ RFID ☐ I ☐ II ☐ III POST:
CITY:	STATE:	ZIP CODE:	
EMPLOYER'S PHONE #:	EMPLOYER FAX #:		
APPLICANT'S POSITION:	APPLICANT'S SUPERVISOR:		
WASD CONTRACT #:	COMPANY EMAIL ADDRESS:		
CONTRACT START DATE : (MM/DD/YYYY)	CONTRACT END DATE: (MM/DD/YYYY)		

WASD PROJECT MANAGER APPROVING CARD TYPE:
NAME: SIGNATURE: DATE:

LIST YOUR EMPLOYMENT HISTORY FOR THE PAST 5-YEARS STARTING WITH THE FIRST PRIOR EMPLOYMENT

START DATE (MM/DD/YYYY):	END DATE (MM/DD/YYYY):	TITLE OF POSITION:		
COMPANY NAME:	COMPANY ADDRESS:	CITY:	STATE:	ZIP CODE:
COMPANY PHONE NUMBER:	SUPERVISOR NAME:	SUPERVISOR TITLE:		
START DATE (MM/DD/YYYY):	END DATE (MM/DD/YYYY):	TITLE OF POSITION:		
COMPANY NAME:	COMPANY ADDRESS:	CITY:	STATE:	ZIP CODE:
COMPANY PHONE NUMBER:	SUPERVISOR NAME:	SUPERVISOR TITLE:		
START DATE (MM/DD/YYYY):	END DATE (MM/DD/YYYY):	TITLE OF POSITION:		
COMPANY NAME:	COMPANY ADDRESS:	CITY:	STATE:	ZIP CODE:
COMPANY PHONE NUMBER:	SUPERVISOR NAME:	SUPERVISOR TITLE:		
START DATE (MM/DD/YYYY):	END DATE (MM/DD/YYYY):	TITLE OF POSITION:		
COMPANY NAME:	COMPANY ADDRESS:	CITY:	STATE:	ZIP CODE:
COMPANY PHONE NUMBER:	SUPERVISOR NAME:	SUPERVISOR TITLE:		
START DATE (MM/DD/YYYY):	END DATE (MM/DD/YYYY):	TITLE OF POSITION:		
COMPANY NAME:	COMPANY ADDRESS:	CITY:	STATE:	ZIP CODE:
COMPANYPHONE NUMBER:	SUPERVISOR NAME:	SUPERVISOR TITLE:		

SS# Last 4____________

SECTION III - APPLICANT CRIMINAL BACKGROUND HISTORY DISCLOSURE

Persons seeking unescorted access to Miami-Dade County Water and Sewer Department Restricted Areas are subject to the requirements of Article IX of Chapter 32 of the Code of Miami-Dade County (Ord. No. 02-68, § 1, 4-23-02). I further understand that compliance with Article IX of Chapter 32 of the Code of Miami-Dade County is part of the Miami-Dade County Water and Sewer Department's Security Program and that Article IX of Chapter 32 of the Code of Miami-Dade County includes access control provisions requiring criminal background checks for individuals seeking access to Miami-Dade County Water and Sewer Department Restricted Areas. I further understand that the Department Director may deny my application for access.

INITIALS_____

I hereby authorize any representative from the Miami-Dade County Water and Sewer Department Identification Office to obtain any records or information pertaining to my arrest record or criminal history, and I direct any representative of any law enforcement or criminal justice agency to release such information upon request of the bearer.

I AGREE ☐ **I DECLINE** ☐ **INITIALS**_____

The undersigned applicant acknowledges and consents to Miami-Dade County Water and Sewer Department Identification Office providing the information contained in this application including the applicant's social security number to the U.S. Department of Homeland Security (DHS), Federal Bureau of Investigation, U.S. Customs and Border Protection, Florida Department of Law Enforcement, and U.S. Immigration and Customs Enforcement pursuant to applicable federal, laws, rules or regulations as they may be amended. The information will be disclosed to DHS personnel and contractors or other agents who need information to assist in activities related to security threat assessments. Applicants who elect to decline authorization for the Miami-Dade County Water and Sewer Department Identification Office to transmit their social security number to DHS shall check the "I decline" box below with the understanding that such action may result in delays or make it impossible to complete the assessment.

I AGREE ☐ **I DECLINE** ☐ **INITIALS**_____

☐ **I HAVE OR** ☐ **HAVE NOT** used illegal drugs within three (3) years immediately preceding the date of this statement. Florida Statute 311.12 (3)(e). **INITIALS**_____

SS# Last 4_____

Have you been at any time incarcerated, convicted, or had adjudication withheld of any crime listed below: **NO** ☐ **YES** ☐ If yes, provide date: / / Probation/Supervision/Parole end date: / /

Indicate below if you have been convicted regardless of whether or not adjudication was withheld, for any of the following offenses within the past five (5) years: Conviction will not necessarily disqualify an applicant for employment.		
Theft	**YES** ☐	**NO** ☐
Smuggling	☐	☐
The possession with intent to sell or distribute, sale, or trafficking of narcotics or any other controlled substance.	☐	☐
Fraud, misrepresentation, or other crime involving dishonesty.	☐	☐
Felony theft under Chapter 812, Florida Statutes, or its federal counterpart.	☐	☐
Any violent crime committed with a weapon.	☐	☐
Any crime directly related to the Grandfathered Applicant's position of employment, shall not be issued an identification card for access to any restricted area. If a conviction or a finding of guilty on one of the above.	☐	☐

Please Indicate that you have read and understand each statement by providing your **INITIALS** in the left box.	
	Whoever, without being fully authorized, licensed or invited, willfully enters or remains on a WASD facility or property, or a portion thereof, or having been authorized, licensed or invited to a WASD facility or property, or portion thereof, is warned or ordered by authorized Department personnel or a law enforcement officer to depart, and refuses to do so, commits the offense of trespass.
	No person shall have entry to any restricted area unless such person possesses a current WASD issued identification card authorizing such access or whose access is otherwise expressly authorized under this Article. Identification cards shall be worn conspicuously on the outer garment of the bearer, in plain view above the waist.
	The WASD Director reserves the right to revoke authorization to possess an ID card.

SS# Last 4_____

	The making of a false statement in the application for an identification card under this section shall be grounds for refusal to issue the card and also shall be a violation of Article IX of Chapter 32 of the Code of Miami-Dade County.
	Identification cards issued by the Department shall at all times remain the property of the County. As such, the Department shall at all times have the right to confiscate or demand return of the identification card of any person who violates the provision of Article IX of Chapter32 of the Code of Miami-Dade County and demand the return of the identification card of all persons employed by a company violating this Article or whose lease, contract, permit or license agreement with the County allowing use of a WASD facility has expired or has been canceled or is terminated. .
	The identification card shall be valid for one (1) year from the date of issuance, unless sooner canceled or surrendered.
	The Director or his designee may suspend or revoke the use of the card based on any felony arrest, conviction, finding of guilt or other just cause, and may reinstate the use of the card when, in his/her discretion, circumstances warrant, provided, however, that such power to suspend, revoke or reinstate may not be exercised in conflict with a decision of the appeals committee.
	Any holder of a personal identification card shall report in writing to the Director (i) immediately any felony arrests, convictions, or findings of guilt, and (ii) within ten (10) days of the change any other change of data in an application for a personal identification card. Failure to report such changes within the time provided or the making of a false statement in any change in information submitted shall constitute grounds for suspending the use of the card; false statements or material omissions in the change information shall be a violation of Article IX of Chapter 32 of the Code of Miami-Dade County.
	An application for an identification card to enter into any restricted area shall be denied by the Director if the applicant refuses to answer or falsely answers any questions listed in Article IX, Section 32-172 of Chapter 32 of the Code of Miami-Dade County or refuses to produce documents to verify statements made on the application.
	An identification card for a person shall not be transferable at any time for any purpose.
	No person shall retain or have in his or her possession and shall promptly return to the Director or his or her designee, any card, permit, pass, badge or other means of identification issued by the Director after it has expired or when such person is no longer employed at the WASD facility or upon request by the Director or his or her designee that it be returned or when otherwise required by ordinance. Such retention shall constitute a violation of Article IX, of Chapter 32 of the Code of Miami-Dade County.

SS# Last 4_____

Miami-Dade Water & Sewer Department
NON-Employee ID Card Application

	No person shall forge, counterfeit, alter, erase, obliterate or transfer any identification card, permit, pass, lease, record, form, badge or other instrument or document issued or maintained by the County Manager or WASD Director, pursuant to Article IX of Chapter 32 of the Code of Miami-Dade County. No person shall have in his/her possession any forged, counterfeited, altered, erased, or obliterated or transferred identification card, permit, pass, lease, record, form, badge or other instrument or document issued or maintained by the County Manager or WASD Director pursuant to this Article. No person shall have in their possession the identification card of another individual. No person shall have more than one (1) WASD active card issued at a time.
	Failure to produce identification cards by all persons required to possess identification cards pursuant to Article IX of Chapter 32, Code of Miami-Dade County within a WASD facility shall be cause for immediate removal from the WASD facility and shall be grounds for such further actions as may be authorized by law.

CERTIFICATION OF THE APPLICANT WITH RESPECT TO THIS APPLICATION PROCESS REQUIRING FULL DISCLOSURE OF INFORMATION

I have read and agree to abide by the responsibilities set forth in this identification card request. I understand that a knowing and willful false statement on this application can be punished by fine or imprisonment of both. I understand that knowingly providing false information on this application or any portion of the ID application process may subject me to criminal prosecution and will minimally result in the permanent denial or revocation of my WASD ID card. I understand that upon termination of my official employment at WASD, in any capacity where I am required to have the issued WASD ID card, I will immediately return my ID card to my former employer or directly to WASD ID Credentials Section and that failure to do so will Constitute a violation of Miami-Dade County Ordinance 02-68.

Applicant Full Name:----------	
Applicant Title:----------	
Applicant Signature: MUST BE WITNEESED BY ID ROOM CLERK	
Date:---------- MUST BE WITNESSED BY ID ROOM CLERK	

FOR OFFICIAL USE ONLY

Applicant Verified By:

Date:

Signature: _____

Comments:

SS# Last 4 _____

Miami-Dade Water and Sewer Department

3071 SW 38 Ave, Miami, Fl 33146

NON- WASD EMPLOYEE ID CARD FEES

(PER APPLICANT)

$ 60.00	NEW WASD ID CARD / EXPIRED ID CARD
$ 55.00	RENEWAL OF WASD ID CARD
$ 25.00	CHANGE OF COMPANY
$ 15.00	LOST OR STOLEN

Note: All NON-WASD Employee ID Cards EXPIRE ANNUALLY on applicants BIRTH month or CONTRACT END DATE whichever occurs first.

CODE
of
MIAMI-DADE COUNTY, FLORIDA

Codified through
Ordinance No. 09-27, enacted April 7, 2009.
(Supplement No. 61)

Preliminaries

CODE OF METROPOLITAN DADE COUNTY

This publication is up to date as indicated by the banner above. No additional ordinances have been submitted for interim display via our NOW service (New Ordinances On the Web). For more information about this service, please visit:
http://www.municode.com/services/now.asp

ARTICLE IX. SECURITY AT MIAMI-DADE WATER AND SEWER DEPARTMENT

Sec. 32-170. Legislative intent.

The intent of the County Commission in enacting this Article is to accomplish the following goals and purposes at the Miami-Dade Water and Sewer Department.

(1) Improve security.

(2) Retain certain of the present identification procedures, and adopt certain new procedures providing greater security protection.

(3) Establish rules and regulations governing security at Miami-Dade Water and Sewer Department facilities.

(4) Protect the public health, safety and welfare by preventing crime, detecting, arresting and prosecuting violators of Article IX of Chapter 32 of the Code of Miami-Dade County.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-171. Definitions; applicability of Article provisions; disclaimer of liability; right of access of public officers and employees; offenses and penalties.

The following definitions shall apply in this Article:

(1) *Authorized* shall mean acting under or pursuant to a written contract, license, permit, instruction or other evidence of right issued by the Board or the Manager or his designee.

(2) *Board* shall mean the Board of County Commissioners of Miami-Dade County, Florida.

(3) *County* shall mean the County of Miami-Dade in the State of Florida.

(4) *Department* shall mean the Miami-Dade Water and Sewer Department.

(5) *Director* shall mean the administrative head of the Miami-Dade Water and Sewer Department, the assistant or acting Director, appointed by the County Manager.

(6) *Law Enforcement Officer* shall mean any person employed and vested with the police power of arrest under federal, State or County authority.

(7) *Operational directives* shall refer to instructions, directives, rules and regulations pertaining to the operation of the Miami-Dade Water and Sewer Department prepared and promulgated from time to time by the Director. When approved by the Board of County Commissioners, these operational directives shall have the same force and effect as County ordinances.

(8) *Person* shall be as defined in Section 1.01(3), Florida Statutes, and shall include municipal, governmental and public bodies and their agents, when such bodies or agents are using the water and sewer facilities.

(9) *Restricted area* shall mean any sensitive area operated, maintained or occupied by WASD that is deemed to have critical security or public safety status by the Director.

(10) *WASD* shall mean the Miami-Dade Water and Sewer Department.

(11) *WASD* Facility shall include, but not be limited to, water treatment and supply plants, wastewater treatment plants, office buildings, wellfields, pump stations, and any other facility operated, maintained or occupied by WASD.

32-171.1*Applicability of Article IX of Chapter 32 provisions.*

(a) Any permission granted to a person, corporation, partnership, or other legal entity by the Board, County Manager or Director, directly or indirectly, expressly or by implication, to enter upon a WASD facility or restricted area, is conditioned upon compliance with this Article and operational directives and the payment of any and all fees or charges established and payable to the County; such fees and charges shall include any and all fees or charges established or approved by the Board or the County Manager and entry on WASD property by any person shall be deemed to constitute an agreement by such person to comply with such rules and regulations and to pay any such fees and charges.

(b) It shall be unlawful for any person to do or commit any act forbidden by or to fail to perform any act required by these rules and regulations or to fail to pay any fees established and payable pursuant to this Article.

(c) The Department, through its Director, may from time to time cause to be issued operational directives applicable to WASD property. If any such operational directive contains a requirement that fees and charges be paid for any operation or use of a WASD facility or property as defined in the operational directive, such fees and charges shall be established in accordance with the provisions of this Article.

32-171.2*WASD liability.* The County assumes no responsibility or liability for any loss, injury or damage to persons or property at a WASD facility.

32-171.3*Access of public employees and law enforcement officers.* Authorized County employees, law enforcement officers, and employees of local, state and federal regulatory agencies shall have free and full access to and from any and all WASD facilities to make inspections and/or enforce the provisions of this Article. No person shall obstruct or interfere with any Law Enforcement Officer, employees of local state or federal regulatory agencies, or any designated County or Department employee conducting such inspection and/or enforcement or in the performance of any other power or duty required of such officer or employee.

32-171.4*Offenses and penalties.* Every person who violates any provision of this Article shall be punished by a fine not to exceed five hundred dollars ($500.00), or imprisonment in the Miami-Dade County Jail for a period of not more than sixty (60) days, or both.

32-171.5*Emergencies.* The Director is empowered to take such action as the Director deems necessary when an emergency exists at a WASD facility or property which, in the Director's judgment, presents an immediate threat to public health, security, safety or welfare, or to the operation of a WASD facility or property; provided, however, that in the exercise of such power the Director shall promptly notify the governmental agency(ies) or County department(s) having been assigned by the Board or County Manager primary responsibility for the handling and resolution of such emergency, and provided further that the Director's power herein granted shall cease upon the assumption of jurisdiction over such emergency by the governmental agency(ies) or County department(s) and such assumption of responsibility shall not be inconsistent with the requirements of any emergency procedure or program for a WASD facility or property adopted and approved by the Board. No action shall knowingly be taken by the Director hereunder or by any County department(s) contrary to any regulation or order of the Federal, State or County agency having appropriate jurisdiction.

32-171.6*Trespassing.* Whoever, without being fully authorized, licensed or invited, willfully enters or remains on a WASD facility or property, or a portion thereof, or having been authorized, licensed or invited to a WASD facility or property, or portion thereof, is warned or ordered by authorized Department personnel or a law enforcement officer to depart, and refuses to do so, commits the offense of trespass.

32-171.7*Other laws.* All applicable provisions of the laws of the State of Florida, now in existence or hereafter enacted, are hereby adopted by reference as part of these rules and regulations.

32-171.8*Jurisdiction.* The violation of any provision hereof shall be triable in the Miami-Dade County Court.

32-171.9*Severability.* If any provision of these rules and regulations or the application thereof to any person or circumstances is held invalid, the remainder of these rules and regulations and the application of such provision to other persons or circumstances shall not be affected thereby.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-172. Identification cards for persons.

32-172.1 *Persons who may enter restricted area.* No person shall have entry to any restricted area unless such person possesses a current WASD issued identification card authorizing such access or whose access is otherwise expressly authorized under this Article. Identification cards shall be worn conspicuously on the outer garment of the bearer, in plain view above the waist.

32-172.2 *Plan for issuance.* The Director shall devise, maintain and, as required, revise a plan for the issuance of identification cards to all WASD employees and non-WASD employees working in a restricted area.

Such plan shall provide for ready identification of various clearance levels based on the most appropriate color scheme as determined by the Director. Such color scheme shall specifically identify limited and unlimited security access for WASD employees, non-restricted public access, and distinguish various levels of access for consultants, contractors, contract employees, public officials, and other public employees.

With the exception of temporary identification cards, each identification card shall:

(a) Be issued for a period not to exceed one (1) year;

(b) Contain a photo of the cardholder

(c) Contain a physical description of the cardholder, to include but not be limited to height, weight, and date of birth of cardholder;

(d) Contain the name, title, and employer, or in the case of a WASD employee the employing division or section, of cardholder; and

(e) Contain a unique serial number not to be repeated on any other identification card.

32-172.3 Employees who are required to maintain an operational license to operate, or have direct oversight or control over the operation of any Water or Wastewater Treatment Facility, or who are critical to security or public safety at any Miami-Dade Water and Sewer Facility, shall be classified as exempt employees if agreed to in the applicable Collective Bargaining Agreement and to the extent allowed by law shall be required to submit to both a Federal and State Criminal Background Check and an annual Drug & Alcohol Screening test consistent with Miami-Dade County Personnel Policies and Procedures and applicable Collective Bargaining Agreements. Such positions shall include Water/Wastewater Division Chiefs, Assistant Superintendents, Chief Water Treatment Plant Operators, Chief Wastewater Treatment Plant Operators, Treatment Plant Operator 1, Treatment Plant Supervisors and Treatment Plant Operator 2. Said employees who fail the criminal or drug screening provisions shall be subject to existing Miami-Dade County Personnel Policies and Procedures.

32-172.4. *Application.*

(a) The application for a permanent identification card is to be a public record filed in writing, maintained in WASD's employment records and shall contain the applicant's:

(1) Full current name and any previous names and aliases used:

(2) Current residential address and all residential addresses within the past (5) years;

(3) Date and place of birth;

(4) Current employer and any previous employer within the past five (5) years;

(5) Social Security number and driver's license number as well as copies of each to be made by WASD Security Division personnel from original documents;

(6) Specific reason for entry into the restricted areas;

(7) A photo of applicant taken by the Department at the time of application submission;

(8) Fingerprints authenticated by the Miami-Dade Police Department on an identification record form furnished by the Director of the Miami-Dade Police Department.

(9) Prior felony convictions or entries of findings of guilt (whether pursuant to a plea of guilty or nolo contendere or a judgment of conviction entered by a court of competent jurisdiction);

(10) Signed authorization to conduct a criminal, financial or other background check on the applicant; and

(11) Signatures of applicant and employer for non-WASD employees or immediate supervisor for WASD employees.

(b) Pending final action on an application for an identification card or for individuals at a WASD facility for no more than five (5) total days per calendar year, the Director or his or her designee may issue a temporary identification card to non-WASD employees.

(c) In addition to the information required in subsection (a) above, the Director may require the applicant to produce such further facts and evidence as may be necessary to determine whether or not the applicant possesses the qualifications necessary for an identification card.

(d) The making of a false statement in the application for an identification card under this section shall be grounds for refusal to issue the card and also shall be a violation of this Article.

(e) The Director may conduct or request Miami-Dade Police Department ("MDPD") to conduct a criminal and/or financial background check on any applicant and may conduct or require such other background checks as the Director deems necessary.

(f) Any applicant for a WASD identification card who, within the last five (5) years, (i) has had a felony conviction or (ii) against whom a finding of guilty has been entered on a felony charge shall not be issued an identification card for any restricted area except in the case of a Grandfathered Applicant, whose access shall be governed by subsection (g).

(g) Any Grandfathered Applicant for a WASD identification card who within the last two (2) years, (i) has had a felony conviction or (ii) against whom a finding of guilty has been entered on a felony charge for the following crimes: (a) theft, (b) smuggling, (c) the possession with intent to sell or distribute, sale, or trafficking of narcotics or any other controlled substance, (d) dishonesty, fraud, or misrepresentation, (e) felony theft under Chapter 812, Florida Statutes, or its federal counterpart, or (f) any violent crime committed with a weapon; or (g) any crime directly related to the Grandfathered Applicant's position of employment, shall not be issued an identification card for access

to any restricted area. If a conviction or a finding of guilty on one of the above-listed crimes has occurred more than two (2) years but less than five (5) years from the effective date of this article, the Director has the discretion to issue an identification card to a Grandfathered Applicant under such terms and conditions as the Director deems appropriate to meet the Department's security needs.

A "Grandfathered Applicant" for purposes of this subsection means a person employed at WASD as of the effective date of this article or who, prior to the effective date of this article, was employed at WASD.

(h) Any applicant denied an identification card based on subsection (f) or (g) above may appeal the decision to an appeals committee. The appeals committee shall consist of five members, a member of the Miami-Dade Police Chiefs' Association, excluding the Director of the Miami-Dade Police Department, on a rotating basis, each member to serve for a period of one (1) year, a member of Miami-Dade County Inspector General's Office, a representative of the employee's employer or, at the employer's option, the association representing the employer, the WASD Director or his or her designee, and a union, labor or employee representative. The appeals committee shall determine whether the employee shall be issued an identification card based on procedures issued by the County Manager in an administrative order.

32-172.5 *Identification card for persons.* Identification cards issued by the Department shall at all times remain the property of the County. As such, the Department shall at all times have the right to confiscate or demand return of the identification card of any person who violates the provisions of this Article and to demand the return of the identification card of all persons employed by a company violating this Article or whose lease, contract, permit or license agreement with the County allowing use of a WASD facility has expired or has been canceled or is terminated. The identification card shall be valid for one (1) year from the date of issuance, unless sooner canceled or surrendered. Application for or acceptance of a card or pass under Section 32-172 or entry into any restricted area by any person shall subject such person to the reporting requirements of Section 32-172.5.

32-172.6 *Report of changes in data on application for identification card for a person.* Any holder of a personal identification card shall report in writing to the Director (i) immediately any felony arrests, convictions, or findings of guilt, and (ii) within ten (10) days of the change any other change of data in an application for a personal identification card. Failure to report such changes within the time provided or the making of a false statement in any change in information submitted shall constitute grounds for suspending the use of the card; false statements or material omissions in the change information shall be a violation of this Article. The Director or his designee may suspend or revoke the use of the card based on any felony arrest, conviction, finding of guilt or other just cause, and may reinstate the use of the card when, in his discretion, circumstances warrant, provided, however, that such power to suspend, revoke or reinstate may not be exercised in conflict with a decision of the appeals committee as set forth in Section 32-172.3 (h). Any person whose identification card has been suspended or revoked may appeal the decision to the appeals committee set forth in Section 32-172.3 (h).

32-172.7 *Denial of identification card.* An application for an identification card to enter into any restricted area shall be denied by the Director if the applicant refuses to answer or falsely answers any questions listed in Section 32-172 or refuses to produce documents to verify statements made on the application.

32-172.8 *Identification card or pass for a person; Loss, transfer, alteration or possession of altered identification cards, passes or department documents.*

(a) A person who has lost his or her valid identification card, after identifying himself or herself to the satisfaction of the WASD Security Division, shall be issued a new identification card after such person submits a completed application for a replacement card and, upon payment of a replacement charge as set by Administrative Order.

(b) An identification card for a person shall not be transferable at any time for any purpose.

(c) No person shall retain or have in his or her possession and shall promptly return to the Director or his or her designee, any card, permit, pass, badge or other means of identification issued by the Director after it has expired or when such person is no longer employed at the WASD facility or upon request by the Director or his or her designee that it be returned or when otherwise required by ordinance or otherwise. Such retention shall constitute a violation of this Article.

(d) No person shall forge, counterfeit, alter, erase, obliterate or transfer any identification card, permit, pass, lease, record, form, badge or other instrument or document issued or maintained by the County Manager or Director, pursuant to this Article. No person shall have in his possession any forged, counterfeited, altered, erased, obliterated or transferred identification card, permit, pass, lease, record, form, badge or other instrument or document issued or maintained by the County Manager or Director pursuant to this Article. No person shall have in his possession the identification card of another individual.

(e) In the event that any person who has an application on file for an identification card enters a restricted area without valid identification card or being otherwise authorized, such person may have the identification card or other authorization under this Article suspended or revoked.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-173. Administrative Review procedure.

32-173.1 *Administrative review.* Any person, including the County, aggrieved with any action or inaction by the Director and/or the Department, may file a written request with the County Manager within ten (10) days of the action or inaction. Such person shall be entitled to an appeal before a hearing examiner assigned by the County Manager or his designee from a list supplied by the American Arbitration Association. Such hearing examiners may be paid a fee for their services but shall not be deemed County officers or employees within the purview of Sections 2-10.2, 2-11.1 or otherwise. The hearing examiner shall conduct a hearing after notice and shall transmit his findings of facts, conclusions, and any recommendations together with a transcript of all evidence taken before him and all exhibits received by him, to the Manager who may sustain, reverse or modify the action at issue. Such hearings shall be conducted insofar as is practicable in accordance with the rules of civil procedure governing the procedure in the Circuit Court, except as may be provided in this Code or by rules adopted by the Board of County Commissioners. Any interested party may procure the attendance of witnesses and the production of records at such hearings in the manner provided by Section 2-50. Any person appearing before a hearing examiner under the provisions of this section has the right, at his own expense, to be accompanied, represented and advised by counsel or other qualified representative. (Counsel shall mean a member of the Florida Bar).

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-174. Identification.

32-174.1. *Identification cards.* Failure to produce identification cards by all persons required to possess identification cards pursuant to this Article within a WASD facility shall be cause for immediate removal from the WASD facility and shall be grounds for such further actions as may be authorized by law.

32-174.2. *Duty to report violations.* All law enforcement officers and persons required to possess identification cards pursuant to this Article shall be under a continuing duty to promptly report the presence of (1) any unauthorized persons in a restricted area and (2) any unauthorized person on a WASD facility without a conspicuously-placed identification card.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-175. Fees.

The fee schedule for all identification cards required by this Article shall be set and established by an administrative order of the County Manager and approved by the Board of County Commissioners.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-176. False Reports or Threats.

No person shall make any threat involving the operations, including but not limited to, water and wastewater treatment at a WASD facility, or any false report regarding the conduct of operations at any WASD facility.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-177. Forgery and counterfeit.

No person shall make, possess, use, offer for sale, sell, barter, exchange, pass or deliver any forged, counterfeit, or falsely altered pass, permit, identification badge, certificate, placard, sign or other authorization purporting to be issued by or on behalf of the Department, nor shall any information electronically or magnetically encoded thereof be knowingly altered or erased.

(Ord. No. 02-68, § 1, 4-23-02)

Sec. 32-178. Audits by Inspector General's Office.

The Office of the Miami-Dade County Inspector General (IG) shall, on a random basis, perform audits and monitor compliance with the provisions of this Article. The Inspector General shall submit a report and appropriate recommendations to the Board of County Commissioners following such audits. However, the Inspector General shall have the discretion to exclude from such reports any information that may compromise security at a WASD facility or affect the public's safety.

(Ord. No. 02-68, § 1, 4-23-02)

Secs. 32-179--32-200. Reserved.

APPENDIX "D"

MIAMI-DADE
WATER AND SEWER DEPARTMENT
SAFETY UNIT

CONSTRUCTION SAFETY AND HEALTH POLICY

(4 Pages)

Miami-Dade Water and Sewer Department Safety Unit
CONSTRUCTION SAFETY and HEALTH POLICY

The Construction Safety and Health standards contained in this Contract are to aid Contractors in their efforts toward achieving compliance with the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations (CFR) and other regulatory programs in the workplace. The Contract does not contain all OSHA and other regulatory safety and health programs, those indicated are (1) standards or procedures most frequently overlooked and\or (2) procedures as they pertain to hazardous situations.

It is the policy of Miami-Dade County to improve the effectiveness of public service by providing a safe and healthful work place for County and contractual employees, providing for the safety and health of the public, and preserving County resources, through the establishment and implementation of the Miami-Dade Safety and Loss Prevention Program **(Administrative Order No. 7-14)**. A copy of Administrative Order No. 7-14 will be available and provided at the preconstruction meeting.

Miami-Dade County has adopted the Occupational Safety and Health Act. Contractors must comply with standards in 29 CFR 1910 and 1926. 29 CFR 1926, Subpart C, "General Safety and Health Provisions" and other specific sections of these standards include the responsibilities for each Contractor to initiate and maintain safety and health programs, provide for a competent person to conduct frequent and regular inspections, instruct each employee to recognize and avoid unsafe conditions and know what regulations are applicable to the work environment (site). OSHA also uses Special Emphasis Programs (SEPs), Local Emphasis Programs (LEPs), and National Emphasis Programs (NEPs) to find ways to help control accidents, injuries, and illnesses in construction sites where employee and public exposure to unusual physical and health risks exist.

A Contractor's project safety manual must be submitted for review and accepted by the Miami-Dade Water and Sewer Department Safety Unit prior to receiving "Notice to Proceed." The project safety manual must include but not be limited to, all OSHA and all other Federal, State and Local regulatory programs as they pertain to the construction project. The project safety manual must be available and accessible at the construction site.

The Miami-Dade County Water and Sewer Department Safety Unit adheres to and enforces Administrative Order No. 7-14, inclusive of all regulatory programs. It is the responsibility of the Contractor to comply with and enforce all applicable safety regulations. The Contractor shall comply with, but not be limited to, the OSHA Code of Federal Regulations and all other regulatory programs as they pertain to the construction project.

- **Excavation\Trenching (CFR 1926 Subpart P)** any man made cut, cavity, trench, or depression in an earth surface, formed by earth removal. Ensure each employee protection from potential hazards around or within an excavation or trench. Contractor must adhere to the State of Florida **Trench Safety Act (*Title XXXIII, Regulation of Trade, Commerce, Investments and Solicitation, Chapter 553, Building Construction Standards, Part III, (ss 553.60 through 553.64*))**. The Trench Safety Act (TSA) has been incorporated in to a State standard, derived from the OSHA excavation safety standard CFR 1926.650 Subpart P. The TSA states on all contracts for trench excavation in which such excavation will exceed a depth of 5 feet **(ss. 553.63-Trench excavations in excess of 5 feet deep; required information.)**:

1 **The contract bid submitted by the Contractor who will perform such excavation shall include:**
   - **(a) A reference to the trench safety standards that will be in effect during the period of construction of the project.**
   - **(b) Written assurance by the Contractor performing the trench excavation that such Contractor will comply with the applicable trench safety standards.**
   - **(c) A separate item identifying the cost of compliance with the applicable trench safety standards.**

2 **A Contractor performing trench excavation shall:**
   - **(a) As a minimum, comply with the excavation safety standards which are applicable to a project.**
   - **(b) Adhere to any special shoring requirements, if any, of the state or other political subdivisions which may be applicable to such a project.**
   - **(c) If any geotechnical information from the owner, the contractor, or otherwise, the contractor performing trench excavation shall consider this information in the contractor's design of the trench safety system which it will employ on the project. This paragraph shall not require the owner to obtain geotechnical information.**

- Specific excavation requirements **(CFR 1926.651(b)(1))** states that the estimated location of utility installations such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably maybe expected to be encountered during excavation work shall be determined prior to opening an excavation. Contractor shall contact utility companies to establish the location of utility underground installations within 24 hours (unless a longer period is required), or cannot establish the exact location of these installations, the work may proceed, and does so with caution, or detection equipment, or other acceptable means to locate utility installations are used **(CFR 1926.651(b)(2))**. When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. While the excavation is open, underground installations shall be protected, supported, or removed, as necessary, to safeguard workers **(CFR 1926.651(b)(3),(4))**. Each employee shall be protected from cave-ins by an adequate protective system designed in accordance with **paragraph (b) or (c)** of this section. Excavations shall be protected from cave-ins by an adequate protective system except when:
  - Excavations are made entirely in stable rock; or trench less than 5 feet (1.5 meters) in depth and examination of the ground by a competent person provides no indication of a potential cave-in **(CFR 1926.652(a)(1)(i) and (ii))**.
  - Protective system shall have the capacity to resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

  Employees within the trench shall be protected from materials and equipment which could pose a hazard by falling or rolling into the trench. Materials and equipment shall be placed at least 2 feet from the edge of the trench or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling in excavations or a combination of both if necessary **(CFR 1926.651(j)(2))**.

  A ladder is a safe means of egress which shall be located in trench excavations that are 4 feet or greater in depth so as to require no more than 25 feet of lateral travel for employees **(CFR 1926.651(c)(2))**.

Means of exit within the trench must be free of all obstructions, this would allow the employee immediate use in case of fire or emergency **(CFR 1926.34(c))**.

- **Movement of Motor Traffic (M.O.T.)**…reference the Department of Transportation's Manual on Uniform Traffic Control Devices, Part 6…to provide for reasonably safe and efficient movement of road users through or around temporary traffic control zones (work area) while reasonably protecting workers, responders to traffic incidents, and equipment. This only applies if the Contractor is working in an area where there is movement of traffic. Workers exposed to public vehicular traffic greater than 25 m.p.h. shall be provided with, and shall wear orange warning vest with yellow reflective stripes on front and back **(Class II or III)** or other suitable garments marked with or made of reflectorized or high visibility material **(CFR 1926.651(d))**. Flaggers, signaling by flaggers and the garments worn shall follow the OSHA rules incorporated by reference in the Department of Transportation's Manual.
- **Crane Safety (CFR 1926 Subpart N; 1926.550)**. If a crane is to be used at anytime during this project a crane program must be submitted prior to the beginning of construction. The Crane Safety program is a Miami-Dade Code Enforcement Ordinance. The Crane Ordinance **(Chapter 8E-Cranes and Hoisting Equipment of the Code of Miami-Dade County)** is enforceable by the Miami-Dade Code Enforcement Unit. Accessible areas within the swing radius of the rear of the rotating superstructure of the crane, either permanently or temporarily mounted, must be barricaded in such a manner as to prevent an employee from being struck or crushed by the crane. A copy of the Cranes and Hoisting Equipment Ordinance will be available and provided at the preconstruction meeting.
- **Fall Protection (CFR 1926 Subpart M)** employers are required to assess the workplace to determine if the walking/working surface on which employees are to work have the strength and structural integrity to safely support workers.
- **Electrical Protection (CFR 1926 Subpart K)** addresses electrical safety requirements that are necessary for the practical safeguarding of employees involved in construction work and control of hazardous energy and all electrical hazards.
- **Hazard Communication (CFR 1926 Subpart D; 1926.59)** employers shall develop, implement, and maintain at the workplace a written hazard communication program for their workplaces. Employers must inform their employees of the availability of the program, including the required list(s) of hazardous chemicals, and material safety data sheets required.
- **General Safety and Health Provisions (CFR 1926 Subpart E; 1926.28(a) and 1926.95(a) through (c))** the employer is responsible for requiring the wearing of appropriate personal protection equipment in all operations where there is a an exposure to hazardous conditions or where the need is indicated for using such equipment to reduce the hazard to the employee. Employees working over or near a body water, shall be provided with U. S. Coast Guard approved life jackets or buoyant work vests. **Head Protection (CFR 1926.100)** Head protective equipment (hard hat) shall be worn in areas where there is a possible danger of head injuries from impact, flying or falling objects or electrical shock and burns.
- **Portable Ladders (CFR 1926 Subpart G; 1926.200(h); Subpart X; 1926.1053)** portable ladders with structural defects, such as broken or missing rungs, cleats or steps, broken or split rails, or otherwise corroded, faulty, or defective components must be either immediately marked as defective or tagged with "Do Not Use" or similar language and removed from service until repaired.
- **Occupational Noise Exposure Standard (CFR 1910 Subpart G; 1910.95(l)(1))** the employer shall make available to affected employees or their representatives a copy of

this standard and shall also post a copy in the workplace\site. Hearing Protection **(CFR 1926.52)** feasible hearing controls shall be utilized to protect employees against sound levels that exceed the values in the table.

- **Signs, Signals, and Barricades (CFR 1926 Subpart G; 1926.202; Subpart P 1926.651)** a warning system, such as barricades, hand or mechanical signals, or stop logs, must be used when mobile equipment is operated adjacent to an excavation, or when the equipment is required to approach the edge and the operator does not have a clear and direct view of the excavation. The barricades must conform to the ANSI Manual on Uniform Traffic Control Devices for Streets and Highways.
- **Utility Line Markings ((CFR 1926 Subpart P; 1926. 651(b))** the estimated location of utility installations, such as sewer, telephone, fuel, electric, and water lines, or any other underground installations that reasonably maybe expected to be encountered during excavation work, must be determined prior to opening an excavation.
- **Worksite Analysis**… is a practical analysis of the work environment involves a variety of worksite examinations to identify existing hazards and conditions and operations in which changes might occur to create new hazards. Lack of awareness of a hazard stemming from failure to examine the worksite is a sign that safety and health policies and\or practices are ineffective. An effective active analysis, analyzes the work and worksite to anticipate and prevent harmful occurrences. A job analysis helps an individual to determine if there are hazards in the workplace. This is necessary to help identify and determine what precautions will be necessary to perform the job safely. Verifying whether employees and visitors are wearing their personal protection equipment as it relates to various tasks being performed and as required by OSHA standard **(CFR1926.28 (Subpart C) and 1910.132(a) (Subpart I))**. Reviewing the daily job analysis for the worksite.

The Contractor is advised and encouraged to maintain their Company's policies, procedures, and practices to protect their employees from, and allow them to recognize, job-related safety and health hazards. The purpose of the safety policy and procedures is to promote safety, safeguard the lives and physical welfare of employees and the general public.

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APPENDIX “E”

DESIGN PLANS

(13 PAGES)

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MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

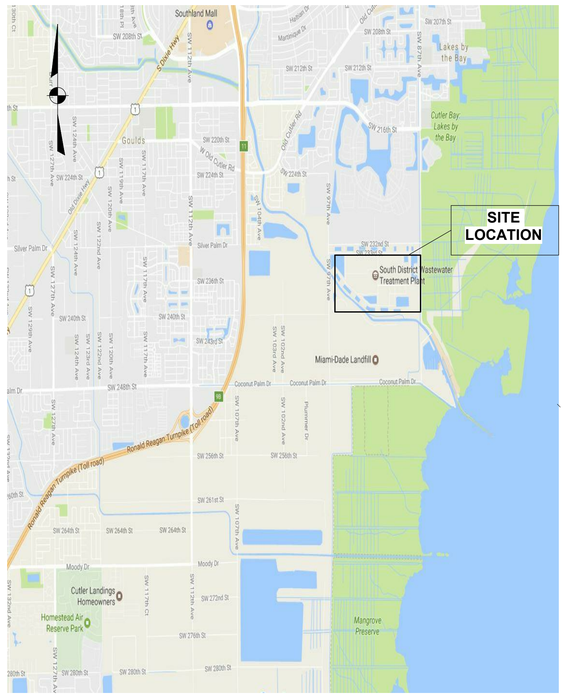
SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

MIAMI-DADE COUNTY

MAY 2019

LIST OF DRAWINGS

DWG. NO	DRAWING TITLE
G001	COVER SHEET
G002	SYMBOLS AND APPREVIATION
S100	STRUCTURAL GENERAL NOTES AND SITE PLAN
S101	CHLORINE CONTACT TANKS PARTIAL FLOOR PLAN - TANK 3 AND TANK 4
S201	TANK 4 - LANE 1 - ELEVATION VIEW
S202	TANK 4 - LANE 2 - ELEVATION VIEW
S203	TANK 4 - LANE 3 - ELEVATION VIEW
S204	TANK 4 - LANE 4 - ELEVATION VIEW
S205	TANK 4 - LANE 5 - ELEVATION VIEW
S206	TANK 4 - LANE 6 - ELEVATION VIEW
S207	TANK 4 - LANE 7 - ELEVATION VIEW
S301	TYPICAL WALL REPAIR DETAILS
S302	TYPICAL SLAB REPAIR DETAILS



LOCATION MAP

D&B ENGINEERS AND ARCHITECTS, P.C.

ABBREVIATIONS

(A)	ABANDONED
ADD'L	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AIC	AMPERE INTERRUPTING CAPACITY
ALUM	ALUMINUM
AOBE	AS ORDERED BY ENGINEER
ARV	AIR RELEASE VALVE
AT	ASTRONOMIC TIMER
"B, BOT"	BOTTOM
BC	BOTTOM OF CURB
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLW	BLOWOFF
BM	BEAM
"BP, BYP"	BY PASS
BPWW	BACKWASH WATER
BV	BALL VALVE
BWW	BELT PRESS WASH WATER
C	CONDUIT OR CONDENSATE
C.I.	CAST IRON
C.O.	CLEAN OUT
CB	CIRCUIT BREAKER/CATCH BASIN
CCT	CHLORINE CONTACT TANK
CHL	CHLORINE
CJ	CONSTRUCTION JOINT
CL	CLEARANCE OR CENTERLINE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	"CONTINUE,CONTINUOUS"
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CORROSION RESISTANT
CU	COPPER
CV	CHECK VALVE
D	DRAIN
DET	DETAIL
DFB	DENITE FILTER BYPASS
DFE	DENITE FILTER EFFLUENT
DFEB	DENITE FILTER EFFLUENT BACKWASH
DFI	DENITE FILTER INFLUENT
DFIB	DENITE FILTER INFLUENT BACKWASH
DG	DIGESTER GAS
DI	DUCTILE IRON
DIA.	DIAMETER
DIS	DISCHARGE
DMH	DRAIN MANHOLE
DPI	DIFFERENTIAL PRESSURE INDICATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DS	DOOR MOUNTED SWITCH (INTRUSION ALARM)
DSL	DIGESTED SLUDGE
DWG(S)	DRAWING(S)
DWLS	DOWELS
E	ELECTRIC
EA	EACH
EC	ELECTRICAL CONTRACTOR
EE	EACH END
EF	EACH FACE
EFF	EFFLUENT
EH	ELECTRICAL HANDHOLE
EJ	EXPANSION JOINT
"EL,ELEV"	ELEVATION
ELL	ELBOW
EMH	ELECTRICAL MANHOLE
EOF	EMERGENCY OVERFLOW
EP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
ETC	ET CETERA
EUH	ELECTRIC UNIT HEATER
EW	EACH WAY
EWH	ELECTRIC WATER HEATER
EXIST.	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
F	FLOW SWITCH
F.F./FIN. FLR.	FINISHED FLOOR
FBO	FURNISHED BY OTHERS
FDN	FOUNDATION
FE	FINAL EFFLUENT
FI	FLOW INDICATOR
FIL	FILTRATE
FL	FLOOR
FLM	FLOW METER
FM	FORCE MAIN
FR	FRACTIONAL HORSEPOWER
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOAT SWITCH
FTG	FOOTING
FVNR	FULL VOLTAGE NON-REVERSING STARTER
G	GAS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GS	GAS SERVICE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HOA	HAND-OFF-AUTOMATIC SWITCH
HOF	HEAT-OFF-FAN SWITCH
HP	HORSEPOWER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HYP	HYPOCHLORITE
ID	INSIDE DIAMETER
IJ	ISOLATION JOINT
INF	INFLUENT
INT	INTERIOR
INV.	INVERT ELEVATION
"LBS, #"	POUNDS
LF	LINEAR FEET
LP	LOW POINT
LS	LIMIT SWITCH
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFG	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
MO	MASONRY OPENING
MOPO	MAINTENANCE OF PLANT OPERATIONS
MWO	MUDWELL OVERFLOW
MWR	MUDWELL RETURN
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NO	NUMBER OR NORMALLY OPEN
NTS	NOT TO SCALE
"OC, O/C"	ON CENTER
OCA	ODOR CONTROL AIR
OD	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRIC
OF	OUTFALL
OPNG	OPENING
OT	OVERHEAD TELEPHONE
OVF	OVERFLOW
PB	PULLBOX
PD	PLANT DRAIN
PE	PLANT EFFLUENT
PL	PLATE OR PROPERTY LINE
PLV	PLUG VALVE
PLW	PLANT WATER
PRS	PRESSURE SWITCH
PTE	PRIMARY TRICKLING FILTER EFFLUENT
PVC	POLYVINYL CHLORIDE PIPE
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REC	RECIRCULATION
RED	REDUCER
REINF	"REINFORCE, REINFORCING"
REQ'D	REQUIRED
RPZ	REDUCED PRESSURE BACKFLOW PREVENTER
RSL	RAW SLUDGE
RSW	RAW SEWER
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
S	SANITARY SEWER OR SEWAGE
SC	SCREENINGS
SCH	SCHEDULE
SCW	SCRUBBER WATER
SFM	SLUDGE FORCE MAIN
SG	SLUICE GATE
SH	SODIUM HYDROXIDE
SL	SLUDGE
SLO	SLUDGE OVERFLOW
SLW	SLUDGE WITHDRAWAL
SM	SCUM
SN	SUPERNATANT
SPECS	SPECIFICATIONS
SQ.	SQUARE
SQ. FT./SF	SQUARE FEET
SSL	SECONDARY SLUDGE
STD	STANDARD
STF	SECONDARY TRICKLING FILTER
STI	SECONDARY TRICKLING FILTER INFLUENT
STN. STL./SS	STAINLESS STEEL
STRUCT	STRUCTURAL
SUC	SUCTION
SV	SOLENOID VALVE
SWR	SCRUBBER WATER RETURN
T	TELEPHONE
T&B	TOP AND BOTTOM
TB	TERMINAL BOX
TC	TOP OF CURB
TDC	TIME DELAY CLOSE
TDO	TIME DELAY OPEN
TDR	TIME DELAY RELAY
THERM	THERMOSTAT
TOS	TOP OF STEEL
TOW	TOP OF WALL
TS	THICKENED SLUDGE
TYP	TYPICAL
U.N.O.	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VENT
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
W	WATER
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WP	WEATHER-PROOF
WS	WATER SERVICE
WW	WASHWATER
WWF	WELDED WIRE FABRIC

SYMBOLS

CIVIL-EXISTING

- CURB
- CONTOUR
- SPOT ELEVATION (107.57+)
- TOP OF CURB ELEVATION / BOTTOM OF CURB ELEVATION (TC 108.00 / BC 107.50)
- TREE
- TREE (EVERGREEN)
- VEGETATION LINE (HEDGES, LARGE SHRUBS,ETC.)
- UTILITY POLE
- LIGHT POLE
- FENCE
- SIGN
- GAS VALVE
- GAS METER
- WATER VALVE
- WATER METER
- HYDRANT
- STORM DRAIN MANHOLE
- DRAINAGE INLET
- CATCH BASIN
- SANITARY SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- UNKNOWN MANHOLE
- GAS MAIN
- WATER MAIN
- SANITARY SEWER
- STORM DRAIN
- ELECTRIC LINE
- TELEPHONE LINE
- UNDERGROUND PROCESS (SEE ABBREVIATIONS FOR DESCRIPTIONS)

CIVIL-PROPOSED

- CONTOUR
- SPOT ELEVATION
- TOP OF CURB / BOTTOM OF CURB ELEVATION
- BELGIAN BLOCK CURB
- TREE
- LIGHT POLE
- FENCE
- STORM DRAIN MANHOLE
- YARD INLET
- CATCH BASIN
- SANITARY SEWER MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- WATER MAIN
- SANITARY SEWER
- STORM DRAIN
- ELECTRIC LINE
- TELEPHONE LINE
- UNDERGROUND PROCESS PIPING (SEE ABBREVIATIONS FOR DESCRIPTIONS)
- ASPHALT PAVEMENT
- CONCRETE
- GRAVEL
- SILT FENCE
- STORM DRAIN INLET FILTER
- SODDING
- PIPE SLOPE DRAIN
- PERIMETER/DIKE SWALE

MECHANICAL/PLUMBING

- AIR RELEASE VALVE
- GATE VALVE
- BACK PRESSURE CONTROL VALVE
- BALL VALVE
- BUTTERFLY VALVE
- BUTTERFLY VALVE W/MOTORIZED ACTUATOR
- PLUG VALVE
- CHECK VALVE
- SOLENOID VALVE ASSEMBLY
- VENTURI METER
- FLANGED FITTING
- MECHANICAL JOINT FITTING
- SLUICE GATE
- UNION
- FLOW SWITCH, FLOW INDICATOR
- PRESSURE SWITCH
- FLOW TRANSMITTER
- CORPORATION STOP/ SERVICE CONNECTION
- WATER METER
- LIMIT SWITCH
- PRESSURE GAUGE
- HOSE BIBB
- FLOAT SWITCH
- AIR FILTER
- INTAKE LOUVER
- BACKDRAFT DAMPER
- RPZ-BACKFLOW PREVENTER
- AIR FLOW MEASURING STATION

ELECTRICAL

- PUMP MOTOR - INSERT DENOTES HORSE POWER
- SAFETY SWITCH, 3 POLE, 3FUSE 30A SIZE SWITCH - 20A SIZE FUSE
- NON-FUSED DISCONNECT SWITCH
- MAGNETIC MOTOR STARTER
- SOLENOID VALVE
- THERMOSTAT
- HEAT-OFF-FAN SWITCH WITH THERMOSTAT
- CONTROL PANEL
- 120 OR 277V 120V TIME SWICH DPDT/SPRING RESERVE POWER
- WALL BATTERY PACK - 2 LITE FIXTURE
- LIGHTING FIXTURE (UPPER CASE LETTER INDICATES TYPE, SEE SPECIFICATION FOR FIXTURE SCHEDULE
- VOLTMETER SWITCH
- AMMETER SWITCH
- INTRUSION DOOR SWITCH
- INTRUSION HATCH SWITCH
- FS — FIRE SENSOR
- G — WET WELL GAS SENSOR
- P — PANIC BUTTON
- HOME RUN (BARBS INDICATE NUMBER OF SINGLE POLE CIRCUITS)
- HOME RUN OR THREE POLE CIRCUITS
- GROUND CABLE
- CONDUIT AND WIRING RUN EXPOSED
- CONDUIT CONCEALED OR BURIED
- CONDUIT (TURNED UP)
- CONDUIT (TURNED DOWN)
- CONDUIT FOR TELEPHONE SYSTEM

ELECTRICAL (CONTINUED)

- CAPPED CONDUIT (EXPOSED)
- JUNCTION BOX
- TOGGLE SWITCH, 20A SPST (LOWER CASE LETTER INDICATES FIXTURES & EQUIPMENT TO BE SWITCHED
- DUPLEX RECEPTACLE, 20A, 18" A.F.F. UNLESS OTHERWISE NOTED
- DOUBLE DUPLEX RECEPTACLE
- GRD FAULT DUPLEX RECEPTACLE
- ISO GRD DUPLEX RECEPTACLE, 3 WIRE
- RECEPTACLE, 20A, 120V, 3P CORD DROP TO 2" A.F.F.
- RECEPTACLE, SPECFIC PURPOSE - VERIFY REQMT
- RECEPTACLE, SPECIAL OUTLET - EE SCHEDULE
- RECEPTACLE, 208V, 3P-1 PHASE, 20A
- LIGHTNING AIR TERMINAL
- GROUND ROD
- GROUNDING/LIGHTNING PROTECTION ROD
- FLEXIBLE CABLE W/ PLUG
- FLEXIBLE CABLE W/RECEPTICAL (MATCHING)
- SECTION OF CONCRETE CONDUIT BANK
- INDICATING PILOT LIGHT
  - W - WHITE B - BLUE
  - R - RED A - AMBER
  - G - GREEN C - CLEAR
- M (F) — MOTOR STARTER CONTACTOR COIL
  - F - FOWARD R - REVERSE
- SOLENOID VALVE COIL
- N.C. LIQUID LEVEL SWITCH
- N.C. AIR PRESSURE SWITCH
- N.O. TEMPERATURE SWITCH
- CONVECTION HEATER

ARCHITECTURAL/STRUCTURAL

- EXISTING
- EXISTING TO BE REMOVED (SEE NOTE 2)
- NEW
- NEW (HIDDEN)
- NEW CONCRETE
- NEW BLOCK
- GRATING
- EARTH

HVAC

- 24"X12" — SECTION DUCT SIZE - FIRST DIMENSION IS HORIZONTAL
- 12"X24" — ELEVATION OF DUCT SIZE - FIRST DIMENSION IS SIDE SHOWN
- 24"X12" — PLAN OF DUCT SIZE - FIRST DIMENSION IS SIDE SHOWN
- VENTILATION DUCT TURN UP / TURN DOWN RESPECTIVELY
- FLEXIBLE CONNECTION

MISCELLANEOUS SYMBOLS

- EXISTING — INDICATES EXISTING BUILDINGS, STRUCTURES AND FEATURES, ETC.
- EXISTING — INDICATES EXISTING BUILDINGS, STRUCTURES AND FEATURES, ETC. TO BE DEMOLISHED
- PROPOSED — INDICATES PROPOSED BUILDINGS, STRUCTURES AND FEATURES, ETC.

NOTES:

1. SYMBOLS/ ABBREVIATIONS LIST APPLIES TO ALL CONTRACTS
2. THE REMOVAL SYMBOL APPLIES TO ALL ITEMS TO BE REMOVED INCLUDING CIVIL, MECHANICAL, PLUMBING, HEATING, VENTILATING, ELECTRICAL ETC.

DETAIL REFENENCES

A — DETAIL LETTER
M-001 — DRAWING NUMBER

SECTION REFENENCES

SECTION NUMBER — 1
DRAWING NUMBER — M-201

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NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/JL	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
MIAMI-DADE COUNTY — FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

SYMBOLS AND ABBREVIATIONS

PROJECT NO. 3951	DRAWING NO. G002
DATE: MAY 2019	
SCALE:	

GENERAL

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MIAMI CITY BUILDING CODE AND WITH THE RULES AND REGULATIONS OF ALL LOCAL AGENCIES, DEPARTMENTS OR LAWS HAVING JURISDICTION OVER ANY PORTION OR SPECIFIC PHASE OF THE WORK. THE CONTRACTOR SHALL COORDINATE THE WORK WITH PUBLIC UTILITY COMPANIES HAVING JURISDICTION.

2. THE CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS REQUIRED FOR THE PERFORMANCE OF THE WORK AND PAY ALL FEES IN CONNECTION THEREOF.

3. THE CONTRACTOR SHALL NOT MAKE DEVIATIONS FROM DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL FROM THE ARCHITECT/ENGINEER.

4. IF THERE IS A DISCREPANCY ON THE CONSTRUCTION DOCUMENTS, THE ARCHITECT/ENGINEER SHALL BE NOTIFIED IMMEDIATELY SO THAT THE DISCREPANCY CAN BE RESOLVED. UNLESS OTHERWISE INDICATED IN WRITING BY THE ARCHITECT/ENGINEER, THE MORE CONSERVATIVE INTERPRETATION OF THE CONSTRUCTION DOCUMENTS SHALL APPLY.

5. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS CONFIRMED BY FIELD CONDITIONS TAKE PRECEDENCE. IF DISCREPANCY ARISES BASED ON FIELD CONDITIONS, CONSULT WITH ARCHITECT/ENGINEER BEFORE PROCEEDING WITH WORK OR ORDERING MATERIALS.

6. ALL SECTIONS AND DETAILS SHALL BE CONSIDERED TYPICAL AND APPLY FOR THE SAME AND SIMILAR CONDITIONS, UNLESS OTHERWISE SPECIFICALLY NOTED.

7. ANY ITEM OF WORK NECESSARY FOR PROPER COMPLETION OF CONSTRUCTION, WHICH IS NOT SPECIFICALLY COVERED ON THE DRAWINGS OR IN THE SPECIFICATIONS, SHALL BE CONSIDERED INCLUDED IN THIS WORK AND SHALL BE PERFORMED IN A MANNER DEEMED GOOD PRACTICE OF THE TRADE INVOLVED.

8. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND PROPERTY DURING CONSTRUCTION OPERATIONS AND UNTIL COMPLETION OF ALL WORK.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTION AND MISALIGNMENT.

10. THE ARCHITECT/ENGINEER SHALL NOT BE RESPONSIBLE FOR THE PERFORMANCE OR THE WORK OF THE GENERAL CONTRACTOR, OWNER OR ANY OTHER SUBCONTRACTORS NOR SHALL HE GUARANTEE THEIR PERFORMANCE.

11. CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER IMMEDIATELY IF HE OR SHE CANNOT COMPLY WITH ALL REQUIREMENTS.

12. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CHANGES TO THIS PROJECT MADE BY OWNER, GENERAL CONTRACTOR OR ANY SUBCONTRACTOR OR MATERIAL SUPPLIER UNLESS PROPERLY AUTHORIZED, IN WRITING, BY THE ENGINEER.

13. THE DEPARTMENT WILL SHUTDOWN, ISOLATE AND DRAIN CHLORINE CONTACT CHAMBER NO. 4, INCLUDUNG THE INFLUENT AND EFFLUENT CHAMBERS. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS AS REQUIRED TO DEWATER THESE CHAMBERS DOWN TO THE FLOORS, INCLUDING THE REMOVAL OF ALL DEBRIS, DOWN TO THE CHAMBER FLOORS AS REQUIRED TO PERFORM THE WORK UNDER THIS CONTRACT.

CONCRETE BLOCK WALLS & PIERS

1. SCOPE OUT FULL EXTENT OF REPAIRS NEEDED TO THE SURFACE OF THIS REINFORCED CONCRETE STRUCTURE.

2. SCOPE OUT AND REPAIR ALL DISCOVERED DAMAGE ACCORDING TO THE SPECIFICATIONS AND DETAILS PROVIDED IN THE CONSTRUCTION SET OF DRAWINGS.

EXISTING CONDITIONS

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MEASURE ALL REQUIRED FIELD DIMENSIONS AND TO VERIFY ALL EXISTING CONDITIONS THAT ARE SHOWN ON THE DRAWINGS. SHOULD ANY OF THE CONDITIONS PROVE TO BE NOT AS SHOWN ON THE DRAWINGS, THE ENGINEER SHALL BE IMMEDIATELY INFORMED BEFORE PROCEEDING WITH ANY OF THE WORK.

2. THE FOLLOWING SEQUENCE OF WORK SHALL BE FOLLOWED:

A. THE CONTRACTOR SHALL PROVIDE NECESSARY DEMOLITION WORK, AS NECESSARY TO REVEAL THE EXISTING STRUCTURE (FLOOR FRAMING AND WALLS) WHICH EFFECTS THE NEW WORK.

B. THE ENGINEER AND CONTRACTOR SHALL REVIEW THE EXPOSED STRUCTURE AND DETERMINE IF ANY CHANGES NEED TO BE MADE TO THE NEW STRUCTURE AND DETAILS AS A RESULT OF THE CONDITIONS AND DIMENSIONS OF THE EXISTING FRAMING.

C. ALL FIELD DIMENSIONS SHALL BE TAKEN BY THE CONTRACTOR FOR FABRICATION OF THE NEW STEEL.

D. ALL THE ABOVE MUST BE DONE BEFORE SHOP DRAWINGS ARE STARTED.

PATCHING MATERIALS

1. CONCRETE PATCHING MATERIALS SHALL BE MORTARCRETE SERIES 217, MORTAR CLAD SERIES 218 OR APPROVED EQUAL.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI-318 SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS AND ACI-301 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, LATEST EDITION.

2. ALL CONCRETE SHALL BE 4000 P.S.I., PEA GRAVEL AND AIR ENTRAINED.

3. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60, EXCEPT STIRRUPS AND TIES WHICH MAY BE GRADE 40.

4. REINFORCING BARS SHALL BE SPLICED PER CHARTS PROVIDED IN THE CONSTRUCTION SET.

5. MINIMUM EMBEDMENT FOR STANDARD HOOKS SHALL BE 16 BAR DIAMETERS UNLESS OTHERWISE NOTED. THE 90 DEGREE END HOOK SHALL HAVE A MINIMUM LENGTH OF 12 BAR DIAMETERS.

6. MINIMUM CONCRETE COVERING OF REINFORCING STEEL SHALL BE AS FOLLOWS: 1-1/2" FOR COLUMN VERTICAL STEEL AND WALL STEEL IN BOTH DIRECTIONS; 1" FOR COLUMN TIES.

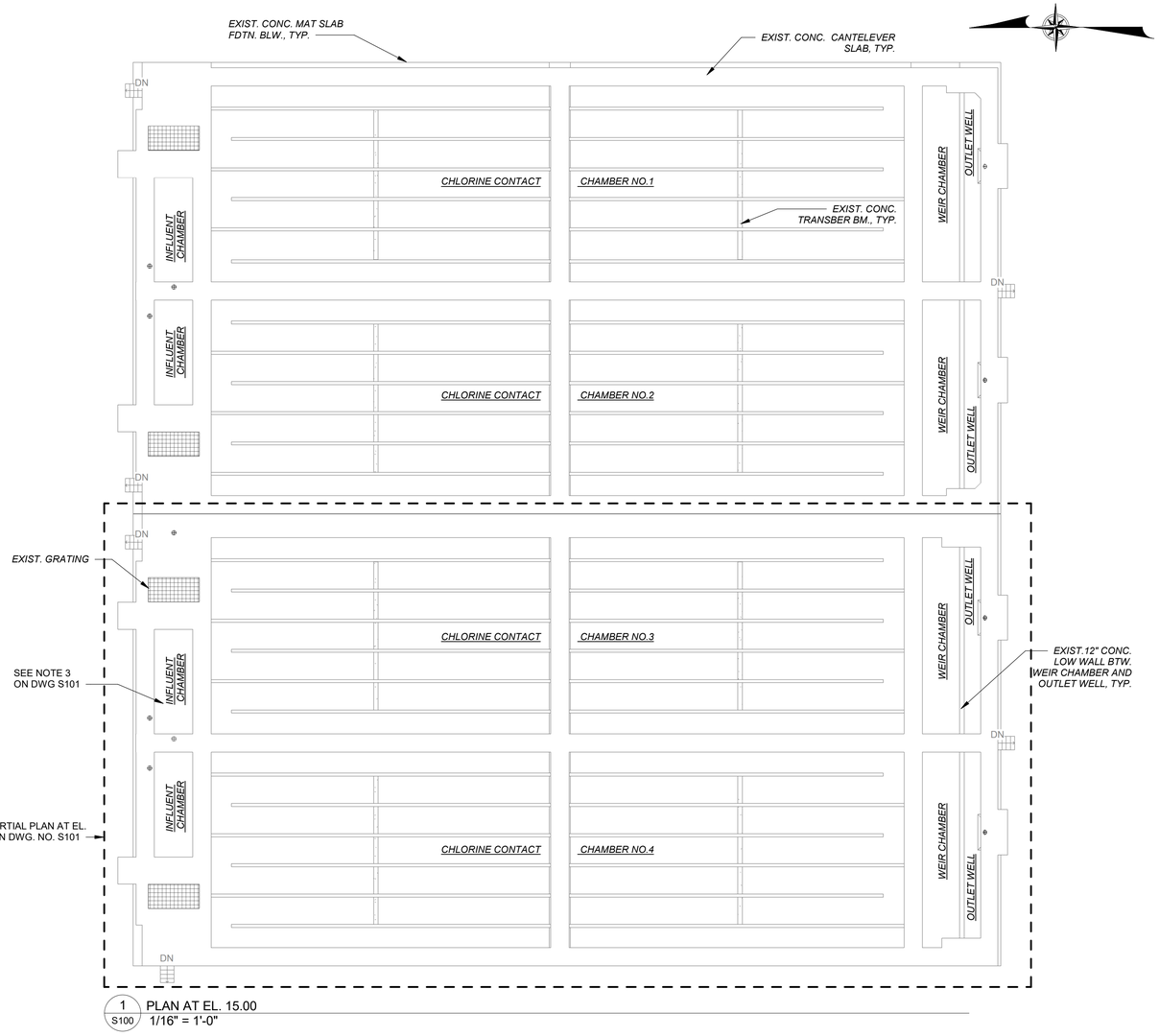
8. CALCIUM CHLORIDE SHALL NOT BE USED IN CONCRETE MIXES.

9. WHERE NEW CONCRETE IS TO BE PLACED AGAINST EXISTING CONCRETE SURFACES, THE EXISTING SURFACE SHALL BE ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH. THE SURFACE SHALL BE CLEANED AND LAITANCE REMOVED IMMEDIATELY. ALL CONSTRUCTION JOINTS SHALL BE MOISTENED AND STANDING WATER REMOVED BEFORE THE NEW CONCRETE IS PLACED.

10. COLD WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI-306.

11. THROUGHOUT CONSTRUCTION, THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED AGAINST DAMAGE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR METHODS, ICE, RAIN, SNOW, EXCESSIVE HEAT AND FREEZING TEMPERATURES.

12. EARLY DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE MOIST CURED OR PROTECTED USING A MEMBRANE CURING AGENT APPLIED AS SOON AS FORMS ARE REMOVED. IF MEMBRANE CURING AGENT IS USED, EXERCISE CARE NOT TO DAMAGE COATING.



1 S100 PLAN AT EL. 15.00
1/16" = 1'-0"

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NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

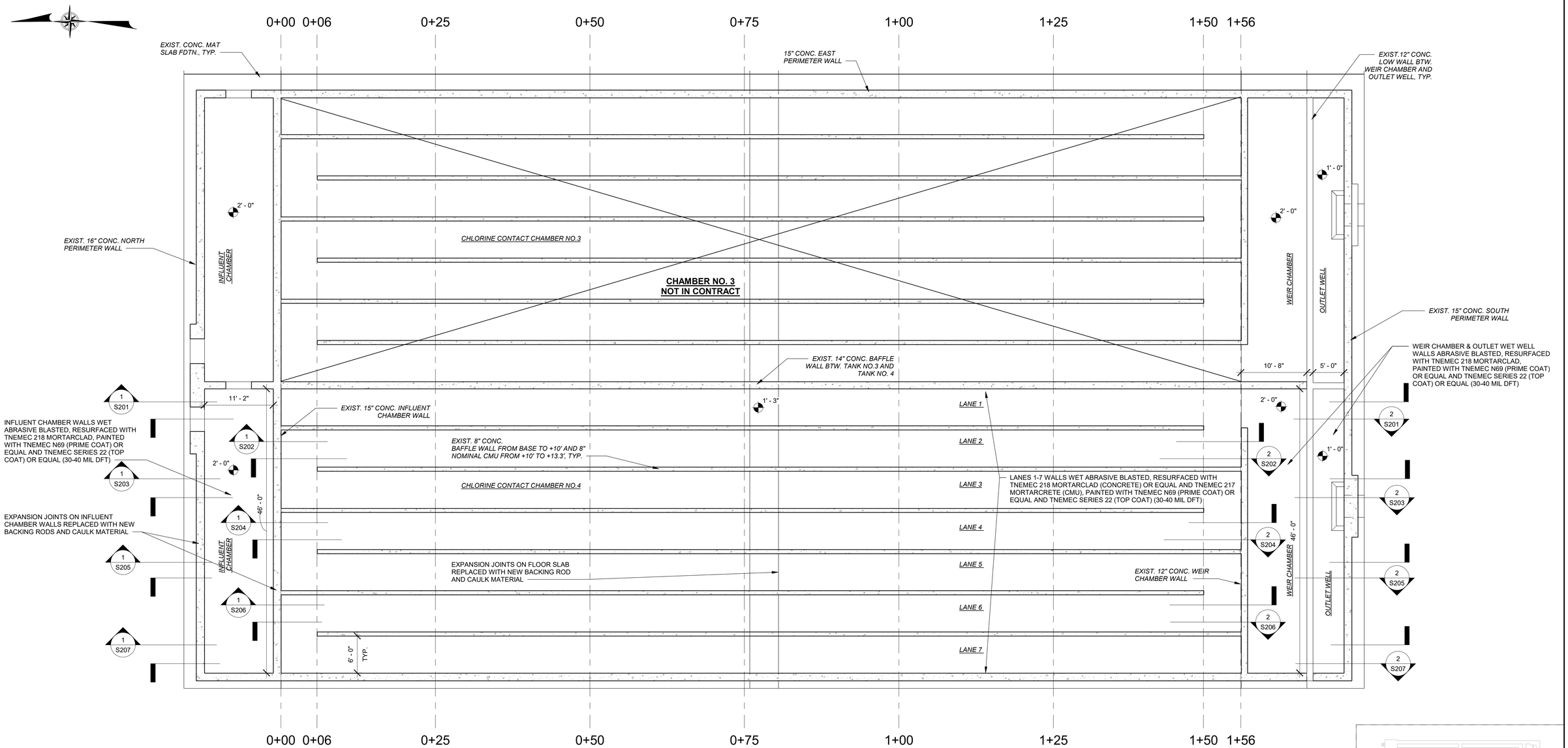
MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

STRUCTURAL GENERAL NOTES AND SITE PLAN

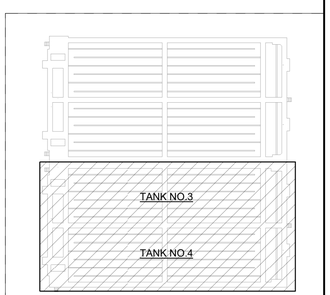
PROJECT NO. 3951	DRAWING NO. S100
DATE: MAY 2019	
SCALE: 1/16" = 1'-0"	



1 S101 PARTIAL STRUCTURAL PLAN - TANK 3 AND TANK 4
1/8" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)
3. PAINT CONCRETE CEILING IN THE INFLUENT CHAMBER WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOPCOAT) OR EQUAL (30-40 MIL DFT)



KEY PLAN

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

CHLORINE CONTACT TANKS PARTIAL PLAN

TANK 3 AND TANK 4

PROJECT NO. 3951	DRAWING NO. S101
DATE: MAY 2019	
SCALE: As indicated	

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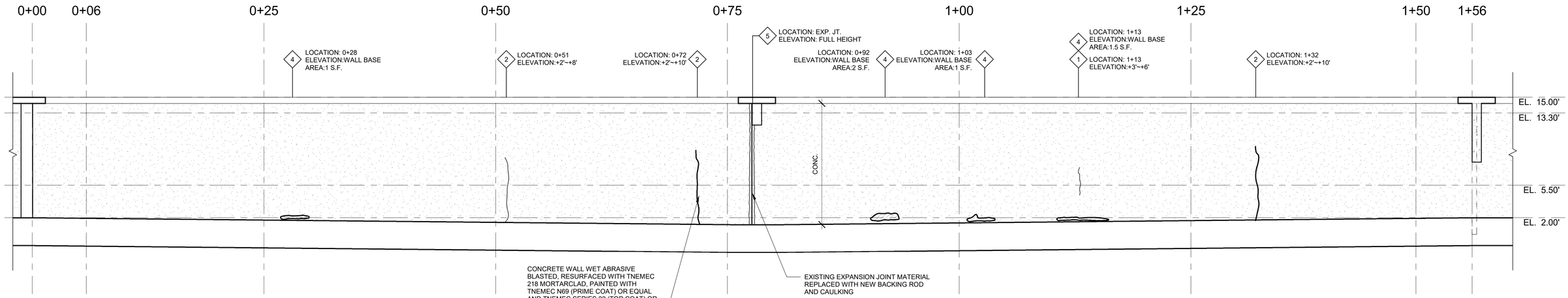


1 / S201 TANK 4 - LINE 1 - EAST ELEVATION
3/16" = 1'-0"

1. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3. STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4. STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

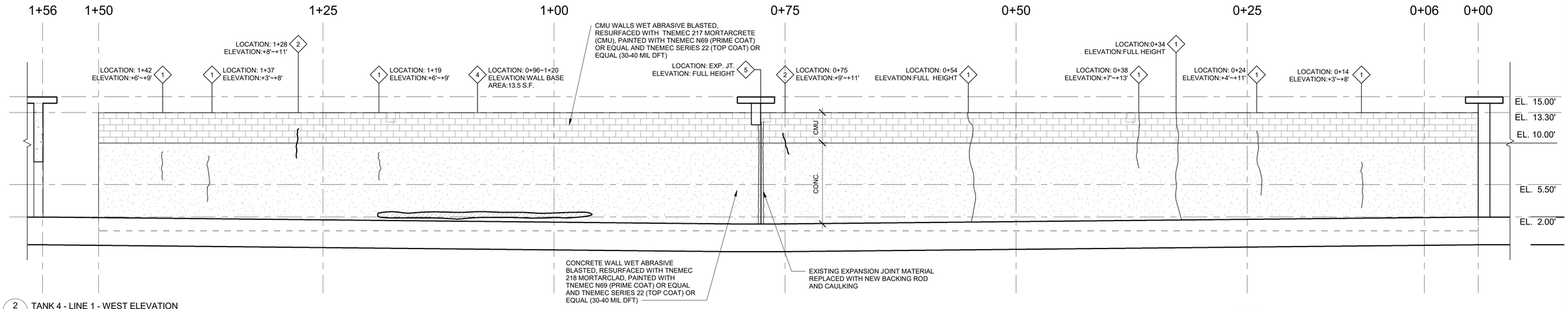
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5. STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR.
INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6. STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 / S201 TANK 4 - LINE 1 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 1 - ELEVATION VIEW

PROJECT NO. 3951	DRAWING NO. S201
DATE: MAY 2019	
SCALE: 3/16" = 1'-0"	

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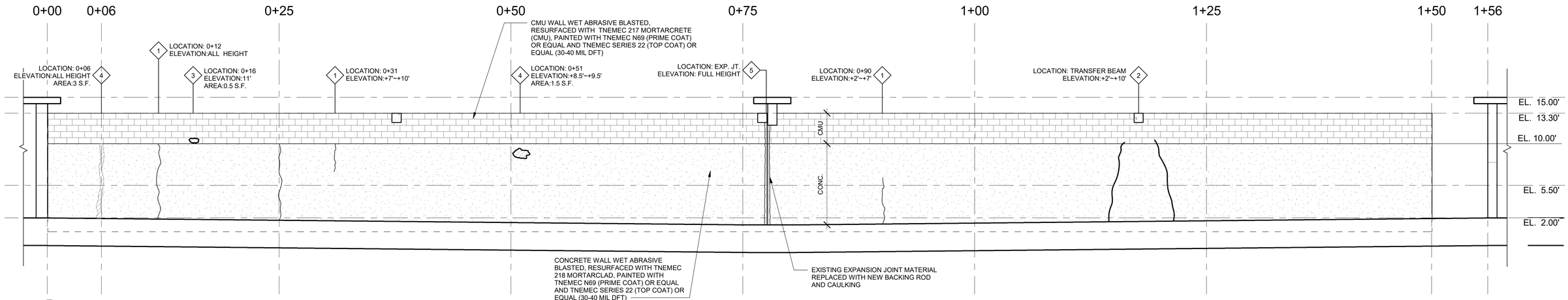


1 / S202 TANK 4 - LINE 2 - EAST ELEVATION
3/16" = 1'-0"

1. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3. STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4. STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

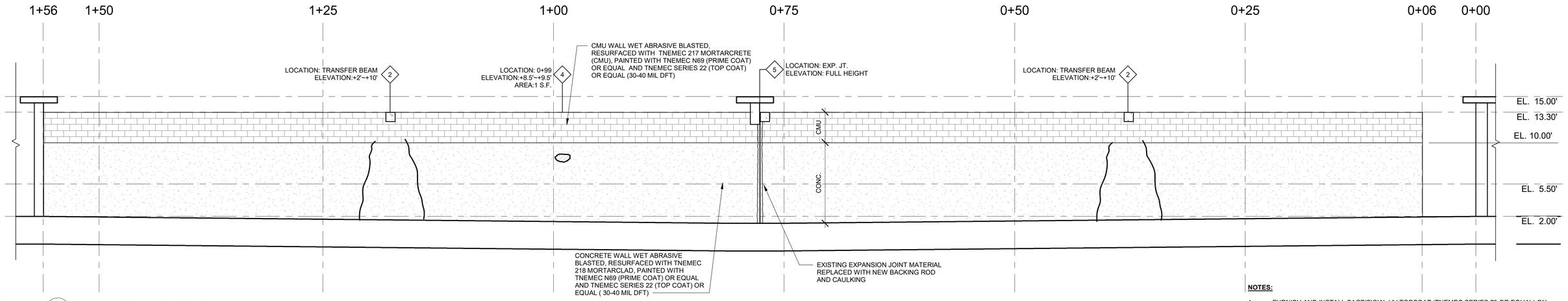
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5. STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR.
INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6. STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 / S202 TANK 4 - LINE 2 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 2 - ELEVATION VIEW

PROJECT NO. 3951	DRAWING NO. S202
DATE: MAY 2019	
SCALE: 3/16" = 1'-0"	

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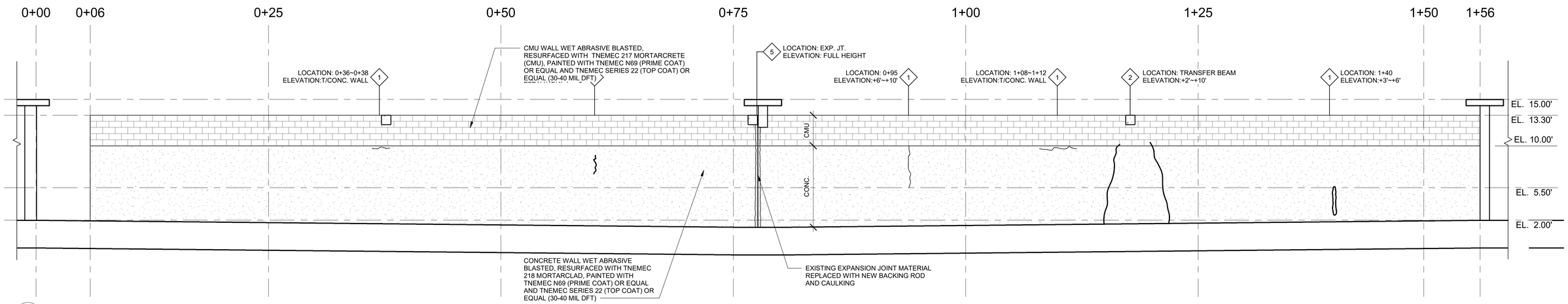


1 / S203 TANK 4 - LINE 3 - EAST ELEVATION
3/16" = 1'-0"

1. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2. STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3. STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4. STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

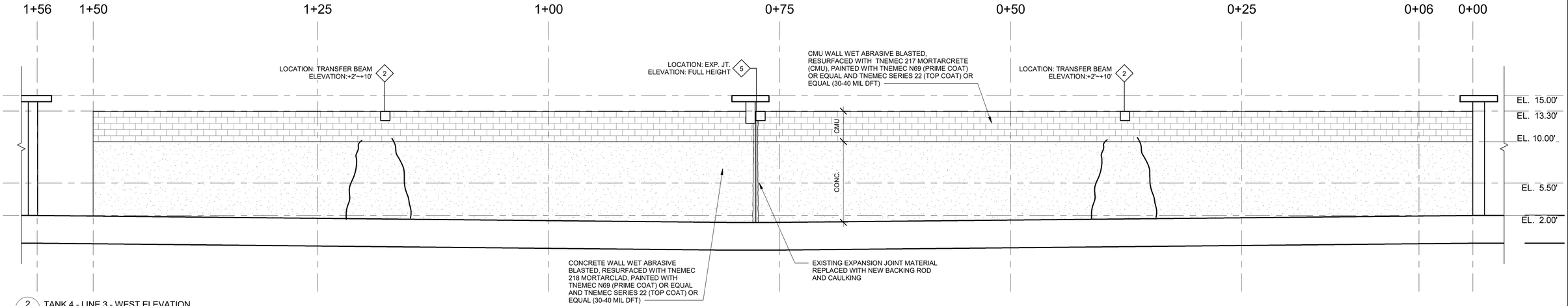
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5. STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR.
INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6. STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 / S203 TANK 4 - LINE 3 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM | DRAWN BY: JZ
DESIGNED BY: SM/CD | CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 3- ELEVATION VIEW

PROJECT NO. 3951
DATE: MAY 2019
SCALE: 3/16" = 1'-0"
DRAWING NO. S203

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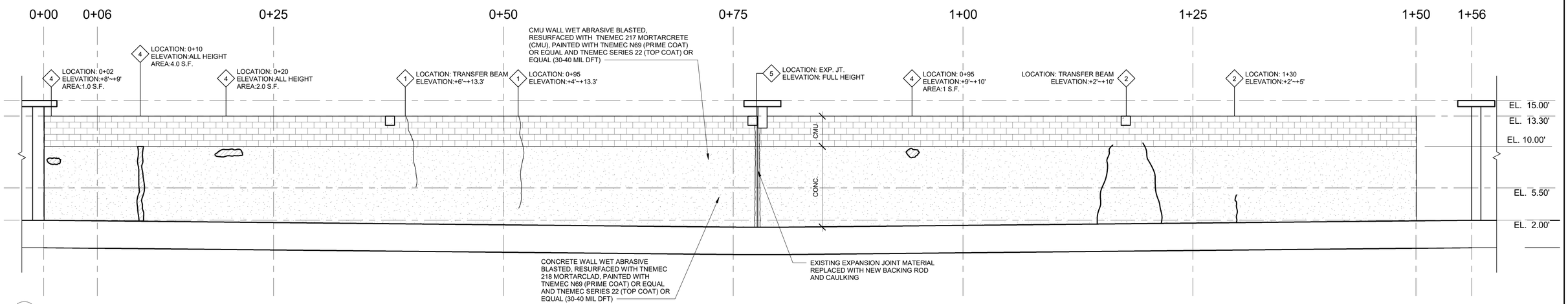


1 / S204 TANK 4 - LINE 4 - EAST ELEVATION
3/16" = 1'-0"

1 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3 STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4 STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

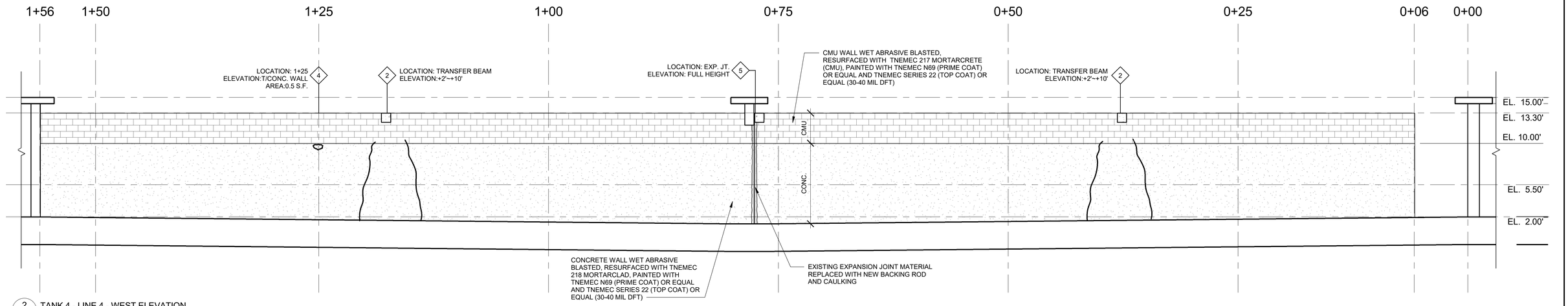
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5 STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR. INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6 STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 / S204 TANK 4 - LINE 4 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: Approver	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 4 - ELEVATION VIEW

PROJECT NO. 3951	DRAWING NO. S204
DATE: MAY 2019	
SCALE: 3/16" = 1'-0"	

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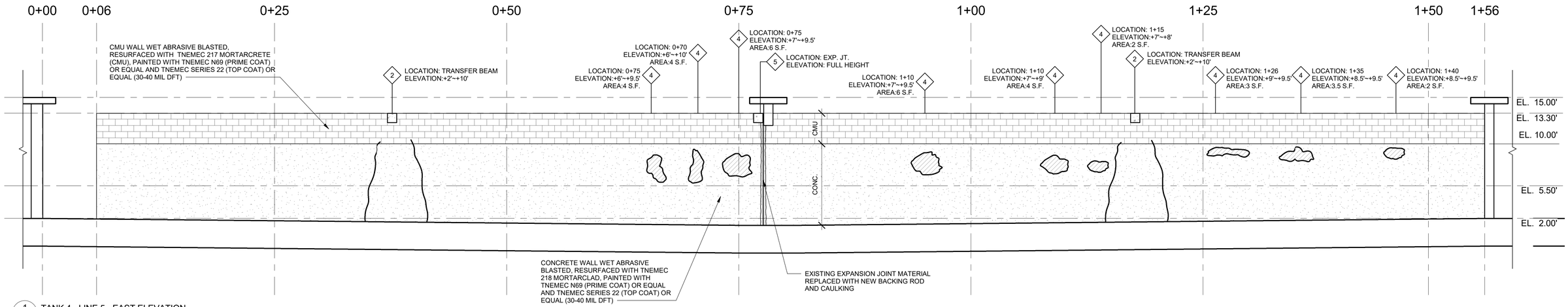


1 S205 TANK 4 - LINE 5 - EAST ELEVATION
3/16" = 1'-0"

1 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3 STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4 STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

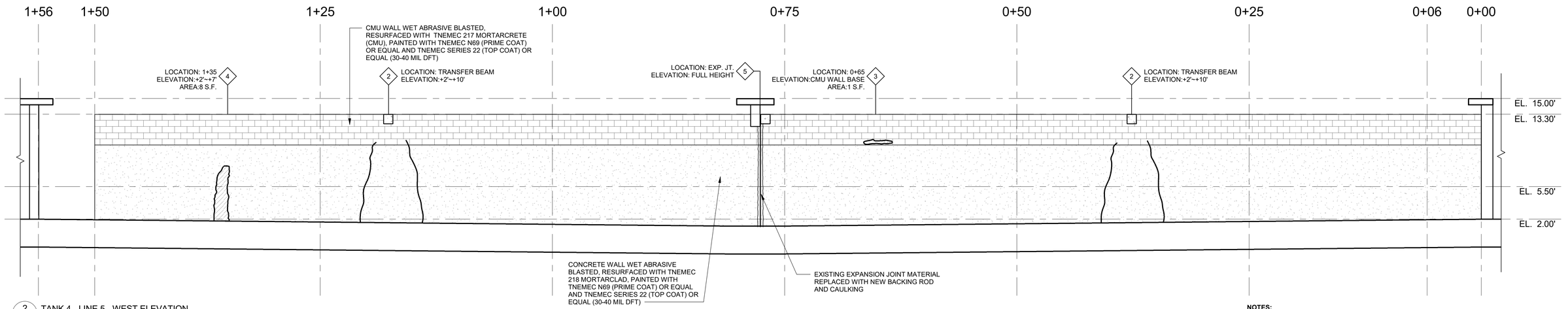
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5 STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR.
INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6 STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 S205 TANK 4 - LINE 5 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM | DRAWN BY: JZ
DESIGNED BY: SM/CD | CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 5 - ELEVATION VIEW

PROJECT NO. 3951
DATE: MAY 2019
SCALE: 3/16" = 1'-0"
DRAWING NO. **S205**

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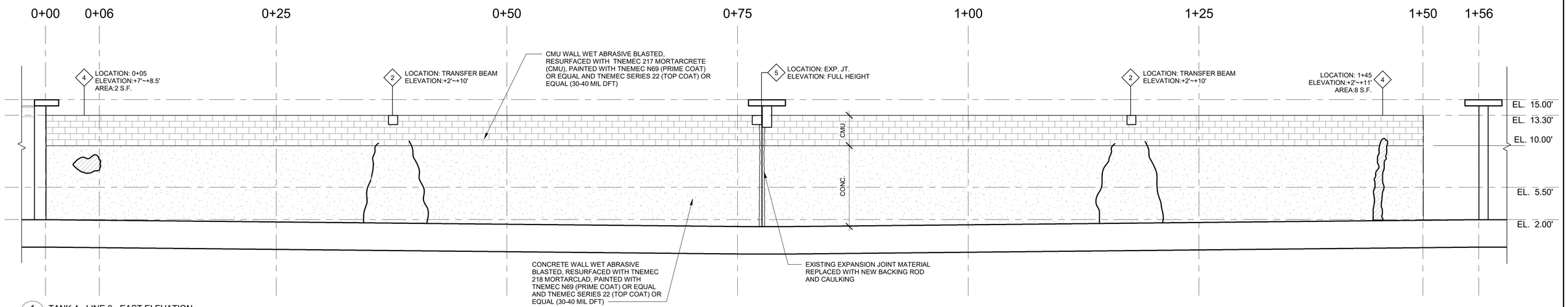


1 S206 TANK 4 - LINE 6 - EAST ELEVATION
3/16" = 1'-0"

1 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3 STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4 STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

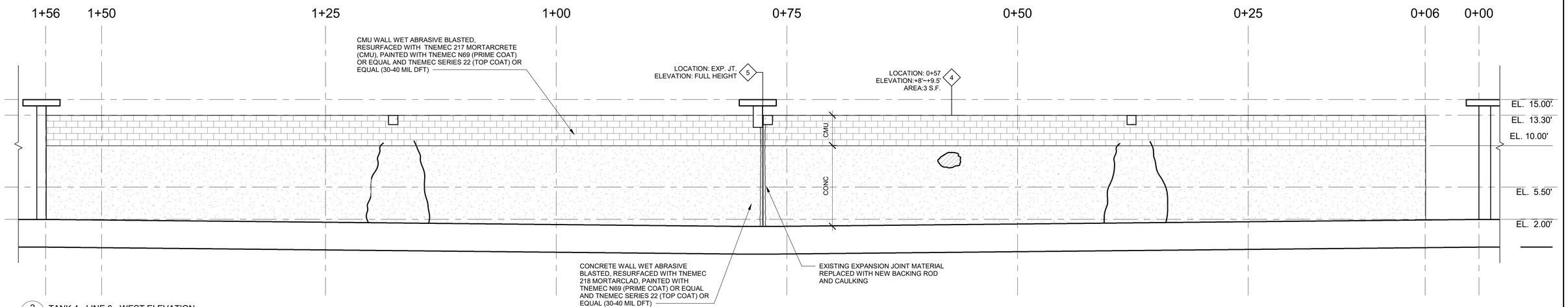
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5 STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR. INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6 STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 S206 TANK 4 - LINE 6 - WEST ELEVATION
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JZ
DESIGNED BY: SM/CD	CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 6 - ELEVATION VIEW

PROJECT NO. 3951	DRAWING NO. S206
DATE: MAY 2019	
SCALE: 3/16" = 1'-0"	

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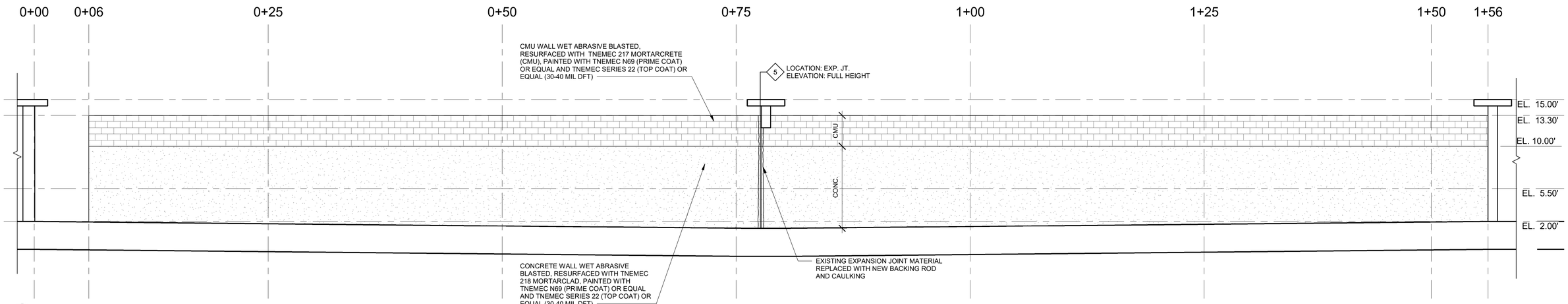


1 / S207 TANK 4 - LINE 7 - EAST ELEVATION
3/16" = 1'-0"

1 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/16" TO 1/4"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

2 STRUCTURAL DEFICIENCY TYPE:
CRACKS - WIDTH BETWEEN 1/4" TO 1/2"

REPAIR METHOD:
FLEXIBLE SEALANT OR EPOXY INJECTION

3 STRUCTURAL DEFICIENCY TYPE:
CONCRETE SPALLS

REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF SPALLING.

4 STRUCTURAL DEFICIENCY TYPE:
CONCRETE DELAMINATION

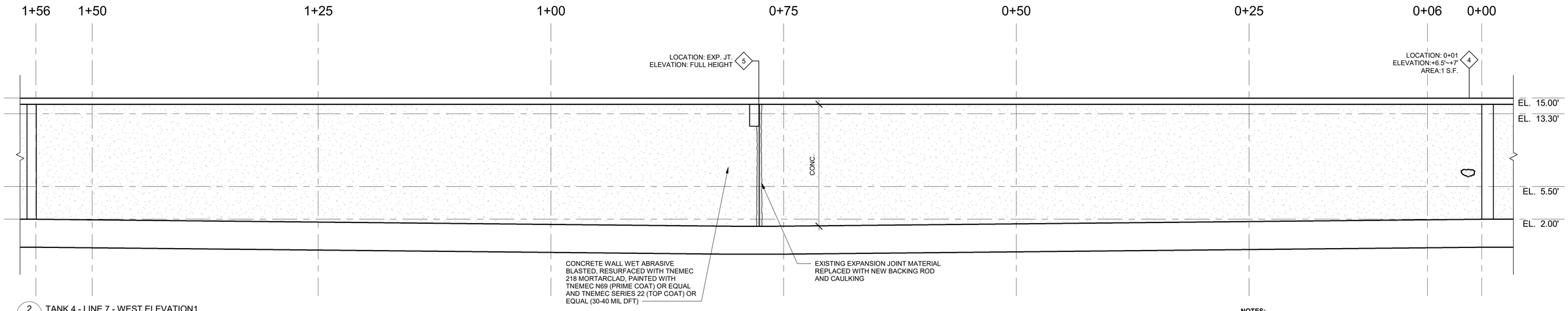
REPAIR METHOD:
SAW CUT DELAMINATED CONCRETE TO SOUND CONCRETE AND PATCH AS REQUIRED. BONDING AGENT SHOULD BE APPLIED BEFORE APPLICATION OF CEMENTITIOUS PATCHING MATEIRAL. STEEL WIRE MESH MAY BE REQUIRED DEPENDING ON THE DEPTH OF DELAMINATION.

5 STRUCTURAL DEFICIENCY TYPE:
EXPANSION JOINT FAILURE -DETERIORATED JOINT SEALANT AND BACKING MATERIAL. DELAMINATED ADJACENT CONCRETE.

REPAIR METHOD:
FOLLOW METHOD 4 FOR CONCRETE DELAMINATION REPAIR. INSTALL NEW EXPANSION JOINT BACKING ROD AND CAULKING.

6 STRUCTURAL DEFICIENCY TYPE:
EXPOSED REBAR

REPAIR METHOD:
REMOVE SURROUNDING CONCRETE. REPLACE OR DOUBLE UP THE REBAR BASED ON STEEL AREA LOSS CONDITION. PROVIE ENOUGH COVER FOR THE REBAR IF POSSIBLE.



2 / S207 TANK 4 - LINE 7 - WEST ELEVATION1
3/16" = 1'-0"

NOTES:

1. FURNISH AND INSTALL SACRIFICIAL UV TOPCOAT (TNEMEC SERIES 73 OR EQUAL) ON SURFACES ABOVE EL. 9.75'.
2. PAINT ALL CONCRETE FLOOR SLABS IN THE INFLUENT CHAMBER, CHLORINE CONTACT CHAMBER, WEIR CHAMBER AND OUTLET WELL WITH TNEMEC N69 (PRIME COAT) OR EQUAL AND TNEMEC SERIES 22 (TOP COAT) OR EQUAL (30-40 MIL DFT)

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM | DRAWN BY: JZ
DESIGNED BY: SM/CD | CHECKED BY: JS

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TANK 4 - LANE 7 - ELEVATION VIEW

PROJECT NO. 3951
DATE: MAY 2019
SCALE: 3/16" = 1'-0"
DRAWING NO. **S207**

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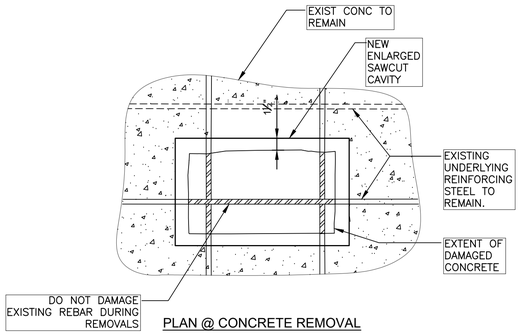
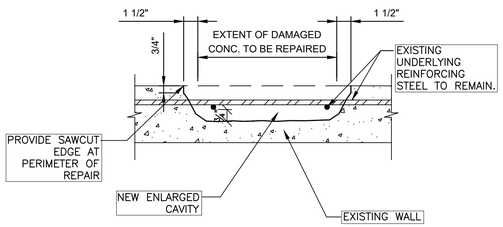
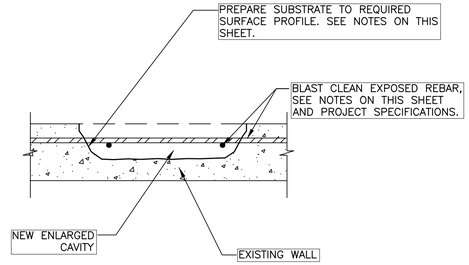


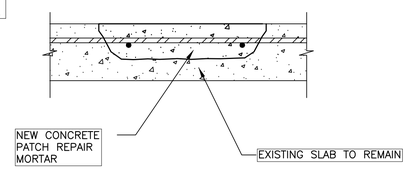
PLAN @ CONCRETE REMOVAL



SECTION @ CONCRETE REMOVAL



SECTION @ CAVITY PREPARATION



SECTION @ CONCRETE REPAIR

1 / S301 TYPICAL REPAIR SEQUENCE

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

CONCRETE & CMU SURFACE PREPARATION:

1. REMOVE ALL LOOSE CONCRETE/CMU AND SLUDGE, GRIME, AND GREASE ON SURFACE TO BE REPAIRED.
2. PRESSURE CLEAN SURFACE TO PROVIDE A CLEAN, CONTAMINANT FREE, ROUGHENED SURFACE.
3. SANDBLAST SURFACE PER SSPC–SP13 / NACE No. 6 TO PROVIDE THE FOLLOWING MINIMUM SURFACE PROFILES:
   - 3.1. CONCRETE WALLS: ICRI–CSP5 OR GREATER
   - 3.2. CMU WALLS: ICRI–CSP6 OR GREATER
   - 3.3. CONCRETE SLAB: ICRI–CSP3 OR GREATER
4. REMOVE ALL CONTAMINANTS BY SCABBING, CHIPPING, GRINDING, BRUSHING, BLASTING OR OTHER METHODS TO A DEPTH WHERE ALL THE WHITE CALCIUM SULFATE IS REMOVED AND ONLY HARD GREY CONCRETE WITH A pH AT 9.0 OR ABOVE.
5. REINFORCING STEEL EXPOSED BY CONCRETE REMOVALS SHALL BE SANDBLASTED TO REMOVE ALL CONTAMINATED CONCRETE AND RUST.

REINFORCING STEEL REPAIR

1. REMOVE ALL CONCRETE AROUND REINFORCING BARS. SEE DETAIL ON THIS SHEET FOR EXTENTS CONCRETE REMOVALS AT REBAR.
2. BLAST CLEAN EXPOSED REBAR TO SSPC–SP10/NACE No.2 (NEAR–WHITE) OR SSPC–SP11 POWER TOOL CLEANING TO BARE METAL.
3. IF ENGINEER DETERMINES THAT REINFORCING BARS NEED TO BE REPLACED, FOLLOW DETAILS ON THIS SHEET SIZE, LOCATION, AND DOWELING REQUIREMENTS FOR REPLACEMENT BARS.
4. ONCE ALL REINFORCING STEEL IS INSPECTED AND ACCEPTED BY ENGINEER, APPLY 5.0 TO 7.0 MILS DFT OF TNEMEC SERIES N69 HI BUILD EPOXOLINE II. PROTECT SURROUNDING CONCRETE FROM REBAR COATING.

WALL AND SLAB PATCHING

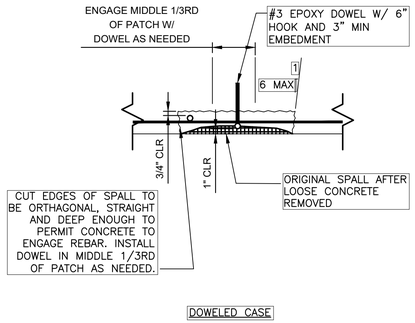
1. CONCRETE SURFACE REPAIR:
   - 1.1. INFILL ALL CONCRETE STRUCTURAL, SHRINKAGE, AND SETTLEMENT CRACKS WITH TNEMEC SERIES 218 MORTARCLAD. CLEAN SAND CAN BE ADDED TO THICKEN MATERIAL FOR DEEPER CRACKS. FILL VOIDS FLUSH WITH SURFACECONCRETE INFILL:
   - 1.2. PATCH ALL DETERIORATED CONCRETE SURFACES AND AREAS RECEIVING REINFORCING BAR REMEDIATION WITH TNEMEC SERIER 217 MORTARCRETE. PROVIDE ¼" TERMINATION POINT AT EDGE. DO NOT FEATHER MORTARCRETE.
2. CMU SURFACE REPAIR ALL CMU PATCHING AND CRACK INFILL SHALL BE TNEMEC SERIER 217 MORTARCRETE.
   - 2.1. FINISH INFILL TO A FLAT, SMOOTH FINISH BY STEEL TROWEL OR WOOD FLOAT. BROOM FINISH WILL NOT BE ACCEPTABLE.
3. KEEP MORTARCRETE DAMP FOR A MINIMUM OF 2 HOURS AFTER APPLICATION TO REDUCE SHRINKAGE CRACKS.
4. ONCE MORTARCRETE PATCH HAS CURED FOR A MINIMUM OF 12 HOURS, LAITANCE MUST BE REMOVED AND SURFACE SHALL BE WET BLASTED FOR SURFACE PROFILE OF SSPC–SP13/ NACE No.6.

JOINT SEALANT

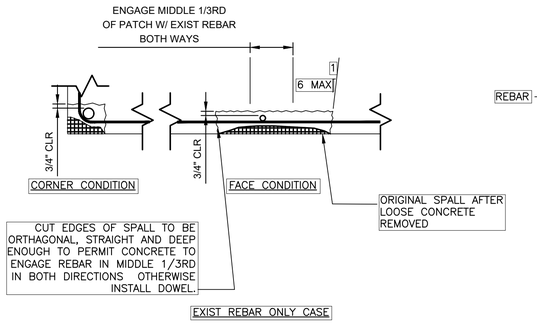
1. PREPARE SURFACE BY REMOVING ALL COATINGS, SEALERS, COMPOUNDS, OILS, GREASES, OR OTHER CONTAMINANTS.
2. PREPARE SURFACE BY MECHANICAL MEANS TO ACHIEVE A SURFACE PROFILE OF SSPC–SP3 TO SSPC–SP5, PRODUCING A PROFILE EQUAL TO 60–GRIT SANDPAPER OR COARSER.
   - 2.1. FOR NEW CONCRETE, ALLOW CONCRETE TO CURE FOR 28 DAYS PRIOR TO PREPARING SURFACE.
3. INSTALL TIOKOL 2235M HP HIGH PERFORMANCE JOINT SEALANT SYSTEM, OR APPROVED EQUAL. SEE SPECIFICATIONS FOR APPLICATION PROCEDURE.

SURFACE FINISH

1. ONCE CONCRETE AND CMU SURFACES HAVE BEEN INSPECTED AND ACCEPTED BY ENGINEER, APPLY TNEMEC 2–PART SURFACE FINISH SYSTEM FOR A TOTAL THICKNESS OF 30.0–40.0 MILS WITH THE FOLLOWING PRODUCTS:
   - 1.1. PRIME COAT: TNEMEC SERIES N69 HB EPOXOLINE (6.0–8.0 MILS)
   - 1.2. TOP COAT: TNEMEC SERIES 22–1218 LIGHT BLUE EPOXOLINE (24.0–32.0 MILS)



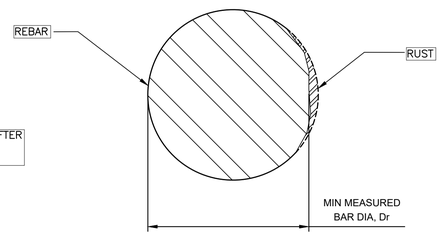
DOWELED CASE



EXIST REBAR ONLY CASE

2 / S301 TYPICAL CONCRETE PATCH REPAIR DETAIL

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



PROCEDURE:

1) CLEAN RUSTED REBAR OF LOOSE RUST.

2) MEASURE DIAMETER ALONG SEVERAL AXIS AND RECORD THE LEAST DIMENSION.

PASSING CRITERIA:

PASSING = De >= .95 Db

WHERE:
De = ACTUAL BAR AREA
Db = ORIGINAL BAR AREA

	Db	De
#6	0.7500	.7125
#7	0.8750	.8312
#8	1.0000	.9500
#9	1.1250	1.0687

3 / S301 TYPICAL REBAR CONDITION ASSESSMENT

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

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM | DRAWN BY: JL
DESIGNED BY: SM/JL | CHECKED BY: CD

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TYPICAL WALL REPAIR DETAILS

PROJECT NO. 3951
DATE: MAY 2019
SCALE: As indicated
DRAWING NO. S301

CONCRETE & CMU SURFACE PREPARATION:

1. REMOVE ALL LOOSE CONCRETE/CMU AND SLUDGE, GRIME, AND GREASE ON SURFACE TO BE REPAIRED.
2. PRESSURE CLEAN SURFACE TO PROVIDE A CLEAN, CONTAMINANT FREE, ROUGHENED SURFACE.
3. SANDBLAST SURFACE PER SSPC–SP13 / NACE No. 6 TO PROVIDE THE FOLLOWING MINIMUM SURFACE PROFILES:
   - 3.1. CONCRETE WALLS: ICRI–CSP5 OR GREATER
   - 3.2. CMU WALLS: ICRI–CSP6 OR GREATER
   - 3.3. CONCRETE SLAB: ICRI–CSP3 OR GREATER
4. REMOVE ALL CONTAMINANTS BY SCABBING, CHIPPING, GRINDING, BRUSHING, BLASTING OR OTHER METHODS TO A DEPTH WHERE ALL THE WHITE CALCIUM SULFATE IS REMOVED AND ONLY HARD GREY CONCRETE WITH A pH AT 9.0 OR ABOVE.
5. REINFORCING STEEL EXPOSED BY CONCRETE REMOVALS SHALL BE SANDBLASTED TO REMOVE ALL CONTAMINATED CONCRETE AND RUST.

REINFORCING STEEL REPAIR

1. REMOVE ALL CONCRETE AROUND REINFORCING BARS. SEE DETAIL ON THIS SHEET FOR EXTENTS CONCRETE REMOVALS AT REBAR.
2. BLAST CLEAN EXPOSED REBAR TO SSPC–SP10/NACE No.2 (NEAR–WHITE) OR SSPC–SP11 POWER TOOL CLEANING TO BARE METAL.
3. IF ENGINEER DETERMINES THAT REINFORCING BARS NEED TO BE REPLACED, FOLLOW DETAILS ON THIS SHEET SIZE, LOCATION, AND DOWELING REQUIREMENTS FOR REPLACEMENT BARS.
4. ONCE ALL REINFORCING STEEL IS INSPECTED AND ACCEPTED BY ENGINEER, APPLY 5.0 TO 7.0 MILS DFT OF TNEMEC SERIES N69 HI BUILD EPOXOLINE II. PROTECT SURROUNDING CONCRETE FROM REBAR COATING.

WALL AND SLAB PATCHING

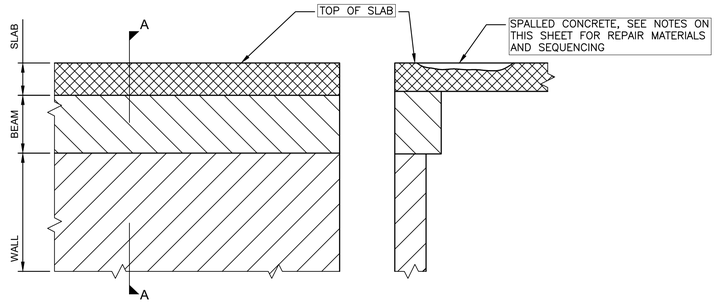
1. CONCRETE SURFACE REPAIR:
   - 1.1. INFILL ALL CONCRETE STRUCTURAL, SHRINKAGE, AND SETTLEMENT CRACKS WITH TNEMEC SERIES 218 MORTARCLAD. CLEAN SAND CAN BE ADDED TO THICKEN MATERIAL FOR DEEPER CRACKS. FILL VOIDS FLUSH WITH SURFACECONCRETE INFILL:
   - 1.2. PATCH ALL DETERIORATED CONCRETE SURFACES AND AREAS RECEIVING REINFORCING BAR REMEDIATION WITH TNEMEC SERIER 217 MORTARCRETE. PROVIDE ¼" TERMINATION POINT AT EDGE. DO NOT FEATHER MORTARCRETE.
2. CMU SURFACE REPAIR ALL CMU PATCHING AND CRACK INFILL SHALL BE TNEMEC SERIER 217 MORTARCRETE.
   - 2.1. FINISH INFILL TO A FLAT, SMOOTH FINISH BY STEEL TROWEL OR WOOD FLOAT. BROOM FINISH WILL NOT BE ACCEPTABLE.
3. KEEP MORTARCRETE DAMP FOR A MINIMUM OF 2 HOURS AFTER APPLICATION TO REDUCE SHRINKAGE CRACKS.
4. ONCE MORTARCRETE PATCH HAS CURED FOR A MINIMUM OF 12 HOURS, LAITANCE MUST BE REMOVED AND SURFACE SHALL BE WET BLASTED FOR SURFACE PROFILE OF SSPC–SP13/ NACE No.6.

JOINT SEALANT

1. PREPARE SURFACE BY REMOVING ALL COATINGS, SEALERS, COMPOUNDS, OILS, GREASES, OR OTHER CONTAMINANTS.
2. PREPARE SURFACE BY MECHANICAL MEANS TO ACHIEVE A SURFACE PROFILE OF SSPC–SP3 TO SSPC–SP5, PRODUCING A PROFILE EQUAL TO 60–GRIT SANDPAPER OR COARSER.
   - 2.1. FOR NEW CONCRETE, ALLOW CONCRETE TO CURE FOR 28 DAYS PRIOR TO PREPARING SURFACE.
3. INSTALL TIOKOL 2235M HP HIGH PERFORMANCE JOINT SEALANT SYSTEM, OR APPROVED EQUAL. SEE SPECIFICATIONS FOR APPLICATION PROCEDURE.

SURFACE FINISH

1. ONCE CONCRETE AND CMU SURFACES HAVE BEEN INSPECTED AND ACCEPTED BY ENGINEER, APPLY TNEMEC 2–PART SURFACE FINISH SYSTEM FOR A TOTAL THICKNESS OF 30.0–40.0 MILS WITH THE FOLLOWING PRODUCTS:
   - 1.1. PRIME COAT: TNEMEC SERIES N69 HB EPOXOLINE (6.0–8.0 MILS)
   - 1.2. TOP COAT: TNEMEC SERIES 22–1218 LIGHT BLUE EPOXOLINE (24.0–32.0 MILS)

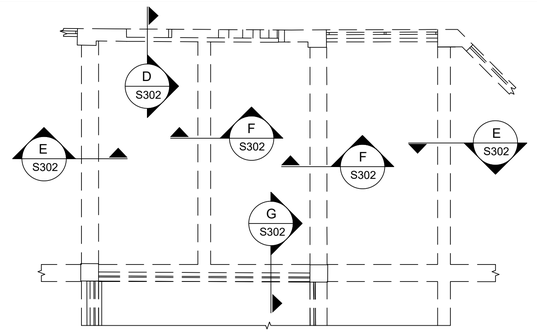


PARTIAL INTERIOR ELEVATION

SECTION A-A

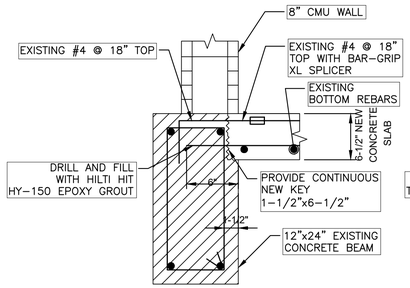
1 / S302 DETAIL FOR MINOR SLAB REPAIR

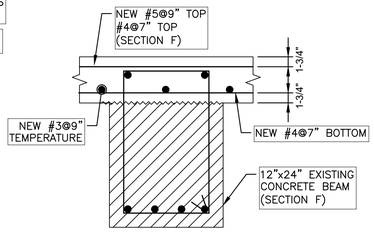
SCALE: N.T.S.



PARTIAL PLAN (EXISTING CONCRETE SLAB TO BE COMPLETELY REMOVED AND REPLACED

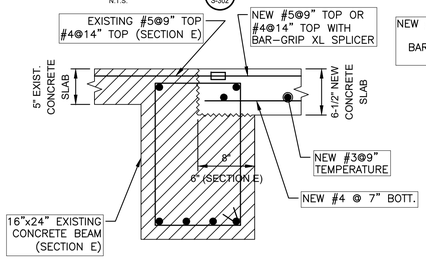
N.T.S.

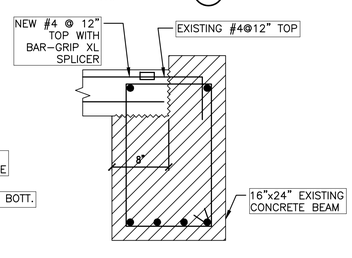




SECTION D (D / S-302) N.T.S.

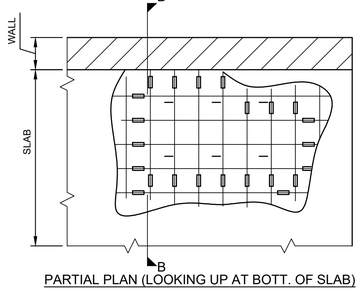
SECTION D (F / S-302) N.T.S.



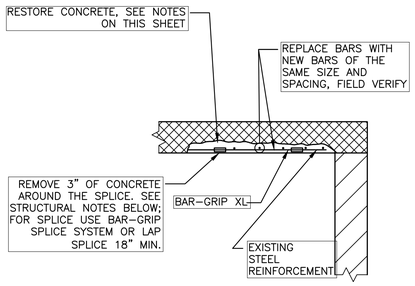


SECTION E (E / S-302) N.T.S.

SECTION E (G / S-302) N.T.S.



PARTIAL PLAN (LOOKING UP AT BOTT. OF SLAB)



SECTION B-B

2 / S302 REPAIR DETAIL FOR DEEP SLAB DETERIORATION

SCALE: N.T.S.

ADDITIONAL NOTES FOR SLAB REPLACEMENT

1. FLOOR SLAB AREA TO BE REPAIRED, SHALL BE PROVIDED WITH ADEQUATE SHORING PRIOR TO START OF REPAIR WORK. CONTRACTOR SHALL SUBMIT SIGNED AND SEALED SHORING PLANS AND DETAILS FOR REVIEW AND APPROVAL BY ENGINEER OF RECORD
2. REMOVED BY SAW–CUTTING AND/OR CHIPPING THE EXISTING CONCRETE SLAB, TO LIMITS SHOWN ON DETAIL 5. THE INTERFACE OF THE NEW SLAB WITH THE EXISTING CONCRETE BEAM, SHALL BE ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH
3. REMOVAL AND/OR REPAIR OF EXISTING ELECTRICAL CONDUITS AND MECHANICAL INSTALLATIONS SHALL BE COORDINATED WITH THE M–DWASD ENGINEER PRIOR TO AND DURING THE REPAIR WORK
4. PRIOR TO COMPLETE REMOVAL OF EXISTING CONCRETE SLAB TO BE REPAIRED, MECHANICAL PIPE INSTALLATIONS SHALL BE PROVIDED WITH ADEQUATE SHORING BY THE CONTRACTOR. THEN PIPE HANGERS ATTACHED TO THE CONCRETE SLAB, MAY BE REMOVED, REPLACED OR RE–USED IF FOUND ACCEPTABLE BY M–DWASD CONSTRUCTION MANAGER

3 / S302 REPAIR DETAIL FOR PORTION OF SLAB TO BE COMPLETELY REMOVED

SCALE: N.T.S.

NO.	DATE	REVISION	INT.

PROJECT ENGINEER: SM	DRAWN BY: JL
DESIGNED BY: SM/JL	CHECKED BY: CD

D&B ENGINEERS AND ARCHITECTS, P.C.

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

MIAMI-DADE COUNTY FLORIDA

SDWWTP TANK REHABILITATION FOR CHLORINE CONTACT CHAMBER NO.4

TYPICAL SLAB REPAIR DETAILS

PROJECT NO. 3951	DRAWING NO. S302
DATE: MAY 2019	
SCALE: As indicated	

NO TEXT ON THIS PAGE

APPENDIX “F”

STRUCTURAL CONDITION ASSESSMENT REPORT

(29 PAGES)

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MIAMI-DADE WATER & SEWER AUTHORITY
SOUTH DISTRICT WASTE WATER TREATMENT FACILITY

Structural Condition Assessment Report

For

CHLORINE CONTACT CHAMBERS AND GATE REHABILITATION

EDP-WS-256(A) – CD1.12

Prepared By:

D&B Engineers and Architects, P.C.
Coral Gables, FL

May 2017

Table of Contents

PROJECT: Miami-Dade SAWD – South District WWTP

EDP-WS-256(A) – CD1.12 SDWWTP

Chlorine Contact Chambers and Gate Rehabilitation

CLIENT: Miami-Dade Water and Sewer Department (WASD)

DATE: April 21st, 2017

PREPARED BY: Shaun McGrath, P.E., CCM

Jianwei Liu, E.I.T.

D&B PROJECT NO. 3951

Present at the site:

D&B Engineers and Architects, P.C.

Shaun McGrath

Joe Baader

Jianwei Liu

Heidi Negron

Executive Summary

Between March 27, 2017 and March 29, 2017, D&B Engineers and Architects, P.C. conducted a visual condition assessment of the four (4) chlorine contact tanks at the South District WWTP.

The purpose of the condition survey was to evaluate the general condition of the chlorine contact tanks, inlet/outlet wells, weir chambers, as well as sluice gates, and to quantify concrete/concrete masonry unit damage and deterioration such as, but not limited to, cracks, spalls, delamination, leaks, joint condition, efflorescence, scaling, reinforcement corrosion, and other defects. Observations were made from inside the tanks and the top walkways. Hammer soundings were performed at most areas of the floor, tie columns and walls of the tanks.

Tank Structure Description

Tank One (1) and Tank Two (2)

Location: East

Drawings reviewed: Design drawings prepared by the David Volker and Associates, dated August 27, 1979.

Baffle walls within the chlorine contacts tank are constructed with 8” concrete masonry units (CMU), with a continuous bond beam on top and intermediate cast-in-place tie columns. The east and west perimeter walls of the tank are constructed with 15” thick cast in place concrete. For the inlet well, west and east concrete walls, the adjoining chlorine contact wall have a thickness of 15”, the north concrete wall is 16” thick and the south concrete wall that divides the inlet well and the contact tank is 15” thick. All perimeter concrete walls of the weir chamber and outlet well have a thickness of 15”. The low weir wall that separates the weir chamber and outlet well is built with 12” thick cast-in-place concrete.

Tank Three (3) and Tank Four (4)

Location: West

Drawings reviewed: As-built drawings prepared by the Poole and Kent Company, dated February 24, 1989.

Wall construction of the inlet well, outlet well, and weir chamber is identical to Tank 1 and Tank 2, whereas the baffle walls within the chlorine contact tank are built with 8” thick cast-in-place concrete up to approximately 8’-0” above slab level. The remaining portion of the walls are constructed with 8” CMU with a continuous bond beam on top.

Conditions Observed

- Surface Condition: Most of the concrete/CMU coating surfaces and exposed surfaces below the operating liquid level exhibit minor-to-moderate efflorescence. Water that carries dissolved salts contained within masonry, concrete, or EIFS base coat will migrate to the surface and then evaporate, leaving a layer of the salt. Moderate honeycombing is present along the length of CMU at the operating level because of maximum fluid velocity on the fluid surface. Moderate-to-severe surface coating cracks and delamination was observed on most of the walls.
- Structural Stability: Vertical cracks were observed in the tank walls. The cracks are mostly shrinkage cracks and are generally narrow in width, greater than 1/16” but less than 1/4”. A few cracks with widths between 1/4" and 1/2” and minor-to-moderate spalled concrete were observed. The cracks typically originate at the top of the wall and extend down the wall for various lengths. Several cracks reach the bottom of the wall. Based on the visual inspection and hammer soundings, all tank walls are structurally stable.

- Structural Movement: The tank walls are vertically plumb. There are no noticeable lateral deflections, in-plane settlements, or movements.
- Floor slab: Moderate coating cracks and delamination were observed on the tank two (2) and tank three (3) floor slabs. There are a few cracks on the concrete slab surface, but it is not known if the floor cracks result in leakage.
- Joints: At the construction joints located below the lateral bracing beams, minor-to-moderate cracks were observed on both sides of the joint. The baffle wall expansion joints within the chlorine contact tank exhibit signs of deterioration. The filler/caulking in the expansion joints was often loose, deteriorated or cracked, and falling out of the joint. The backing material was deteriorated and rotted, or was not present at all. Some mortar joints between CMU blocks were deteriorated. Joints between cast-in-place concrete and CMU construction in tank three (3) and tank four (4) exhibited deterioration, possibly due to lack of transition between two materials, (i.e., transitional material such as high-strength non-shrink grout was not used). The floor slab does not contain any expansion joints.
- Corrosion: In some locations, exposed rebar in the concrete was severely corroded. Other steel elements, e.g., pipes, pipe mounting system, sluice gate, have experienced minor-to-moderate surface delamination and steel surface corrosion.

Conclusions and Recommendations

The tank is in generally sound condition except for localized areas of damage consisting of minor cracking and spalling. The tank displays several structural deficiencies with varying degrees of severity. Most of the deficiencies are minor in nature. However, if these deficiencies are permitted

to persist without repair the consequences could eventually be severe. Based upon the observations above, we present the following conclusions and recommendations:

- Most concrete surface areas exhibit erosion and have been washed-out with exposed aggregates dislodging from the concrete paste. Surface erosion can result in member section reduction, but most importantly it can reduce the reinforcement protection cover that can lead to reinforcement corrosion. These conditions are already present at some wall locations and the columns. Therefore, all interior surfaces, including walls, columns, beams and slabs should be restored and protected from the erosive effects and chemical attack of the water. Repair methods should include the application of a protective coating of polymer-modified cementitious waterproofing slurry or the application of a concrete layer on the affected concrete surfaces.
- Most of the observed cracks are less than 1/16" in width and are most likely due to shrinkage that occurred immediately after construction, as well as due to thermal expansion and contraction. Water penetrating the cracks will eventually corrode the steel reinforcement leading to further concrete deterioration and ultimate structural failure. The cracks should be permanently sealed. Depending on the nature of the cracks, propagating or non-propagating, the cracks should be sealed with either a flexible sealant or epoxy injection to restore the structural continuity and reinforcement protection.
- The cracks in the floor slab are mostly hairline. These cracks should be permanently sealed with a flexible sealant to prevent: 1) further deterioration and corrosion of the reinforcement steel; and 2) possible water leaks into the ground.

- The exposed corroded reinforcement at various locations presents moderate structural damage. The exposed reinforcement most likely occurred as a result of a combination of factors, such as improper steel placement during the original construction and the erosion of the concrete surface. The corroded steel bars should be exposed by removing the concrete all around the bars. The extent of corrosion should then be further evaluated to determine the steel area lost, and severely damaged bars should either be replaced or doubled-up. The bars should be bent inwards inside the wall, where possible, to achieve adequate protection cover. Additional concrete or other repair material may be required to provide adequate steel protection.
- The concrete spalls can present major structural deficiencies. Concrete spalls are the result of reinforcement corrosion resulting in concrete separations and delaminations. Spalls should be sawcut or chipped down to sound concrete creating a clean surface for the patch. Stainless steel pins should be inserted into the existing concrete to help bond new concrete to the existing concrete. Corroded steel reinforcement should be further evaluated and replaced or doubled up as required. The exposed cleaned concrete surfaces and reinforcement should be treated with concrete bonding agents before the application of the cementitious patching materials. Depending on the depth of the patch, a wire mesh should be installed in the patch area when required.
- The expansion joints and the joint filler and sealant are failing. The joint filler and sealant materials should therefore be replaced.
- Corrosion of the existing steel embedments and steel anchorage into concrete surfaces may have caused concrete cracking and spalling at the location of the steel embedment. All steel

embedments should be closely inspected and removed as required and the cracked and/or spalled concrete areas should be repaired as indicated above.

- Some concrete columns exhibit deterioration due to reinforcing steel corrosion. There are reinforcing tie bars exposed at various locations. The columns should be repaired. The loose concrete spalls should be removed and the corroded reinforcement should be exposed and evaluated. Depending on the extent of corrosion, the steel tie bars may need to be replaced or supplemented with additional steel bars. The exposed cleaned concrete surfaces and reinforcement should be treated with concrete bonding agents before the application of the cementitious patching materials.
- Concrete beam cracking and spalling should be repaired as indicated above.
- The exposed top walls of the tank troughs display surface erosion. The troughs are more vulnerable than the rest of the tank areas since they are directly exposed to the elements, including damage from freeze-thaw effects. The erosion at the trough should be repaired as indicated above.
- In general, all repairs and rehabilitation occur within the surface of structural elements. No major structural rehabilitation is required. As such, it is our opinion that a permit is not required for this rehabilitation work as it should be considered routine maintenance and operations work.

Preliminary Cost Estimate for Concrete Repairs

A preliminary cost estimate for the required concrete repairs has been developed based on the visual observations of the interior of the tank. Considering the inherent limited information

obtained from visual inspections, the observed quantities were factored by thirty percent to account for hidden conditions under the concrete surface, or in areas not readily visible.

This engineering cost estimate is based on construction prices of similar repair work. Actual cost may be obtained only after preparation of construction documents, such as drawings and specifications, and obtaining firm bids from prospective contractors. The construction cost may be affected by changes of the repair design during construction, based on the actual conditions observed at that time.

Attached Table 1 shows a summary of the concrete defect quantities. Table 2 shows the preliminary cost estimate for the repairs of this tank. The construction cost estimate includes only the concrete repairs.

List of Attachments

1. Condition Survey: Definition of Typical Terms
2. Photographs and Descriptions of Typical Conditions Encountered
3. Table 1: Summary of Results for Tank
4. Table 2: Preliminary Cost Estimate for Repairs at Tank

CONDITION SURVEY: DEFINITION OF TYPICAL TERMS

The definitions of selected typical terms used in this investigation study are extracted from:

ACI 201.1R/Guide for Conducting a Visual Inspection of Concrete in Service

Crack - A complete or incomplete separation, of either concrete or masonry, into two or more parts produced by breaking or fracturing.

Craze cracks - Fine random cracks or fissures in a surface of plaster, cement paste, mortar, or concrete.

Hairline cracks - Cracks in an exposed-to-view concrete surface having widths so small as to be barely perceptible.

Pattern Cracking - Cracking on concrete surfaces in the form of a repeated sequence; resulting from a decrease in volume of the material near the surface, or an increase in volume of the material below the surface, or both.

Plastic shrinkage cracking - Cracking that occurs in the surface of fresh concrete soon after it is placed and while it is still plastic.

Shrinkage cracking - Cracking of a structure or member due to failure in tension caused by external or internal restraints as reduction in moisture content develops, carbonation occurs, or both.

Temperature cracking - Cracking due to tensile failure, caused by temperature drop in members subjected to external restraints or by a temperature differential in members subjected to internal restraints.

Deterioration - 1) Physical manifestation of failure of a material (for example, cracking, delamination, flaking, pitting, scaling, spalling, and staining) caused by environmental or internal autogenous influences on rock and hardened concrete as well as other materials; or 2) Decomposition of material during either testing or exposure to service.

Delamination - A separation along a plane parallel to a surface, as in the case of a concrete slab, a horizontal splitting, cracking, or separation within a slab in a plane roughly parallel to, and generally near, the upper surface; found most frequently in bridge decks and caused by the corrosion of reinforcing steel or freezing and thawing; similar to spalling, scaling, or peeling except that delamination affects large areas and can often only be detected by nondestructive tests, such as tapping or chain dragging.

Disintegration - Reduction into small fragments and subsequently into particles.

Efflorescence - A deposit of salts, usually white, formed on a surface, the substance having emerged in solution from within either concrete or masonry and subsequently been precipitated by a reaction, such as carbonation or evaporation.

Joint spall - A spall adjacent to a joint.

Joint sealant failure - Joints opened due to a cracked and/or debonded sealant.

Joint leakage - Liquid migrating through the joint.

Scaling - Local flaking or peeling away of the near-surface portion of hardened concrete or mortar.

Spall - A fragment, usually in the shape of a flake, detached from a concrete member by a blow, by the action of weather, by pressure, by fire, or by expansion within the larger mass.

Cold joint - A joint or discontinuity resulting from a delay in placement of sufficient duration to preclude inter- mingling and bonding of the material in two successive lifts of concrete, mortar, or the like.

Honeycomb - Voids left in concrete due to failure of the mortar to effectively fill the spaces among coarse aggregate particles.

PHOTOGRAPHS AND DESCRIPTIONS OF TYPICAL CONDITIONS

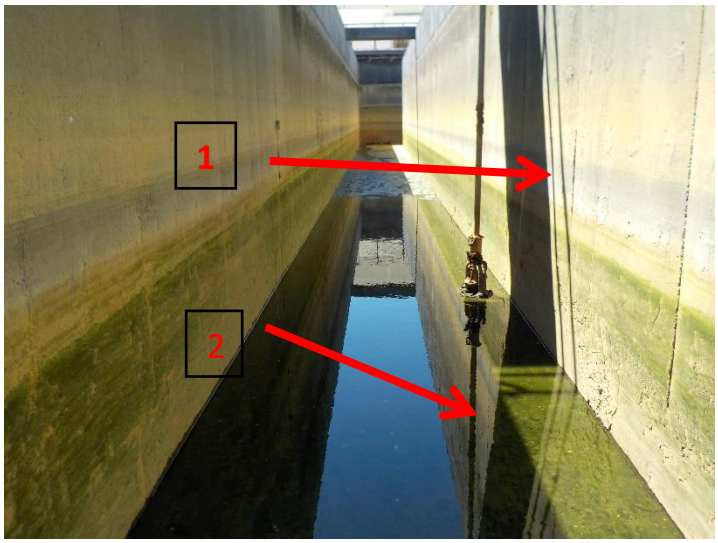
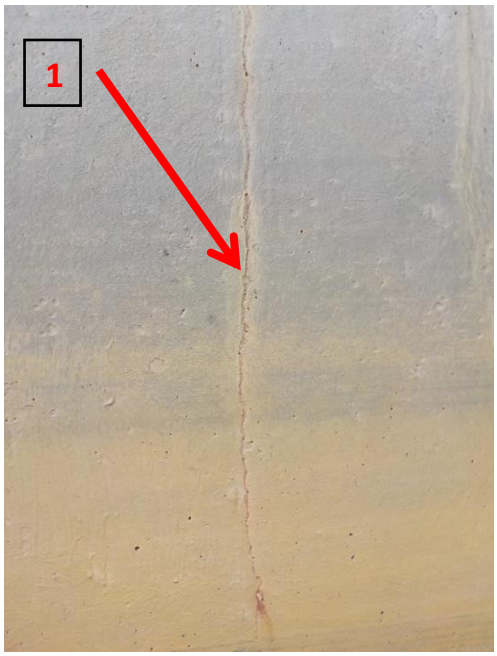
Photo 1 **Location:** Typical Chlorine Contact Tank 'lane' **Reference Drawing** **Description:** 1. ~11'-0" high baffle wall 2. Concrete slab Each Tank consists of seven (7) lanes for a total of twenty-eight (28) lanes contained within the four (4) Chlorine Contact Tanks.	
Photo 2 **Location:** Typical Vertical Crack **Reference Drawing** **Description:** 1. Typical vertical crack in the baffle wall (greater than ¼" but less than ½" in width). All cracks within this width range (or larger) should be cleaned of loose debris, injected with epoxy or grout and recoated. All cracks greater than 1/16" wide but less than ¼" wide will be sealed by the new concrete coating.	

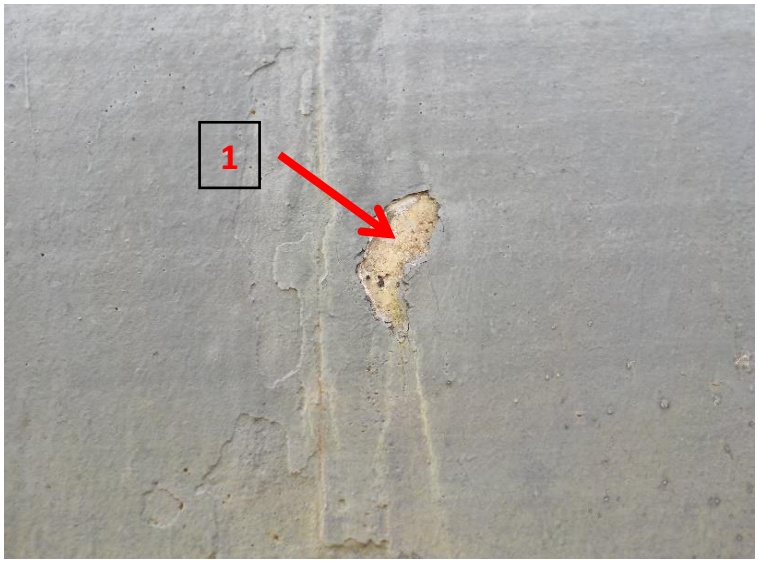
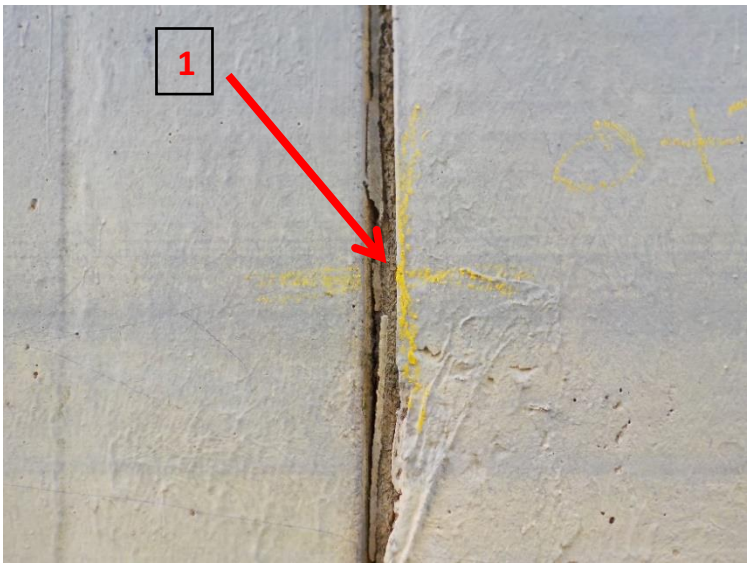
Photo 3 **Location:** Typical Delamination of Coating **Reference Drawing** **Description:** 1. Typical delamination of concrete coating at the baffle wall. All existing concrete coatings should be mechanically removed and replaced with a new coating per the contract documents and manufacturer's specifications.	
Photo 4 **Location:** Typical Expansion Joint Condition **Reference Drawing** **Description:** 1. Typical expansion joint condition. Expansion joint material mostly deteriorated or missing. Backer rod/filler deteriorated and cracking due to long-term water exposure. All expansion joints should be repaired and/or replaced in whole.	

Photo 5 **Location:** Typical Lane Marking for Inspection **Reference Drawing** **Description:** 1. Typical keel marking for Tank #, Lane # and compass direction for alignment.	
Photo 6 **Location:** Typical Weeping at Hairline Cracks **Reference Drawing** **Description:** Typical weeping of liquid from concrete baffle wall at hairline cracks. The existing concrete coating should be removed and replaced. The new concrete coating will fill in small hairline cracks and prevent weeping.	

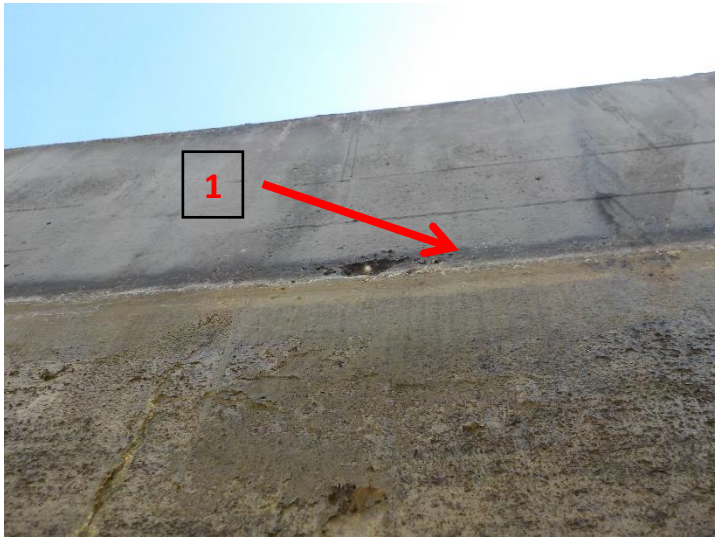
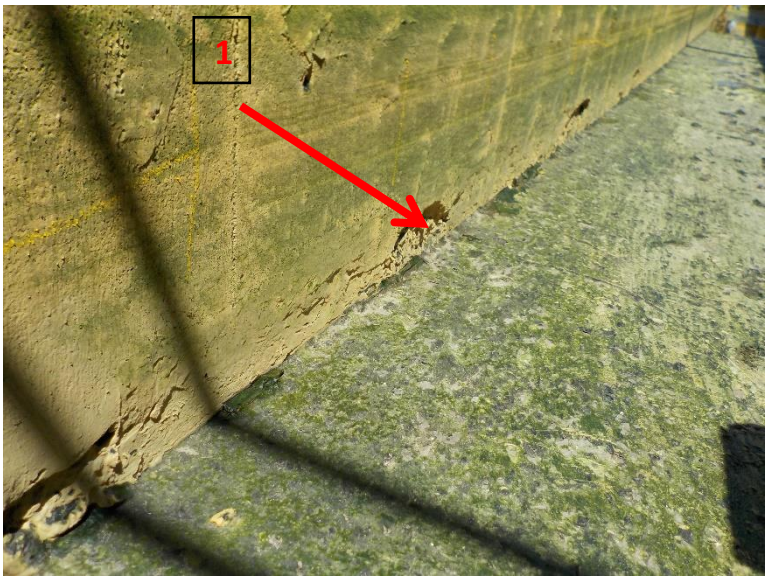
Photo 7 **Location:** Typical Baffle Wall Transition **Reference Drawing** **Description:** 1. Typical transition from concrete to CMU at baffle walls in Tanks 3 & 4. There is evidence of scouring along the water line on many of the baffle walls. Scouring has led to hairline cracks, concrete popouts and general surface deterioration. All existing coatings should be removed, cracks should be injected with grout or epoxy and popouts filled with non-shrink grout.	
Photo 8 **Location:** Typical Concrete Popouts at Base **Reference Drawing** **Description:** 1. A typical condition encountered along the base of the baffle walls in Tanks #3 & #4 was concrete popouts. This is likely caused by improper consolidation of the concrete along with the turbulent flow of the liquid along the wall and slab interface in the tank. These popouts should be filled with non-shrink grout to prevent further deterioration of the concrete surface and subsequent damage to the rebar.	

Photo 9 **Location:** Typical Wall Coating Delamination **Reference Drawing** **Description:** 1. Typical wall coating delamination observed at the baffle walls. Over time, water penetrates the concrete coating and causes the coating to bubble, flake and chip away from the concrete surface. The existing concrete coating should be removed and replaced.	
Photo 10 **Location:** Typical Efflorescence & Delamination **Reference Drawing** **Description:** 1. Typical conditions encountered along the baffle walls in Tanks #3 & #4 were efflorescence and delamination. The existing concrete coating should be removed and replaced to prevent the spread of efflorescence and further delamination of the coating.	

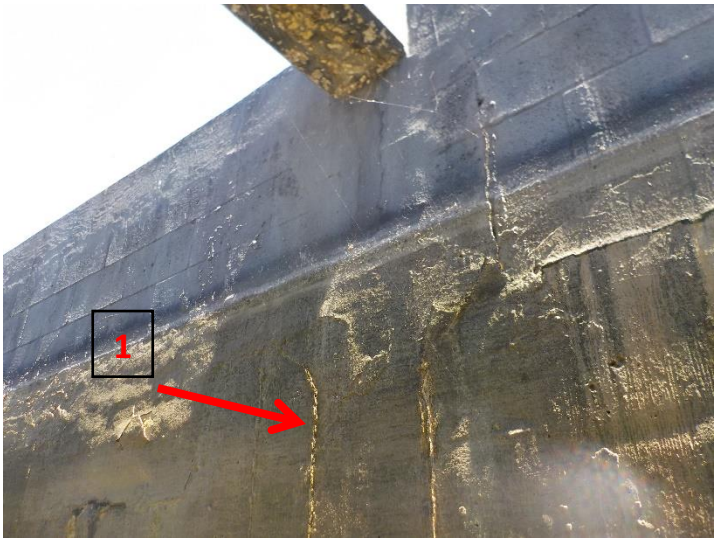
Photo 11 **Location:** Typical Vertical Cracking at Beams **Reference Drawing** **Description:** 1. Along the length of the baffle walls, concrete beams are installed between the tops of the walls to provide lateral support for the freestanding concrete/CMU walls. At many of the beam locations, two vertical cracks are visible from the underside of the concrete beam to the base of the wall. These cracks should be sealed with epoxy or grout prior to the installation of the new concrete coating.	
Photo 12 **Location:** Typical Delamination and Cracking **Reference Drawing** **Description:** 1. In locations where the concrete coating was applied in a thick or uneven layer, the coating cracked and/or delaminated over time. Many of these delaminated areas can be pulled off by hand, exposing the bare concrete beneath. The lack of concrete coating exposes the concrete surface to harmful chlorine, which can lead to degradation of the concrete surface and steel reinforcement.	

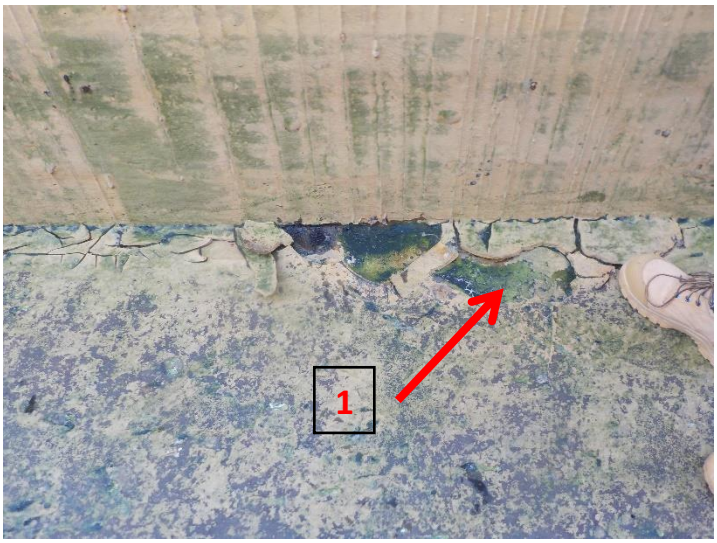
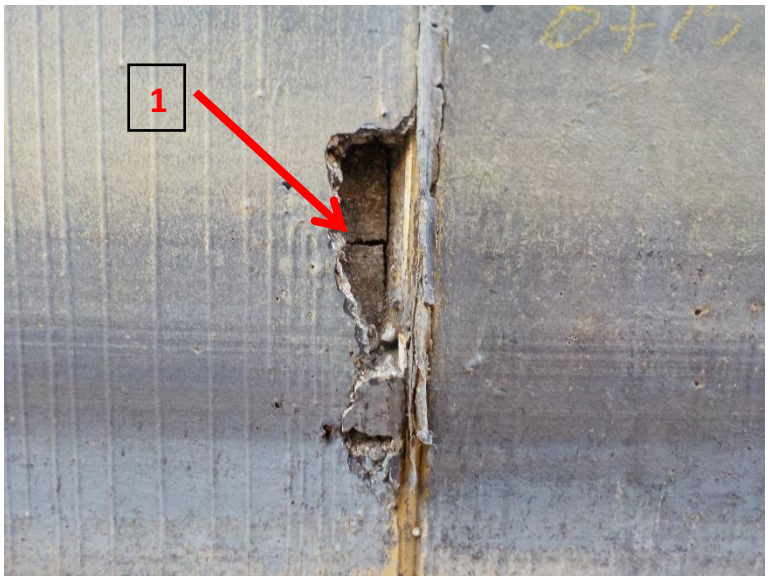
Photo 13 **Location:** Typ. Delamination of Slab Coating **Reference Drawing** **Description:** 1. In Tanks #2 & #3, the slab coating showed evidence of complete delamination and peeling off the concrete surface. This delamination exposes the concrete slab and steel reinforcement to harmful chlorine. The existing concrete slab coating should be removed and replaced.	
Photo 14 **Location:** Typ. Concrete Popout at Exp. Joint **Reference Drawing** **Description:** 1. Some of the expansion joint locationsshow evidence of complete concrete material loss due to popout. These areas should be patched with non-shrink grout and receive a new concrete coating.	

Photo 15 **Location:** Typical Biological Buildup **Reference Drawing** **Description:** 1. All tanks and lanes exhibit a buildup of biological material at the lower 2'-0" to 3'-0" of the baffle walls. In general, the deterioration of the concrete walls in Tanks 3 & 4 is greater in these lower locations than the upper portions of the walls. The existing concrete coating should be removed and replaced to prevent further deterioration of the concrete and steel reinforcement.	
Photo 16 **Location:** Typ. Concrete Cracking & Delamination **Reference Drawing** **Description:** 1. The existing concrete baffle walls in Tanks 3 & 4 show evidence of coating delamination and vertical concrete cracking in many locations. The concrete coating should be removed, the cracks should be cleaned of loose debris and injected with epoxy or grout and the concrete coating should be replaced.	

Photo 17 **Location:** Typ. Midwall Concrete Popout **Reference Drawing** **Description:** 1. Tanks 3 & 4 contain isolated locations where the surface concrete has deteriorated to the point of dislodging from the rest of the wall, leaving behind a cavity. These concrete popouts should be cleaned of loose coating material and debris, filled with non-shrink grout and recoated.	
Photo 18 **Location:** Typ. Vertical Concrete Cracking **Reference Drawing** **Description:** 1. The existing concrete baffle walls in Tanks 3 & 4 show evidence of vertical concrete cracking in many locations. The concrete coating should be removed, the cracks should be cleaned of loose debris and injected with epoxy or grout and the concrete coating should be replaced.	

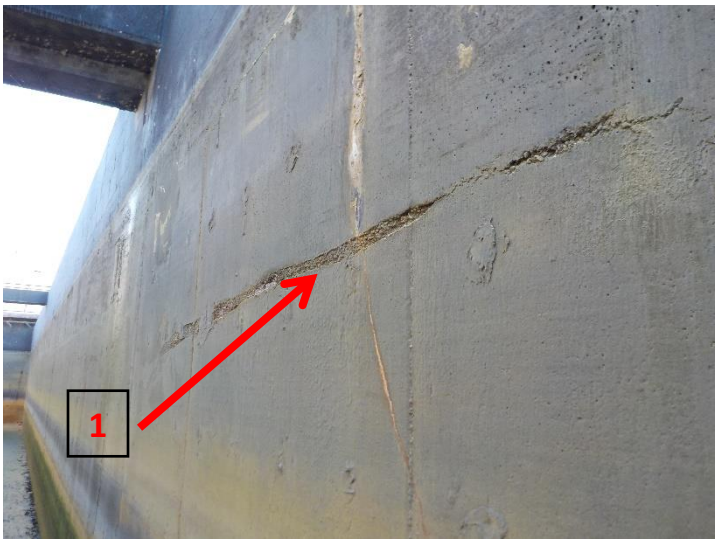
Photo 19 **Location:** Typ. Midwall Horizontal Cracking **Reference Drawing** **Description:** 1. Tanks 3 & 4 contain isolated locations where long, horizontal cracks in the surface of the concrete baffle walls have developed. These concrete cracks should be cleaned of loose coating and debris, injected with epoxy or grout and recoated.	
Photo 20 **Location:** Typ. Concrete Cracking & Popout **Reference Drawing** **Description:** 1. The existing concrete baffle walls in Tanks 3 & 4 show evidence of coating popout and horizontal concrete cracking in a few locations. The concrete coating should be removed, the cracks should be cleaned of loose debris and injected with epoxy or non-shrink grout and the concrete coating should be replaced.	

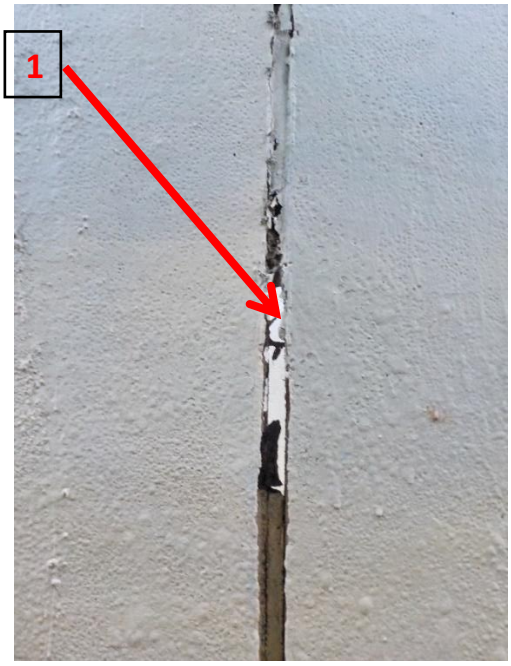
Photo 21 **Location:** Typical Vegetation in Cracks **Reference Drawing** **Description:** 1. Tanks 3 & 4 contain isolated locations where vegetation can be seen growing out of small cracks in the baffle walls. The vegetation should be removed, all debris should be cleaned from the cracks, the cracks should be filled with epoxy or grout and the concrete recoated.	
Photo 22 **Location:** Typical Exp. Joint Material Loss **Reference Drawing** **Description:** 1. The existing CMU baffle walls in Tanks 1 & 2 show evidence complete loss of expansion joint material, including the backer rod/filler. All loose backing material and expansion joint material should be completely removed and replaced.	

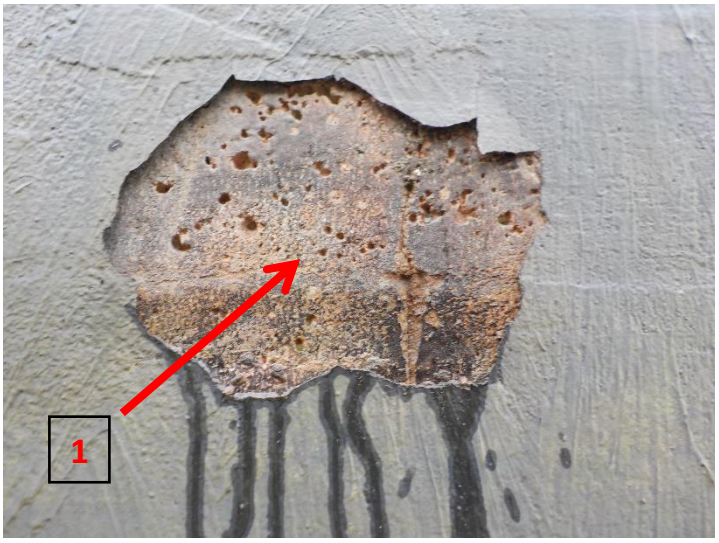
Photo 23 **Location:** Typical Coating Delamination at CMU **Reference Drawing** **Description:** 1. Tanks 1 & 2 contain numerous locations where water has become trapped between the CMU baffle walls and the coating material. The water forms bubbles in the coating, causing the delamination to spread. The existing coating should be removed and replaced. All loose coating material and CMU debris should be cleaned prior to installing the new baffle wall coating.	
Photo 24 **Location:** Typical Vertical Cracking in CMU Wall **Reference Drawing** **Description:** 1. The existing CMU baffle walls in Tanks 1 & 2 contain numerous locations where vertical cracks have formed and water weeps out from the cracks. These cracks should be cleaned and all debris removed. The cracks should be injected with epoxy or grout and a new wall coating applied.	

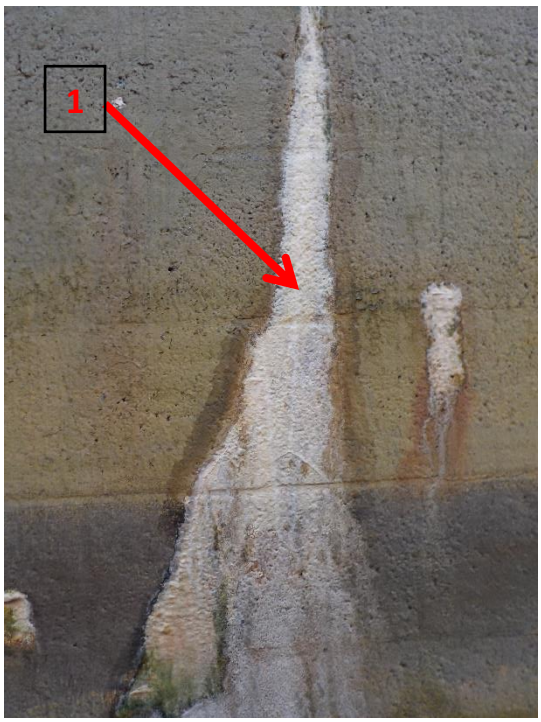
Photo 25 **Location:** Typical Efflorescence in CMU Walls **Reference Drawing** **Description:** 1. Tanks 1 & 2 contain numerous locations where efflorescence is visible at the surface of the CMU baffle walls. The efflorescence is emanating from hairline cracks in the CMU walls. The cracks should be cleaned and all loose debris removed. The efflorescence should be remove and the CMU walls should be recoated.	
Photo 26 **Location:** Damage to Concrete at Sluice Gate Stem at Sluice Gate #6 **Reference Drawing** **Description:** 1. Sluice Gate #6 in Tank #1 contains cracking through the concrete top slab which should be repaired prior to the installation of the new sluice gates. The concrete cracks should be cleaned of loose debris, injected with epoxy or grout and coated to prevent further deterioration.	

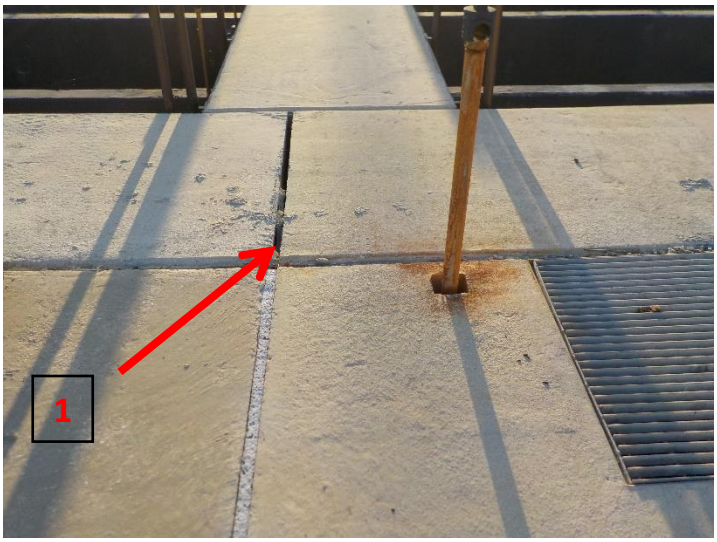
Photo 27 **Location:** Typical Expansion Joint Material Loss at Top Deck Walkways **Reference Drawing** **Description:** 1. All top deck walkways show evidence of expansion joint material loss. At many locations, vegetation has started to grow in the joints. The vegetation growth can lead to deterioration of the concrete and steel reinforcement and eventual breakdown of the concrete walkways. All vegetation at the top deck should be removed, and all existing expansion joint material should be removed and replaced.	
Photo 28 **Location:** Typical Vegetation Growth at Top Deck Walkways **Reference Drawing** **Description:** 1. See comments above in Photo #27.	

Photo 29 **Location:** Typical Loose Railing at Top Deck **Reference Drawing** **Description:** 1. The top deck sidewalks between the Chlorine Contact Tanks contained several loose railings. In many cases, the caulking between the railing and the surrounding concrete has deteriorated partially or completely, allowing the handrail to float within the hole in the concrete deck. This creates a hazardous condition and can lead to cracking and deterioration of the concrete deck. All missing caulking at handrails should be replaced.	
Photo 30 **Location:** Concrete top deck above Sluice Gate #6 **Reference Drawing** **Description:** 1. The existing concrete top deck/sidewalk directly above Sluice Gate #6 at Tank #1 shows signs of cracking through the deck. These cracks should be cleaned of debris and injected with epoxy or grout.	

Table 1: Summary of Results for CCTs 1-4
Miami-Dade SAWD - South District WWTP - Chlorine Contact Tanks
Contract: EDP-WS-256(A) - CD1.12 SDWWTP Chlorine Contact Chambers and Gate Rehabilitation / Gates
Tank 1-4
Dates: March 27-29
Inspected BY: SM & JL

Legend

C	CRACKS	**IR**	INSERT REMNANT (STEEL ANCHORS, WOOD, ETC.)
CJ	COLD JOINT	**L**	WATER LEAK
CZ	CRAZE CRACKING	**LR**	LOOSE RAILING
DL	DELAMINATION	**PF**	PATCH FAIL
E	EFFLORESCENCE	**PG**	PATCH GOOD
EJ	EXPANSION JOINT	**R**	EXPOSED REBAR
EJ-F	EXPANSION JOINT - FAILURE	**RS**	EXPOSED REBAR WITH SPALLS
ES	ERODED SURFACE	**S**	SPALLS
HC	HONEYCOMB	**SC**	SCALING

TANK #CCT4		C (lf)	CJ (lf)	CZ (sf)	DL (lf)	E (lf)	EJ (lf)	EJ-F (lf)	ES (%)	HC (sf)	IR (ea)	L (lf)	LR (ea)	PF (sf)	PG (sf)	R (sf)	RS (sf)	S (sf)	SC (sf)
WALLS	NORTH WALL																		
	SOUTH WALL																		
	EAST WALL	369			362			308		30.25				97				18.5	
	WEST WALL	494			377			308						8				11.25	
	TOTALS																		
OTHER	COLUMNS																		
	BEAMS																		
	FLOOR/DIVIDERS																		
	WALKWAYS																		
	UNDERSIDE OF WALKWAYS																		
	EAST PARTITIONS																		
	WEST PARTITIONS																		
	EAST TROUGH																		
	TOTALS																		
GRAND TOTAL		863	0	0	739	0	0	616	0	30.25	0	0	0	105	0	0	0	29.75	0

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