

ELECTRONIC DOCUMENTS DISCLAIMER

1. Electronic copies of the solicitation documents are made available on this website solely for the convenience of prospective bidders (whether as a prime contractor or sub-contractor) on the Project, and are not considered part of the Contract Documents. No representation or warranty is made, either expressed or implied, with regard to the accuracy or suitability of these electronic copies for any purpose whatsoever. In the event of discrepancies or conflicts between the County's originally published document(s) and any other version distributed or submitted by other parties, the County's original hard copy version shall prevail.
2. Miami-Dade County Department of Transportation and Public Works (DTPW) does not track or monitor downloads of Project documents from this website. Therefore, prospective bidders who choose to use this method of distribution shall also be responsible for monitoring the site and downloading any applicable addenda or supplemental information. DTPW will distribute hard copy addenda or supplemental information only to those persons or firms who we have purchased a hard copy of the original solicitation documents.
3. Miami-Dade County shall not be responsible for errors and omissions occurring in the transmission or downloading of any documents or specifications from this website. In the event of any discrepancy between information obtained from this website and the DTPW hard copy solicitation documents and specifications, the terms of the hard copy documents will prevail.
4. Miami-Dade County does not guarantee continuous, uninterrupted or secure access to this or other related websites. Operation of this website may be affected from time to time by numerous factors outside of our control. In the event that we are notified of any problems in a timely manner we will do our best to assist with those problems that fall within our control. For assistance, contact us at 305-375-2930. Solicitation documents are removed from this website as soon as possible after the due date.
5. DTPW does not accept facsimile or electronic bid responses of any kind. All bids must be submitted in writing, on the forms provided by the County, to the address designated in the bid package. It is the bidder's responsibility to ensure that their submittals are received at the designated location, complete and on time. Bids received after the due date will be rejected, even if the solicitation is still appearing on this site.
6. These documents shall not be altered in any manner. Utilization or viewing of these electronic documents shall constitute implicit acknowledgement and acceptance of these provisions. Failure to comply with these provisions may result in rejection of your bid.

CONTRACT SPECIFICATIONS

DEPARTMENT OF TRANSPORTATION
& PUBLIC WORKS
DESIGN AND ENGINEERING DIVISION

BID DOCUMENTS

**METROMOVER FIRE PANEL
UPGRADE**

CONTRACT NO. CICC 7360 PLAN

RPQ NO.: TP-0000018108

PROJECT NO.: CIP172

VOLUME I OF II

SOLICITATION DOCUMENTS

JANUARY 2025



RPQ NO.: TP-0000018108

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

METROMOVER FIRE PANEL UPGRADE

PROJECT NO. CIP172

RPQ NO. TP-0000018108

BID DOCUMENTS - TABLE OF CONTENTS I OF II
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BID DOCUMENTS

INVITATION TO BID

MINIMUM QUALIFICATIONS & REQUIREMENTS

FORMS FOR BIDDING

- Bid Form
- Attachment 5A
- Surety Bid Bond Form
- Acknowledgment Addenda (if applicable/Signed by Contractor)
- Certificate of Assurance (CoA) (Not Applicable for this Project)
- Bidder's Statement of Qualifications and Business References
- Scrutinized Company Affidavit
- Non-Collusion Affidavit
- Firm's Responsibility Combined Affidavit
- Responsible Contractor Affidavit (Form RTFE 1)
- Contractor's Due Diligence Affidavit
- Fair Wage Affidavit
- E-Verify Affidavit
- DPM Requirement - Affirmation of Vendor Affidavits
- Financial Documentation
- Job Clearinghouse Form
- Fair Subcontracting Practices

CONTRACT FORMS

- Surety Performance and Payment Bond
- Residents First Training and Employment Program/Community Workforce Program/
Employ Miami-Dade Program Construction Workforce Plan - Form RFTE2
- OSHA Safety Training Affidavit - Form RFTE 3
- Residents First Training and Employment Program/Employ Miami-Dade Program
Workforce Performance Report - Form RFTE 4
- Bid Submittal Check List Questionnaire Appendix "D"
- Certificate(s) of Insurance

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

METROMOVER FIRE PANEL UPGRADE

PROJECT NO. CIP172

RPQ NO. TP-0000018108

BID DOCUMENTS - TABLE OF CONTENTS II OF II

BID DOCUMENTS

- SMALL BUSINESS DEVELOPMENT PROJECT WORKSHEET (No Measures)

- LCP TRACKER

- SPECIAL PROVISIONS:
 - Appendix A: Authorization Agreement for Automatic Deposit
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- STANDARD CONSTRUCTION: GENERAL CONTRACT CONDITIONS.

- TECHNICAL SPECIFICATIONS: SPECIAL TERMS & CONDITIONS.

INVITATION TO BID



RPQ NO. TP-0000018108

**Department of Transportation and
Public Works**

**Capital Improvements Division
111 NW 1st Street, Suite 1410
Miami, FL 33128 33128**



**MIAMI-DADE COUNTY, FLORIDA
REQUEST FOR PRICE QUOTATION (RPQ)**

Contract No: MCC 7360 Plan

RPQ No: TP-0000018108

INVITATION TO BID

A RPQ has been issued for the work identified below. If you are interested in submitting a bid for this project, please submit your bid via Sealed Envelopes, attention to Office of the Clerk of the Board at 111 NW 1st ST. 17th Floor. Miami, FL. 33128 - Clerk of the Board Office no later than 3/12/2025 at 02:00 PM. If you have any questions, contact Marco Movilla at (305) 375-3267.

This RPQ is issued under the terms and conditions of the Miscellaneous Construction Contracts (MCC) Program MCC 7360 Plan.

RPQ DETAILED BREAKDOWN

Bid Due Date:	3/12/2025	Time Due:	02:00 PM	Submitted Via:	Sealed Envelopes		
Estimated Value:	\$2,853,084	(excluding Contingencies and Dedicated Allowances)					
Project Name:	Metromover Fire Panel Upgrade						
Project Location:	Various Locations (See Comments Section)						
License Requirements:	Primary:	Electrical Contractor					
	Sub:	General Engineering					
Scope of Work:	<p>(Contractor must obtain and submit all permits prior to performing any work). New installation of Switch Machines Equipment.</p> <p>Each of the Metromover stations is protected by a Fire Alarm system that was commissioned when the stations were originally built. The protection system needs to be replaced by a new Fire Alarm system in all Metromover stations and the locations provided in the Technical Specifications document.</p> <p>The work will include the provision of a new Fire Alarm system and station devises as specified in the contract Technical Specifications and division 26 documents. The new system must meet all governing NFPA requirements, and the requirements as dictated by the Authorities having Jurisdiction over the locations where the new fire alarm systems will be installed. The new systems must be safety certified per The Department of transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Each plan is project specific, and the contractor will develop the plan for this project and provide it to the project manager within 90 days of the notice to proceed.</p> <p>Safety Certification is required as defined in the Federal Transportation Administration (FTA) State Safety Oversight Rule (49 CFR Part 659) and must be safety certified as mandated by the FDOT Fixed Guideway Transportation Systems State Safety Oversight Program Standard and the Department of Transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Both documents describe testing and certification processes which must be conducted to ensure safe operation of the track and all governing systems. Upon successful completion of the testing, certification will be submitted to FDOT, in Tallahassee. In supporting the safety certification process, the Contractor shall carry out a detailed accounting of all correspondence and documentation to verify that all safety related requirements, activities, tests, inspections and action items have been completed and satisfied and shall document these results in a Safety Report which shall be submitted to the County for its review and acceptance 30 calendar days prior to the Contractors written application for Substantial Completion.</p> <p>The Technical Specification for the contract provides the specific locations where the work is to be done, the order of execution of the work, and exceptions as noted in the Technical Specifications for the contract.</p>						
Document Pickup:	Contact:	DTPW Capital Improvements Division	Phone No:	(305) 375-2930	Date:	1/30/2025	
	Location:	111 NW 1st Street. Suite# 1410. Miami, FL. 33128					
Pre-Bid Meeting::	YES	Mandatory:	No	Date:	2/12/2025	Time:	10:00 AM
	Location:	See Info. Below in Comments					
Site Meeting:	YES	Mandatory:	No	Date:	2/12/2025	Time:	10:00 AM

	Location:	See Info. Below in Comments		
Bid shall be submitted to:	Contact:	Office of the Clerk of the Board		
	Address:	111 NW 1st ST. 17th Floor. Miami, Fl. 33128 - Clerk of the Board Office		
	Email:	Clerkbbs@miamidade.gov	FAX # :	305-375-2931
Type of Contract:	Single Trade	Method of Award:	Lowest Responsible Bidder	
Method of Payment:	Scheduled Monthly Payments	Insurance Required:	YES	
Additional Insurance Required:	NO	If Yes - Minimum Coverage:		
Performance & Payment Bond Required:	YES	Bid Bond Required:	YES	
Davis Bacon:	NO	Maintenance Wages:	NO	AIPP: NO Amount:
DBE Participation:	NO	Percentage:	0.00%	DBE Subcontractor Forms Required: NO
SBE-S Requirements	NO	Percentage:	0.00%	
SBE-G Requirements	NO	Percentage:	0.00%	
Liquidated Damages:	YES	\$\$ Per Day:	\$1,211.27	
For RPQ's less than \$10,000, if no LD rate is specified, the County reserves the right to assess actual damages in lieu of LDs.				
Design Drawing Included:	NO	Shop Drawing Included:	NO	Specifications Included: NO
Anticipated Start Date:	1/20/2026		Calendar Days for Project Completion:	914
Comments:	<p>Pursuant to Section 2-8.10 of the Code of Miami-Dade County, this Contract is subject to a user access fee under the County's User Access Program (UAP) in the amount of two percent (2%). All construction services provided under this contract are subject to the 2% UAP. This fee applies to all Contract usage whether by County Departments or by any other governmental, quasi-governmental or not-for-profit entity. From every payment made to the Contractor under this contract (including the payment of retainage), the County will deduct the two percent (2%) UAP fee provided in the ordinance and the Contractor will accept such reduced amount as full compensation for any and all deliverables under the contract. The County shall retain the 2% UAP for use by the County to help defray the cost of its procurement program. Contractor participation in this pay request reduction portion of the UAP is mandatory.</p> <p>Provided, however, UAP shall not be applicable for total contract values, inclusive of contingency and allowance accounts, of less than five hundred thousand dollars (\$500,000.00).</p> <p>LOCATION OF WORK:</p> <p>Location Address</p> <p>1 School Board 50 NE 15 Street</p> <p>2 Adrienne Arsht Center 1455 Biscayne Boulevard</p> <p>3 Museum Park 1191 Biscayne Blvd</p> <p>4 Eleventh Street 1098 NE Second Avenue</p> <p>5 Park West 800 NE Second Avenue</p> <p>6 Freedom Tower 600 NE Second Avenue</p> <p>7 College North 100 NE 5 Street</p> <p>8 Wilkie D. Ferguson, Jr. 90 NW 5 Street</p> <p>9 Miami Avenue 90 South Miami Avenue</p> <p>10 Third Street 250 South Miami Avenue</p> <p>11 Knight Center 100 SE Second Street</p> <p>12 Bayfront Park 150 Biscayne Boulevard</p> <p>13 Dupont Plaza 16 SE 2 ST</p> <p>14 First Street 225 NE First Street</p> <p>15 College/Bayside 225 NE 3 Street</p> <p>16 Riverwalk 88 SE 4 Street</p> <p>17 Fifth Street 35 SE 5 Street</p> <p>18 Eighth Street 59 SE 8 Street</p> <p>19 Tenth Street 1011 SE First Avenue</p> <p>20 Brickell 1001 SW First Avenue</p> <p>21 Financial District 50 SE 14 Street</p> <p>22 Stephen P. Clark Center 111 NW First Street – 4th and 5th floors</p> <p>23 Mover Maintenance 100 S.W. 1st Avenue</p>			

A. LICENSE REQUIREMENTS:

A. All Contractors must hold a current valid Certificate of Competency for Electrical Contractor, as required by the Florida Building Code, for the types of Work covered by the Contract at the time of RPQ submission and maintain same throughout the duration of the project. The certificate(s) is to be issued by:

1. The State of Florida Construction Industry Licensing Board, pursuant to the provisions of Section 489.115 of the Florida Statute and registered with the Miami-Dade County, Building Department or,

2. The Dade County Construction Trades Qualifying Board, pursuant to the provisions of Section 10-3(a) of the County Code. Holders of Miami-Dade County Certificates of Competency must also hold Certificates of Registration issued by the State of Florida Construction Licensing Board, pursuant to the provisions of Section 489.115 or Section 489.117 of the Florida Statutes.

B. Proof of such Certificate(s) must be submitted at the time of initial response and maintained current throughout the contract period. The County may request proof of continued certification at any time during the contract period. Failure to provide such proof within five (5) working days from notification by the County shall result in the removal from the contract and the rejection of any current or future RPQ bid submissions.

Subsequent to the commencement of the Contract, Miami-Dade County may require specific qualifications based on a Project's scope of work. Such requirements will be included within the Request for Price Quotation.

B. EXPERIENCE REQUIREMENTS:

This project requires specialized equipment and license requirements to include a State of Florida Electrical Contractor. The project is considered a closed and interconnected system, which requires that the work be completed by the same Contractor.

The Contractor must be able to pull in a Master Permit. In addition, the Contractor is required to have a minimum of three years of experience with Electrical Power Systems in a Transit environment including Power Cables and Fiber Optic installation, termination and testing, equipment installation, testing and commissioning for revenue service; have previously worked on Electronic Signage and SCADA systems.

Additional Qualifications:

1. Electrical Contractor (Primary)
2. A minimum of 3 years of experience with commercial electrical and fiber optic Systems in a Transit environment including cabling, installation, testing and commissioning for revenue service.
3. Previously worked on Fiber Optic cable installations.
4. Work with a Test Plan to verify integration with the existing systems in all Metrorail stations and in the Stephen P. Clark Center,
5. Technical Certification 2.00- Mass Transit Systems.

C. INDEMNIFICATION AND INSURANCE REQUIREMENTS:

The Contractor shall furnish to Department of Transportation and Public Works, 111 NW 1 Street, Miami Florida 33128, Certificate(s) of Insurance which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

A. Worker's Compensation Insurance for all employees of the Contractor as required by Florida Statute 440.

B. Commercial General Liability Insurance in an amount not less than \$1,000,000 per occurrence, and \$2,000,000 in the aggregate, not to exclude Products and Completed Operations. Miami-Dade County must be shown as an additional insured with respect to this coverage.

C. Automobile Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the work, in an amount not less than \$1,000,000 combined single limit per occurrence for bodily injury and property damage.

D. Umbrella Liability Insurance in an amount not less than \$3,000,000 per occurrence, and \$3,000,000 in the aggregate.

a. If Excess Liability is provided must be follow form to coverages B and C.

All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The company must be rated no less than "A-" as to management, and no less than "Class VII" as to financial strength, by Best's Insurance Guide, published by A.M. Best Company, Oldwick, New Jersey, or its equivalent, subject to the approval of the County Risk Management Division.

or

The company must hold a valid Florida Certificate of Authority as shown in the latest "List of All Insurance Companies Authorized or Approved to Do Business in Florida" issued by the State of Florida Department of Financial Services.

Miami-Dade County reserves the right, upon reasonable notice, to request and examine the policies of insurance (including but not limited to policies, binders, amendments, exclusions or riders, etc.)

NOTE: CERTIFICATE HOLDER MUST READ:

MIAMI-DADE COUNTY
111 NW 1st STREET
SUITE 2340
MIAMI, FL 33128

D. BID DOCUMENTS:

Bidding documents may be purchased from the Department of Transportation and Public Works, Capital Improvements Division, 111 NW 1st Street, 14th Floor, Miami, Florida 33128 for a non-refundable fee of one hundred twenty-five dollars (\$125.00) per each complete set of documents. Payment shall be in the form of a company check, cashier's check, or money order payable to the "Department of Transportation and Public Works." Bid Documents can also be downloaded for free at the following link: <https://www8.miamidade.gov/Apps/ISD/DPMWW/SolicitationList.aspx>, and the project number TP-0000018108.

E. ADDENDUMS - RFI'S:

All RFI requests should be e-mailed to Marco.Movilla@miamidade.gov while copying the Clerk of the Board (clerkbcc@miamidade.gov).

The Department of Transportation and Public Works has made changes regarding how addendums and requests for information (RFI) will be sent to document holders. Be advised that Solicitation Documents, Addendums, RFI's, and the document holders list (bidder's list) are now available to view online at the following web address:

<https://www.miamidade.gov/apps/isd/StratProc/Home/CurrentSolicitations>

Therefore, during the advertising period, the Department will not be sending these documents via certified mail. All document holders must provide an e-mail address. The Department will only be sending addendums and RFI's by e-mail and posting online at the aforementioned link. The bidders list will be updated every Friday during the advertising phase of the contract. Please be aware that acknowledgment of receipt of all addendums and RFI's remain a requirement when submitting bids.

F. VENDOR REGISTRATION:

Due to the new Vendor Registration procedures of the Internal Services Department, Procurement management Division, updated definitions along with the "Affirmation of Vendor Affidavits" has been added to the Bid Submittal Package. The successful bidder must be registered under this new procedure prior to the award.

G. PRE-BID MEETING AND SITE VISIT MEETING:

Pre-Bid Meetings and Site Visits will be held on Wednesday & Thursday, 10:00 A.M., February 12th & 13th, 2025, respectively, and it will be located at:

On Wednesday, February 12th at 10:00 am: To meet at:
Pre-Bid Meeting & Site Visit.

1. Brickell Station, 1001 SW First Avenue, then

Then, once we've finished holding the Pre-Bid Meeting @ Brickell Station, then, we would immediately proceed, for Site Visit's purposes to:

2. Fifth Street Station, 35 SE 5 Street, then

3. Bayfront Park, 150 Biscayne Boulevard and lastly

4. Miami Avenue Station, 90 South Miami Avenue.

On Thursday, February 13th at 10:00 am: To meet at:
Site Visits Only:

First location to meet at:

1. School Board Station, 50 NE 15 Street, then

2. Adrienne Arsht Center, 1455 Biscayne Boulevard and lastly

3. Museum Park Center, 1191 Biscayne Blvd.

Site Visits will be held immediately after the Pre-Bid meeting.

Additional site visit meetings may be scheduled based on the number of RSVPs received. If additional site visit meetings are scheduled, DTPW will notify the prospective bidders in writing.

H. BID SUBMITTAL DUE DATE:

Bid Submittal Time and Location: Wednesday, 2:00 P.M., March 12th, 2025, at 111 NW 1 Street, 17th Floor, Clerk of the Board Office.

Bid Opening immediately after Bid Submittal in the 18 Floor.

DISCLOSURE:

- Contractor shall indemnify and hold harmless the County and its officers, employees, agents and instrumentalities from any and all liability, losses or damages, including attorneys' fees and costs of defense, which the County or its officers, employees, agents or instrumentalities may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the performance of this Agreement by the Contractor or its employees, agents, servants, partners principals or subcontractors. Contractor shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind or nature in the name of the County, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon. Contractor expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by the Contractor shall in no way limit the responsibility to indemnify, keep and save harmless and defend the County or its officers, employees, agents and instrumentalities as herein provided.

The Contractor shall furnish to **Department of Transportation and Public Works, Capital Improvements Division, 111 NW 1st Street, Suite 1410, Miami, FL 33128 33128**, Certificate(s) of Insurance which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

- A.** Worker's Compensation Insurance for all employees of the Contractor as required by Florida Statute 440.
 - a. If applicable should include coverage required under the U.S. Longshoremen and Harbor Workers' Act (USL&H) and/or Jones Act for any activities on or about navigable water.
- B.** Commercial General Liability in an amount not less than \$1,000,000 per occurrence, and \$2,000,000 in the aggregate. Miami-Dade County must be shown as an additional insured with respect to this coverage.
- C.** Automobile Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the work, in an amount not less than \$1,000,000 combined single limit per occurrence for bodily injury and property damage.

*Under no circumstances are Contractors permitted on the Aviation Department, Aircraft Operating Airside (A.O.A) at Miami International Airport without increasing automobile coverage to \$5 million. Only vehicles owned or leased by a company will be authorized. \$1 million limit applies at all other airports.

VERIFICATION OF EMPLOYMENT ELIGIBILITY (E-VERIFY):

By entering the Contract, the Awarded Bidder becomes obligated to comply with the provisions of Section 448.095, Florida Statute, titled "Verification of Employment Eligibility." This includes but is not limited to utilization of the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of all newly hired employees by the Awarded Bidder effective, January 1, 2021, and requiring all Subcontractors to provide an affidavit attesting that the Subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Failure to comply may lead to termination of this Awarded Bidder, or if a Subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than twenty (20) calendar days after the date of termination. If this Contract is terminated for a violation of the statute by the Awarded Bidder, the Awarded Bidder may not be awarded a public contract for a period of one year after the date of termination, and the Awarded Bidder may be liable for any additional costs incurred by the County resulting from the termination of the Contract. Public and private employers must enroll in the E-Verify System (<http://www.uscis.gov/e-verify>) and retain the I-9 Forms for inspection.

MINIMUM QUALIFICATIONS & REQUIREMENTS



RPQ NO. TP-0000018108

LICENSE REQUIREMENTS:

A. All Contractors must hold a current valid Certificate of Competency for *Electrical Contractor*, as required by the Florida Building Code, for the types of Work covered by the Contract at the time of RPQ submission and maintain same throughout the duration of the project. The certificate(s) is to be issued by:

1. The State of Florida Construction Industry Licensing Board, pursuant to the provisions of Section 489.115 of the Florida Statute and registered with the Miami-Dade County, Building Department or,
2. The Dade County Construction Trades Qualifying Board, pursuant to the provisions of Section 10-3(a) of the County Code. Holders of Miami-Dade County Certificates of Competency must also hold Certificates of Registration issued by the State of Florida Construction Licensing Board, pursuant to the provisions of Section 489.115 or Section 489.117 of the Florida Statutes.

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Subsequent to the commencement of the Contract, Miami-Dade County may require specific qualifications based on a Project's scope of work. Such requirements will be included within the Request for Price Quotation.

CONTRACTOR MUST MEET THE BELOW REQUIREMENTS:

This project requires specialized equipment and license requirements to include a State of Florida Electrical Contractor. The project is considered a closed and interconnected system, which requires that the work be completed by the same Contractor.

The Contractor must be able to pull in a Master Permit. In addition, the Contractor is required to have a minimum of three years of experience with Electrical Power Systems in a Transit environment including Power Cables and Fiber Optic installation, termination and testing, equipment installation, testing and commissioning for revenue service; have previously worked on Electronic Signage and SCADA systems.

Additional Qualifications:

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2. A minimum of 3 years of experience with commercial electrical and fiber optic Systems in a Transit environment including cabling, installation, testing and commissioning for revenue service.
3. Previously worked on Fiber Optic cable installations.

4. Work with a Test Plan to verify integration with the existing systems in all Metrorail stations and in the Stephen P. Clark Center,
5. Technical Certification 2.00- Mass Transit Systems.

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

METROMOVER FIRE PANEL UPGRADE

PROJECT NO. CIP172

RPQ NO. TP-0000018108

FORMS FOR BIDDING

- Bid Form
- Attachment 5A
- Surety Bid Bond Form
- Acknowledgment Addenda (if applicable/Signed by Contractor)
- Certificate of Assurance (CoA) (Not Applicable for this Project)
- Bidder's Statement of Qualifications and Business References
- Scrutinized Company Affidavit
- Non-Collusion Affidavit
- Firm's Responsibility Combined Affidavit
- Responsible Contractor Affidavit (Form RTFE 1)
- Contractor's Due Diligence Affidavit
- Fair Wage Affidavit
- E-Verify Affidavit
- DPM Requirement - Affirmation of Vendor Affidavits
- Financial Documentation
- Job Clearinghouse Form
- Fair Subcontracting Practices

All bids must be received by the due date and time. The County will not consider bids received after the due date and time.

Bids are to be submitted sealed with all necessary affidavits and supporting documentation attached. Bids are to be delivered to the Clerk of the Board at 111 NW 1st Street, 17th Floor, Miami, Florida, 33128. **All envelopes must be stamped at the reception desk with the date and time. Failure to submit with your bid the forms stipulated above may render the bid non-responsive.**

BID FORM



RPQ NO. TP-0000018108

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

BID DOCUMENTS

METROMOVER FIRE PANEL UPGRADE

PROJECT NO. CIP172

RPQ NO. TP-0000018108

To: Miami-Dade County
Department of Transportation and Public Works
Miami, Florida

Bid Opening Date: _____

Bid Opening Time: _____

Local Time: _____

Gentlemen:

We _____

Bidder's Name

have received, have examined and are familiar with the Contract Documents bearing the title **METROMOVER FIRE PANEL UPGRADE- RPQ NO. TP-0000018108**, the forms for the Submittal of Bids and have included the cost of their provisions, in our Bid. We have examined, are familiar with, and do accept the conditions of the Work site and other conditions affecting the Work.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Failure to acknowledge receipt of all addenda may cause the bid to be considered not responsive to the invitation, which would require rejection of the bid.

RPQ No.: TP-0000018108

METROMOVER FIRE PANEL UPGRADE

PROJECT No.: CIP172

BID FORM

IF THIS CONTRACT IS ACCEPTED, THE BIDDER AGREES TO COMPLETE ALL WORK UNDER THIS CONTRACT *WITHIN 914 CALENDAR DAYS* AFTER THE EFFECTIVE DATE OF NOTICE TO PROCEED. **PRICING SHALL BE INCLUSIVE OF ALL REQUIREMENTS TO COMPLETE THE SCOPE OF WORK AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.**

***** TO BE COMPLETED BY BIDDER AT BID SUBMISSION *****

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	General Requirements	LS	1		
2	Produce required documents in accordance with local codes and regulations to produce required permits. The cost for drawings and permits shall be included in this pay item. Systems drawings and required specifications will be submitted to the Miami-Dade Building Department (division) for approval in accordance with the Summary of Work and Division 26	LS	1		
3	Metromover Station project location for FIRE ALARM PANEL installations, School Board	LS	1		
4	Metromover Station project location for FIRE ALARM PANEL installations, Adrienne Arsht Center	LS	1		
5	Metromover Station project location for FIRE ALARM PANEL installations, Museum Park	LS	1		
6	Metromover Station project location for FIRE ALARM PANEL installations, Eleventh Street	LS	1		
7	Metromover Station project location for FIRE ALARM PANEL installations, Park West	LS	1		
8	Metromover Station project location for FIRE ALARM PANEL installations, Freedom Tower *(See Note 1, Page 8, Technical Specifications)	LS	1		
9	Metromover Station project location for FIRE ALARM PANEL installations, College North	LS	1		
10	Metromover Station project location for FIRE ALARM PANEL installations, Wilkie D. Ferguson, Jr.	LS	1		
11	Metromover Station project location for FIRE ALARM PANEL installations, Miami Avenue	LS	1		
12	Metromover Station project location for FIRE ALARM PANEL installations, Third Street	LS	1		

13	Metromover Station project location for FIRE ALARM PANEL installations, Knight Center	LS	1		
14	Metromover Station project location for FIRE ALARM PANEL installations, Bayfront Park	LS	1		
15	Metromover Station project location for FIRE ALARM PANEL installations, Dupont Plaza	LS	1		
16	Metromover Station project location for FIRE ALARM PANEL installations, First Street	LS	1		
17	Metromover Station project location for FIRE ALARM PANEL installations, College/Bayside	LS	1		
18	Metromover Station project location for FIRE ALARM PANEL installations, Riverwalk	LS	1		
19	Metromover Station project location for FIRE ALARM PANEL installations, Fifth Street	LS	1		
20	Metromover Station project location for FIRE ALARM PANEL installations, Eighth Street *(See Note 1, Page 8, Technical Specifications)	LS	1		
21	Metromover Station project location for FIRE ALARM PANEL installations, Tenth Street	LS	1		
22	Metromover Station project location for FIRE ALARM PANEL installations, Brickell	LS	1		
23	Metromover Station project location for FIRE ALARM PANEL installations, Financial District	LS	1		
24	Metromover Station project location for FIRE ALARM PANEL installations, Government Center	LS	1		
25	Mover Maintenance	LS	1		

TOTAL BASE BID \$ _____

(Instructions: The spaces provided in the Total Price Column(s) for the Bid Line Item(s) must be filled in and no spaces left blank. The sum of the Bid Line Items must represent your Base Bid Total. Failure to submit a complete and accurate Bid Form may result in your bid found non-responsive.)

A TEN PERCENT (10%) CONTINGENCY ALLOWANCE AND OTHER DEDICATED ALLOWANCES AS REQUIRED WILL BE ADDED TO THE BASE BID TOTAL AS STIPULATED IN THE SPECIAL PROVISIONS.

LICENSE NO. _____ BIDDER'S NAME _____

BIDDER'S TELEPHONE NUMBER _____ BIDDER'S ADDRESS _____

BIDDER'S FEIN NUMBER _____ BIDDER'S SIGNATURE _____

THE BIDDER UNDERSTANDS AND AGREES THAT THE BASE BID TOTAL AND ALL APPLICABLE ALLOWANCES ARE INCLUSIVE OF ALL WORK NECESSARY TO COMPLETE THE SCOPE OF WORK AS DESCRIBED IN THE CONTRACT DOCUMENTS, AND IF THIS PROPOSAL IS ACCEPTED, THE BIDDER AGREES TO ENTER INTO AND EXECUTE THE CONTRACT WITH THE NECESSARY BOND AND ACCEPT THE ABOVE BASE BID, INCLUSIVE OF ALL ALLOWANCES, AS FULL COMPENSATION FOR THE WORK PERFORMED UNDER THIS CONTRACT.

***YOU ARE REQUIRED TO TRANSFER TOTALS TO FORM APPENDIX 5A. FAILURE TO COMPLY WITH THIS REQUEST MAY RENDER THE PROPOSAL NON-RESPONSIVE.**

LOCAL PREFERENCE CERTIFICATION: For the purpose of this certification, a “local business” is a business located within the limits of Miami-Dade County that conforms with the provisions of Section 3.0 of the Special Provisions of this solicitation and contributes to the economic development of the community in a verifiable and measurable way. This may include, but not be limited to, the retention and expansion of employment opportunities and the support and increase to the County’s tax base.

☐ Place a check mark here only if affirming bidder meets requirements for Local Preference. Failure to complete this certification at this time (by checking the box above) may render the vendor ineligible for Local Preference.

LOCALLY-HEADQUARTERED BUSINESS CERTIFICATION: For the purpose of this certification, a “locally-headquartered business” is a Local business whose “principal place of business” is in Miami-Dade County as defined in Section 3.0 of the Special Provisions of this solicitation.

☐ Place a check mark here only if affirming bidder meets requirements for the Locally-Headquartered Preference (LHP). Failure to complete this certification at this time (by checking the box above) may render the vendor ineligible for the LHP. The address of the locally-headquartered office is _____

LOCAL CERTIFIED WARTIME VETERAN BUSINESS ENTERPRISE CERTIFICATION: A Local Certified Service-Warime Veteran Business Enterprise is a firm that is (a) a local business pursuant to Section 2-8.5 of the Code of Miami-Dade County and (b) prior to bid submission is certified by the State of Florida Department of Management Services as a service-warime veteran business enterprise pursuant to Section 295.187 of the Florida Statutes.

☐ Place a check mark here only if affirming bidder is a Local Certified Service-Warime Veteran Business Enterprise. A copy of the certification must be submitted with this proposal.

A. WAIVER OF CONFIDENTIALITY AND TRADE SECRET TREATMENT OF BID:

The Bidder acknowledges and agrees that the submittal of the Bid is governed by Florida's Government in the Sunshine Laws and Public Records Laws, as set forth in Florida Statutes Section 286.011 and Florida Statutes Chapter 119. As such, all material submitted as part of, or in support of, the Bid will be available for public inspection after opening of bids and may be considered by the County in public.

By submitting a bid pursuant to this solicitation, Bidder agrees that all such materials may be considered to be public records. The Bidder shall not submit any information in response to this solicitation which the Bidder considers to be a trade secret, proprietary or confidential. In the event that the Bid contains a claim that all or a portion of the Bid submitted contains confidential, proprietary or trade secret information, the Bidder, **by signing below**, knowingly and expressly **waives** all claims made that the Bid, or any part thereof no matter how indicated, is confidential, proprietary or a trade secret and authorizes the County to release such information to the public for any reason.

B. CONVICTION DISCLOSURE:

Pursuant to Section 2-8.6 of the Code of Miami-Dade County, any individual, corporation, partnership, joint venture or other legal entity having an officer, director, or executive who has been convicted of a felony during the past ten (10) years shall disclose this information at the time of bid submittal.

☐ Place a check mark here only if the Bidder has such conviction to disclose to comply with this requirement.

D. C. CERTIFICATE OF COMPETENCY NO _____ BIDDER'S NAME _____

BIDDER'S TELEPHONE NUMBER _____ BIDDER'S ADDRESS _____

BIDDER'S SIGNATURE: _____ DATE: _____

ATTACHMENT 5A



RPQ NO. TP-0000018108

Department of
Transportation and Public
Works
Capital Improvements Division
111 NW 1st Street, Suite 1410
Miami, FL 33128, 33128



MIAMI-DADE COUNTY, FLORIDA
REQUEST FOR PRICE QUOTATION (RPQ)
Contract No: MCC 7360 Plan
RPQ No: TP-0000018108

RPQ BID FORM – ATTACHMENT 5A

RPQ Project Name: Metromover Fire Panel Upgrade

Price Proposal (Cost to Perform the work **must** be stated here. State 'No Bid' if not submitting a price proposal)

\$

Bidder's Company Name: _____

Company Address: _____

City: _____ **State:** _____ **Zip:** _____

Telephone No: _____ **Fax No:** _____ **E-Mail:** _____

THE EXECUTION OF THIS FORM CONSTITUTES THE UNEQUIVOCAL OFFER OF PROPOSER TO BE BOUND BY THE TERMS OF ITS PROPOSAL. FAILURE TO SIGN THIS SOLICITATION WHERE INDICATED BELOW BY AN AUTHORIZED REPRESENTATIVE SHALL RENDER THE PROPOSAL NON-RESPONSIVE. THE COUNTY MAY, HOWEVER, IN ITS SOLE DISCRETION, ACCEPT ANY PROPOSAL THAT INCLUDES AN EXECUTED DOCUMENT WHICH UNEQUIVOCALLY BINDS THE PROPOSER TO THE TERMS OF ITS OFFER.

Name of Person Submitting Quote (Print): _____

Number of Addendums received: _____ (if none' write "None")

Signature: _____ **Date:** _____

Note: Quotes must be submitted on this form. Quote envelope must state RPQ Number, date and time due and the Bidder's Name. Use of any other form for submission of the price quotation shall result in the rejection of the price quotation. Late bids will not be opened. *Low bidder will be notified, in the Recommendation of Award, of the requirements to submit current copies of insurance certificates in accordance with the Contract Documents. By signature, the CONTRACTOR agrees to be bound by the terms set forth in the MCC 7360 Plan.*

SURETY BID BOND FORM



RPQ NO. TP-0000018108

SURETY BID BOND

STATE OF _____) ss.:
COUNTY OF _____)

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto Miami-Dade County in the penal sum of Dollars (\$ _____) lawful money of the United States, which sum represents five percent of the Base Bid Total, and for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying Bid, dated _____ 20 ____ for **RPQ NO. TP-0000018108** entitled, **METROMOVER FIRE PANEL UPGRADE.**

NOW THEREFORE, if the Principal shall not withdraw said Bid within 180 days after the Bid opening date, shall submit complete information required, and shall within 10 days after the prescribed forms are presented to him for signature, enter into a written Contract with Miami-Dade County, in accordance with the Bid as accepted, and give a Surety Performance and Payment Bond with good and sufficient surety or sureties and provide the necessary Insurance Certificates, as may be required, for the faithful performance and proper fulfillment of such Contract and for the prompt payment of all persons furnishing labor or materials in connection therewith, or in the event of withdrawal of said Bid within the period specified, or in the event of the failure to enter into such Contract and give such Bond within the time specified, if the Principal shall pay Miami-Dade County the difference between the amounts specified in said Bid and the amount for which Miami-Dade County may procure the required work and supplies, provided the latter amount be in excess of the former, then the above obligations shall be void and of no effect; otherwise, to remain in full force and virtue.

IN WITNESS WHEREOF, the above bounden parties have caused this Bond to be executed by their appropriate officials as of the _____ day of _____, 20__.

(CORPORATE SEAL)

(printed name of corporation)

(printed state of incorporation)

By: _____
(signature of president or vice-president & capacity)

(printed name of president or vice- president & capacity)

By: _____
(signature of secretary or assistant secretary & capacity)

(printed name of secretary or assistant secretary & capacity)

(Business address of corporation)

ACKNOWLEDGEMENT:

STATE OF _____) ss.:

COUNTY OF _____)

Before me personally appeared _____, as President to me well known or has presented _____ as identification and
(Type of identification)

_____ as Secretary, to me well known, or has presented _____ as identification and known to me to be individuals described
(Type of identification)

in and who executed the foregoing instrument as _____ President and _____ Secretary of the above named _____ a Corporation, and severally acknowledged that they executed such instrument as such _____ President and _____ Secretary, respectively, of said corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that it was affixed to said instrument by due and regular corporate authority, and said instrument is the free act and deed of said corporation.

SUBSCRIBED AND SWORN TO (or affirmed) before me on _____
(Date)
by _____. He / She is personally known to me or has presented
(Affiant)
_____ as identification.
(Type of Identification)

(Signature of Notary) (Serial Number)

(Print or Stamp Name of Notary) (Expiration Date)

Notary Public _____
(State) Notary Seal:

=====

SURETY:

(CORPORATE SEAL)

(printed name of Surety)

(address of Surety)

By: _____
(Attorney-in-Fact)

By: _____
(resident Florida agent)

(printed name of Attorney-in-Fact)

(printed name of agent)

Note: Copy of Resident Agent's current license as issued by State of Florida Insurance Commissioner must be attached.

(Power of Attorney must be attached)

ACKNOWLEDGMENT ADDENDA
(IF APPLICABLE/ SIGNED BY CONTRACTOR)



RPQ NO. TP-0000018108

MIAMI-DADE COUNTY
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS (DTPW)

PROJECT: METROMOVER FIRE PANEL UPGRADE

PROJECT NO.: CIP172

RPQ NO: TP-0000018108

ACKNOWLEDGEMENT OF ADDENDA

(Must be completed and submitted with required solicitation documents)

Instructions: Complete Part I or Part II, as applicable.

PART I: Listed below are the dates of issue for each Addendum received in connection with this solicitation.

Addendum #1, Dated _____,	202__
Addendum #2, Dated _____,	202__
Addendum #3, Dated _____,	202__
Addendum #4, Dated _____,	202__
Addendum #5, Dated _____,	202__
Addendum #6, Dated _____,	202__
Addendum #7, Dated _____,	202__
Addendum #8, Dated _____,	202__
Addendum #9, Dated _____,	202__
Addendum #10, Dated _____,	202__

PART II:

____ No Addendum was received in connection with this solicitation.

Authorized Signature: _____ Date: _____

Print Name: _____ Title: _____

Firm Name: _____

CERTIFICATE OF ASSURANCE (CoA)
(Not Applicable for this Project)



RPQ NO. TP-0000018108

BIDDER'S STATEMENT OF QUALIFICATIONS AND
BUSINESS REFERENCES



RPQ NO. TP-0000018108

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS
TRANSIT ENGINEERING

BIDDER'S STATEMENT OF QUALIFICATIONS AND BUSINESS REFERENCES

This statement is an integral part of the Contractor's Bid, and must be completed as directed in the Instructions to Bidders. All references and information shall be current and traceable. If Bidder is a joint venture, a separate form must be prepared by each venturer (extra forms are available from the Engineer).

NAME OF BIDDER _____

PRINCIPAL OFFICE _____

(Street Address or P. O. Number)

(City)

(State)

(Zip Code)

(Area Code) (Telephone Number)

1. Are you registered to do business in Florida? _____ Registration No. _____ Classification _____
2. Do you hold a certificate of competency issued by Miami-Dade County, Florida? _____ Classification _____
3. Are you an individual _____, a partnership _____, a corporation _____ or a joint venture _____ (Check as applicable).

If a partnership, list names and addresses of partners; if a corporation, list names of officers and directors and State of incorporation; if a joint venture, list names and addresses of venturers and, if any venturer is a corporation, partnership or joint venture, list the same information for each such corporation, partnership and joint venturer.

4. How many years has your organization been in business as a contractor under your present business name? _____ years.

5. How many years of experience has your organization had in construction work similar to the work of this Contract?

(a) As a general contractor? _____

(b) As a subcontractor? _____

6. List all the projects which your organization has completed, which demonstrate qualifications to perform the work of this Contract. (For joint venture work show the sponsoring individual or company.)

YEAR	CONTRACT PRICE	KIND OF CONSTRUCTION	LOCATION OF WORK	NAME, ADDRESS, AND E-MAIL OF ENGINEER OR ARCHITECT

7. Have you or your organization, or any officer or partner thereof, failed to complete a Contract? _____

If so, give details _____

8. In what other lines of business are you financially interested?

9. Name the persons with whom you have been associated in business as partners or business associates during the last five years.

10. Give information about the construction experience of the principal individuals of your present organization.

11. List work, which you have currently underway.

Contract Price	Type of Construction	Location of Work	Percent Completed	Expected Completion Date	Name & Address of Engineer or Architect

12. List engineers, architects and owners, including public bodies, for whom you have done work:

NAME	ADDRESS	BUSINESS	TELEPHONE

13. Reference is hereby made to the following financial institutions as to the financial responsibility of the Bidder:

Name of Bank: _____

Street Address: _____

City and State: _____ Telephone: _____

Officer Familiar with Bidder's Account: _____

Name of Bank: _____

Street Address: _____

City and State: _____ Telephone: _____

Officer Familiar with Bidder's Account: _____

Name of Bank: _____

Street Address: _____

City and State: _____ Telephone: _____

Officer Familiar with Bidder's Account: _____

14. Reference is hereby made to the following surety company or companies as to the financial responsibility and general reliability of Bidder:

Name of Surety Company: _____

Name of Local Agent (if different): _____

Local Street Address: _____

City and State: _____ Telephone: _____

Person Familiar with Bidder's Account: _____

Name of Surety Company: _____

Name of Local Agent (if different): _____

Local Street Address: _____

City and State: _____ Telephone: _____

Person Familiar with Bidder's Account: _____

15. Is any litigation pending against your organization? _____

If so, give details _____

16. Is any litigation presently being prosecuted by your organization or on behalf of your organization? _____

If so, give details

The undersigned certifies that he is legally authorized by the Bidder to make the statements and representations contained in this document, and represents and warrants that the foregoing information is true and accurate to the best of his knowledge, and intends that the Miami-Dade County, DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS Agency, rely thereon in awarding the Contract.

BIDDER'S NAME: _____

DATE OF SIGNING: _____

SIGNATURE: _____ By: _____

TITLE: _____

SCRUTINIZED COMPANIES

AFFIDAVIT

By executing the Scrutinized Companies with Activities in Sudan or Iran Petroleum Energy Sector Lists Affidavit through a duly authorized representative, the bidder certifies that the bidder is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, as those terms are used and defined in sections 287.135 and 215.473 of the Florida Statutes. In the event that the bidder is unable to provide such certification, the bidder shall execute the Affidavit through a duly authorized representative. In such event, the bidder shall furnish together with its bid a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. The bidder agrees to cooperate fully with the County in any investigation undertaken by the County to determine whether the claimed exception would be applicable. The County shall have the right to terminate any Contract resulting from this solicitation for default if the bidder is found to have submitted a false certification or to have been, or is subsequently during the term of the Contract, placed on the Scrutinized Companies for Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List.



AFFIDAVIT
SCRUTINIZED COMPANIES WITH ACTIVITIES IN SUDAN
OR IRAN PETROLEUM ENERGY SECTOR LISTS
FLORIDA STATUTES 215.473

Pursuant to 287.135, F.S., the { _____ } (“Entity”) must disclose, if the Entity or any of its officers, directors, or executives are doing certain types of business in or with Sudan or Iran.

Indicate below if the above named Entity, as of the date of submission:

_____ has not engaged in commerce in any form in Sudan or Iran, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing, or operating equipment, facilities, personnel, products, services, personal property, real property, or any other apparatus of business or commerce.

_____ has engaged in commerce with Sudan or Iran, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing, or operating equipment, facilities, personnel, products, services, personal property, real property, or any other apparatus of business or commerce.

(CORPORATE SEAL)

CONTRACTOR

(Legal Name of Corporation)

ATTEST:

Secretary _____
(Signature and Seal)

By: _____
Contractor – Signature

(Type Name & Title)

Name: _____

(Type Name & Title)

NON-COLLUSION AFFIDAVIT



RPQ NO. TP-0000018108



NON-COLLUSION AFFIDAVIT

(In accordance with [Sections 2-8.1.1](#) and [10-33.02.1](#) of the Code of Miami-Dade County)

I, the undersigned, am over 18 years of age, have personal knowledge of the facts stated in the Non-Collusion Affidavit (*this Affidavit*) and I am an owner, officer, director, principal shareholder and/or otherwise authorized to bind the Bidder/Proposer of this solicitation.

- A. I have reviewed the list of respondents attached to this Affidavit. I state that the Bidder/Proposer of this competitive solicitation (check one):

☐ is **not related** to any of the other respondents submitting a Bid/Proposal in the competitive solicitation.

☐ is **related** to the following respondents who submitted a Bid/Proposal in the competitive solicitation, which are identified and listed below:

- B. I state that the Bidder/Proposer of this competitive solicitation:

1. has prepared this Bid/Proposal independently without consultation, communication, agreement or arrangement with any other Bidder/Proposer or competitor for the purpose of restricting competition;
2. has submitted the Bid/Proposal in its own behalf, and not in the interest or on behalf of any person not therein named;
3. has not, directly or indirectly, induced or solicited any other Bidder/Proposer to put in a sham proposal, or any other person, firm, or corporation to refrain from proposing;
4. has not in any manner sought by collusion to secure an advantage over any other Bidder/Proposer.

Note: Any person or entity that fails to submit this executed Affidavit shall be ineligible for contract award. In accordance with Section 2-8.1.1 of the Code of Miami-Dade County, where two or more related parties, as defined herein, each submit a Bid for any contract, such Bids shall be presumed to be collusive. The foregoing presumption may be rebutted by the presentation of evidence as to the extent of ownership, control and management of such related parties in preparation and submittal of such Bids. **Related parties** shall mean the Bidder/Proposer; the principals, corporate officers, and managers of a Bidder/Proposer; or the spouse, domestic partner, parents, stepparents, siblings, children or stepchildren of a Bidder/Proposer or the principals, corporate officers and managers thereof which have a direct or indirect ownership interest in another Bidder/Proposer for the same contract or in which a parent company or the principals thereof of one Bidder/Proposer have a direct or indirect ownership interest in another Bidder/Proposer for the same contract. Bid/Proposal found to be collusive shall be rejected. Bidder/Proposer who has been found to have engaged in collusion may be considered non-responsible, and may be suspended or debarred, and any contract resulting from collusive bidding may be terminated for default.

Written Declaration: Pursuant to §92.525, Florida Statutes, under penalties of perjury, I declare that I have read the foregoing Affidavit and that the facts stated in it are true, accurate, and complete.

Solicitation No.: _____ Solicitation Title: _____

By: _____
Signature of Affiant

Date: _____ 20 ____

Printed Name of Affiant and Title

____/____/____ - ____/____/____/____/____
Federal Employer Identification Number

Printed Name of Bidder/Proposer

Address of Bidder/Proposer

FIRM'S RESPONSIBILITY COMBINED AFFIDAVIT



RPQ NO. TP-0000018108

STATE OF FLORIDA)
) SS:
COUNTY OF MIAMI-DADE)

The undersigned, being first duly sworn, states as follows:

GENERAL

1. I am a duly authorized representative of the Firm submitting a bid, proposal or other document to Miami-Dade County with the intention of being awarded a contract (referred to in this affidavit as the "Respondent").
2. This Affidavit is made of my personal knowledge. I understand that Miami-Dade County will rely on the representations made in this affidavit in determining my eligibility and responsibility to enter into a contract with Miami-Dade County. By executing this affidavit, the Respondent agrees to provide to Miami-Dade County such documentation or other proof as Miami-Dade County may require verifying the accuracy and completeness of any of the representatives.
3. The Respondent is duly authorized to submit this bid or proposal, and if awarded the contract, to enter into the contract and perform the services or supply the goods contemplated in the contract.

OWNERSHIP DISCLOSURE

4. That in compliance with Section 2-8.1(d)(1) of the Miami Dade County Code, if the contract or business transaction is with a corporation, the full legal name and business address shall be provided for each officer and director and each stockholder who holds directly or indirectly five percent (5%) or more of the corporation's stock. If the contract or business transaction is with a trust, the full legal name and address shall be provided for each trustee and each beneficiary. All such names and addresses are (Post Office addresses are not acceptable). The full legal names and business address of any other individual (other than subcontractors, materialmen, suppliers, laborers, or lenders) that have, or will have, any interest (legal, equitable beneficial or otherwise) in the contract or business transaction with Miami-Dade County are (Post Office addresses are not acceptable). This information shall be supplied on the attached Ownership Disclosure form (Attachment "A") and signed by the Respondent.

Combined Affidavit Initial

EMPLOYMENT DISCLOSURE

5. The following information and attachments are provided and are in compliance with all items in County Ordinance No. 90-133, amending Section 2.8-1; Subsection (d) (2):

- a. Does your firm have a collective bargaining agreement with its employees?
☐ Yes ☐ No
- b. Does your firm provide paid health care benefits for its employees?
☐ Yes ☐ No
- c. Provide a current breakdown (number of persons) of your firm's work force and ownership as to race, national origin and gender:

White:	_____	Males:	_____	Females:	_____
Asian:	_____	Males:	_____	Females:	_____
Black:	_____	Males:	_____	Females:	_____
American					
Indian:	_____	Males:	_____	Females:	_____
Hispanics:	_____	Males:	_____	Females:	_____
Aleut					
(Eskimo):	_____	Males:	_____	Females:	_____
_____:	_____	Males:	_____	Females:	_____

EMPLOYMENT DRUG FREE WORKPLACE

6. The Respondent provides a drug-free workplace in full compliance with Section 2-8.1.2 of the Code of Miami-Dade County.

EMPLOYMENT FAMILY LEAVE

7. That in compliance with Ordinance No. 91-142 of the Code of Miami-Dade County, Florida, the following information is provided and is in compliance with all items in the aforementioned Ordinance:

An employee who has worked for the above firm for at least one (1) year shall be entitled to ninety (90) days of family leave during any twenty-four (24) month period, for medical reasons, for the birth or adoption of a child, or for the care of a child, spouse or other close relative who has a serious health condition without risk of termination of employment or employer retaliation.

Combined Affidavit Initial

ARREARS WITH THE COUNTY

8. That in compliance with Ordinance No. 95-178 and Section 2-8.1(c) of the Code of Miami-Dade County, the Proposer has paid all delinquent and currently due fees or taxes, including but not limited to real estate and personal property taxes, registered in the name of Proposer and which are collected in the normal course by the Miami-Dade County Tax Collector, and that County issued parking tickets for vehicles registered in the name of the above proposer, and which are collected in the normal course by the Miami-Dade Clerk of the Circuit and County Courts, have been paid.

That in compliance with Ordinance No. 99-162 and Section 2-8.1 of the Code of Miami-Dade County, the Proposer is not in arrears in any payment under contract, promissory note or other loan document with Miami-Dade County, or any of its agencies or instrumentalities, including the Public Health Trust, either directly or indirectly through a firm, corporation, partnership or joint venture in which the individual or entity has a controlling financial interest as that term is defined in Section 2-11.1(b)(8) of the Code of Miami-Dade County.

CODE OF BUSINESS ETHICS

9. I, being duly sworn, hereby state and certify that this firm has adopted a Code of Business Ethics that is fully compliant with the requirements of Section 2-8.1(i) of the Code of Miami-Dade County as amended. I further acknowledge that failure to comply with the adopted Code of Business Ethics shall render any contract with Miami-Dade County voidable, and subject this firm to debarment from County work pursuant to Section 10-38 (h)(2) of the Code of Miami-Dade County as amended. I further acknowledge that failure to submit this affidavit shall render this firm ineligible for contract award.

NO CRIMINAL RECORD

10. The Respondent has not been convicted of a felony during the past ten (10) years, nor does it, as of the date of the bid or proposal submission, have an officer, director or executive who has been convicted of a felony during the past ten (10) years as defined in Section 2-8.6 of the Code of Miami-Dade County.

PUBLIC ENTITY CRIME

11. The respondent has not been convicted of a Public Entity crime as defined in Paragraph 287.133(1)(g) of the Florida Statutes. Violation of any State or Federal law with respect to the transaction of business with any public entity or with an agency or political subdivision of any State.

Combined Affidavit Initial

DEBARMENT AND SUSPENSION DISCLOSURE

- 12 . The Respondent, and its officers, principals, stockholders, subcontractors or its affiliates are not debarred or suspended from contracting with Miami-Dade County as regulated by Section 10-38 of the Miami Dade County Code.

NON -DISCRIMINATION BASED ON DISABILITY

- 13 . The Respondent is in compliance with and agrees to continue to comply with and assure any subcontractor, or third party contractor under this project complies with all applicable laws forbidding discrimination based on disability including, but not limited to those provisions pertaining to employment, provision of programs and services, transportation, communications. Access to facility, renovations and new construction as set forth in the Americans with Disabilities Act of 1990 (ADA), the Rehabilitation Act of 1973, the Federal Transit Act and the Fair Housing Act.

FAIR SUBCONTRACTING

- 14 . Consistent with Section 2-8.8 of the Code of Miami-Dade County, the Respondent has adopted subcontracting policies and procedures which (a) notifies the broadest number of local subcontractors of the opportunity to be awarded a subcontract; (b) invites local subcontractors to submit bids in a practical, expedient way; (c) provides local subcontractors access to information necessary to prepare and formulate a subcontracting bid; (d) allows local subcontractors to meet with appropriate personnel of the Respondent to discuss the Respondent's requirements; and (e) awards subcontracts based on full and complete consideration of all submitted proposals and in accordance with the Respondent's stated objectives.

RESPONSIBLE WAGE AND BENEFITS (IF APPLICABLE)

- 15 . If applicable, the Respondent is in full compliance with Section 2-11.16 of the Code of Miami-Dade County, and should he or she be awarded the contract, understands his or her obligation to pay the project minimum wage rates set forth in that Section and the labor provisions of the contract documents.

Combined Affidavit Initial

CLEARINGHOUSE AFFIDAVIT

16. That in compliance with Miami-Dade County Resolution Number R-1145-99, the Respondent agrees to comply with all requirements of the Clearinghouse Resolution and Job Request form for posting job opportunities. Making it a mandatory requirement for Respondents to post notice of job opportunities resulting from the construction of improvements on County property through the County's Clearinghouse process.

I STATE NOTHING FURTHER IN THIS AFFIDAVIT.

Signature: _____

Position/Title: _____

Name of Firm: _____

The foregoing was sworn and subscribed before me this _____ day of _____, _____ by _____, who is personally known to me or who has produced _____ as identification who being duly sworn, deposes and says that the above is true to the best of his knowledge, information and belief.

My Commission expires:

NOTARY PUBLIC
STATE OF FLORIDA

Residents First Training and Employment Program
Responsible Contractor/Subcontractor Affidavit Form
(RFTE 1)



RPQ NO. TP-0000018108

Residents First Training and Employment Program
Responsible Contractor/Subcontractor Affidavit Form (RFTE 1)
(Miami-Dade County Code Section 2-11.17)

In accordance with Section 2-11.17 of the Miami-Dade County Code, all contractors and subcontractors of any tier performing on a contract for (i) the construction, demolition, alteration and/or repair of public buildings or public works projects valued in excess of \$1,000,000 funded completely or partially by Miami-Dade County, or (ii) privately funded projects or leases valued in excess of \$1,000,000 for the construction, demolition, alteration or repair of buildings or improvements on County owned land, and which are subject to Section 2-11.16 of the Code of Miami-Dade County shall comply with the requirements of the Residents First Training and Employment Program.

If applicable, the undersigned ☐ Contractor / ☐ Subcontractor verifies that should they be awarded the contract, the undersigned understands their obligation to comply with the following:

- i. Prior to working on the project, all persons employed by the contractor / subcontractor to perform construction shall have completed, the OSHA 10 Hour Safety Training course established by the Occupational Safety & Health Administration of the United States Department of Labor. Such training does not need to be completed at the time of bidding but shall be completed prior to the date persons are employed on the project.
- ii. The contractor / subcontractor will make its best reasonable efforts to promote employment opportunities for local residents and seek to achieve a project goal of having fifty-one percent (51%) of all Construction Labor hours performed by Miami-Dade County residents. To verify workers' residency, firms shall require each worker to produce a valid driver's license or other form of government-issued identification.

Printed Name of Affiant Printed Title of Affiant Signature of Affiant

Name of Firm Date

Address of Firm State Zip Code

Notary Public Information

Notary Public – State of _____ County of _____

Subscribed and sworn to (or affirmed) before me this _____ day of, _____ 20____.

by _____ He or she is personally known to me ☐ or has produced identification ☐

Type of identification produced _____

Signature of Notary Public Serial Number

Print or Stamp of Notary Public Expiration Date Notary Public Seal

CONTRACTOR DUE DILIGENCE AFFIDAVIT

“The attention of the Contractor is hereby directed to the requirements of Resolution R-63-14 in that the award of this contract is conditioned on the Contractor providing the County, when required, with a “CONTRACTOR DUE DILIGENCE AFFIDAVIT”.



Miami-Dade County
Contractor Due Diligence Affidavit

Per Miami-Dade County Board of County Commissioners (Board) Resolution No. R-63-14, County Vendors and Contractors shall disclose the following as a condition of award for any contract that exceeds one million dollars (\$1,000,000) or that otherwise must be presented to the Board for approval:

- (1) Provide a list of all lawsuits in the five (5) years prior to bid or proposal submittal that have been filed against the firm, its directors, partners, principals and/or board members based on a breach of contract by the firm; include the case name, number and disposition;
- (2) Provide a list of any instances in the five (5) years prior to bid or proposal submittal where the firm has defaulted; include a brief description of the circumstances;
- (3) Provide a list of any instances in the five (5) years prior to bid or proposal submittal where the firm has been debarred or received a formal notice of non-compliance or non-performance, such as a notice to cure or a suspension from participating or bidding for contracts, whether related to Miami-Dade County or not.

All of the above information shall be attached to the executed affidavit and submitted to the Procurement Officer overseeing this solicitation/ contract/purchase order. The Vendor/Contractor attests to providing all of the above information, if applicable, to the County.

Written Declaration: Pursuant to Florida Statutes s. 92.525, under penalties of perjury, I declare that I have read the foregoing Contractor Due Diligence Affidavit and that the facts stated in it (attached to it) are true.

Contract No. : **Federal Employer Identification Number (FEIN):**

Contract Title:

<input type="text"/> Printed Name of Affiant	<input type="text"/> Printed Title of Affiant	<input type="text"/> Signature of Affiant
<input type="text"/> Name of Firm	<input type="text"/> Date	
<input type="text"/> Address of Firm	<input type="text"/> State	<input type="text"/> Zip Code

Notary Public Information

Notary Public – State of _____ County of _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____ by _____
_____ He or she is personally known to me _____ or has produced identification

_____ Signature of Notary Public	_____ Serial Number
_____ Print or Stamp of Notary Public	_____ Expiration Date
_____ Notary Public Seal	

FAIR WAGE AFFIDAVIT



RPQ NO. TP-0000018108

FAIR WAGE AFFIDAVIT

Before me, the undersigned authority appeared _____ the
(PRINT NAME)

_____ of _____,
(PRINT TITLE) (PRINT NAME OF BIDDER OR PROPOSER)

who attests that _____ shall pay workers on
(PRINT NAME OF BIDDER OR PROPOSER)

the project minimum wage rates in accordance with Responsible Wages and Benefits, Section 2-11.16 of the Code of Miami-Dade County and the Labor Provisions of the contract documents.

State of FLORIDA

County of Miami-Dade

Sworn to (or affirmed) and subscribed before me this _____ day of _____, 202_____.

_____ Personally, known or _____ produced identification.

(Signature of Notary Public - State of Florida)

(Print, Type, or Stamp Commissioned Name of Notary Public)

Type of identification produced: _____

E-VERIFY AFFIDAVIT



RPQ NO. TP-0000018108

Miami-Dade County

E-Verify Affidavit

Executive Order 11-02 requires all Florida State agencies under the direction of the Governor to use E-Verify to confirm the employment eligibility of all current and prospective employees (including subcontractors) assigned to perform work pursuant to a state agency contract. Executive Order 11-116 clarifies that the requirement for state contractors to use E-Verify applies to "all contracts for the provision of goods and services to the state in excess of nominal value."

In accordance with the State requirement, Miami-Dade County requires all vendors doing business with the County who are awarded state-funded contracts to verify employee eligibility using the E-verify system. It is the responsibility of the awarded vendor to insure compliance with E-verify requirements at all times.

To enroll in E-Verify, employers should visit the E-Verify website (<http://www.uscis.gov/e-verify>) and follow the instructions. The employer must, as usual, retain the I-9 Forms for inspection.

By affixing your signature below you hereby affirm that you have complied with E-Verify requirements.

Federal Employer Identification Number (FEIN): _____

_____ Printed Name of Affiant	_____ Printed Title of Affiant	_____ Signature of Affiant
_____ Name of Firm		_____ Date
_____ Address of Firm	_____ State	_____ Zip Code

Notary Public Information

Notary Public -- State of _____ County of _____

Subscribed and sworn to (or affirmed) before me this _____ day of, _____ 20____

by _____ He or she is personally known to me ☐ or has produced identification

Type of identification produced _____

Signature of Notary Public

Serial Number _____

Print or Stamp of Notary Public

Expiration Date

Notary Public Seal

DEPARTMENT OF PROCUREMENT MANAGEMENT
(DPM) AFFIRMATION OF VENDOR AFFIDAVITS

Bidders are required to affirm that all information submitted with the Vendor Registration Package is current, complete and accurate as a condition of award, by completing the provided Affirmation of Vendor Affidavit Form.





New Vendor Registration and Bid/Proposal Contract Language

1.1. DEFINITIONS FOR VENDOR REGISTRATION

Bid – shall refer to any offer(s) submitted in response to this solicitation.

Bidder – shall refer to anyone submitting a Bid in response to this solicitation.

Bid Solicitation – shall mean this solicitation documentation, including any and all addenda.

Bid Submittal Form – defines the requirement of items to be purchased, and must be completed and submitted with Bid. The Bidder should indicate its name in the appropriate space on each page.

County – shall refer to Miami-Dade County, Florida

DPM – shall refer to Miami-Dade County's Department of Procurement Management.

Enrolled Vendor – shall refer to a firm that has completed the necessary documentation in order to receive Bid notifications from the County.

Registered Vendor – shall refer to a firm that has completed the Miami-Dade County Business Entity Registration Application and has satisfied all requirements to enter into business agreements with the County.

The Vendor Registration Package – shall refer to the Business Entity Registration Application.

For additional information about on-line vendor enrollment or vendor registration contact the Vendor Assistance Unit at 111 N.W. 1st Street, 13th Floor, Miami, FL 33128, Phone 305-375-5773. Vendors can enroll online and obtain forms to register by visiting our web site at www.miamidade.gov/dpm

1.2. INSTRUCTIONS TO BIDDERS

A. Bidder Qualification

It is the policy of the County to encourage full and open competition among all available qualified vendors. All vendors regularly engaged in the type of work specified in the Bid Solicitation are encouraged to submit Bids. Vendors may enroll with the County to be included on a notification list for selected categories of goods and services. To be eligible for award of a contract (including small purchase orders), Bidders must become a Registered Vendor. Only Registered Vendors can be awarded County contracts. Vendors are required to register with the County by contacting the Vendor Assistance Unit. The County endeavors to obtain the participation of all qualified small business enterprises. For information and to apply for certification, contact the Department of Small Business Development at 111 N.W. 1st Street, 19th Floor, Miami, FL 33128-1900, or telephone at 305-375-3111. County employees and board members wishing to do business with the County are referred to Section 2-11.1 of the Miami-Dade County Code relating to Conflict of Interest and Code of Ethics.

B. Vendor Registration

To be recommended for award the County requires that vendors complete a Miami-Dade County Vendor Registration Package. Effective June 1, 2008, a new Vendor Registration Package, including a Uniform Affidavit Packet (Affidavit form), must be completed by vendors and returned to the Department of Procurement Management (DPM), Vendor Assistance Unit, within fourteen (14) days of notification of the intent to recommend for award. In the event the Vendor Registration Package is not properly completed and returned within the specified time, the County may in its sole discretion, award to the next lowest responsive, responsible Bidder. The Bidder is responsible for obtaining the Vendor Registration Package, including all affidavits by downloading from the DPM website at www.miamidade.gov or from the Vendor Assistance Unit at 111 N.W. 1st Street, 13th Floor, Miami, FL 33128.

Bidders are required to affirm that all information submitted with the Vendor Registration Package is current, complete and accurate, at the time they submit a response to a Bid Solicitation, by completing the provided Affirmation of Vendor Affidavit form.

In becoming a Registered Vendor with Miami-Dade County, the vendor confirms its knowledge of and commitment to comply with the following:

1. **Miami-Dade County Ownership Disclosure Affidavit**
(Sec. 2-8.1 of the County Code)
2. **Miami-Dade County Employment Disclosure Affidavit**
(County Ordinance No. 90-133, amending Section 2-8.1(d)(2) of the County Code)
3. **Miami-Dade County Employment Drug-free Workplace Certification**
(Section 2-8.1.2(b) of the County Code)
4. **Miami-Dade Disability and Nondiscrimination Affidavit**
(Article 1, Section 2-8.1.5 Resolution R182-00 Amending R-385-95)
5. **Miami-Dade County Debarment Disclosure Affidavit**
(Section 10.38 of the County Code)
6. **Miami-Dade County Vendor Obligation to County Affidavit**
(Section 2-8.1 of the County Code)
7. **Miami-Dade County Code of Business Ethics Affidavit**
(Article 1, Section 2-8.1(i) and 2-11(b)(1) of the County Code through (6) and (9) of the County Code and County Ordinance No 00-1 amending Section 2-11.1(c) of the County Code)
8. **Miami-Dade County Family Leave Affidavit**
(Article V of Chapter 11 of the County Code)

9. **Miami-Dade County Living Wage Affidavit**
(Section 2-8.9 of the County Code)

10. **Miami-Dade County Domestic Leave and Reporting Affidavit**
(Article 8, Section 11A-60 11A-67 of the County Code)

11. **Subcontracting Practices**
(Ordinance 97-35)

12. **Subcontractor /Supplier Listing**
(Ordinance 97-104)

13. **Environmentally Acceptable Packaging**
Resolution (R-738-92)

14. **W-9 and 8109 Forms**
The vendor must furnish these forms as required by the Internal Revenue Service.

15. **Social Security Number**
In order to establish a file for your firm, you must provide your firm's Federal Employer Identification Number (FEIN). If no FEIN exists, the Social Security Number of the owner or individual must be provided. This number becomes your "County Vendor Number". To comply with Section 119.071(5) of the Florida Statutes relating to the collection of an individual's Social Security Number, be aware that DPM requests the Social Security Number for the following purposes:

- Identification of individual account records
- To make payments to individual/vendor for goods and services provided to Miami-Dade County
- Tax reporting purposes
- To provide a unique identifier in the vendor database that may be used for searching and sorting departmental records

16. **Office of the Inspector General**
Pursuant to Section 2-1076 of the County Code.

17. **Small Business Enterprises**
The County endeavors to obtain the participation of all small business enterprises pursuant to Sections 2-8.2, 2-8.2.3 and 2-8.2.4 of the County Code and Title 49 of the Code of Federal Regulations.

18. **Antitrust Laws**
By acceptance of any contract, the vendor agrees to comply with all antitrust laws of the United States and the State of Florida.

C. PUBLIC ENTITY CRIMES

To be eligible for award of a contract, firms wishing to do business with the County must comply with the following:

Pursuant to Section 287.133(2)(a) of the Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Bid on a contract to provide any goods or services to a public entity, may not submit a Bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit Bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 of the Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.



Miami-Dade County
Department of Procurement Management
Affirmation of Vendor Affidavits

In accordance with Ordinance 07-143 amending Section 2-8.1 of the Code of Miami-Dade County, effective June 1, 2008 (for goods and services) and July 1, 2008 (for design and construction), vendors are required to complete a new Vendor Registration Package, including a Uniform Affidavit Packet (Vendor Affidavits Form), before being awarded a new contract. The undersigned affirms that the Vendor Affidavits Form submitted with the Vendor Registration Package is current, complete and accurate for each affidavit listed below.

Contract No. : _____ **Federal Employer Identification Number (FEIN):** _____

Contract Title: _____

Affidavits and Legislation/ Governing Body

1. Miami-Dade County Ownership Disclosure Sec. 2-8.1 of the County Code	6. Miami-Dade County Vendor Obligation to County Section 2-8.1 of the County Code
2. Miami-Dade County Employment Disclosure County Ordinance No. 90-133, amending Section 2-8-1(d)(2) of the County Code	7. Miami-Dade County Code of Business Ethics Article 1, Section 2-8.1(i) and 2-11(b)(1) of the County Code through (6) and (9) of the County Code and County Ordinance No 00-1 amending Section 2-11.1(c) of the County Code
3. Miami-Dade County Employment Drug-free Workplace Certification Section 2-8.1.2(b) f the County Code	8. Miami-Dade County Family Leave Article V of Chapter 11, Resolution No. R-183-00 amending Resolution No. R – 1499-91 of the County Code
4. Miami-Dade County Disability Non-Discrimination Article 1, Section 2-8.1.5 Resolution R182-00 amending R-385-95	9. Miami-Dade County Living Wage Section 2-8.9 of the County Code
5. Miami-Dade County Debarment Disclosure Section 10.38 of the County Code	10. Miami-Dade County Domestic Leave and Reporting Article 8, Section 11A-60 11A-67 of the County Code

Printed Name of Affiant	Printed Title of Affiant	Signature of Affiant
Name of Firm		Date
Address of Firm	State	Zip Code

Notary Public Information

Notary Public – State of _____ County of _____

Subscribed and sworn to (or affirmed) before me this _____ day of, _____ 20 _____.

by _____ He or she is personally known to me ☐ or has produced identification ☐

Type of identification produced _____

Signature of Notary Public	Serial Number
Print or Stamp of Notary Public	Notary Public Seal

Expiration Date

FINANCIAL DOCUMENTATION

As a condition of award, the Contractor may be required to provide documentation that affirm its financial capacity to perform the work (i.e., Tax Returns, Financial Statements, Profit-and-Loss Statements, Cash Flow Statements, etc.).



JOB CLEARINGHOUSE
FORM



RPQ NO. TP-0000018108



Delivering Excellence Every Day

JOB CLEARINGHOUSE AFFIDAVIT
Notice of Construction Job Opportunities

Project / Contract Number: _____

Pursuant to Miami-Dade County Resolution No. R-1395-05, there are ____ open position(s) to submit to the Job Clearinghouse for this project at this time. All open positions will be submitted to South Florida Workforce at <https://iapps.careersourcesfl.com/jchcwp/>.

(Signature of Affiant)

(Date)

(Printed Name of Affiant, Title, and Firm Name)

(Witness)

Sworn to and subscribed before me this

_____ day of _____ 20 ____

By: _____

Signature of Notary Public



Personally Known



Produced ID

Type of ID produced _____

FAIR SUBCONTRACTING
PRACTICES



RPQ NO. TP-0000018108

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

METROMOVER FIRE PANEL UPGRADE

PROJECT NO. CIP172

RPQ NO. TP-0000018108

CONTRACT FORMS

- Surety Performance and Payment Bond
- Residents First Training and Employment Program/Community Workforce Program/
Employ Miami-Dade Program Construction Workforce Plan - Form RFTE2
- OSHA Safety Training Affidavit - Form RFTE 3
- Residents First Training and Employment Program/Employ Miami-Dade Program
Workforce Performance Report - Form RFTE 4
- Bid Submittal Check List Questionnaire Appendix "D"
- Certificate(s) of Insurance

SURETY PERFORMANCE AND PAYMENT BOND

(This is a sample. P&P Bond to be submitted by successful bidder)



RPQ NO. TP-0000018108

SURETY PERFORMANCE AND PAYMENT BOND

By this Bond, we _____, as Principal, whose principal business address is _____, as Contractor under the contract dated _____, 20_____, between Principal Miami-Dade County for the construction of **METROMOVER FIRE PANEL UPGRADE**, RPQ/Project No. **RPQ NO. TP-0000018108** (herein after referred to as "Contract") the terms of which Contract are incorporated by reference in its entirety into this Bond and _____, a corporation, whose principal business address is _____ as Surety, are bound to Miami-Dade County (hereinafter referred to as "County") in the sum of _____ (U.S. dollars) \$_____, for payment of which we bind Ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs all the work under the Contract, including but not limited to guarantees, warranties and the curing of latent defects, said Contract being made a part of this bond by reference, and in the times and in the manner prescribed in the Contract, including any and all damages for delay; and
2. Promptly makes payments to all claimants, as defined in Section [255.05\(1\)](#), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and
3. Pays County all losses, damages, including damages for delay, expenses, costs and attorney's fees, including appellate proceedings, that County sustains because of a default by Principal under the Contract, including but not limited to a failure to honor all guarantees and warranties or to cure latent defects in its work or materials within 5 years after completion of the work under the Contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the Contract, including all warranties and curing all latent defects within 5 years after completion of the work under the Contract;

then this bond is void; otherwise, it remains in full force.

If no specific periods of warranty are stated in the Contract for any particular item or work, material or equipment, the warranty shall be deemed to be a period of one (1) year from the date of final acceptance by the County. This Bond does not limit the County's ability to pursue suits directly with the Principal seeking damages for latent defects in materials or workmanship, such actions being subject to the limitations found in Section 95.11(3)(c), Florida Statutes.

Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes does not affect Surety's obligation under this Bond.

SURETY PERFORMANCE AND PAYMENT BOND (Cont'd)

IN WITNESS WHEREOF, the above bounden parties have caused this Bond to be executed by their appropriate officials as of the _____ day of _____ 20 ____.

CONTRACTOR

(Contractor Name)

BY:

(President) (Managing Partner or Joint Venture)

(SEAL)

COUNTERSIGNED BY RESIDENT
FLORIDA AGENT OF SURETY:

SURETY:

(Copy of Agent's current
Identification Card as issued by
State of Florida Insurance Commissioner must be attached) By: _____

Attorney-in-Fact

(CORPORATE SEAL)

(Power of Attorney must be attached)

RESIDENTS FIRST TRAINING AND EMPLOYMENT PROGRAM/
COMMUNITY WORKFORCE PROGRAM/EMPLOY MIAMI-DADE PROGRAM
CONSTRUCTION WORKFORCE PLAN - FORM RFTE 2



RPQ NO. TP-0000018108

**Residents First Training and Employment Program/Community Workforce Program/Employ Miami-Dade Program
Construction Workforce Plan (Miami-Dade County Code Sections 2-11.17, 2-1701 & A.O. 3-63) - Form RFTE 2**

Contract No. _____

Prime Contractor: _____

☐ §2-1701 Community Workforce Program ☐ §2-11.17 Resident First Training and Employment Program ☐ A.O. 3-63 Employ Miami-Dade Program

In accordance with Sections 2-11.17 & 2-1701 of the Miami Dade County-Code, this form must be submitted by the Prime Contractor within 15 business days of award notification and prior to issuance of a Notice to Proceed. The Prime Contractor should enter the word "NONE" where appropriate below and sign the form below. Please duplicate this form if additional space is needed.

- i. Specify the total number of persons that will be used by the Prime Contractor and all subcontractors to perform all of the construction trades and labor work of the contract, broken down by trade and labor category, minimum qualifications for each category, the number of persons to be utilized in each category, the number of positions to be hired by the contractor in each category which are not currently staffed, the number of positions to be filled from the Employ Miami-Dade Register and the number of employees which live within the project DTA. If the current workforce will not achieve the project goal of 51% construction labor hours performed by Miami-Dade County residents, include a Job Clearinghouse Affidavit or a statement on how Miami-Dade County residents will be recruited to fill the needed positions and meet the goal.

Contractor/Subcontractor Name	Trade/Category	Minimum Qualifications	# of Persons to be Utilized	# of Positions to be filled by Employ Miami Dade	# of Persons to be Hired	# of Persons who Reside in the DTA (if applicable)
Total:						

- ii. Identify by name, address and trade category of all persons proposed to perform work under the contract currently on the contractor's (or on any proposed subcontractor's) payroll who reside in Miami-Dade County only and marking the correct box for DTA residents. Two forms of identification must be provided for each DTA resident demonstrating one year of residency.

Employee Name	Address	Trade/Category Performing	DTA Resident (if applicable)

- iii. Attach a list of subcontractors that will be used on the project and executed Responsible Subcontractor Affidavits (Form RFTE 1) for each.
iv. Attach a list of all employees currently employed by the contractor and each subcontractor at the time of award that includes the last four digits of their social security.

I certify that the representations contained in this Construction Workforce Plan are to the best of my knowledge true and accurate.

Signature of Affiant

Print Name

Print Title

Date

OSHA SAFETY TRAINING AFFIDAVIT
(FORM RFTE 3)



RPQ NO. TP-0000018108

**Residents First Training and Employment Program
Occupational Safety & Health Administration (OSHA)
10 Hour Safety Training Affidavit - Form RFTE 3**

In accordance with Section 2-11.17 of the Miami-Dade County Code, all contractors and subcontractors of any tier performing on a County Construction Contract, shall satisfy the requirements of the Miami-Dade County Residents First Training and Employment Program which requires: for (i) all persons employed by the contractor to perform construction shall have completed the Occupational Safety & Health Administration (OSHA) 10 Hour safety training course established by the Occupational Safety & Health Administration of the United States Department of Labor

The undersigned verifies that every employee reported on the payroll has completed the OSHA 10 Hour or OSHA 30 Hour Safety Training Course prior to working on the project.

Project Number, Title

Printed Name of Affiant

Printed Title of Affiant

Signature of Affiant

Name of Firm

Date

Address of Firm

State

Zip Code

Notary Public Information

Notary Public – State of _____ County of _____

Subscribed and sworn to (or affirmed) before me this _____ day of, _____ 20____.

by _____ He or she is personally known to me ☐ or has produced identification ☐

Type of identification produced _____

Signature of Notary Public

Serial Number

Print or Stamp of Notary Public

Expiration Date

Notary Public Seal

RESIDENTS FIRST TRAINING AND EMPLOYMENT PROGRAM/
EMPLOY MIAMI-DADE PROGRAM WORKFORCE
PERFORMANCE REPORT - FORM RFTE 4



RPQ NO. TP-0000018108

Workforce Performance Report - Form RFTE 4
(Miami-Dade County Code Section 2-11.17 & A.O. 3-63)

Contract No. _____ Prime Contractor: _____

In accordance with Section 2-11.17 of the Miami-Dade County Code & A.O. 3-63, this report must be submitted by the Prime Contractor within thirty (30) days of completion of a County Capital Construction Contract to Small Business Development through the Contracting Officer. The Contracting Officer shall not authorize issuance of final payment for completion of a County Capital Construction Contract until the County receives a completed Workforce Performance Report.

Please provide the following information on the workforce employed in the execution of the contract:

_____ Total number of Construction Labor positions utilized on the project

_____ Total number of Construction Labor work hours performed on the project

Total number Construction Labor work hours performed by Miami-Dade County residents

Total number Construction Labor positions performed by Employ Miami-Dade participants

Percentage of Construction Labor work hours performed by Miami-Dade County residents

Attach supporting documentation verifying construction labor work hours performed by Miami-Dade County residents & Employ Miami-Dade participants.

\$ _____ Total amount of funds expended during the course of the project on other related skill and safety training programs

Were any positions on this project filled with new hires? _____ Yes _____ No

If you answered “yes” to the above question, please identify the new hires by name, address and trade category, and indicate whether they were Miami-Dade County residents or an Employ Miami-Dade participant. (Please attach additional sheets if necessary.)

Employee Name	Address	Trade/Category Performed	Miami-Dade County Resident (√)	Employ Miami-Dade County Participant (√)

Were all new hires Miami-Dade County residents?	No	Yes

Was the 20% labor workforce threshold met from the Employ Miami-Dade Register?	No	Yes

If you answered “no” to either of the above questions, please attach supporting documentation that verifies reasonable efforts to promote employment opportunities for local residents including participation in the Employ Miami-Dade Program, which shall include applicable advertisements in local newspapers, posting of job opportunities with CareerSource South Florida’s Job Clearinghouse, referrals received from CareerSource South Florida, job applications received, candidates interviewed, and number of new hires.

I certify that the representations contained in this Construction Workforce Plan are to the best of my knowledge true and accurate.

Signature of Affiant

Print Name, Title

Date _____

BID SUBMITTAL CHECK LIST QUESTIONNAIRE
APPENDIX “D”



RPQ NO. TP-0000018108

QUESTIONNAIRE

Appendix D



IN ORDER TO PROVIDE INFORMATION NECESSARY IN DETERMINING THE QUALIFICATIONS OF THE PROPOSER, PLEASE PROVIDE THE INFORMATION LISTED BELOW

#	QUESTION	ANSWER
1	Have you carefully read the Instruction To Prospective Contractors?	<input type="checkbox"/> YES <input type="checkbox"/> NO
2	Have you carefully reviewed the entire Contract Documents as identified within the Instruction To Prospective Contractors?	<input type="checkbox"/> YES <input type="checkbox"/> NO
3	If identified in the Contract Documents, have you carefully inspected the site of the work?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
4	Have you requested, in writing, of the contact person identified in the Advertisement, any clarifications necessary to submit a responsive proposal? Have you received a written response of clarification?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
5	Are you licensed and certified to perform the work for which you are submitting this proposal? License No.: Competency No.: FEIN No.: Qualifier's Name:	<input type="checkbox"/> YES <input type="checkbox"/> NO _____ _____ _____ _____
6	Are you registered with the Miami-Dade County Department of Procurement Management (DPM)?	<input type="checkbox"/> YES <input type="checkbox"/> NO
7	Have you made any changes or written any codicils to the Contract Proposal?	<input type="checkbox"/> YES <input type="checkbox"/> NO
8	How many previous Contracts with Miami-Dade County in the past five (5) years?	_____
9	Total dollar value of Contracts with Miami-Dade County in the past five (5) years?	_____
10	How many years has your Company been in business with the same Principals?	_____
11	Applicable Federal Requirement Certifications	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A

CERTIFICATE(S) OF INSURANCE
(TO BE PROVIDED BY CONTRACTOR)



RPQ NO. TP-0000018108

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

METRORAIL BATHROOM REHABILITATION

PROJECT NO. IRP215

RPQ NO. TP-0000027284

BID DOCUMENTS - TABLE OF CONTENTS II OF II

BID DOCUMENTS

- SMALL BUSINESS DEVELOPMENT PROJECT WORKSHEET (No Measures)

- LCP TRACKER

- SPECIAL PROVISIONS:
 - Appendix A: Authorization Agreement for Automatic Deposit.
 - Appendix B: Sustainable Buildings Program

- STANDARD CONSTRUCTION: GENERAL CONTRACT CONDITIONS.

- TECHNICAL SPECIFICATIONS: SPECIAL TERMS & CONDITIONS.

**SMALL BUSINESS DEVELOPMENT PROJECT
WORKSHEET
(No Measures)**



RPQ NO. TP-0000018108



Office of Small Business Development

Project Worksheet

Project/Contract Title: Metromover Fire Panel Upgrade

Received Date: 12/4/2024

Project/Contract No: TP-0000018108

Funding Source: Other

Department: Transportation & Public Works

Estimated Cost of Project/Bid: \$2,853,084.18

Description of Project/Bid: Metromover Fire Panel Upgrade

Contract Measures		
<u>Measure</u>	<u>Program</u>	<u>Goal Percent</u>
No Measure	SBE – Goods & Services	

Reasons for Recommendation

SMALL BUSINESS ENTERPRISE- GOODS & SERVICES (SBE-G&S).
SBD reviewed this project pursuant to Implementing Order 3-41 for SBE-G&S measure. Project information analyzed included the project's scope of services, estimated project cost, minimum requirements/qualifications and funding source. These indicate a No Measure is appropriate for this contract.

NAICS 238210 Electrical Contractors and Other Wiring Installation Contractors, NIGP 28095 Wire and Cable (Not Otherwise Classified), NIGP 28500 Electrical Equipment And Supplies, Except Cable And Wire

Living Wages: YES ☐ NO ☒

Highway: YES ☐ NO ☒

Heavy Construction: YES ☐ NO ☒

Responsible Wages: YES ☐ NO ☒

Building: YES ☐ NO ☒

SBD Director

12/18/24

Date

LCP TRACKER



RPQ NO. TP-0000018108

Memorandum



Date: April 25, 2019

To: Department Directors

From: Gary T. Hartfield, Director
Small Business Development (SBD) Division

Subject: Implementation of LCPtracker

A handwritten signature in blue ink, appearing to be "G. Hartfield", written over a light blue grid background.

On April 10, 2018, the Board of County Commissioners adopted Ordinance No. 18-33, which amended several Miami-Dade County Code sections to mandate use of the County's web-based system, the Business Management Workforce System (BMWS), to comply with Small Business Enterprise (SBE), Wage, and Workforce program requirements. The implementation of BMWS will soon be complete with the "go live" of LCPtracker on May 1, 2019.

LCPtracker is a new web-based system for firms to submit certified payroll and workforce program documentation, replacing our current paper-based reporting requirements at no cost to the firms. As part of the implementation of LCPtracker, Small Business Development (SBD), a division of the Internal Services Department, reviewed all active Miami-Dade County contracts in BMWS subject to Responsible Wages and Benefits, Living Wages and federally-funded contracts at Miami Dade County International Airport with Davis Bacon Wages. Based on the contract status, over three hundred existing contracts have been selected to go into LCPtracker. Attached is the latest report listing the projects by department. In addition to these identified projects, all County contracts subject to the above-mentioned wage requirements and awarded on or after April 1, 2019 will be synced to LCPtracker for the electronic submission of certified payrolls and workforce documentation.

Beginning with the May 2019 reporting period, all prime contractors/vendors and their subcontractors at every tier level participating on a contract that was added to LCPtracker must submit certified payrolls via the system by the 10th day of the month for work performed in the previous month. Therefore, all certified payrolls for work performed in the month of May 2019 must be submitted electronically by **June 10, 2019**. At which point, the department should no longer collect or accept paper certified payrolls for these projects.

SBD will provide department staff with access to LCPtracker to view certified payrolls by project, firm, and reporting period. Prior to approving a firm's pay application/invoice, departments must log into LCPtracker to verify certified payrolls have been submitted for all firms on the project, regardless of tier, for the period of the pay application.

Attached are the steps to generate the LCPtracker report titled "Certified Payroll Report (CPR) Status Report" for a project and period of a pay application/invoice under review. This report will list all received, rejected, pending and delinquent certified payrolls for a project for the period requested. For any delinquent certified payrolls listed on the report, the departments should:

- 1) Provide written notice to the prime contractor/vendor (and SBD, if the prime contractor/vendor is a certified SBE or any of the subcontractors are certified) that the review and approval of its pay application/invoice is on hold until all firms that worked during the period of the pay application/invoice have submitted their certified payrolls via LCPtracker.

- 2) Provide the prime contractor/vendor with a copy of the CPR Status Report, or provide the report to the firm(s) listed under the delinquent section of the report, the week ending date for the missing payroll(s), and a deadline to submit the missing certified payroll(s) via LCPtracker.

LCPtracker user accounts for department staff on existing applicable contracts will be automatically created. For any additional staff requiring access, the department's SBD Liaison should provide their name and email address to Alecia Anderson, SBD Section Manager, at Alecia.Anderson@miamidade.gov or Shawn Gannon, Special Projects Administrator, at Shawn.Gannon@miamidade.gov.

As always, SBD will continue to work closely with departments to ensure compliance with the legislated changes and offer monthly hands-on training opportunities for department staff and firms. Should you have any questions, please do not hesitate to contact Alice Hidalgo-Gato, SBD Section Chief, at (305) 375-3153.

Attachments

- c. Office of the Mayor Senior Staff
Tara C. Smith, ISD Director
SBD Liaisons
Procurement Liaisons

SAFETY DIRECTIVE 182536 / RESOLUTION NO.

1181-18

Memorandum



Date: February 26, 2019

Agenda Item No. 2(B)2
March 19, 2019

To: Honorable Chairwoman Audrey M. Edmonson
and Members, Board of County Commissioners

From: Carlos A. Gimenez
Mayor

A handwritten signature in blue ink, appearing to read "Carlos A. Gimenez", written over a horizontal line.

Subject: Report Regarding Consideration of Contractor Safety Information as a Part of the
Contractor Responsibility Review for Contract Award – Directive No. 182536

This report is in response to Resolution No. R-1181-18, approved at the November 8, 2018 meeting of the Board of County Commissioners (Board), directing the County Mayor or the County Mayor's designee to provide a status report describing the processes, procedures and actions taken to consider safety records of prospective contractors and first-tier subcontractors for public construction projects.

The County reviews contractor responsibility prior to award for all construction contracts. Pursuant to Resolution No. R-187-12, and in accordance with procurement guidelines, staff currently performs due diligence reviews as a part of the process to determine a contractor's responsibility. This review includes checking the contractor's corporate status, lists for convicted, debarred and suspended vendors, excluded parties, and internal County reports for small business compliance, evaluations and delinquent contractors.

County staff will require contractors and proposed first-tier subcontractors to submit the following items for the previous three years from the United States Department of Labor Occupational and Safety Health Administration (OSHA):

1. The OSHA Form 300 containing a list of the company's work-related injury and illness data; and
2. OSHA inspection data.

A copy of this memorandum and Resolution No. R-1181-18 will be forwarded to each of the department directors who manage capital programs across the County. Confirmation that safety due diligence was performed and any instance when a safety record affects the contractor responsibility will be included in any memorandum to the Board recommending an award or ratification of award of a construction project.

Pursuant to Ordinance No. 14-65, this memorandum will be placed on the next available Board Meeting agenda. Should you require additional information, please contact Tara C. Smith, Director, Internal Services Department, at 305-375-1135.

- c: Abigail Price-Williams, County Attorney
Geri Bonzon-Keenan, First Assistant County Attorney
Office of the Mayor Senior Staff
Tara C. Smith, Director, Internal Services Department
Department Directors
Linda L. Cave, Acting Director, Clerk of the Board
Eugene Love, Agenda Coordinator
Yinka Majekodunmi, Commission Auditor

MEMORANDUM

Agenda Item No. 11(A)(1)

TO: Honorable Chairman Esteban L. Bovo, Jr.
and Members, Board of County Commissioners

DATE: November 8, 2018

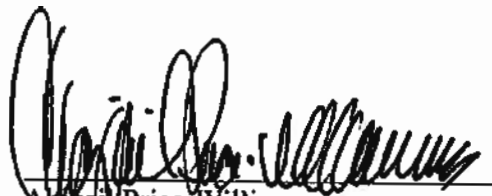
FROM: Abigail Price-Williams
County Attorney

SUBJECT: Resolution directing the County Mayor to: (1) consider safety records of prospective contractors and first-tier subcontractors for public construction projects; (2) confirm the safety records of recommended contractors and first-tier subcontractors were considered and report any instance where the safety record may adversely affect a finding of contractor responsibility in award memorandum to the Board; and (3) provide a report to the Board within 60 days

Resolution No. R-1181-18

This item was amended at the 10-17-18 Government Operations Committee to add language in Section 1 specifying that the OSHA related safety information required to be considered in the resolution shall be initially provided by the prospective contractors and first-tier subcontractors bidding on County construction projects.

The accompanying resolution was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Daniella Levine Cava.



Abigail Price-Williams
County Attorney

APW/lmp



MEMORANDUM

(Revised)

TO: Honorable Chairman Esteban L. Bovo, Jr.
and Members, Board of County Commissioners

DATE: November 8, 2018

FROM: 
Abigail Price-Williams
County Attorney

SUBJECT: Agenda Item No. 11(A)(1)

Please note any items checked.

- ☐ **"3-Day Rule" for committees applicable if raised**
- ☐ **6 weeks required between first reading and public hearing**
- ☐ **4 weeks notification to municipal officials required prior to public hearing**
- ☐ **Decreases revenues or increases expenditures without balancing budget**
- ☐ **Budget required**
- ☐ **Statement of fiscal impact required**
- ☐ **Statement of social equity required**
- ☐ **Ordinance creating a new board requires detailed County Mayor's report for public hearing**
- ☐ **No committee review**
- ☐ **Applicable legislation requires more than a majority vote (i.e., 2/3's ____, 3/5's ____, unanimous ____) to approve**
- ☐ **Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 11(A)(1)
11-8-18

RESOLUTION NO. R-1181-18

RESOLUTION DIRECTING THE COUNTY MAYOR OR COUNTY MAYOR'S DESIGNEE TO: (1) CONSIDER SAFETY RECORDS OF PROSPECTIVE CONTRACTORS AND FIRST-TIER SUBCONTRACTORS FOR PUBLIC CONSTRUCTION PROJECTS; (2) CONFIRM THE SAFETY RECORDS OF RECOMMENDED CONTRACTORS AND FIRST-TIER SUBCONTRACTORS WERE CONSIDERED AND REPORT ANY INSTANCE WHERE THE SAFETY RECORD MAY ADVERSELY AFFECT A FINDING OF CONTRACTOR RESPONSIBILITY IN AWARD MEMORANDUM TO THE BOARD; AND (3) PROVIDE A REPORT TO THE BOARD WITHIN 60 DAYS

WHEREAS, we live in a large, heavily-populated and diverse metropolitan area with constantly expanding public infrastructure needs and demands; and

WHEREAS, Miami-Dade County's infrastructure, including its public buildings, roads and bridges, mass transit facilities, airports and seaport, fuel supply facilities, medical and nursing care facilities, recreational facilities, sporting facilities and water and wastewater facilities, constantly require significant new construction and on-going improvements and upgrades; and

WHEREAS, consequently, to meet these infrastructure demands, Miami-Dade County (the "County") enters into significant construction contracts for public buildings, structures and other public works; and

WHEREAS, a substantial number of the County's public construction projects are large complex projects requiring a large of number of workers to complete the project; and

WHEREAS, many of these County projects occur in densely populated areas where members of the public may be directly exposed to the dangers of a construction site; and

WHEREAS, the tragic loss of life caused by the collapse of the Florida International University pedestrian bridge reminds this community that the safety of members of the public and workers relating to public construction projects is of paramount importance; and

WHEREAS, this Board wants to ensure that a contractor's safety record be fully considered in the selection and contracting of construction companies for public infrastructure projects,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board:

Section 1. Directs the County Mayor or County Mayor's designee to consider the safety records of prospective contractors and their first-tier subcontractors as part of the due diligence investigation performed to determine contractor responsibility for the construction or improvement of a public building, structure or other public construction project that will be presented to this Board for contract award or ratification of an award. Such investigation shall include reviewing available relevant information from the United States Department of Labor Occupational Safety and Health Administration (OSHA) such as OSHA logs of work-related injuries and illnesses (Form 300) and OSHA inspection data >>which shall be initially provided by the prospective contractors and first-tier subcontractors<<¹. The OSHA information shall be reviewed for at least the previous three (3) years to the extent that such information is available for that period. In addition, County staff may use other sources to investigate the safety records

¹ Committee amendments are indicated as follows: Words stricken through and/or [[double bracketed]] are deleted, words underscored and/or >>double arrowed<< are added.

of prospective contractors and their first-tier subcontractors for public construction projects in determining contractor responsibility.

Section 2. Directs the County Mayor or County Mayor's designee to include in his or her memorandum to this Board recommending an award or ratification of an award of a County public construction project confirmation that the safety record was considered by the County as part of the due diligence required pursuant to Resolution R-187-12, including reporting to this Board any instance where the safety record may adversely affect a finding of contractor responsibility.

Section 3. Directs the County Mayor or County Mayor's designee to submit a report to this Board within 60 days of the effective date of this resolution describing the processes, procedures and actions taken to comply with Sections 1 and 2 of this resolution and place the completed report on an agenda of the Board pursuant to Ordinance No. 14-65.

The Prime Sponsor of the foregoing resolution is Commissioner Daniella Levine Cava. It was offered by Commissioner **Dennis C. Moss**, who moved its adoption. The motion was seconded by Commissioner **Sally A. Heyman** and upon being put to a vote, the vote was as follows:

Esteban L. Bovo, Jr., Chairman	aye
Audrey M. Edmonson, Vice Chairwoman	aye
Daniella Levine Cava	aye
Sally A. Heyman	aye
Barbara J. Jordan	aye
Jean Monestime	aye
Rebeca Sosa	aye
Xavier L. Suarez	aye
Jose "Pepe" Diaz	aye
Eileen Higgins	aye
Joe A. Martinez	aye
Dennis C. Moss	aye
Sen. Javier D. Souto	aye

The Chairperson thereupon declared this resolution duly passed and adopted this 8th day of November, 2018. This resolution shall become effective upon the earlier of (1) 10 days after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become effective only upon an override by this Board, or (2) approval by the County Mayor of this resolution and the filing of this approval with the Clerk of the Board.



MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

Linda L. Cave

By: _____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

A handwritten signature in black ink, appearing to be "EWG", written over a horizontal line.

Eduardo W. Gonzalez

A handwritten mark or signature at the bottom center of the page, consisting of a stylized, cursive letter 'L' or '4'.

Contractor Quick Start Guide

Version: 2

Date: 8/3/2022

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Contractor Quick Start Guide

At LCPtracker (Labor Compliance Program Tracker), we are aware that using a Prevailing Wage Software may be a new undertaking for many Contractors. We have designed this guide to explain what LCPtracker is used for and how to start using the software.

The LCPtracker service is a paperless, online system of entering Certified Payroll Reports (CPRs). Payroll data may be entered directly into the system or uploaded from major construction accounting systems or payroll programs. This service eliminates the need for Contractors to submit paper documents and forms while providing an online database that stores all CPRs.

All contract-specific wage rates, fringe rates and worker crafts/classifications are online within the system, and Contractors may then select craft/classifications from a drop-down menu. Potential errors in wage rates or work classification entries can be flagged to Contractors preemptively, allowing them to submit data with corrections implemented. (This is contingent on how the Administrator set up their Project validations). Once you have submitted your CPR, an electronic version will be available, and you will have access to all Contractor reports within LCPtracker.

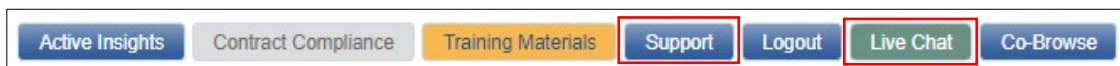
It is important to understand that the LCPtracker validation rules operate to assist you in your compliance process only insofar as the correct classifications are chosen by the user, and the correct data is entered by the user.

Contacting LCPtracker Support

There is no cost to Contractors for this service or for online training. We have a dedicated Support staff available Monday through Friday from 5:00am until 5:30pm PST.

Contractors may access the various options for training after receiving a User ID and password, which will be sent by a "no reply" email address from LCPtracker (i.e., NOREPLY@LCPtracker.com). This email, with login instructions, will be sent to Contractors once they're assigned to an account in LCPtracker by your Agency or Prime Contractor. Every Contractor account is created by the Agency or their Prime Contractor. Complete and full support is offered directly to Contractors by LCPtracker for any technical questions on the use of the software.

Contact LCPtracker Support:



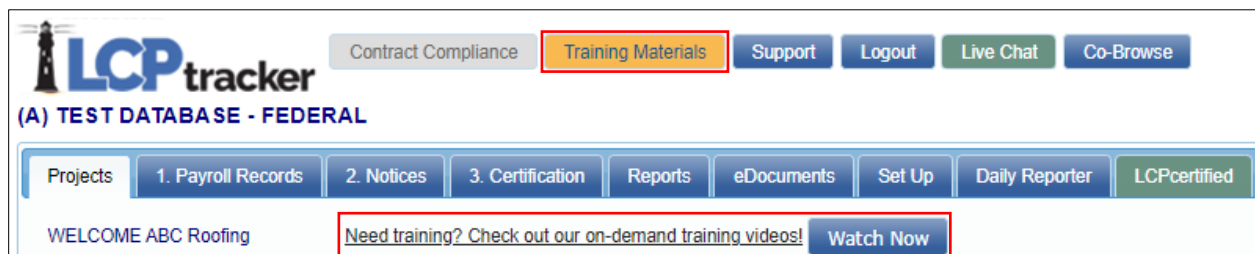
- 714-669-0052 option 4; or
- Support@LCPtracker.com; or
- Live Chat

If you send the Support Team an email or prefer to leave a voice message, LCPtracker asks that you include the information listed below (because of the high number of users stored within LCPtracker, we cannot look up your account with only your company name or project you are working on).

- Your Company Name
- Your User ID
- Your Name and Phone Number
- What the Issue is – please be as specific as possible so we can re-create the issue

LCPtracker Training Options

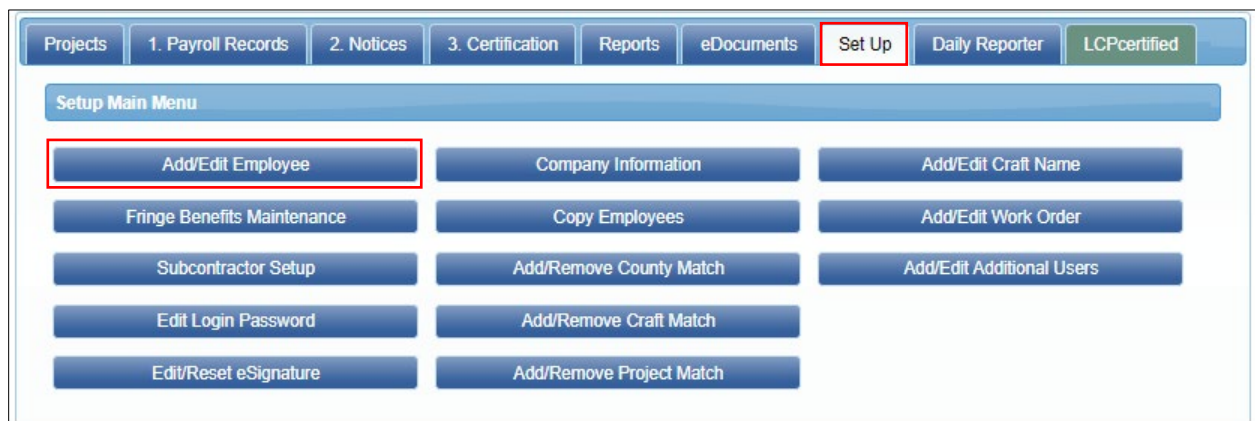
Contractors can access the various options for training after receiving a User ID and password. An email with login instructions will be sent to Contractors once they are assigned to an account in LCPtracker. Every Contractor account is created by the Agency or their Prime Contractor.



Add/Edit Employee

This section is used to enter Contractor employee's personal information.

To add an employee into system or edit someone already in system, click 'Set Up' and then 'Add/Edit Employee'.



Add/Edit Employee Information

Enter the appropriate employee information in the data fields. Tab key or mouse click to move between fields. Any **RED** asterisk field(*) is required by the Agency, and the system will not save unless the information is entered in the required fields.

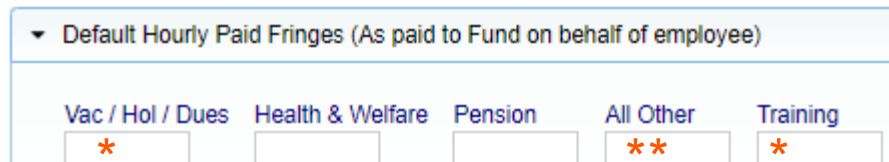
Default Hourly Paid Fringes (As paid to Fund on behalf of employee)

This section is known as a 'time saver'. It is optional to fill in the hourly fringe rates in this section. This will allow for ease of use when entering payroll records manually, as you will be able to click the 'Calculate Fringes' button on the Payroll Entry screen, and the system will perform the mathematical calculation of the hourly fringes multiplied by the hours worked.

*If there are any predetermined increases, or your Union updates once a year, you will need to come back to this section and update your fringes accordingly.

**If you have multiple projects with different fringe rates, built in increases, or everyone has the same fringes and you only want to enter those dollar values once, skip this section and use the 'Fringe Benefit Maintenance' table to enter your hourly fringe rates into system.

Note: Any fringe amount entered in this section will supersede the fringe amount entered in that time saver section of the employee setup.



The screenshot shows a form titled "Default Hourly Paid Fringes (As paid to Fund on behalf of employee)". It contains five input fields with the following labels: "Vac / Hol / Dues", "Health & Welfare", "Pension", "All Other", and "Training". The "Vac / Hol / Dues" field contains an asterisk (*), "All Other" contains two asterisks (**), and "Training" contains one asterisk (*). The other two fields are empty.

*** DO NOT USE - Not allowed by Responsible Wages & Benefits**

**** Use to enter vision, dental, life, and Accidental Death & Dismemberment insurance Only**

Default Other Deductions Notes

Any deduction that is permissible according to the USDOL or your Agency (such as IRS garnishments, child support, a company loan, etc.) would fall under the 'other' deduction section. Any amount listed in 'other' will then dictate that 'other deduction notes' are required.

1. Payroll Records Tab

There are five methods of payroll entry available to all Contractors:

1. Copy Payroll feature in LCPtracker
2. Upload from a payroll system export file
3. Upload from the Excel spreadsheet
4. Direct Payroll Subscription / Interface (DPI)
5. Manual entry

1. Copy Payroll

This option is only available if a week of payroll has been previously completed. In the Payroll Records tab, click the 'Copy Previous Payroll' button, select the project, then select the CPR to be copied.

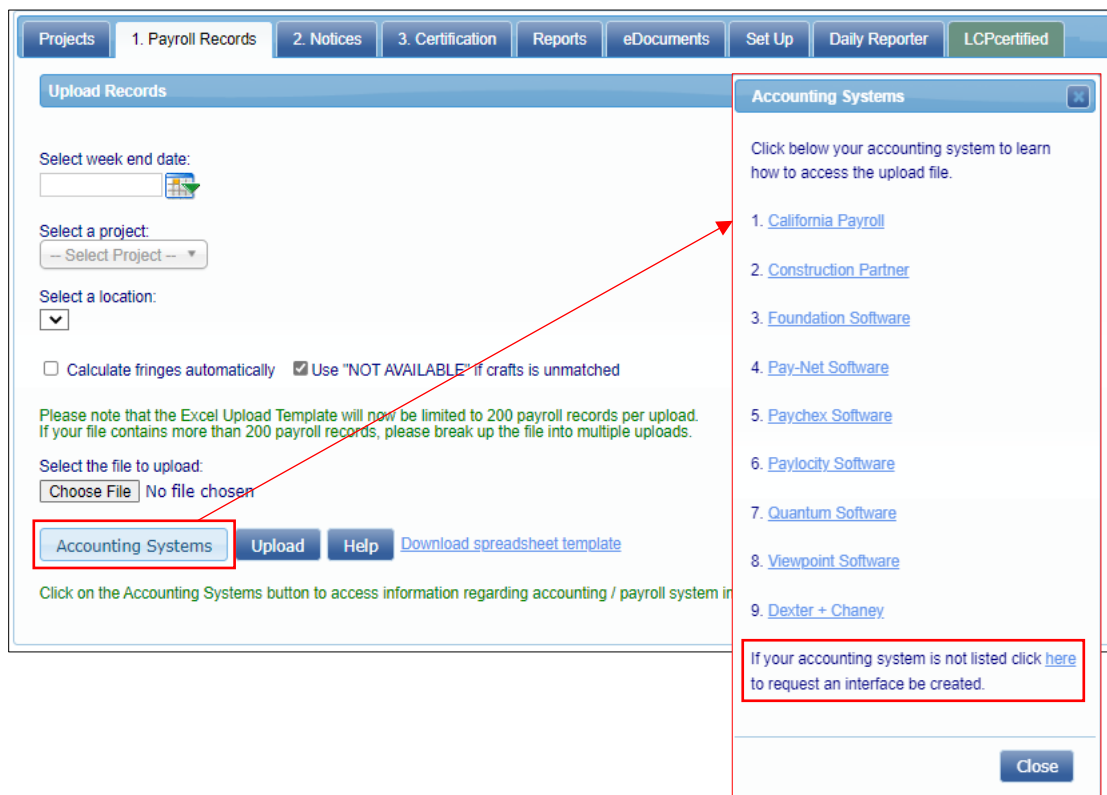


The screenshot shows the 'Payroll Records' tab in the LCPtracker interface. It contains several buttons for managing payroll data. The 'Copy Previous Payroll' button is highlighted with a red rectangular box.

2. Upload from a Payroll System Export File

In the Payroll Records tab, click the 'Upload Records' button, then click the 'Accounting Systems' button, you will see a partial list of the payroll companies that we have partnered with to create a payroll interface, or export file.

To see a complete list of payroll interfaces available, please visit www.lcptracker.com, and click the 'Resources' tab, then select 'Partners'. If you do not find your payroll company and would like to see if there is an opportunity to partner, please fill out the informational form listed under the "Upload Records" section and someone from LCPtracker will contact you.



The screenshot shows the 'Upload Records' page in the LCPtracker interface. The 'Accounting Systems' button is highlighted with a red box. A red arrow points from this button to a modal window titled 'Accounting Systems'. The modal contains a list of payroll companies and a 'Close' button.

Accounting Systems

Click below your accounting system to learn how to access the upload file.

1. [California Payroll](#)
2. [Construction Partner](#)
3. [Foundation Software](#)
4. [Pay-Net Software](#)
5. [Paychex Software](#)
6. [Paylocity Software](#)
7. [Quantum Software](#)
8. [Viewpoint Software](#)
9. [Dexter + Chaney](#)

If your accounting system is not listed click [here](#) to request an interface be created.

Close

Click on the name of your payroll company, and a list of directions on how to obtain your export file will be available, or you will see a request that you contact your payroll company directly for instructions on how to obtain that export file.

Entering Fringe Benefits on LCPTracker

Wages Paid in Lieu of Fringes (Total cash fringes) = hourly rate of fringe x hours worked on county job

Projects | 1. Payroll Records | 2. Notices | 3. Certification | Reports | eDocuments | Set Up | Daily Reporter | LCPcertified

Notices

Week End Date: 6/21/2019 Contractor: CMC PRIME CONTRACTOR
 Project: CMC RWB TEST CONTRACT-HIGHWAY Sub To:
 Employee: ANDERSON, ALECIA Contract ID: test

☐ Is Foreman ☐ Is Owner/Operator

Gross Employee Pay This Project (Usually No Fringes) 1600.000
 Wages Paid in Lieu of Fringes (Total Cash Fringes) 0.000

These fields are Hourly rate fields (Usually No Fringes)

Base Hourly	Overtime Hourly	Doubletime Hourly
40.000	0.000	0.000

Rate in Lieu of Fringes (Cash Fringes) 0.000

▼ Classifications

Jurisdiction	Location	Craft	Classification	Construction Type
Miami-Dade County Responsible Wages	Miami-Dade County	ELECTRICAL WORKER	Electrician - Wireman	Building

▼ Hours Worked Each Day for This Project Only

	Saturday 6/15/2019	Sunday 6/16/2019	Monday 6/17/2019	Tuesday 6/18/2019	Wednesday 6/19/2019	Thursday 6/20/2019	Friday 6/21/2019	Total Hours
Regular Time	0.00	0.00	8.00	8.00	8.00	8.00	8.00	40.00
Overtime at 1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Double-Time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	8.00	8.00	8.00	8.00	8.00	40.00
Total Hours All Projects Worked	40.00							

▼ Fringes / Contributions paid to others (not employee) for This Project Only (Rate Times the # of Hours Worked)

Vac / Hol / Dues	Health & Welf.	Pension	All Other	Training
0.000	0.000	0.000	0.000	0.000

More... More... More...

Voluntary Contributions for all Projects

Pension	Medical
0.000	0.000

☐ Vac/Hol/Dues Included in Gross Emp. Pay/Base Hourly Rate
☐ Some or All Fringes Paid to Employee
☐ Voluntary Contributions Included in Gross Emp. Pay
 Calculate Fringes

This is an hourly rate of funds paid instead of Fringes Benefits. Funds paid directly to the employee and not paid into an approved plan.

Paid into approved Plan.

- Health Insurance
- Dental Insurance
- Vision Insurance
- Life Insurance
- Accident Death & Dismemberment

Paid into approved Plan

- Pension Plan
- 401K

Payroll record entry form (2 of 2)

Week End Date: 6/3/2018 Contractor: Darren's Demo
 Project: M59 Realignment Sub To:
 Employee: DUCK, DONALD Contract ID: 5

☐ Is Foreman ☐ Is Owner/Operator

Gross Employee Pay This Project
(Usually No Fringes)

0.000

Wages Paid in Lieu of Fringes (Total Cash Fringes)

0.000

These fields are Hourly rate fields (Usually No Fringes)

Base Hourly

50.000

Overtime Hourly

0.000

Doubletime Hourly

0.000

Rate in Lieu of Fringes (Cash Fringes)

0.000

Gross Employee Pay This Project – The amount of basic wages paid for this project only. This is typically the hourly rate of pay multiplied by the hours worked (it could be more complex with overtime figured in).

Wages Paid-in-Lieu of Fringes – The amount paid to the employee instead of fringe benefits paid to a plan, fund or program. This amount is sometimes included in the Gross Employee Pay this Project depending on the accounting system and the agency reporting requirements. (Whether you are a Union Shop or Open Shop typically determines whether you pay these required fringes to an approved plan, fund or program, or pay them directly to the employee in cash.) This amount would be the rate-in-lieu of Fringes multiplied by the number of hours worked.

Rate-in-lieu of fringes – The hourly rate paid-in-lieu of fringes. If you pay your employees directly for the required fringe benefit instead of paying into an approved plan, fund or program, please list the hourly rate paid here.

Base Hourly – The hourly rate of pay not including fringes. Some accounting systems include taxable fringes and fringes paid-in-lieu in this amount, do not include those in this field.

Overtime Hourly – The hourly rate of pay multiplied by a factor of 1.5. Do not include fringe benefits in this equation, unless specifically called for by your Awarding Body.

Doubletime Hourly – The hourly rate of pay multiplied by a factor of 2. Do not include fringe benefits in this equation, unless specifically called for by your Awarding Body.

Lump Sum Payments

Rates

4. Direct Payroll Subscription/Interface (DPI)

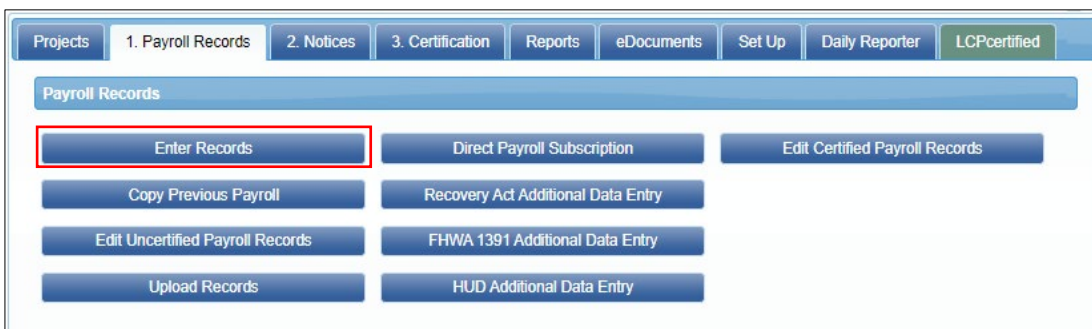
This option allows you to choose to have LCPtracker map your existing payroll so that you may use it (as a PDF or .CSV file) as an upload file. Once you have it, you can use it to upload your CPR from that 'Upload Records' button.



The screenshot shows the LCPtracker interface with the 'Payroll Records' tab selected. The 'Upload Records' button is highlighted with a red rectangle.

5. Manual Entry

For Manual Entry, in the 'Enter Records' tab, you will enter a record each week for every employee that performs work covered by prevailing wages on their project.



The screenshot shows the LCPtracker interface with the 'Payroll Records' tab selected. The 'Enter Records' button is highlighted with a red rectangle.

If your employee works in more than one classification (i.e., they've worked 20 hours as a Carpenter and 20 hours as a Power Equipment Operator) enter two separate pay records to show that they are being paid according to the work performed.

Amounts Paid (top section of the Payroll Record Entry Form)

Enter the appropriate amounts in the appropriate sections. Keep in mind this is just a transfer of historical data from your already existing payroll records.

1. Gross Employee Pay This Project – The amount of basic wages paid for this project only. This is typically the hourly rate of pay multiplied by the hours worked (it could be more complex with overtime figured in).
2. Wages Paid-in-Lieu of Fringes – The amount paid to the employee instead of fringe benefits paid to a plan, fund or program. This amount is sometimes included in the Gross Employee Pay this Project depending on the accounting system and the agency reporting requirements. (Whether you are a Union Shop or Open Shop typically

determines whether you pay these required fringes to an approved plan, fund or program, or pay them directly to the employee in cash.) This amount would be the rate-in-lieu of Fringes multiplied by the number of hours worked.

3. Rate-in-lieu of fringes – The hourly rate paid-in-lieu of fringes. If you pay your employees directly for the required fringe benefit instead of paying into an approved plan, fund, or program, please list the hourly rate paid here.
4. Base Hourly – The hourly rate of pay not including fringes. Some accounting systems include taxable fringes and fringes paid-in-lieu in this amount, do not include those in this field.
5. Overtime Hourly – The hourly rate of pay multiplied by a factor of 1.5. Do not include fringe benefits in this equation, unless specifically called for by your Agency.
6. Doubletime Hourly – The hourly rate of pay multiplied by a factor of 2. Do not include fringe benefits in this equation, unless specifically called for by your Agency.

Payroll record entry form (2 of 2)

Week End Date: 6/3/2018

Project: M59 Realignment

Employee: DUCK, DONALD

Contractor: Darren's Demo

Sub To:

Contract ID: 5

☐ Is Foreman
 ☐ Is Owner/Operator

1

Gross Employee Pay This Project
(Usually No Fringes)

0.000

2

Wages Paid in Lieu of Fringes (Total Cash Fringes)

0.000

These fields are Hourly rate fields (Usually No Fringes)

4

Base Hourly

50.000

5

Overtime Hourly

0.000

6

Doubletime Hourly

0.000

3

Rate in Lieu of Fringes (Cash Fringes)

0.000

Classifications

This section lists the craft and classification that your employee worked on your project and will be paid for. If you mistakenly choose the wrong classification on the original entry page, you may change it here by clicking on the Edit button. (Remember that if your employee worked in more than one classification within this work week, you would need to enter a separate payroll record for that classification).

▼ Classifications					
Jurisdiction	Location	Craft	Classification	Construction Type	
Federal Wages	Huron County, MI	Carpenter	Carpenter - Pending USDOL 02/01/2017	Highway	Edit

Hours Worked Each Day for This Project Only

Enter the hours worked each day.



The first row is for regular time worked(1), the second row is for overtime worked(2) and the third row for is for double time worked(3).

ONLY enter hours worked on this prevailing wage job for this week. The system will total each type of hours worked, the days worked and the week under the totals hours column(4).

▼ Hours Worked Each Day for This Project Only								
	Monday 5/28/2018	Tuesday 5/29/2018	Wednesday 5/30/2018	Thursday 5/31/2018	Friday 6/1/2018	Saturday 6/2/2018	Sunday 6/3/2018	4 Total Hours
1 Regular Time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Overtime at 1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 Double-Time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: If turned on by the Administrator, you may see an additional field 'Total Hours All Projects Worked' listed in the hours section. If so, this field will require a manual entry for your employee's full hours worked that week.

▼ Hours Worked Each Day for This Project Only								
	Monday 4/8/2019	Tuesday 4/9/2019	Wednesday 4/10/2019	Thursday 4/11/2019	Friday 4/12/2019	Saturday 4/13/2019	Sunday 4/14/2019	Total Hours
Regular Time	2.00	2.00	2.00	2.00	2.00	0.00	0.00	10.00
Overtime at 1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Double-Time	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.00	2.00	2.00	2.00	2.00	0.00	0.00	10.00
Total Hours All Projects Worked	40.00							

Fringes/Contributions Paid to Other (Not Employee) for This Project Only

You may utilize this section in two different ways:

1. Auto calculate
2. Manual entry

▼ Fringes / Contributions paid to others (not employee) for This Project Only (Rate Times the # of Hours Worked)					
* Vac / Hol / Dues	Health & Welf.	2 Pension	** All Other	* Training	
0.000	0.000	0.000	0.000	0.000	
More...		More...			
Voluntary Contributions for all Projects Pension: 0 Medical: 0					<input type="checkbox"/> Vac/Hol/Dues Included in Gross Emp. Pay <input type="checkbox"/> Some or All Fringes Paid to Employee <input type="checkbox"/> Voluntary Contributions Included in Gross Emp. Pay <input type="button" value="Calculate Fringes"/>
					1

* DO NOT USE - Not allowed by Responsible Wages & Benefits

** Use to enter vision, dental, life, and Accidental Death & Dismemberment insurance Only

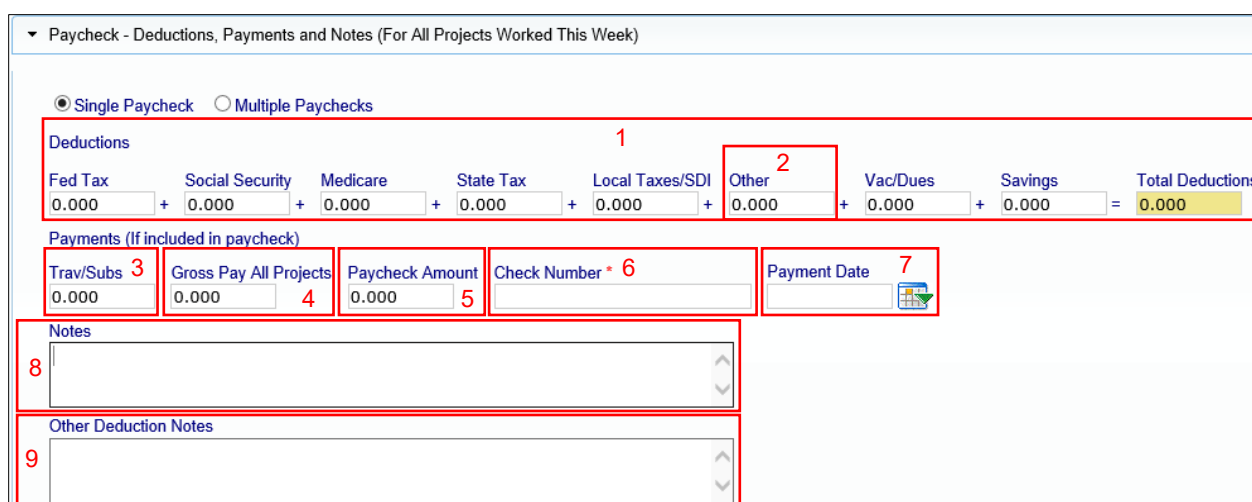
Auto Calculate: The first is by simply clicking the 'Calculate Fringes' button so that the system automatically calculates the fringe benefit rates paid.

Manual Entry: This only works if you filled out the hourly fringe benefit rates in the Add/Edit Employee screen (or the Fringe Benefit Maintenance section, also available in the Set Up tab). This function multiplies the hours worked times the fringe benefit rate to get the values.

The second way is to manually enter the total amounts paid per section (Vac/Hol/Dues, Health & Welfare, Pension, etc.) from your payroll register or paystubs. Mark the appropriate check boxes as required. If they are checked in the Add/Edit Employee setup, then that value carries over.

Paycheck – Deductions, Payments, and Notes

Values entered in this section apply to all hours worked on all projects during the week.



1. Deductions - the 'Total Deductions' box will add as you enter values in the taxes, other deductions, Vac/Dues and Savings fields.
2. Other Deduction - this field is for permissible deductions that do not fall into the other available fields. If you put an amount in the 'Other' deductions field, an 'Other Deduction Note' will become required.
3. Trav/Subs - this field is for travel or subsistence paid to your employee. This amount does figure into the mathematical calculation that the system to ensure that Gross and Net pays are correct.
4. Gross Pay All Projects – the gross amount on the paycheck for the week including all projects worked.
5. Paycheck Amount – this is also referred to as Net pay. This is the actual amount of pay the employee received.
6. Check Number – you have the option of putting different information in this field. If you hand out actual checks to your employees, please enter the check number in this field. If

you utilize direct deposit and no check numbers exists, enter 'DD'.

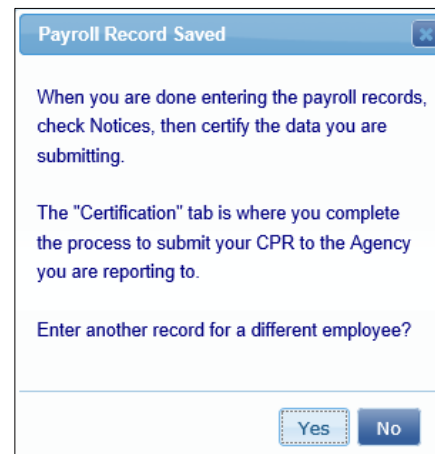
7. Payment Date – this is the actual date of the paycheck. Not all Agencies require this field.
8. Notes – this is a section that allows you to communicate anything out of the ordinary that you would like your Agency to know.
9. Other Deduction Notes – if you entered a permissible deduction in the above-mentioned field, then you will be required to leave a note describing that deduction. Please remember to be transparent in your notes entered. We recommend that you list what the actual deduction is, and not write "other deduction" or "N/A".

Saving the Payroll Record

When you have completed all the above-mentioned fields, Click Save.

SAVE WITH NO NOTICES

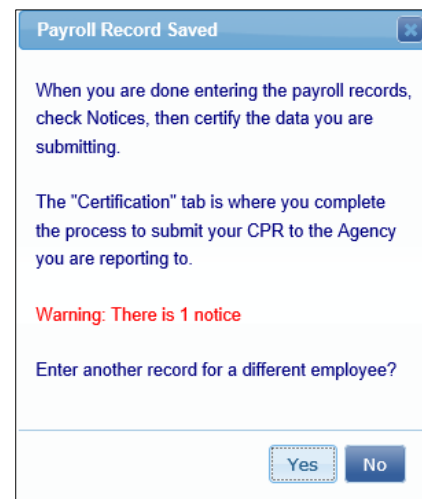
With a successful save you will get this message:



A screenshot of a web browser dialog box titled "Payroll Record Saved". The dialog box has a blue header bar with a close button (X) in the top right corner. The main content area is white and contains the following text: "When you are done entering the payroll records, check Notices, then certify the data you are submitting." followed by "The 'Certification' tab is where you complete the process to submit your CPR to the Agency you are reporting to." Below this is the question "Enter another record for a different employee?". At the bottom right, there are two buttons: "Yes" (with a dashed border) and "No" (solid blue).

SAVE WITH NOTICES

If you do not get this message, look for the **RED** message on the screen. You may have to scroll through the payroll record to see what you have missed that may be a required field.



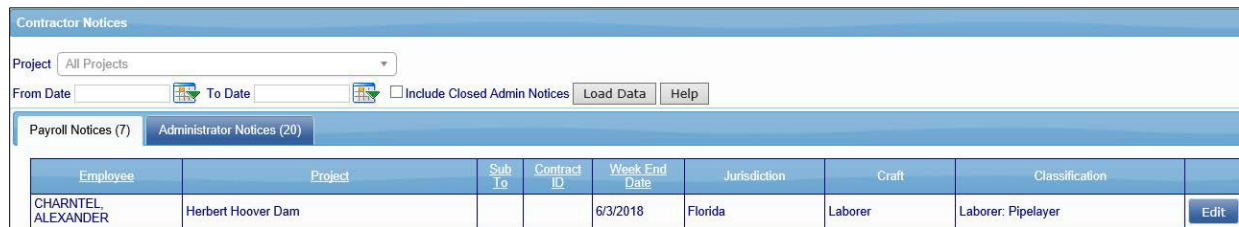
A screenshot of a web browser dialog box titled "Payroll Record Saved". The dialog box has a blue header bar with a close button (X) in the top right corner. The main content area is white and contains the following text: "When you are done entering the payroll records, check Notices, then certify the data you are submitting." followed by "The 'Certification' tab is where you complete the process to submit your CPR to the Agency you are reporting to." Below this is a red warning message: "Warning: There is 1 notice". Below the warning is the question "Enter another record for a different employee?". At the bottom right, there are two buttons: "Yes" (with a dashed border) and "No" (solid blue).

2. Notices Tab

Once you have entered all payroll records for the week, go to the '2. Notices' tab to check and see if you have any payroll Notices.

After your records have been saved: there could be issues ranging from forgetting to add an employee ID or phone number to forgetting to enter the Gross Employee Pay This Project field at the top of the Payroll Record Entry screen, this will display in the Notices tab.

If an employee is displayed on the notices screen (see below), the notice will need to be cleared.



Employee	Project	Sub ID	Contract ID	Week End Date	Jurisdiction	Craft	Classification	
CHARNTEL ALEXANDER	Herbert Hoover Dam			6/3/2018	Florida	Laborer	Laborer: Pipelayer	Edit

To clear the notice, click on the Edit button to the right of the employee's name. This will take you back into the Payroll Record Entry screen. Scroll down the bottom and you will see detailed notes on exactly what your notice is.

If you do not understand the notice, there are options on how to get help. You can click on the Video Assistance 'Play Now' button and you will see a video that explains what the notice is and how to address it, or you can contact our [Support](#) department and they will assist you.

All Notices must be cleared to certify the payroll.

3. Certification Tab

It's time to certify your payroll! You will do this for each week beginning when you first start work on your project until the last week on the project.

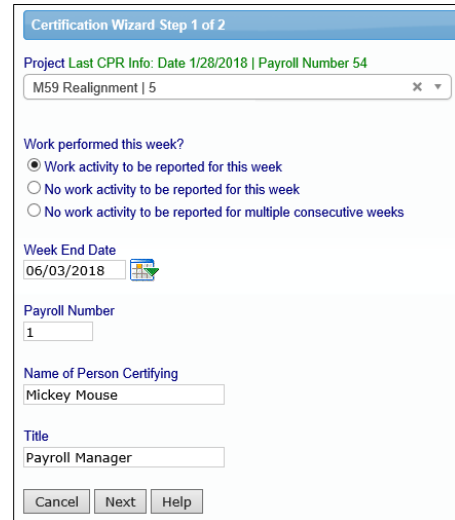
There are three options available to you when you certify your payroll:

1. Certify a payroll for a week during which work was performed
2. Certify a payroll for a week during which no work was performed (non-work week payroll)
3. Certify a payroll for multiple consecutive weeks during which no work was performed

Certification Wizard - Step 1 of 2

To certify your payroll:

- Choose your project
- Choose the type of payroll you are certifying
- Choose your week ending date (if you choose multiple consecutive weeks, you will enter the start date and the last date)
- Enter your name as the person certifying your payroll
- Enter your title
- Click next



The screenshot shows the 'Certification Wizard Step 1 of 2' form. At the top, it displays 'Project Last CPR Info: Date 1/28/2018 | Payroll Number 54'. Below this is a dropdown menu for 'M59 Realignment | 5'. The 'Work performed this week?' section has three radio button options: 'Work activity to be reported for this week' (selected), 'No work activity to be reported for this week', and 'No work activity to be reported for multiple consecutive weeks'. The 'Week End Date' is set to '06/03/2018' with a calendar icon. The 'Payroll Number' is '1'. The 'Name of Person Certifying' is 'Mickey Mouse'. The 'Title' is 'Payroll Manager'. At the bottom are 'Cancel', 'Next', and 'Help' buttons.

Certification Wizard - Step 2 of 2

The Statement of Compliance (SOC) portion of your certified payroll report will display.

You now need to denote how you pay your fringe benefits (if you do both, you may choose both):

- 4a – paid into an approved plan, fund, or program
- 4b – paid in cash to the employee
- 4c – section to note any exceptions you might have, per craft/classification.

If you have any final remarks that you'd like to leave for your Agency, there is a section available to you to do so. Note: this field is mandatory if you are *recertifying* a CPR.

You may also click on a checkbox to note if your CPR is a final.

Enter your eSignature and click Save. This completes your CPR, and it will pop up in another window so long as you have your pop-up blocker turned off. (If you forget your e- Signature, go back to the Set Up tab, edit your eSignature, and then go back to the Certification Tab and follow the above procedures again.)



The screenshot shows a single text input field labeled 'eSignature Password:'.

You have now completed certifying your payroll.

Your CPRs are electronically sent to your Administrator, and unless otherwise specified, there is no need to send or print out a hardcopy unless you would like to do so for your own records.

Remember that your CPR's will always be stored in your account to access at any time, so you may decide not to print out hardcopies.

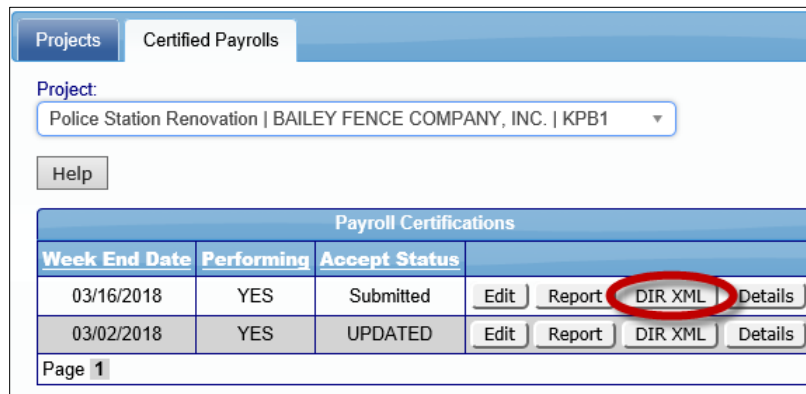
State Specific Uploads

California DIR XML Upload

If you perform work on a California Public Works project, you also need to upload your payroll to the Department of Industrial Relations (DIR) eCPR system. Once you've certified your payroll, you can download the DIR XML file to upload.

Instructions to find and upload this file:

- Click on the Projects tab
- Click on the Certified Payrolls tab
- Locate the week ending payroll file you need
- Click on the DIR XML button (make sure your pop-up blockers are off)
- Save this file to your desktop
- Upload into the DIR eCPR system



Payroll Certifications			
Week End Date	Performing	Accept Status	
03/16/2018	YES	Submitted	Edit Report DIR XML Details
03/02/2018	YES	UPDATED	Edit Report DIR XML Details

Page 1

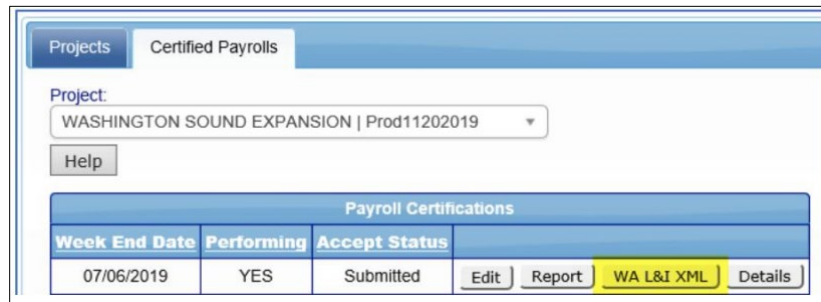
Washington L&I XML Upload

Beginning in January 2020, weekly certified payroll reports are required to be filed online with Washington State Department of Labor and Industries, or WA L&I, at least once a month for all public works projects. Once you've certified your payroll, you can download the WA L&I XML file to upload.

Instructions to find and upload this file:

- Click on the Projects tab
- Click on the Certified Payrolls tab
- Locate the week ending payroll file you need
- Click on the WA L&I XML button (make sure your pop-up blockers are off)
- Save this file to your desktop

- Upload into the WA State PWIA portal



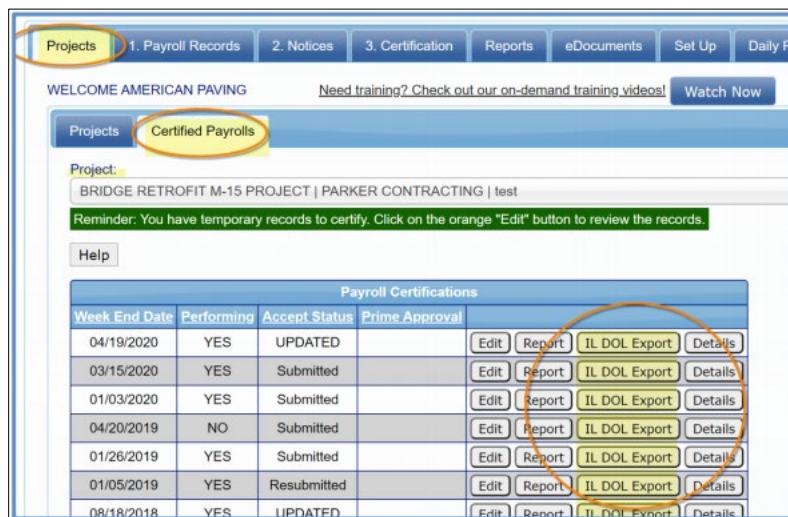
Payroll Certifications			
Week End Date	Performing	Accept Status	
07/06/2019	YES	Submitted	Edit Report WA L&I XML Details

Illinois DOL Export Upload

Beginning in September 2020, weekly certified payroll reports are required to be filed online with the Illinois Department of Labor, or IDOL, by the 15th of each month for all state-funded public works projects. Once you've certified your payroll, you can download the IL DOL XML file to upload.

Instructions to find and upload this file:

- Click on the Projects tab
- Click on the Certified Payrolls tab
- Locate the week ending payroll file you need
- Click on the IL DOL Export button (make sure your pop-up blockers are off)
- Save this file to your desktop
- Make any manual additions/adjustments to the CSV file
- Upload into the IDOL portal



Payroll Certifications			
Week End Date	Performing	Accept Status	Prime Approval
04/19/2020	YES	UPDATED	Edit Report IL DOL Export Details
03/15/2020	YES	Submitted	Edit Report IL DOL Export Details
01/03/2020	YES	Submitted	Edit Report IL DOL Export Details
04/20/2019	NO	Submitted	Edit Report IL DOL Export Details
01/26/2019	YES	Submitted	Edit Report IL DOL Export Details
01/05/2019	YES	Resubmitted	Edit Report IL DOL Export Details
08/18/2018	YES	UPDATED	Edit Report IL DOL Export Details

Should you find that you have any further questions, please consult either the Contractor User Manual or call our [Support](#) department.

SPECIAL PROVISIONS



RPQ NO. TP-0000018108

SPECIAL PROVISIONS

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APPENDIX “A” TO SPECIAL PROVISIONS
Authorization Agreement for Automatic Deposit

APPENDIX “B” TO SPECIAL PROVISIONS
Sustainable Buildings Program

1. SCOPE OF WORK:

New installation of Switch Machines Equipment.

Each of the Metromover stations is protected by a *Fire Alarm system* that was commissioned when the stations were originally built. The protection system needs to be replaced by a new Fire Alarm system in all Metromover stations and the locations provided in the Technical Specifications document.

The work will include the provision of a *new Fire Alarm system and station devices as specified in the contract Technical Specifications and division 26 documents*. The new system must meet all governing NFPA requirements, and the requirements as dictated by the Authorities having Jurisdiction over the locations where the new fire alarm systems will be installed. The new systems must be safety certified per The Department of transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Each plan is project specific, and the contractor will develop the plan for this project and provide it to the project manager within 90 days of the notice to proceed.

Safety Certification is required as defined in the Federal Transportation Administration (FTA) State Safety Oversight Rule (49 CFR Part 659) and must be safety certified as mandated by the FDOT Fixed Guideway Transportation Systems State Safety Oversight Program Standard and the Department of Transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Both documents describe testing and certification processes which must be conducted to ensure safe operation of the track and all governing systems. Upon successful completion of the testing, certification will be submitted to FDOT, in Tallahassee. In supporting the safety certification process, the Contractor shall carry out a detailed accounting of all correspondence and documentation to verify that all safety related requirements, activities, tests, inspections and action items have been completed and satisfied and shall document these results in a Safety Report which shall be submitted to the County for its review and acceptance 30 calendar days prior to the Contractors written application for Substantial Completion.

The Technical Specification for the contract provides the specific locations where the work is to be done, the order of execution of the work, and exceptions as noted in the Technical Specifications for the contract.

2. ALLOWANCE ACCOUNTS:

- A. **Contingency Allowance** - A Contingency Allowance Account has been established for the exclusive use of the Department of Transportation and Public Works as a reserve account to cover unforeseeable and unavoidable costs associated with the Work. This Contingency Allowance account shall be calculated at ten percent (10%) of the base bid total for the Work. It is understood that any unspent portion of the contingency allowance account is to remain with the COUNTY.

3. INSURANCE REQUIREMENTS:

Contractor shall indemnify and hold harmless the County and its officers, employees, agents and instrumentalities from any and all liability, losses or damages, including attorneys' fees and costs of defense, which the County or its officers, employees, agents or instrumentalities may incur as a result of claims, demands, suits, causes of actions or proceedings of any kind or nature arising out of, relating to or resulting from the performance of this Agreement by the Contractor or its employees, agents, servants, partners principals or subcontractors. Contractor shall pay all claims and losses in connection therewith and shall investigate and defend all claims, suits or actions of any kind or nature in the name of the County, where applicable, including appellate proceedings, and shall pay all costs, judgments, and attorney's fees which may issue thereon. Contractor expressly understands and agrees that any insurance protection required by this Agreement or otherwise provided by Contractor shall in no way limit the responsibility to indemnify, keep and save harmless and defend the County or its officers, employees, agents and instrumentalities as herein provided.

Contractor shall furnish to Miami-Dade County, Department of Transportation & Public Works, 111 NW 1st Street, Miami FL 33128-1987, Certificate(s) of Insurance which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

- A. Worker's Compensation Insurance for all employees of the Contractor as required by Florida Statute 440.
- B. Commercial General Liability Insurance in an amount not less than \$1,000,000 per occurrence, and \$2,000,000 in the aggregate, not to exclude Products and Completed Operations. **Miami-Dade County must be shown as an additional insured with respect to this coverage.**
- C. Automobile Liability Insurance covering all owned, non-owned and hired vehicles used in connection with the work, in an amount not less than \$1,000,000 combined single limit per occurrence for bodily injury and property damage.
- D. Umbrella Liability Insurance in an amount not less than \$3,000,000 per occurrence, and \$3,000,000 in the aggregate.
 - a. If Excess Liability is provided must be follow form to coverages B and C.

All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The company must be rated no less than "A-" as to management, and no less than "**Class VII**" as to financial strength, by Best's Insurance Guide, published by A.M. Best Company, Oldwick, New Jersey, or its equivalent, subject to the approval of the County Risk Management Division.

or

The company must hold a valid Florida Certificate of Authority as shown in the latest "List of All Insurance Companies Authorized or Approved to Do Business in Florida" issued by the State of Florida Department of Financial Services.

**NOTE: CERTIFICATE HOLDER MUST READ: MIAMI-DADE COUNTY
111 NW 1st STREET
SUITE 2340
MIAMI, FL 33128**

- A. Compliance with the foregoing requirements shall not relieve the vendor of his liability and obligation under this section or under any other section of the Contract.
- B. Contractor's qualification for inclusion in the Contract is contingent upon the receipt of the insurance documents within fifteen (15) calendar days after notification. If the insurance certificate is received within the specified time frame but not in the manner prescribed in this solicitation, the Contractor shall be verbally notified of such deficiency and shall not be placed in an active status until such time as a corrected certificate is submitted to the County. Contractors who are not or do not remain in compliance will be listed as inactive and will not remain inactive until all such defects are corrected. Any Contractor placed in an inactive status shall lose their current position in the established rotation and will be placed at the back of the current rotation upon correction of the deficiency and return to active status.
- C. The CONTRACTOR shall be responsible for assuring that the insurance certificates required in conjunction with this Section remain in force for the duration of the contractual period including any and all option years that may be granted to the CONTRACTOR in accordance with Section 2.5 of the Special Conditions.
- D. If insurance certificates are scheduled to expire during the contractual period, the CONTRACTOR shall be responsible for submitting new or renewed insurance certificates to the County at a minimum of thirty (30) calendar days in advance of such expiration. In the event that expired certificates are not replaced with new or renewed certificates which cover the contractual period, the County shall place the contractor in an inactive status until such time as the new or renewed certificates are received by the County in the manner prescribed in the solicitation. Any Contractor placed in an inactive status shall lose their current position in the established rotation and will be placed at the back of the current rotation upon correction of the deficiency and return to active status. If the contractor has an open work order or project when the insurance expires, the contractor will be issued a stop work order and be required to correct the deficiency immediately. No additional time will be allowed as a result of the stop work order and liquidated damages will be assessed. If a Payment and Performance Bond is available on the work, the Bondholder will be notified and given the opportunity to complete the work assignment.

- E. The County may, at its sole discretion require additional or supplemental insurance. Such requirements will be stated in any RPQ issued requiring insurance in addition to the requirements stated above.

4. PRE-BID MEETING:

A Pre-Bid Meeting will be held as indicated in the *Invitation to Bid (ITB)/Request for Price Quotation (RPQ)*. Please refer to the ITB/RPQ for instructions and additional information.

5. CONTRACTOR USE OF PREMISES:

- A. The Contractor's use of the premises is limited to the limits of construction. The Contractor will coordinate all work with the Project Manager and perform work in a manner which allows continuous use of adjoining facilities by DTPW. The Contractor shall maintain safe access to all project areas at all times.
- B. The Contractor shall remain flexible with respect to his work schedule and if the Contractor is delayed due to the non-availability of the project site, his sole remedy for delay shall be limited to a contract time extension only, with no consideration for additional compensation for lost productivity. This remedy for delay (time extension only, no additional compensation) shall also apply to inclement weather conditions.
- C. The Contractor and his subcontractors shall obtain all necessary Permits and provide copies to the Project Manager prior to commencement of work. At the completion of the project, the Contractor shall provide to the Project Manager as-built drawings, all equipment owner's manuals and related documentation provided by the Manufacturers and a copy of the permit(s) with all required inspections signed off.
- D. The Contractor shall clean the area after each workday. In addition, the contractor shall clean the area, remove materials and equipment that would create a potential hazard to pedestrians and DTPW operations personnel.

6. EQUIPMENT:

The contractor will provide equipment of sufficient size and capacity to meet project needs.

7. INSPECTION/MATERIAL TESTING:

- A. **Inspections:** Daily inspections will be performed by the DTPW Representative. Inspections by the DTPW Representative shall not relieve the Contractor of his duties and obligations related to performance and/or quality of the Work.

The Contractor shall coordinate with the DTPW Representative the inspection of all pertinent work activities that may be deemed crucial to the completion of the Project. The pertinent work activities shall be defined by the DTPW Representative prior to installation. The Contractor will be responsible to schedule a meeting with the DTPW Representative to identify the pertinent work activities. Refer to technical specifications/notes provided in the project drawings. Installation Procedures recommended by manufacturer shall be submitted by the Contractor to the DTPW Representative. Contractor to comply with Technical Specifications/Notes provided on the Contract Drawings.

B. **Materials:** As specified in the Scope of Work and Project Schedule of Values.

8. MEASUREMENT AND PAYMENT:

The Schedule of Values includes all costs required for the complete construction of the specified unit of work including cost of material, delivery; installation, testing, and labor including social security, insurance, and other required fringe benefits, workmen's compensation insurance, bond premiums, cost of the Inspector General random audits, rental of equipment and machinery, taxes, incidental expenses, and supervision.

The Contractor shall be compensated based on percentage of work completed if a lump sum contract or by unit price quantities as agreed upon by the DTPW Representative. The Schedule of Values will be used for payment and negotiation of additions/deletions to scope. DTPW reserves the right to modify/adjust any of the unit item quantities at the same unit rate as specified on the Schedule of Values with no additional adjustment (compensation) for the reduction of work scope.

The Contractor shall comply with Resolution No. R-138-10, which mandates that SBE firms work be identified in the Schedule of Values, if applicable. In accordance with Resolution R-138-10, the Contractor is required as a condition subsequent to award and prior to the issuance of notice to proceed, that the scope of work to be performed by any SBE utilized to satisfy any SBE goal in the contract be separately identified in such schedule of values.

Payment requisitions for the scope of work of such SBE shall be accomplished by statements of completion of the work of the SBE and shall be accompanied by appropriate documentation including invoicing and checks reflecting payment of the SBE for the previous construction draw.

9. TIME OF WORK:

Refer to Technical Specification.

10. PRE-CONSTRUCTION MEETING:

A Pre-Construction Meeting will be scheduled prior to the NTP date. The DTPW Representative may require the Contractor to submit at the time of the Pre-Construction meeting a Project Schedule, Detailed Schedule of Values, Maintenance of Traffic (MOT) Plan, Shop Drawing Submittal Log, Emergency Contact List, and List of Subcontractors.

11. CONSTRUCTION COORDINATION MEETINGS:

The Contractor shall attend Construction Coordination meetings at the site, if required by the DTPW Representative. The DTPW Representative will advise the Contractor of the frequency of the meetings. The meetings shall be attended by the Contractor's representative and the DTPW Representative at a time and location to be determined by the DTPW Representative.

12. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK:

TIME IS OF THE ESSENCE. The work to be performed under this Contract shall commence on the effective date of the Notice-to-Proceed and be completed and released to MDC upon completion of all punch list items within the time specified.

Completion of All Work: The Work must be Substantially Completed within **365** calendar days after the date when the Contract Time commences to run, and all requirements of the Contract Documents completed to the Engineer's satisfaction, including the completion of all punch list items, delivery to the Engineer of all required deliverable, and completion of any remaining Site restoration; and be ready for final payment no later than 150 calendar days after NTP.

13. LIQUIDATED DAMAGES:

TIME IS OF THE ESSENCE and completing the work within the specified time is of the utmost importance to MDC. The following liquidated damages rate(s) have been determined based on the best information available at the time of bidding and represent a good faith effort by MDC to quantify the damages that MDC will incur if the contract duration is not achieved. Therefore, for failure to complete the work within the number of days stipulated in the Invitation to Bid, the Contractor and his/ her sureties will be assessed Liquidated Damages as follows:

Final Completion

Liquidated Damages shall be assessed in the amount of **\$1,211.27**, per day for each day of delay, not as a penalty, but as Liquidated Damages for each day or fraction thereof of delay until the Final Completion Date is met, which will be paid to Miami-Dade County by the Contractor.

14. METHOD OF AWARD:

The award shall be made to the lowest responsive and responsible bidder. DTPW reserves the right to negotiate additional or deductive services related to this project with the low bidder. DTPW reserves the right to reject all bids if deemed in the best interest of Miami Dade County.

15. PERFORMANCE & PAYMENT BOND:

The Contractor shall provide a Surety Performance and Payment Bond for 100% of the contract amount. NTP shall not be issued, and no work shall commence until a fully executed performance bond and required insurance are submitted and approved by Miami-Dade County's Risk Management Division. Failure to provide a Performance &

Payment Bond within the time required inclusive of any time extensions granted by DTPW may be considered withdrawal of the bid and forfeiture of the Bid Bond. The Contractor will be reimbursed for the direct (actual) Surety Performance and Payment costs upon presentation of an invoice and paid receipt/cancelled check.

16. COLLUSION AFFIDAVIT:

In accordance with Sections 2-8.1.1 and 10-33.1 of the Miami-Dade County Code as amended by Ordinance No. 08-113, bidders/proposers on County contracts are requested to submit the Collusion Affidavit within five (5) days from notification of intent to award.

Failure to provide a Collusion Affidavit within 5 business days after the recommendation to award has been filed with the Clerk of the Board shall be cause for the contractor to forfeit their bid/proposal bond. NTP shall not be issued, and no work shall commence until a fully executed Collusion Affidavit is submitted and approved by DTPW.

17. JOB CLEARINGHOUSE:

The Contractor is required to comply with the requirements of Job Clearinghouse Code §2-1701 and Resolution No. R-1395-05 amending Resolution Nos. 1145-99 & 937-98, by making it a mandatory requirement for contractors to post notice through the County's Clearinghouse process of job opportunities made available by construction improvements on County property.

The procedures direct the Contractor to forward a notice of job vacancy(s) created as a result of this construction work to the Director of the Division of Small Business Development (SBD), located at Stephen P. Clark Center, 111 N.W. 1st. Street, Contract Review and Compliance Section, 19th Floor, Miami, Florida, 33128. The job vacancy notice(s) should be delivered within ten (10) working days following award of contract. The SBD Director will in turn distribute said job announcements to all Miami-Dade County facilities participating in the notification requirements of Resolution No. 1395-05. For information regarding the Miami-Dade County's Clearinghouse program, please contact the SBD at (305) 375-3157.

18. SCRUTINIZED COMPANIES:

By executing this proposal through a duly authorized representative, the bidder certifies that the bidder is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, as those terms are used and defined in sections

287.135 and 215.473 of the Florida Statutes. In the event that the bidder is unable to provide such certification but still seeks to be considered for award of this solicitation, the bidder shall execute the proposal through a duly authorized representative and shall also initial this space: _____. In such event, the bidder shall furnish together with its proposal a duly executed written explanation of the facts supporting any exception to the requirement for certification that it claims under Section 287.135 of the Florida Statutes. The bidder agrees to cooperate fully with the County in any investigation undertaken by the County to determine whether the claimed exception would be applicable. The County shall have the right to terminate any contract resulting from this solicitation for default if the bidder is found to have submitted a false certification or to have been, or is subsequently during the term of the contract, placed on the Scrutinized Companies for Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List.

19. USER ACCESS PROGRAM (UAP):

Pursuant to Miami-Dade County Budget Ordinance No. 03-192, this Contract is subject to a user access fee under the County's User Access Program (UAP) in the amount of two percent (2%). All construction services provided under this contract are subject to the 2% UAP. This fee applies to all Contract usage whether by County Departments or by any other governmental, quasi-governmental or not-for-profit entity. From every payment made to the Contractor under this contract (including the payment of retainage), the County will deduct the two percent (2%) UAP fee provided in the ordinance and the Contractor will accept such reduced amount as full compensation for any and all deliverables under the contract. The County shall retain the 2% UAP for use by the County to help defray the cost of its procurement program. Contractor participation in this pay request reduction portion of the UAP is mandatory.

20. CONTRACTOR DUE DILIGENCE AFFIDAVIT:

The attention of the Contractor is hereby directed to the requirements of Resolution R6314 in that the award of this contract is conditioned on the Contractor providing the County, when required, with a "CONTRACTOR DUE DILIGENCE AFFIDAVIT."

21. SUBCONTRACTOR / SUPPLIER LISTING:

Pursuant to Section 2-8.1 and 10.34 of the Miami-Dade County Code, for contracts valued at \$100,000 or more when subcontractor(s) and/or supplier(s) are utilized, the Prime contractor/vendor/consultant shall report to Miami-Dade County the race, gender, and ethnic origin of all such first-tier subcontractor(s) and supplier(s). The paper-based Subcontractor/Supplier Listing that was previously submitted at time of bid submission is no longer being used. The Prime contractor/vendor/consultant shall be required to identify its first-tier subcontractor(s)/supplier(s) and provide demographic information for both their firm and each subcontractor/supplier on the contract as soon as reasonably available and in any event prior to final payment under the contract via Miami-Dade County's online Business Management Workforce System (BMWS).

22. RESIDENTS FIRST TRAINING AND EMPLOYMENT PROGRAM:

In accordance with Section 2-11.17 of the Code of Miami-Dade County and Implementing Order No. 3-61 (copies attached or online at <http://www.miamidade.gov/smallbusiness/business-development-legislation.asp>), all contractors and subcontractors of any tier on (i) construction contracts valued in excess of \$1,000,000 for the construction, demolition, alteration and/or repair of public buildings or public works, or (ii) contracts or leases valued in excess of \$1,000,000 for privately funded construction, demolition, alteration or repair of buildings or improvements on County-owned land, shall comply with the following:

1. Bidders must:

- a) Submit a completed Responsible Contractor Affidavit (Form RTFE 1) along with the Bid Submittal Package. The Responsible Contractor Affidavit shall verify that (i) prior to working on the project, all persons employed by the contractor on the project to perform construction have completed the OSHA 10-hour safety training course, and (ii) the contractor will make its best reasonable efforts to have fifty-one percent (51%) of all construction labor hours performed by Miami-Dade County residents.
 - b) The Contracting Officer shall provide to any contractor who fails to submit a Responsible Contractor Affidavit with its bid or proposal, a written notice that said contractor has forty-eight (48) hours from the time of notification to submit a Responsible Contractor Affidavit or its bid or proposal will be deemed nonresponsive and disqualified.
2. Prior to the issuance of a Notice to Proceed, contractors must also submit: (i) a Construction Workforce Plan (Form RFTE 2) and supporting documentation; (ii) a list of all subcontractors to be used on the project; (iii) a Responsible Subcontractor Affidavit (Form RFTE 1) for each subcontractor; and (iv) a list of all employees currently employed by the contractor.
 3. All certified payrolls submitted to the Contracting Officer shall include an OSHA Safety Training Affidavit (Form RFTE 3).
 4. Within thirty (30) business days of completion of a project, the contractor must submit a Workforce Performance Report (Form RFTE 4).
 5. Any lessee shall include requirements of Section 2-11.7 of the Code of Miami-Dade County and Implementing Order No. 3-61, including the right of the County to access the contractor's and subcontractors' records to verify compliance, in any contract, subcontract, or sublease. Lessee shall be responsible to the County for payment of compliance monitoring costs and any penalties found due.

23. MONTHLY UTILIZATION REPORTS:

Paper-based Monthly Utilization Reports (MURs) are no longer being accepted for construction, architecture, and engineering projects with measures. Also, for architecture and engineering firms, pursuant to Implementing Order 3-39, primes and subconsultants are required to report payments monthly via Miami-Dade County's online Business Management Workforce System (BMWS).

“Compliance Audits” will be created in Miami-Dade County’s online Business Management Workforce System (BMWS) after Miami-Dade County pays the Prime contractor/vendor/consultant (approximately one month after). Miami-Dade County Departments will check the compliance audit status for each payment application to ensure that no audits are open for more than two (2) months. For construction contracts without measures, which only require reporting of cumulative subcontractor payments, a “Compliance Audit” shall only be verified prior to the final payment.

24. PUBLIC RECORDS AND CONTRACTS FOR SERVICES PERFORMED ON BEHALF OF MIAMI-DADE COUNTY (HB 1309):

HB 1309 re: governmental accountability has been signed into law by the Governor and was effective July 1. It generally applies only to state agencies, but there is one provision of HB 1309 that also applies to counties. This provision requires public agency contracts for services performed on behalf of the public agency to contain contract provisions clarifying the public record responsibilities of the contractor.

The Contractor shall comply with the Public Records Laws of the State of Florida, including but not limited to: (1) keeping and maintaining all public records that ordinarily and necessarily would be required by Miami-Dade County (County) in order to perform the service; (2) providing the public with access to public records on the same terms and conditions that the County would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law; (3) ensuring that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and (4) meeting all requirements for retaining public records and transferring, at no cost, to the County all public records in possession of the Contractor upon termination of the contract and destroying any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements upon such transfer. In addition, all records stored electronically must be provided to the County in a format that is compatible with the information technology systems of the County. Failure to meet any of these provisions or to comply with Florida’s Public Records Laws as applicable shall be a material breach of the agreement and shall be enforced in accordance with the terms of the agreement.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR’S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT (305) 375-5773;

ISDVSS@MIAMIDADE.GOV; 111 NW 1 STREET, SUITE 1300, MIAMI, FLORIDA 33128.

25. CONE OF SILENCE

The attention of the Contractor is hereby directed to the requirements of Miami-Dade County Administrative Order No. 3-27 – Cone of Silence.

26. BID PROTEST

The attention of the Contractor is hereby directed to the requirements of Miami-Dade County Implementing Order No. 3-21 – Bid Protest and Resolution R-1080-19 which updated the Bid Protest filing fees for contracts set-aside for bidding solely by certified Small Business Enterprises, and other relevant sections.

27. PROMPT PAYMENT

The attention of the Contractor is hereby directed to the requirements of Miami-Dade County Administrative Order No. 3-19 – Prompt Payment.

28. ASSIGNABILITY/ASSIGNMENT

- A. **ASSIGNABILITY** - Department of Transportation and Public Works (DTPW) may assign its rights and obligations under the Contract to any successor to the rights and functions of DTW or to any governmental agency to the extent required by applicable laws or governmental regulations or to the extent that DTPW deems necessary or advisable under the circumstances.
- B. **ASSIGNMENT** - The Contractor shall not assign, transfer, or otherwise dispose of this Contract, including any rights, title or interest therein, or their power to execute such Contract to any person, company or corporation without the prior written consent to DTPW. DTPW's consent for any assignment will not be unreasonably withheld.

29. SECTION 20.055 (5)

The contractor/consultant/vendor agrees to comply with s.20.055 (5), Florida Statutes, and to incorporate in all subcontracts the obligation to comply with s.20.055 (5), Florida Statutes.

Section 20.055 (5):

(5) It is the duty of every state officer, employee, agency, special district, board, commission, contractor, and subcontractor to cooperate with the inspector general in any investigation, audit, inspection, review, or hearing pursuant to this section. Beginning July 1, 2015, each contract, bid, proposal, and application or solicitation for a contract shall contain a statement that the corporation, partnership, or person understands and will comply with this subsection.

30. ESTIMATED TIME CONTINGENCY

This Contract contains a Contingency Allowance time extension not to exceed ten percent (10%) of the original Contract Duration. Pursuant to a written request by the Contractor for a time extension,

that affects the critical path schedule of the Contract or any previously approved changes; written documentation that supports the justification of a time extension, review and concurrence by the COUNTY A/E, a Contract Contingency Allowance Expenditure Authorization will be created for execution by all parties. Once executed the time extension will adjust the scheduled completion date. The cumulative total of all Contingency Allowance time extensions shall not exceed ten percent (10 %) of the original Contract Duration rounded off to the next whole number.

31. LCP TRACKER

Refer to the memo dated April 25, 2019 from the Director of Small Business Development Division for Implementation of LCPtracker.

32. RESOLUTION NO. 1181-18 / DIRECTIVE NO. 182536

The Contractor is directed to the attached report regarding consideration of Contractor Safety Information as a Part of the Contractor Responsibility Review for Contract Award – Directive No. 182536 and the requirements of Resolution No. 1181-18, applicable to this Project.

Bidders may request a copy of any ordinance, resolution and/or administrative order cited in this bid solicitation, by contacting the Clerk of the Board at 305.375.5126.

33. DISCLOSURE OF ALLEGED DISCRIMINATION LAWSUITS

In accord with Resolution No. R-828-19, the County reserves the right to request from any Bidder the disclosure of any lawsuits which include allegations of discrimination in the last ten years prior to date of solicitation, the disposition of such lawsuits, or statement that there are NO such lawsuits.”

34. E-VERIFY

By entering the Contract, the Awarded Bidder becomes obligated to comply with the provisions of Section 448.095, Florida Statute, titled "Verification of Employment Eligibility." This includes but is not limited to utilization of the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of all newly hired employees by the Awarded Bidder effective, January 1, 2021, and requiring all Subcontractors to provide an affidavit attesting that the Subcontractor does not employ, contract with, or subcontract with, an unauthorized alien. Failure to comply may lead to termination of this Awarded Bidder, or if a Subcontractor knowingly violates the statute, the subcontract must be terminated immediately. Any challenge to termination under this provision must be filed in the Circuit Court no later than twenty (20) calendar days after the date of termination. If this Contract is terminated for a violation of the statute by the Awarded Bidder, the Awarded Bidder may not be awarded a public contract for a period of one year after the date of termination, and the Awarded Bidder may be liable for any additional costs incurred by the County resulting from the termination of the Contract. Public and private employers must enroll in the E-Verify System (<http://www.uscis.gov/e-verify>) and retain the I-9 Forms for inspection.

35. APPLICABLE LEGISLATION

The selected Contractor will be required to abide by all applicable federal, state and local laws and ordinances, as amended. the applicable local laws and ordinances include, but are not limited to:

Florida Statute(s)

- [Section 119.07](#)- Inspection and Copying of Records; Photographing Public Records; Fees; Exemptions.
- [Section 119.0701](#) - Contracts; Public Records
- [Section 287.133](#) - Public Entity Crimes
- [Section 287.135](#) - Prohibition against contracting with scrutinized companies
- [Section 295.187](#) - Florida Veteran Business Enterprise Opportunity Act
- [Section 448.095](#) – Employment Eligibility

Ordinance(s)

- [77-13](#) -Financial Disclosures Requirements
- [90-133](#) - Disclosure of Ownership, Collective Bargaining Agreement, and Employee Wages,
- Health Care Benefits, Race, National Origin and Gender
- [97-35](#) - Policy of Fair Subcontracting Practices
- [97-67](#) - Amending Chapter 11A Prohibiting Discrimination in Contracting, Procurement, Bonding and Financial Services
- [99-152](#) - False Claim Ordinance
- [03-107](#) - Ordinance Amending Section 2-11.1 (s) of the Conflict of Interest and Code of Ethics
- [07-65](#) - Sustainable Buildings Program (when applicable)
- [08-113](#) - Ordinance Amending Sections 2-8.1.1 and 10-33.1 of the Miami-Dade County Code relating to bids from related parties to include a prohibition on collusive bidding
- [11-90](#) - Ordinance Relating to the Collection of Data for a Disparity Study
- [14-79](#) - Sea-Level Rise Ordinance (when applicable)
- [21-22](#) - Buy American Iron and Steel Products Procurement Program

Resolution(s)

- R-1049-93 - Affirmative Action Plan Furtherance and Compliance
- R-385-95 - Policy prohibiting contracts with firms violating the American with Disabilities-Act. (ADA) and other laws prohibiting discrimination on the basis of disability ADA requirements, are a condition of award, as amended by Resolution R-182-00.
- [R-531-00](#) - Prohibition of contracting with individuals and entities while in arrears with the County
- [R-183-00](#) - Family Leave Requirements
- [R-185-00](#) - Domestic Violence Leave
- [R-273-05](#) - Public Involvement Planning
- [R-63-14](#) - Contractor Due Diligence

- [R-828-19](#) – Disclosure of Alleged Discrimination Lawsuits
- [R-1106-15](#) - Aspirational Policy of Miami-Dade County
- [R-1011-15](#): Requiring Vendors to Provide Addresses of Local Offices Administrative Order(s)

Administrative Order(s)

- [03-27](#) - Cone of Silence
- [3-53](#) – Miscellaneous Construction Contracts Program
- [10-10](#) - Duties and Responsibilities of County Departments for Compliance with the Americans with Disabilities Act (ADA) Implementing Order(s)
- [3-19](#) – Prompt Payment

Implementing Order(s)

- [3-21](#) - Bid Protest Procedure
- [3-24](#) – Responsible Wages and Benefits for County Construction Contracts
- [3-37](#) – Community Workforce Program
- [3-61](#) – Residents First Training and Employment Program
- [3-63](#) – Employ Miami-Dade Program
- [7-7](#) – Policies and Procedures Establishing a Public Service Honor Code for Elected and Appointed County Officials and County Employees
- [8-8](#) – Sustainable Buildings Program IO

Miami-Dade County Code(s)

- [Section 2-8.1](#) - Contracts and Purchases
- [Section 2-8.1.5](#) – Nondiscrimination
- [Section 2-8.4](#) - Protest Procedures
- [Section 2-8.5](#) – Procedure to provide preference to local business in county contracts
- [Section 2-8.5.1](#) - Procedure to Provide Preference to Local Certified Veteran Business Enterprises in County Contracts
- [Section 2-8.8](#) - Fair Subcontracting Practices
- [Section 2.11.1](#) - Conflict of Interest and Code of Ethics
- [Section 10-34](#) - Listing of Subcontractors Required
- [Section 2-8.2.6.1](#) - Buy American Iron and Steel Products Procurement Program

36. BUY -AMERICAN IRON AND STEEL PRODUCTS PROCUREMENT PROGRAM

The attention of the Contractor is hereby directed to the requirements of Miami-Dade County Ordinance No. 21-22 and Miami-Dade County Code 2-8.2.6.1 – Buy American Iron and Steel Products Procurement Program, applicable to this project.

APPENDIX "A"
**AUTHORIZATION AGREEMENT FOR AUTOMATIC
DEPOSIT**



RPQ NO. TP-0000018108



ACH AUTHORIZATION AGREEMENT FOR AUTOMATIC DIRECT DEPOSIT OF MIAMI-DADE COUNTY WARRANTS

We hereby authorize the Finance Department to initiate credit entries and, if necessary, a debit entry in order to reverse a credit entry made in error in accordance with NACHA rules.

Original form must be received before we can process your request for ACH deposits. Please refer to page 2 for instructions. Processing of the form is approximately 15 days from receipt of completed original form. This authority is to remain in effect until revoked in writing and received by the Finance Department. Account changes must be reported at a minimum **fifteen (15) days prior to actual change**.

Section 1 (TO BE COMPLETED BY VENDOR) - ALL FIELDS ARE REQUIRED

TRANSACTION TYPE:

New ☐

Change ☐

Terminate ☐

FEDERAL IDENTIFICATION NUMBER

--	--	--	--	--	--	--	--	--	--

(AS PER CURRENT W-9)

--	--

(FOR INTERNAL USE ONLY)

VENDOR NAME :

DBA (DOING BUSINESS AS) :

TELEPHONE NUMBER :

FISCAL OFFICER NAME AND TITLE :

FISCAL OFFICER'S EMAIL :

ACH NOTIFICATION EMAIL:

(This is the email where payment information will be sent)

ROUTING NUMBER

--	--	--	--	--	--	--	--	--	--

--	--

(FOR INTERNAL USE ONLY)

VENDOR'S BANK ACCOUNT NUMBER

--	--	--	--	--	--	--	--	--	--

TYPE OF ACCOUNT

Checking ☐

Savings ☐

AUTHORIZED SIGNATURE _____

DATE : _____

PRINTED NAME _____

A VOIDED CHECK OR REDACTED COPY OF A BANK STATEMENT FOR THE ACCOUNT LISTED ABOVE MUST BE PROVIDED. PLEASE REFER TO INSTRUCTIONS FOR OUR MAILING ADDRESS. SUBMISSION OF YOUR E-MAIL ADDRESS IS MANDATORY IN ORDER TO PARTICIPATE IN THIS PAYMENT OPTION.

Section 2 (TO BE COMPLETED BY FINANCIAL INSTITUTION)

FINANCIAL INSTITUTION NAME: _____

ADDRESS: _____

BANK OFFICIAL NAME (PRINTED) AND TITLE : _____

TELEPHONE NUMBER : _____

EMPLOYEE ID NO. : _____

EMAIL : _____

☐ I have verified that the account and routing number provided above is correct and corresponds to vendor noted above.

☐ I have also verified that the person signing is an authorized signer on the account specified.

SIGNATURE _____

DATE : _____

Section 3 (TO BE COMPLETED BY MIAMI-DADE FINANCE DEPARTMENT)

Accounts Payable Verifications

Corp. Officer Name :

Verified by:

A/P Staff: _____

Corp. Officer Title : _____

Date: _____

Bank Officer: _____

A/P Supervisor: _____

Date: _____

Cash Management

Routing # verified by : _____

Date: _____

Verified by : _____

Verification Date: _____

Input/Output

ACH Indicator updated by : _____

Date of Update : _____

Verified by : _____

Verification Date: _____



ACH AUTHORIZATION AGREEMENT FOR AUTOMATIC DIRECT DEPOSIT OF MIAMI-DADE COUNTY WARRANTS

INSTRUCTIONS

Please contact us at (305) 375-5111 or email at FIN-ACHN@miamidade.gov if you have any questions or need assistance with this form.

You may obtain blank copies of this form at : http://www.miamidade.gov/finance/library/ach_form.pdf

At our Vendor Payment Inquiry (VPI) website you can obtain payment information as well as status of invoices, payment due date and other important information. You can reach the VPI site at :

<https://w85exp.miamidade.gov/VInvoice/login.do>

Section 1

Transaction Type

- New : If vendor is currently not on ACH deposits with Miami-Dade County.
- Change : If vendor is currently on ACH deposits with Miami-Dade County and would like to make changes to their information (example : change of financial institution, account number, etc.)
- Terminate : If vendor is currently on ACH deposits with Miami-Dade County and would like to switch to either Check or AP Control disbursement type)

Federal Identification Number : Enter your Federal Employer Identification Number (FEIN) or Social Security Number (SSN) used to register you as a vendor with Miami-Dade County. Name and FEIN/SS must be exactly as provided on IRS Form W-9.

Vendor Name : Enter the name of your business or individual name used to register you as a vendor with Miami-Dade County.

DBA (Doing Business As) : If you have registered a DBA for your business or for you as an individual, please enter it here.

Fiscal Officer Name, Title and E-Mail : Name of Authorized Corporate officer, Title and E-Mail address to be contacted to. Corporate officer signing this form must be an authorized signatory in the corporate bank account listed on this form.

ACH Notification E-Mail : This is the E-Mail address where payment information will be sent to.

Section 2

This section must be completed in full and legible manner by your banking institution in order to prevent delays in processing change to ACH. Both acknowledgment statements must be checked off by Bank Official signing and dating the form.

Section 3

This section will be completed by Miami-Dade County Finance Department.

ORIGINAL FORM AND VOIDED CHECK OR REDACTED STATEMENT MUST BE MAILED TO :

Accounts Payable Manager

Miami-Dade County Finance Department
111 NW First Street, Suite 2620
Miami, Florida 33128

Terms and Conditions

Completed form should not contain any changes (scratched off /white out) or altered information; otherwise, form will not be accepted.

Processing time is approximately fifteen (15) days from receipt of complete form and voided check or redacted Bank statement.

Providing account information does not authorize Miami-Dade County to access bank account activity.

ACH deposits can be made into **only** one (1) bank account. Payments can not be split between multiple accounts.

Notification E-mail providing payment information can be sent to one (1) single E-mail address **only**.

Proper verification will be conducted by Miami-Dade County Finance Department Staff, via a telephone call to confirm the information being provided is accurate.

This authorization shall remain in effect until terminated in writing with sufficient notice to Miami-Dade County Finance Department.

Miami-Dade County will not be responsible for any loss that may arise solely by reason of error, mistake or fraud regarding information provided on this ACH Authorization Agreement Form.

APPENDIX "B"
SUSTAINABLE BUILDINGS PROGRAM



RPQ NO. TP-0000018108

SUSTAINABLE BUILDINGS
PROGRAM

1.0. INFRASTRUCTURE, BUILDINGS, CONSTRUCTION, AND ARCHITECTURAL & ENGINEERING SERVICES:

Resolution R-451-14 (Sea Level Rise

Infrastructure); Comprehensive Development Master Plan (CDMP) Land Use Element Objective LU-13 and Policies LU-13A-LU13I; Miami-Dade County Sea Level Rise Strategy; and Section 21 of the Code (Board of County Commissioners Rule 5.09, consideration of sea level rise).

CDMP Objective LU-13 requires the County to implement strategies to reduce the impacts of climate change on the built environment and address the impacts of the built environment on the natural systems that provide protections against the impacts of climate change. The underlying policies in LU-13A through LU-13I delineate strategies for the County to meet this objective. Resolution R-451-14 requires the consideration of sea level rise in all County infrastructure projects. It is incumbent upon the user department to ensure that procurements are consistent with these County policies.

Pursuant to Section 2-1 of the Code (Board of County Commissioners Rule 5.09), all agenda items brought to the Board that relate to planning, design and/or construction of County infrastructure projects, including but not limited to, County building elevation projects, County installation of mechanical and electrical system, County infrastructure modifications and County infrastructure renovations, the Mayor or Mayor's designee shall include a statement in the item that the impact of sea level rise has been considered in the project.

Pursuant to Resolution R-451-14, all County infrastructure projects, including but not limited to County building elevation projects, County installation of mechanical and electrical systems, County infrastructure modifications, and County infrastructure renovations shall consider sea level rise projections and potential impacts as best estimated at the time of the project. These projects shall consider regionally consistent unified sea level rise projections during all phases,

including but not limited to planning, design, and construction, in order to ensure that infrastructure projects will function properly for fifty (50) years or the design life of the project, whichever is greater.

**Imperative to elevate and waterproof electrical components*

STANDARD CONSTRUCTION
GENERAL CONTRACT CONDITIONS



RPQ NO. TP-0000018108

STANDARD CONSTRUCTION
GENERAL CONTRACT CONDITIONS
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[NOTE: THIS STANDARD CONSTRUCTION GENERAL CONTRACT CONDITIONS HAVE BEEN PREPARED FOR USE IN ALL CONSTRUCTION (DESIGN-BID-BUILD) CONTRACTS AND OTHERWISE IN ACCORDANCE WITH IMPLEMENTING ORDER 3-57.

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1. DEFINITIONS

Addendum/Addenda: A modification or clarification of the Contract Documents distributed to prospective Bidders prior to the opening of Bids.

Administrative Orders/Implementing Orders (AO/IO): a list of Miami-Dade County Administrative Orders and Implementing Orders is available online at:

<http://www.miamidade.gov/ao/home.asp?Process=completelista> Advertisement for Bids: The public notice inviting the submission of Bids for the Work.

Allowance Account (Contingency Account): Account in which a stated maximum dollar amount is included in the Contract for the purpose of funding, at the sole discretion of the Owner, unforeseen and/or changed conditions or extra work arising during the prosecution of the Work or any other changes issued by the Owner. The scope and limitations regarding use of the Allowance Account are contained in the Contract Documents. The performance of any work under this Allowance Account, shall be authorized by a written Work Order issued by the Owner.

Allowance Account(s) (Dedicated): Account(s) in which stated maximum dollar amount(s) are included in the Contract for the purpose of funding specific pre-identified items of work at the sole discretion of the Owner. The scope and limitations regarding use of the Dedicated Allowance Account(s) are contained in the Contract Documents.

Architect/Engineer: Owner or its authorized representatives identified in the Notice-to-Proceed letter, which may include but is not limited to the Owner's Resident Architect/Engineer, the Construction Manager, the Owner's representatives, and the Architect/Engineer of Record. In the event an Architect/Engineer is not employed on the project, or an Architect/Engineer is not otherwise specified in the Notice-to-Proceed, the term shall be read as coterminous with the term "Owner."

Art in Public Places: Miami-Dade County program established in Miami-Dade County Code Section 2-11.15 providing a one and a half percent (1.5%) of each County project's construction and engineering design cost to fund a public art component within the Project. Coordination and installation of the Artist's work is included as part of the scope of the Contractor's services to the extent that it is defined in the Bid Documents. The cost of this program is budgetary, funded by the Department, and shall not be included in the Contractor's bid.

Artist: Person(s) chosen through the Art in Public Places program to design and fabricate or specify an integrated work of art for the Project. The term Artist as may be referred to in the Contract Documents means the Artist and/or their authorized representative.

As-Built Documents: Documents signed and sealed by an appropriately licensed professional and submitted by the Contractor during and/or upon completion of the Contract reflecting actual installed/built conditions and all changes made in the Contract Documents during the construction process and showing the exact dimensions, geometry, location, identification and such other information as required by the Contract Documents and/or Architect/Engineer for all elements of the work completed under the contract (also referred to as "As-Built Drawings" or "As-Builts"). Final payment is conditional upon the receipt of As-Built Documents.

Award: Action taken by the Owner to accept the Bid submitted by the Contractor to perform the Work described in the Contract Documents.

Baseline Construction Schedule: A schedule submitted by the Contractor in accordance with the Contract Documents, reviewed and approved by the Owner that is used by the Contractor to plan the performance of the Work. The Contract Documents may require interim Baseline Construction Schedules be submitted for only a portion of the initial Work to be followed by a Baseline Construction Schedule covering all the Work. The Baseline Construction Schedule shall also be used to quantify delays in accordance with the Contract Documents. While the Baseline Construction Schedule remains unchanged, updates to the Baseline Construction Schedule are prepared and submitted by the Contractor per the Contract Documents. The Baseline Construction Schedule shall only be revised and submitted again for review and approval by the Owner as required by the Contract Documents.

BCC: Board of County Commissioners, the governing board of Miami-Dade County.

Beneficial Occupancy: The point at which the Owner or Architect/Engineer determines that the Work or any portion thereof can be occupied from a regulatory and work function standpoint prior to Substantial Completion of the Work. Beneficial Occupancy will not relieve the Contractor of any of its obligations relative to Substantial Completion, or of its responsibility to fully complete the Work in accordance with the Contract Documents.

Bid: The written offer of a Bidder to perform the Work.

Bid Documents: The Advertisement for Bids, Instructions to Bidders, Bid Form, Bid Security, Construction Contract, all contractual forms, General Conditions, Special Provisions, Technical Specifications and Contract Drawings, together with all Addenda and any other applicable standards, regulations, laws and permits as described within these other documents which may be incorporated by reference.

Bid Item: A specific item of work represented by a line item in the Bid Form.

Bid Form: The form on which Bids are submitted.

Bid Security: (Also known as Bid Bond) The cashier's check, certified check or bid bond, accompanying the Bid and submitted by the prospective bidder, as a guarantee that the prospective bidder will enter into a contract with the Owner for the performance of the Work and furnish acceptable bonds and insurance if the Contract is awarded to him.

Bidder: An individual, firm, partnership, corporation, or combination thereof, submitting a Bid for the Work.

Certificate of Substantial Completion: Certificate issued to the Contractor by the Owner certifying that Substantial Completion has been achieved.

Certificate of Completion: Certificate issued by the local building official providing proof that a structure or system is complete and, for certain types of permits, is released for use and may be connected to a utility system. This certificate does not grant authority to occupy a building, such as a shell building, prior to the issuance of a Certificate of Occupancy by the local building official.

Certificate of Final Acceptance: Certificate issued to the Contractor by the Owner certifying that Final Acceptance has been achieved in accordance with the definition reflected herein (see Final Acceptance definition).

Certificate of Occupancy: Certificate issued by the local building official after the building official inspects the building or structure and finds no violations of the provisions of applicable codes or other laws that are enforced by the local building department.

Change Notice: A document issued by the Architect/Engineer or Owner to the Contractor specifying a proposed change to the Contract Documents and requesting a price proposal from the Contractor, if applicable, within a specified time period.

Change Order: A written agreement executed by the Owner, the Contractor and the Contractor's Surety, covering modifications to the Contract Documents.

Claim: A Claim should include any request for additional compensation, time, or other relief arising out of or relating to the Contract Documents, including without limitation, requests for equitable adjustments and breach of contract.

Commissioning: A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that all of the commissioned systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the Owner's Project Requirements.

Construction Staging Area: Property which may be available for use by the Contractor during the construction period for the purpose of storing products and construction equipment and for the purpose of staging the Work. The construction staging area(s), if applicable, are defined in the Contract Documents.

Construction Contract: The agreement executed by the Contractor and the Owner covering the performance of the Work including the furnishing of labor, superintendence, materials, tools, and equipment as indicated in the Contract Documents. The term "Contract" shall have the same meaning.

Construction Inspection Services: Services performed by the Owner or a consultant to the Owner to verify that the Work is being performed in accordance with the Contract Documents. The use of these services shall not relieve the Design/Builder of their responsibilities under the Contract Documents.

Consultant: See Architect/Engineer.

Contract Documents: Bid Documents, Contract Summary, General Conditions, Special Conditions, Technical Specifications, Change Orders, Payment and Performance Bonds, Work Orders, Approved Schedules, Approved Shop Drawings and Approved Working Drawings.

Contract Drawings: The plans, profiles, cross-sections, elevations, schedules, and details which show locations, character, dimensions, and details of the Work. Contract Drawings are confidential under the Florida Public Records Act and the Contractor is responsible for maintaining confidentiality during and after the progress of the Work.

Contractor: The individual, firm, partnership, or corporation, or combination thereof, private, municipal, or public, including joint ventures, duly licensed under Florida Statutes, which, as an independent Contractor, has entered a Contract with Miami-Dade County, who is referred to throughout the Contract Documents by singular in number and masculine in gender.

Contract Summary: The written agreement between the County and the Contractor for performance of the Work in accordance with the requirements of the Contract Documents and for the payment of the agreed consideration.

Contract Time: The number of days allowed for completion of the Work commencing with the effective date of Notice to Proceed and ending with the date of Substantial Completion or Final Completion, including completion of punch list items, as determined by the Owner or the Owner's designee. The Contract Time will be stipulated in the Contract Documents unless extended by a Change Order or by a Work Order.

County: See Owner.

County Mayor: The Mayor of Miami-Dade County, Florida, or the County Mayor's designee.

Critical Path: Longest sequence of activities in a project's schedule which defines the project completion date and which must be completed on time in order for the project to be completed on schedule.

Delays: May be Excusable or Non-Excusable. Excusable Delays may be Compensable or Non-Compensable, as further defined within the text of these General Conditions.

Days: Unless otherwise designated, days mean calendar days.

Department Director: The Director of the Miami-Dade County Department implementing the work or the Director's designee.

Department Director's Representative: The person or persons designated by the Department Director to act on his behalf in the administration of the contract within the limits of their respective authorization.

Direct Costs: Direct Costs recoverable by the Contractor as a result of changes in the Work shall be limited to the actual additional costs of labor and materials installed as part of the Work and for the reasonable additional cost of rental of any Special Equipment or Machinery. Labor shall be limited to site labor costs, including Employer's Payroll Burden. Specifically excluded from labor are the costs of general foremen and site office personnel. Materials are limited to permanent materials required by the Contract Documents and materials approved by the Architect/Engineer as necessary to install the permanent materials in an efficient and workmanlike manner. For special equipment or machinery not listed in said document, the Contractor shall be paid a rental rate corresponding to the average prevailing rental rate for such equipment or machinery in Miami-Dade County, Florida, subject to approval by the Architect/Engineer. No additional payment shall be made to the Contractor for fuel, lubricants, for wear and tear, transportation, insurance, or depreciation. Any equipment or machinery not designated by the Architect/Engineer as special equipment and machinery shall be considered Overhead.

Extra Work: Work not provided for in the Contract Documents as awarded or as previously modified by Change Order or Work Order but found to be essential to the satisfactory completion of the Contract within its intended scope.

Facility: The structure or items being constructed under the Contract, inclusive of all subsurface work, landscaping work, and other ancillary work. Field Representative/Construction Manager: An authorized representative of the Owner that may provide administrative and construction inspection services during the pre-construction, construction, and closeout phases of the Contract and through which the orders of the Owner shall be given. The Field Representative has no authority to modify or waive any provision of the Contract Documents.

Fast Track: A design/build method where separate and often, intermediate phases of the Project are designed, permitted and constructed earlier in the schedule while the remainder and often, more complex portions of the Project are designed, permitted and constructed later in the schedule. For example, foundation design, permitting and construction earlier while the remainder of the structure takes longer to design, permit and construct. Fast-track construction is subject to the approval of the Owner and the permitting agencies.

Final Acceptance: The formal written acceptance by the Owner of the completed work.

Final Completion: Point in time when the Owner determines that all physical Work has been completed in accordance with the Contract Documents and all deficiencies listed within the Certificate of Substantial Completion and/or Punch List elements have been corrected to the satisfaction of the Owner and Architect/Engineer. Where the contract requires that Contractor provide the Owner with spares or surplus

material, provision of same in accordance with the Contract Documents shall be an additional requirement for Final Completion (See Article 8 Contract Time Paragraph D. Substantial Completion, Final Completion and Final Acceptance).

Force Account: A method of payment measured by actual cost of the labor, materials, and equipment plus the contractual approved mark-up for Indirect Costs, as distinct from other payment methods such as lump sum or unit price, for Extra Work ordered by Change Order and/or Work Order (See Article 10 Changes Paragraph G. Force Account).

Force Majeure: Force Majeure as used herein shall mean Acts of God, strikes, lockouts, any late delivery of the Owner's supplied material and equipment due to transportation delays beyond Department's control, or other industrial disturbances; acts of public enemy, blockades, wars, insurrections, or riots; epidemics, landslides, earthquakes, fire, storms, floods, or washouts; arrests, title disputes, or other litigation; governmental restraints, either Federal or County, civil or military; civil disturbances; explosions; nationwide inability to obtain necessary materials or equipment, supplies, labor, or permits whether due to existing or future rules, regulations, orders, laws, or proclamations, either Federal, State or County, civil or military, or otherwise; and other causes beyond the control of the Department or County, whether or not specifically enumerated herein. Changes in the market price of goods, materials, equipment, labor, or supplies shall not be considered an instance of Force Majeure, and Contractor's bid shall include all risks of market changes the price of such things. COVID-19 or any other catastrophic event shall not be considered a Force Majeure event. Changes in the County's Responsible Wage Ordinance wage rates shall not be considered as Force Majeure events.

Furnishing: Manufacturing, fabricating, or purchasing and delivering to the site of the Work materials, plant, power, tools, patterns, supplies, appliances, vehicles, and conveyances necessary or required for the completion of Work.

General Conditions: This section of the Contract Documents which specifies, in general, the contractual conditions.

Green Building Practices: Environmentally and socially-conscious practices that emphasize processes and methods of design and construction that reduce exposure to noxious materials, conserve non-renewable energy and scarce materials, minimize life-cycle ecological impact of energy and materials, employ renewable energy or materials that are sustainably harvested, protect and restore local air, water, soils, flora and fauna, and support pedestrians, bicycles, mass transit and other alternatives to fossil-fueled vehicles.

Indirect Costs: Overhead.

Installation, Install or Installing: Completely assembling, erecting, and connecting material, parts, components, supplies and related equipment specified or required for the completion of the Work including the successful passing of all tests so that they are fully functional.

LEED (Leadership in Energy and Environmental Design): An ecology-oriented building certification program run under the auspices of the U.S. Green Building Council (USGBC) which concentrates its efforts on improving performance across five key areas of environmental and human health: energy efficiency, indoor environmental quality, materials selection, sustainable site development, and water savings.

Limit of Work: Boundary within which the Work is to be performed.

Liquidated Damages: The amount that the Contractor accepts, as stipulated in the Contract Documents, which will be deducted from the Contract Sum for each day of delay due to a Non-Excusable Delay. The Liquidated Damages set forth herein are compensation for the County's inability to timely put the project

into service, the continued disruption of County functions, for impacts to the County's reputation, and other indirect damages which the parties agree are difficult to measure. (See Article 8 Contract Time Paragraph F. Liquidated Damages and Liquidated Indirect Costs).

Liquidated Indirect Costs Rate: The amount, stipulated in the Contract Documents, which will be added to the Contract Sum for each day of delay due to a Compensable Delay. The Contractor accepts this sum as full compensation for the Contractor's and all its subcontractors', of any tier, for indirect costs, for each day of Compensable Delays. This amount is agreed to include any costs other than Direct Costs incurred by the Contractor and all its subcontractors of any tier in the performance of this Contract. (See Article 8 Contract Time, Paragraph F. Liquidated Damages and Liquidated Indirect Costs)

Lump Sum Bid Item: A bid item in which quantity is not separately measured for payment in units but rather is based on the amount bid by the Contractor as indicated in the Bid Form and made a part of the Contract. Partial payments of Lump Sum Bid Items will be conditionally made, based upon an approved schedule of values, and will be subject to reconciliation in the event that the work of a Lump Sum Bid Item is not fully completed in accordance with the requirements of the Contract Documents.

Miami-Dade County (MDC): A political subdivision of the State of Florida, the Owner.

Miami-Dade County Code of Ordinances: Central repository for Governing Legislation where Ordinances are codified and kept current with subsequent amendments. The Miami-Dade County Code of Ordinances can be viewed at the following hyperlink:

<https://library.municode.com/fl/miami-dade-county/codes/code-of-ordinances>

Milestone: A completion date as defined in the Contract Documents.

Notice to Proceed: Written notice from the Owner to the Contractor specifying the date on which the Contractor is to proceed with the Work and on which the Contract Time commences to run.

Notice of Termination: Written notice from the Architect/Engineer or the Owner to the Contractor to permanently stop work under the Contract on the date and to the extent specified in the notice. The Notice of Termination includes Notices of Termination for Convenience, Default and National Emergencies as set forth in the Contract Documents. Upon receipt of such notice, the Contractor shall comply with the termination provisions of this Contract.

Overhead (Indirect Costs): Overhead, also defined as "Indirect Costs," includes any and all costs other than Direct Costs. The term "Overhead" as indicated in this definition shall apply to both Contractors and subcontractors of any tier. Overhead includes, but is not limited to, all profit and costs associated with: project bond premiums, project insurance premiums, costs of supervision, coordination, superintendents, general foremen, consultants, schedulers, cost controllers, accountants, office administrative personnel, time keepers, clerks, secretaries, watch persons, small tools, equipment or machinery, utilities, rent, telephones, facsimile machines, computers, word processors, printers, plotters, computer software, all expendable items, job site and general office expenses, extended jobsite general conditions, interest on monies retained by the Owner, escalated costs of materials and labor, impact cost on unchanged work, inefficiency, decreased productivity, home office expenses or any cost incurred that may be allocated from the headquarters of the Contractor or any of its subcontractors, loss of any anticipated profits, loss of bonding capacity or capability losses, loss of business opportunities, loss of productivity on this or any other Project, loss of interest income on funds not paid, costs to prepare a bid, cost to prepare a quote for a Change in the Work, costs to prepare, negotiate or prosecute claims, costs of legal and accounting work,

costs spent to achieve compliance with applicable laws and ordinances, loss of Projects not bid upon, loss of productivity or inefficiencies in the Work from any cause.

Owner: Miami-Dade County, whose governing body is the BCC acting in its proprietary capacity through its duly authorized agents. When these Contract Documents require the action of individual persons, the documents contain specific references to these persons. In particular, the documents shall refer to the BCC when approval of the BCC is specifically required and to the Architect/Engineer when the Architect/Engineer's approval is specifically required.

Payment and Performance Bond: Bond executed by the Contractor and its Surety assuring that the Contractor will, in good faith, perform and guarantee the work in full conformity with the terms of the Contract Documents and will promptly pay all persons supplying the Contractor with labor, materials, or supplies, used directly or indirectly by the Contractor in the prosecution of the Work. This bond shall be a single instrument bond for twice the penal sum (to cover 100 percent of the total maximum contract amount for payment-related issues and 100 percent of the total maximum contract amount for performance-related issues).

Project: See definition for Work.

Punch List: A list issued by the Owner to the Contractor of work elements requiring remedial action or completion by the Contractor before Final Completion is issued to the Contractor.

Resolution: An action taken by a vote of the Miami Dade County Board of County Commissioners setting policy and providing guidance to County Departments. Resolutions issued after 1995 can be viewed at the following hyperlink: <http://www.miamidade.gov/govaction/searchleg.asp>. Earlier Resolution can be obtained through request to the Clerk of the Board Division, Stephen P. Clark Center, 111 NW 1st Street, Suite 17-202 Miami, Florida 33128.

Right-of-Way: A term denoting land and property, and interests therein, owned or acquired by the Owner.

Schedules: All schedules delivered under the Contract including time schedules and schedule of values.

Schedule of Values: A detailed cost breakdown of each lump sum bid item in the bid form, submitted by the Contractor at the beginning of the Work and to be used as a basis to determine monthly progress payments and quantity adjustments within the constraints specified in the Contract Documents.

Shop Drawings: Documents furnished by the Contractor for approval by the Architect/Engineer to illustrate specific portions of the Work. Shop Drawings include drawings, diagrams, illustrations, calculations, schedules, tables, charts, brochures and other data describing design, fabrication and installation of specific portions of the Work. Shop Drawings are understood to be submitted for information purposes only, and the County's receipt of or acceptance of shop drawings shall not be deemed as the County agreeing that the selected materials will meet contract requirements or that the selected means and methods are appropriate; the Contractor shall at all times remain responsible for completion of the work in accordance with the contract documents, notwithstanding any approved shop drawings. .

Site, Project Site, Work Site, Construction Site, Job Site: The location(s) at which the work under this Contract is to be accomplished, as shown in the Contract Documents.

Special Provisions: Section of the Contract which includes specific contractual requirements not covered in the General Conditions that are specific to the Project.

Small Business Enterprise – Architect/Engineer (SBE -A&E) Program: Architect/Engineering firms that are certified with Miami-Dade County Small Business Enterprise program

Small Business Enterprise – Construction (SBE -CON) Program: Construction firms that are certified with Miami-Dade County Small Business Enterprise program

Small Business Enterprise – GOODS (SBE -GOODS) Program: Goods, Manufactures, and Wholesalers firms that are certified with Miami-Dade County Small Business Enterprise program

Small Business Enterprise – SERVICES (SBE -SERVIES) Program: Services firms that are certified with Miami-Dade County Small Business Enterprise program

Special Provisions: Section of the Contract Documents which includes specific contractual requirements not covered in the General Conditions that are specific to the Project.

Subcontractor: Any person or entity, other than the employees of the Contractor, supplying the Contractor with labor, materials, supplies and/or equipment used directly or indirectly by the Contractor in the prosecution of the Work.

Substantial Completion: Substantial Completion of a Project is the date on which the Owner certifies that the construction is sufficiently completed, in accordance with the Contract Documents, as modified by any Change Orders, so that the Owner can occupy the Project for the use for which it was intended. A certificate shall be issued to the Contractor by the Owner upon achievement of Substantial Completion. (See Article 8 Contract Time Paragraph D. Substantial Completion, Final Completion and Final Acceptance)

Surety: The bonding company or companies furnishing the bonds required of a Bidder and of the Contractor.

Technical Specifications: The general term comprising all the written directions, provisions and requirements contained herein, entitled "Technical Specifications," those portions of standard specifications to which reference is specifically made in the Technical Specifications, and any Addenda, Work Orders and Change Orders that may be issued for the Contract, all describing the work required to be performed, including detailed technical requirements as to labor, materials, supplies and equipment and standards to which such work is to be performed as well as any reports specifically issued with the Bid Documents and specifically identified in the Instructions to Bidders which may include geotechnical or other technical reports.

Temporary Construction Easement Line: A boundary which describes additional areas which may be made temporarily available for construction operations.

Time Contingency: The maximum time specifically identified in the Contract Documents by which the Owner may extend the contract time to accomplish the work without a change order. Limitations on the use of the time contingency are set forth in the Contract Documents.

Unit Prices: Unit prices shall include all labor, materials, tools, and equipment; all other direct and indirect costs necessary to complete the item of Work and to coordinate the unit price Work with adjacent work; and shall include all overhead and profit. Contractor shall accept compensation computed in accordance with the unit prices as full compensation for furnishing such Work.

Work: The construction and services required by the Contract Documents, which includes all labor, materials, equipment, and services to be provided by the Contractor to fulfill the Contractor's duties and obligations imposed by the Contract Documents or, if not specifically imposed by the Contract Documents, which can be reasonably assumed as necessary to fulfill the intent of the Contract Documents to provide a complete, fully functional, and satisfactory project.

Work Order: A written order, authorized by the Architect/Engineer or Owner, directing the Contractor to perform work under a specific Allowance Account or directing the Contractor to perform a change in the Work that does not have a monetary impact, including but not limited to, extending the Contract Time or subject to the payment of Liquidated Indirect Costs if entitlement is established as required by these Contract Documents. No Work Order may increase the Contract Sum.

END OF ARTICLE

2. INTERPRETATION

- A. The intent of the Contract is to include all necessary items for the proper completion of the Work by the Contractor so the Owner may have a fully functioning facility and fully receive the benefits intended under the Contract. The Contractor shall perform, without additional compensation, such incidental, implied, or appurtenant work as necessary to complete the Work and fulfill the design intent, in accordance with the requirements set forth in the Contract Documents, so that it will meet the requirements for which the Project was intended, in a satisfactory and workmanlike manner.
- B. The Contract Documents and all referenced standards cited are essential parts of the Contract requirements. A requirement occurring in one is as binding as though occurring in all. The documents comprising the Contract Documents are complementary and indicate the construction and completion of the Work. Anything mentioned in the Contract Documents and not shown on the Contract Drawings or shown on the Contract Drawings and not mentioned in the Contract Documents, shall be of like effect as if shown or mentioned in both. The more stringent shall apply in the case of a conflict. The Owner's determination of the more stringent standard shall control and be binding on the contractor, without limitation, and the Contractor's compliance with this determination shall not be considered as Extra Work.
- C. Site Inspections and Verification of Governing Dimensions: In executing the contract, the Contractor represents that he has, prior to bid, visited the site, become familiar with the conditions under which the work is to be performed and correlated his personal observations with the requirements of the Contract Documents or that he has chosen not to do so, in the event that a mandatory site visit is not specified in the Contract Documents. The Contractor accepts the responsibility for all errors in construction which could have been avoided by such examination and the opportunity to seek timely clarifications during the bidding process. The Contractor, before commencing work, shall verify all governing dimensions at the site, all conditions under which the work is to occur, including but not limited to site access, lay down and staging areas, the presence of known utilities and utility connections, and shall examine all adjoining work on which his work is in any way dependent for its conformance with the intent of the Contract Documents and no disclaimer of responsibility for defective or non-conforming adjoining work will be considered unless notice of same has been filed by the Contractor, and agreed to in writing by the Owner through the Architect/Engineer before the Contractor begins any part of the Work. No disclaimer for defective or non-conforming adjoining work that was clearly foreseeable to the Contractor during a site visit (mandatory or non-mandatory) will be considered by the Owner. The County does not warrant or guarantee the presence or absence of any particular site conditions, or the accuracy of any as-built information related to existing work in-place on the site. To the extent provided by or in the possession of the County, subsurface reports, soil borings, and as-builts are solely for the Contractors consideration and use, and the County does not represent that such materials accurately reflect the conditions of the Site.
- D. Errors, Inconsistencies and Omissions: The Contractor shall carefully study and compare all drawings, Contract Documents, and other instructions; shall verify all figures on the Contract Drawings before laying out the Work; shall notify the Owner or Architect/Engineer of all errors, inconsistencies, or omissions which he may discover; and obtain specific instructions in writing during the bidding process and prior to submitting his Bid. The Contractor shall not take advantage of any apparent error or omission which may be found in the Contract Drawings or Contract Documents, and the Architect/Engineer shall be entitled to make such corrections therein and interpretations thereof as he may deem necessary for the fulfillment of their intent. The Contractor shall be responsible for all

errors in construction which could have been avoided by such examination and notification, and shall correct, at his own expense, all work improperly priced, scheduled or constructed through failure to notify the Owner or Architect/Engineer and to request specific instructions.

- E. Where "as indicated," "as detailed," or words of similar import are used, it shall be understood that the reference is made to the Contract Documents unless stated otherwise.
- F. References to Articles or Sections include sub-articles or subsections under the Article referenced.
- G. Referenced Standards: Material and workmanship specified by the number, symbol, or title of a referenced standard shall comply with the latest edition or revision thereof and amendments and supplements thereto in effect on the date of the Invitation to Bid except where otherwise expressly indicated. In case of a conflict between the Contract Documents and the referenced standard, the Contract Documents shall govern.
- H. Order of Precedence of Contract Documents: Unless otherwise provided for in the Special Provisions or required by law, the order of precedence of the Contract Documents will be as follows:
 - 1) Change Orders to the Contract
 - 2) Notice to Proceed
 - 3) Contract
 - 4) Addenda
 - 5) Special Provisions
 - 6) General Conditions
 - 7) Referenced Codes and Standards
 - 8) Technical Specifications
 - 9) Contract Drawings
 - 10) Guarantees
 - 11) Instructions to Bidders
 - 12) Invitation to Bid
 - 13) Other documents
- I. In case of differences between small- and large-scale drawings, the drawings showing greater detail shall govern. The Owner's determination of the more detailed shall control and be binding on the contractor, without limitation, and the Contractor's compliance with this determination shall not be considered as Extra Work. Schedules on drawings shall take precedence over conflicting notations on drawings. In the event of discrepancy between any scaled dimensions on drawings and the figures written thereon, the figures shall govern over the scaled dimensions unless otherwise indicated.
- J. Explanations: Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Owner or Architect/Engineer in a timely manner to allow sufficient time for such further written explanations as may be necessary and shall conform to the explanation provided as part of the Contract. The Owner or Architect/Engineer's decision shall be final.

- K. Effect of Headings: The headings and titles to provisions in the Contract Documents are descriptive only and shall be deemed not to modify or affect the rights and duties of parties to this Contract.
- L. No acceptance, order, measurement, payment, or certificate of or by the Architect/Engineer and/or the Owner or its employees or agents shall either stop the Owner from asserting any rights or operate as a waiver of any provision hereof or of any power or right herein reserved to the Owner or of any rights to damages herein provided.
- M. Wherever the terms, "as directed," "ordered," "permitted," "designated," "as approved," "approved equal," "or equal," "acceptable," and other words of similar meaning which authorize an exercise of judgment are used in the Contract Documents, such judgment shall be vested only in the Owner and shall be final.
- N. The Contractor shall make available at the job site one copy of each referenced standard and/or Contract Documents for the Contractor's and the Field Representative's use during the time that work covered by the standards and/or Contract Documents is underway.
- O. The Contract Documents provide for a complete work and may have been prepared in divisions of various crafts, trades, and other categories of work. The Contractor is responsible for the performance of all work under the Contract regardless of any such divisions and shall ensure that all work is performed and completed. The organization of the Contract Documents into divisions, sections and articles and the arrangement of the drawings do not restrict or limit the Contractor into dividing the Work among subcontractors or in establishing the extent of the Work to be performed by any trade.
- P. No deviation from the approved Contract Documents shall be permitted without the prior written approval of the Owner, which approved deviation shall be documented either by Change order, except that deviations with respect to line items may be paid for via Work Order, to the extent funds are available in the Allowance Account or applicable dedicated Allowance Account.
- Q. All Requests for Information by the Contractor shall be submitted to the Architect or Engineer, with a copy to the Owner, shall be in writing, shall specify, to the maximum extent possible, the particular sheet, page, or section for which the Contractor is requesting information, and shall identify with the maximum specificity possible the ambiguity or uncertainty which the Contractor claims exists.

END OF ARTICLE

3. ARCHITECT/ENGINEER/FIELD REPRESENTATIVE

- A. The Architect/Engineer shall respond to questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work in accordance with the time frames prescribed in the Contract Documents. The Architect/Engineer shall decide all questions which may arise as to the interpretation of the Contract Documents relating to the Work, and the fulfillment of the Contract on the part of the Contractor, and those decisions shall be binding on the Contractor.
- B. The Architect/Engineer is not authorized to revoke, alter, or waive any requirement of the Contract.
- C. The Architect/Engineer, Owner and Field Representative shall have free access to the Work and materials at all times to facilitate the performance of his duties.
- D. Subject to concurrence by the Owner, the Architect/Engineer shall have the right to observe and reject any material or work performed which does not meet the requirements of the Contract Documents. When the Architect/Engineer discovers any work in progress or completed that does not meet the requirements of the Contract Documents, the Architect/Engineer shall reject that portion of the Work affected and shall confirm such rejection in writing, as soon as practical, detailing the reasons for the rejection. Work rejected by the Architect/Engineer will not be paid for, nor shall any work associated to remove, remediate, or correct such non-conforming work be considered Extra Work. Any such observation and/or rejection shall not be construed as undertaking supervisory control of the Work or of means and methods employed by the Contractor or his subcontractors and shall not relieve the Contractor of any of his responsibilities or obligations under the Contract. The Contractor shall not request or attempt to require the Architect/Engineer to undertake such supervisory control or to administer, supervise, inspect, assist, or act in any manner so as to relieve the Contractor from such responsibilities or obligations.
- E. The fact that the Architect/Engineer has not made early discovery of materials furnished or work performed which does not meet the requirements of the Contract Documents, shall not bar the Architect/Engineer from subsequently rejecting said materials or work.
- F. If either the Architect/Engineer or the Field Representative requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the Contract Documents. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as Extra Work. Should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at no additional cost to the Owner.
- G. Any work done or materials used which are not in compliance with the Contract Documents may be ordered removed and replaced at the Contractor's expense.
- H. The Owner and other agencies having jurisdiction over the work hereunder shall be afforded free access to the site to perform such inspections and tests as may be required to determine conformance of the Work with the Contract Documents.
- I. Neither the Architect/Engineer nor the Field Representative shall be responsible for any safety obligations imposed on the Contractor by applicable industry standards, licensing requirements, laws, or regulatory requirements.

- J. Inspectors may additionally be employed by the Owner or the Architect/Engineer. Inspectors will be authorized to inspect all work and materials which are to become a part of the completed Project. Inspectors will have no authority to revoke, alter or waive any requirements of the Specifications or to make any changes in the Plans. Each Inspector will be authorized to call the attention of the Contractor to any failure of the work to conform to the Plans or the Specifications and will have authority to suspend the work affected until any question at issue can be referred to and decided by the Engineer. The Inspector will have no authority to delay the Contractor by failure to inspect the work and materials with reasonable promptness.
- K. If authorized in writing by the Owner, the Field Representative and/or Architect/Engineer will administer the Contract and the orders of the Owner are to be given through the Field Representative and/or Architect/Engineer. The Field Representative and/or Architect/Engineer shall make initial determinations as to the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the Contract, subject to review and approval by the Owner.
- L. The Field Representative may observe the Contractor's work for compliance with the Contract Documents. Such observation shall extend to all, or any part of the work done and to the preparation, fabrication, or manufacture of the material to be used. Owner reserves the right to observe the work via its own employees, Field Representatives, Inspector's, or the Architect/Engineer.
- M. Upon discovery, the Field Representative shall call the Contractor's attention to faulty workmanship or defective materials and shall reject work and materials not conforming to the requirements of the Contract Documents.
- N. When any work in progress or completed does not meet the requirements of the Contract Documents, the Field Representative shall have the authority to order the Contractor to shut down that portion of the work affected until the affected work is corrected to the satisfaction of the Field Representative. The Field Representative shall confirm this order in writing as soon as practicable, detailing the reasons for the shutdown. Work performed in violation of the Field Representative's order to shutdown will not be accepted or paid for.
- O. The Field Representative is not authorized to revoke, alter, or waive any requirements of the Contract. If authorized in writing by the Owner, the Field Representative will negotiate and act on behalf of the Owner to the authorized limits of his authority as specified in the Contract Documents.
- P. Whenever the Contractor intends to build, assemble, or perform any portions of the Work away from the site, the Contractor shall promptly notify the Field Representative of such intentions, including where and when such work is to be performed before such work starts. The Contractor shall also make arrangements for access thereto by the Owner, Field Representative and/or the Architect/Engineer so that the aforementioned portions of the Work may be inspected as needed.
- Q. The fact that the Field Representative has not made early discovery of materials furnished or work performed which does not meet the requirements of the Contract Documents, shall not bar the Field Representative from subsequently rejecting said materials or work and does not relieve the Contractor of his responsibility to meet the requirements of the Contract Documents.
- R. The Field Representative shall not act as a foreman or perform other duties for the Contractor, nor interfere with the management of the work by the Contractor.
- S. The administration, observation of the work, and actions by the Field Representative, as herein provided, shall not be construed as undertaking supervisory control of the construction work or of

means and methods employed by the Contractor or his subcontractors and shall not relieve the Contractor from any of his responsibilities or obligations under the Contract; the Contractor shall not request or attempt to require the Field Representative to undertake such supervisory control or to administer, to supervise, to inspect, to assist, or to act in any manner so as to relieve the Contractor from such responsibilities or obligations.

- T. If authorized in writing by the Owner, the Field Representative shall decide all questions relating to the rights of different prime contractors on the Project or site.
- U. All materials and each part or detail of the work shall be subject to observation by the Field Representative and/or the Architect/Engineer. The Architect/Engineer and the Field Representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required.

END OF ARTICLE

4. OWNER

- A. Unless otherwise specified or excluded elsewhere in the Contract Documents, the records of borings, test excavations and other subsurface investigations, if any, are offered as information only and solely for the convenience of the Contractor. The Owner does not warrant or guarantee either that said records are complete or that the said records will disclose the actual subsurface conditions. The interpretation of the records and the conclusions drawn therefrom as to the actual existing subsurface conditions are the sole responsibility of the Contractor.
- B. Any estimates of quantities of work or materials, based on said borings, test excavations and other subsurface investigations are not warranted by the Owner to indicate the true quantities or distribution of quantities unless the Contractor is expressly directed to rely on such information to prepare and submit his Bid.
- C. If the Contractor is notified by the Owner to correct defective or nonconforming work, and the Contractor fails to promptly proceed with corrective action in a reasonable time, the Owner may, upon written notice, accomplish the redesign, repair, rework, or replacement of nonconforming work by the most expeditious means available and back charge the Contractor for the cost incurred. The cost of back charge work shall include all reasonable costs associated with the corrective action.
- D. The Owner shall separately invoice or deduct from payments, otherwise due to the Contractor, back charges as provided herein. The Owner's right to back charge is in addition to any or all other rights and remedies provided in this Contract, or by law. The performance of back-charge work, on behalf of the Owner, shall not relieve the Contractor of any of its responsibilities under this Contract including but not limited to express or implied warranties, specified standards for quality, contractual liabilities and indemnifications, and the Contract Time.
- E. Miami-Dade County enters into this Contract solely in its proprietary capacity. Nothing in this Contract is intended to bind or otherwise restrict the discretion of Miami-Dade County acting in its regulatory capacity, including but not limited to the regulatory acts of the departments of Regulatory and Economic Resources (RER), Transportation and Public Works (DT&PW), Miami-Dade Fire-Rescue (MDFR) and Mia-Dade Water and Sewer Department (WASD), or their successors.

END OF ARTICLE

5. CONTRACTOR

- A. If the Contractor hereunder is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.
- B. The Contractor shall hold valid current certificate(s) of competency for the type of work to be performed, in accordance with the qualifications requirements as set forth in Chapter 489 of the Florida Statutes and Chapter 10 of the Code of Miami- Dade County.
- C. The Contractor shall maintain within Miami-Dade County, Florida, a duly authorized agent to accept service of legal process on its behalf and shall keep the Owner advised of such agent's name and address, during the duration of the Contract, and for three years after final payment or as long as Contractor has warranty obligations under these Contract Documents, whichever period terminates later. The Contractor shall complete the form titled "Contractor Agent to Accept Service" included in the Contract Documents and submit it to the Architect/Engineer prior to NTP.
- D. The Contractor shall be responsible for the complete performance for all of the work under the Contract, and for the methods, means, and equipment used in performing the Contract and for all materials, tools, apparatus, and property of every description used in connection therewith.
- E. If requested by the Owner, the Contractor will obtain written confirmation from impacted subcontractors agreeing to work within the timeframes specified in the Contractor's schedule as a condition of acceptance.
- F. Contractor's Superintendent: The Contractor shall provide a superintendent at the site at all times who is competent in the type of work being performed to act as the Contractor's agent, and shall give that superintendent the full authority to receive instruction from the Field Representative or Architect/Engineer and to execute the order or directions of the Field Representative or Architect/Engineer, including the prompt supply of all materials, tools, equipment, labor, and incidentals that may be required. The Contractor shall furnish such superintendence regardless of the amount of work that is subcontracted, and the superintendent shall read, speak, write, and understand English. The Contractor shall also maintain at least one other employee on the work site during Project working hours who speaks and understands English. The superintendent shall be responsible for keeping written daily logs of the work on the project.
- G. The competency of the superintendent shall be demonstrated through licensure or certification in contracting, engineering, trade, or experience as applicable to the work being performed. Proof of licensure, certification or qualification of the superintendent must be provided to the Owner at the pre-construction conference and is subject to the approval of the Architect/Engineer or Field Representative after Contractor receipt of said requirements. The Contractor shall replace the Superintendent only with written notice to the County five (5) days in advance of the proposed substitution, and only with a superintendent qualified to perform the work as reasonably determined by the Field Representative.
- H. In the event that the Field Representative or Architect/Engineer determines, through the course of the actual work progress, that the superintendent lacks the knowledge or expertise necessary to execute the work in an efficient and competent manner, in keeping with all current codes and best practices, the Field Representative or Architect/Engineer shall notify the Contractor in writing and the

superintendent shall be replaced by the Contractor with a person acceptable to the Field Representative or Architect/Engineer within five (5) working days.

- I. The Contractor's failure to replace the superintendent in the time allotted shall be cause for the Owner to suspend work with such delays chargeable to the Contractor as Liquidated Damages as specified elsewhere in this contract.
- J. The Contractor shall maintain a daily accounting of his daily manpower, by trade and position, and provide this information to the Field Representative on a weekly basis.
- K. The Contractor shall notify the Owner of any changes of key personnel and all replacement personnel prior to assigning them to the jobsite.

END OF ARTICLE

6. SUBCONTRACTORS

- A. The Contractor will be permitted to subcontract portions of the Work to competent subcontractors. Such subcontractors shall hold valid current certificate(s) of competency for the type of work to be performed, in accordance with the qualifications requirements as set forth in the Florida Statutes and the Code of Miami-Dade County. Use of Subcontractors who were not listed on the Subcontracting Form, or equivalent, at the time of award may occur only with the express consent of the Owner.
- B. Nothing contained herein shall create any contractual relationship between the Owner and any level of subcontractor, materialman, or supplier.
- C. All work performed for the Contractor by a subcontractor shall be pursuant to an appropriate agreement between the Contractor and the subcontractor which shall contain provisions that:
 - 1) Preserve and protect the rights of the Owner and any of its authorized representatives under the Contract, including but not limited to, the Architect/Engineer and Field Representative, with respect to the Work to be performed under the subcontract so that the subcontracting thereof will not prejudice such rights;
 - 2) Require that such Work be performed in accordance with the requirements of the Contract Documents including the Contractor's accepted schedule;
 - 3) Require submission to the Contractor of applications for payment under each subcontract to which the Contractor is a part, in reasonable time to enable the Contractor to apply for payment in accordance with any and all payment provisions of the Contract Documents;
 - 4) Require that all claims for additional costs, extensions of time, damages for delays or otherwise with respect to subcontracted portions of the Work shall be submitted to the Contractor (via any subcontractor or Sub-subcontractor or Supplier where appropriate) in sufficient time so that the Contractor may comply in the manner provided in the Contract Documents for like claims by the Contractor upon the Owner;
 - 5) Require specific consent to all relevant provisions of the Contract Documents; and
 - 6) Incorporate all flow-down clauses specifically called for in the Contract, as directed.
- D. Contractor Participation: The Contractor shall perform not less than 10 percent of the Work, not inclusive of materials purchased, with his own organization. If the Contractor is a joint venture, the requirement shall be satisfied by any one, or a combination of any of the joint venture partners. Where a percentage of a Bid Item is subcontracted, the dollar value of that percentage subcontracted will be based on the estimated cost of such Bid Item, determined from information submitted by the Contractor, subject to approval by the Owner. If, during the progress of the Work, the Contractor requests a reduction in such participation percentage, and the Owner determines that, due to the special nature of the conditions of the Work at the time, it would be to the Owner's advantage, the percentage of the Work required to be performed by the Contractor may be reduced, provided written approval of such reduction is obtained by the Contractor from the Owner. The Contractor shall not proceed with any such reductions until his request is approved in writing by the Owner or his authorized designee. Under no circumstances shall less than 10 percent of the Work be performed with the Contractor's own forces.

E. Work Performed by Equipment-Rental Agreement:

- 1) The amount of work performed under equipment rental agreements shall not be considered subcontractor work. However, for work to be performed by equipment-rental agreement, the Contractor shall notify the Architect/Engineer in writing of such intention before using the rented equipment and shall indicate whether the equipment is being rented on an operated or non-operated basis. The Contractor's written notice shall contain a listing and description of the equipment and a description of the particular work to be performed with such equipment. As an exception to the above requirements for a written notice to the Architect/Engineer, such notice will not be required for equipment to be rented (without operators) from an equipment dealer or from a firm whose principal business is the renting or leasing of equipment.
- 2) The operators of rented equipment, whether rented on an operated or a non-operated basis, will be subject to wage rate requirements applicable to the Project. If equipment is being rented without operators, the Contractor shall be required to carry the operators on his own payroll. When equipment is rented on an operated basis, the Contractor, when required by the Contract or requested by the Architect/Engineer, shall submit payrolls from the lessor with the names of the operators shown thereon.

F. No work is to be performed at the Work site until the Contractor is in compliance with the Insurance Specifications, has furnished satisfactory evidence of required insurance to the Owner and obtained all required permits.

G. Approval of Subcontractor:

- 1) Prior to entering into any subcontract for Work to be performed on the Project, the Contractor shall secure the approval of the Owner regarding the prospective subcontractor's qualifications, employment data and compliance with Small Business Enterprise – Construction (SBE-CON) program requirements, if applicable. The forms or web-based system used to provide the required information shall be the same as those included in the Forms or web-based system for Bidding. The Owner will review the submittal from each subcontractor and will furnish written notification to the Contractor concerning approval of the award of the subcontract. If the Owner objects to the proposed award or fails to respond to the Contractor within five (5) business days of the complete submittal of the required information, the Contractor may furnish written notice of another subcontractor for consideration. The Owner may, at its discretion, waive or reduce subcontractor information submittal requirements as it deems appropriate.
- 2) In accordance with Miami-Dade County Code Sections 2-8.1 and 10-33.01, the Contractor shall not, without written consent of the Owner, either replace any subcontractor or permit any such subcontract to be assigned or transferred, or allow that portion of the Work to be performed by anyone other than the approved subcontractor, except he may perform the work himself with qualified personnel upon written notice to the Owner in accordance with applicable law.

END OF ARTICLE

7. PROSECUTION OF THE WORK

A. Workmanship and Unauthorized Work

- 1) Work under this Contract shall be performed in a skillful and workmanlike manner. Unless otherwise indicated in the Contract Documents, the Contractor shall be solely responsible for means and methods and for the coordination of all trades through completion of the Work and without damage to the existing or newly installed components and surfaces. The Architect/Engineer or Field Representative may, in writing, require the Contractor to remove from the work any employee the Architect/Engineer or Field Representative determines incompetent, careless, or otherwise objectionable. Such request shall be at no cost to the Owner.
- 2) Unauthorized Work: Work performed beyond the lines and grades shown on the Contract Drawings and approved Shop Drawings or established by the Owner, and Extra Work done without a Work Order or Change Order, will be unauthorized work and the Contractor will receive no compensation therefor. If required by the Owner, unauthorized work shall be remedied, removed, or replaced by the Contractor at the Contractor's expense. Upon failure of the Contractor to remedy, remove or replace unauthorized work, the Owner may at its discretion, remedy, remove or replace the unauthorized work and the Contractor shall bear the responsibility for any and all costs and for delays resulting from such work.
- 3) The entire work and each part thereof, unless otherwise specified in the Contract Documents, shall be placed at the location, elevation, grade and gradient specified, and in proper alignment and adjustment. The Contractor shall provide all frames, forms, falsework, shoring, guides, anchors, and temporary structures required to ensure these results.
- 4) No deviation from the approved Plans/Specifications shall be permitted unless (1) the Contractor has submitted an RFI requesting the deviation, and (2) the Contractor has prior written approval of the Architect/Engineer and/or Owner. Written approval shall be by Work Order or Change Order, shall be documented to the extent required by, and shall otherwise comply with the requirements of, the Contract Documents.
- 5) The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the Contract Documents. All workers shall have sufficient skill and experience to properly perform the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.
- 6) All proposed equipment shall be of sufficient size and in such mechanical condition as to meet requirements of the work, producing a satisfactory quality of work. Equipment used on any portion of the work shall be such that no damage to previously completed work, adjacent property, or existing facilities will result from its use.
- 7) When the Contract Documents expressly specify the use of certain methods and equipment, such methods and equipment shall be used unless other methods are authorized in writing by the Architect/Engineer by Work Order or Change Order. If the Contractor desires to use a method or type of equipment other than specified in the Contract, he may request permission from the Architect/Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval

is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with Contract requirements. If, after trial use of the substituted methods or equipment, the Architect/Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality or take such other corrective action as the Architect/Engineer may direct at no additional cost to the Owner. No change will be made to the Contract price or the Contract Time as a result of authorizing a change in methods or equipment under this article.

- 8) The Contractor shall give constant attention to the work to facilitate the progress thereof such that the work will be completed during the contract time and shall cooperate with the Architect/Engineer and its Field Representatives and with other Contractors in every way possible.
- 9) The Contractor warrants to the Owner that all materials and equipment furnished under this Contract will be new unless otherwise expressly allowed in the Plans and Specifications, or otherwise expressly approved in writing by the Owner and that the work will be of good quality, free from faults and defects in materials and workmanship for a period of one year from the date of Substantial Completion, unless otherwise required under this Contract. Work not conforming to these standards may be considered defective. If required by the Architect/Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
- 10) Contractors working in the Public Rights-of-Way shall be cognizant of and comply with Miami-Dade County Code Section 2-103.1 relating to restoration after construction of utilities or works in the public right of way; and Miami-Dade County Code Sections 21-221 through 228 relating to excavation and protection of underground utilities and requiring various Contractor activities; The Contractor shall make every effort to minimize construction impact to business in the area of the Project and as appropriate, the Department will recover any costs caused the County by Contract delays or other business impacting activities attributable to the Contractor. To this end the Contractor shall conduct its construction activities in a manner that will minimize these detrimental effects.
- 11) The Contractor shall at all times ensure that the work site is maintained in a clean and orderly fashion. As soon as the work in any one locality is completed, the accumulated rubbish or surplus materials thereat shall be promptly removed. The Contractor shall also restore all public and private property in a manner acceptable to the Engineer, to a condition equal to or better than pre-construction conditions. This shall apply to public and private property which has been displaced or damaged during the prosecution of the work, and the Contractor shall leave the site and vicinity unobstructed and in a neat and presentable condition. 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 money due the Contractor on the monthly or final estimate. No Contract shall be considered as having been completed until all rubbish and surplus materials have been removed and disposed of properly.
- 12) The Architect/Engineer shall furnish the Contractor with horizontal and vertical controls which shall be utilized as specified elsewhere herein to layout the work. The Florida Registered Land Surveyor hired by the Contractor shall verify all controls provided by the Engineer of Record and it shall be the responsibility of the Contractor to preserve same.

- a. The Contractor shall retain the services of a Florida Registered Land Surveyor who, shall furnish and set stakes, establishing line and grade and shall solely be responsible for the layout of the work as well as the recording of all as-built dimensions and elevations. The Contractor shall furnish all additional stakes, templates, and other materials for marking and maintaining survey points and lines given and shall be responsible for their preservation. Should any of the horizontal and vertical control points furnished by the Engineer of Record be destroyed or disturbed, they shall be reset by the Contractor's Florida Registered Land Surveyor, at the Contractor's expense. All control points previously furnished by the Engineer of Record shall be verified by the Contractor's surveyor.
 - b. For pipeline Projects the Engineer of Record shall furnish the Contractor with horizontal and vertical control every 1,320 feet which shall be utilized as specified elsewhere herein to layout the work. If a pipeline Project is less than 1,320 feet, the Engineer of Record will provide the Contractor with two horizontal and vertical control points. At on-plant-site Projects, the Engineer of Record shall furnish the Contractor with three horizontal and vertical controls.
 - c. No direct payment shall be made for the cost to the Contractor of any of the work occasioned by delay in giving lines and grades, or making other necessary measurements, or by inspection.
- 13) Chapter 446 of the Florida Statutes, as amended, which is by reference incorporated herein, provides labor standards for ratios of apprentices or trainees to journeymen on State, County, or municipal contracts. It shall be the responsibility of the Contractor, prior to the opening of bids, to inform themselves of the provisions of Chapter 446, Florida Statutes, as amended, which are, or may become, applicable to the Contract, and he shall abide by these provisions at no cost to the County. The Contractor is advised to direct all inquiries concerning Chapter 446, Florida Statutes, as amended to the Florida State Apprenticeship Advisory Council.

B. Material

- 1) Unless otherwise indicated in the Contract Documents, equipment, material, and products incorporated in the Work covered by this Contract shall be new and of the grade specified for the purpose intended. Unless otherwise specifically indicated, reference to equipment, material, product, or patented process by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at his option and, subject to the approval of the Architect/Engineer, use any equipment, material, article, or process which is equivalent to that named, subject to the requirements of these Contract Documents or propose a substitute equipment, material, article, or process as indicated below. The Contractor shall at all times comply with Green Building or LEED standards, as established in the Contract Documents; unless otherwise specified, LEED Silver standards shall be the minimum standards acceptable to the County. Proposed alternative equipment, material, products, or patented processes shall be considered equivalent if the Architect/Engineer determines that the proposed alternative is functionally equal to and/or sufficiently similar to that specified in the Contract Documents. The Architect/Engineer and/or the Owner may consider the Department's current maintenance history, requirements for spare parts, training of personnel and conformity to existing systems when reviewing alternatives.
- 2) The Architect/Engineer shall be the sole judge of the quality, suitability and cost of the proposed alternative equipment, material, article, or process. A proposed alternative shall be considered

equivalent and/or functionally equal to that specified in the Contract Documents if, in the exercise of reasonable judgment, the Architect/Engineer determines that the proposed alternative is at least equal in materials of construction, quality, durability, appearance, strength and design characteristics, will reliably perform at least equally well the function and achieve the results imposed by the Design Professional's Basis of Design and has a proven record of performance and availability, and the procurement and installation of same will not impact project costs or schedule.

- 3) If the Architect/Engineer determines that a proposed alternative does not qualify as equivalent or functionally equal, the alternative may be proposed for consideration as a substitute subject to the Contractor submitting sufficient information as provided below to allow the Architect/Engineer to determine that the proposed alternative is essentially equivalent to or better than the specified item and is an acceptable substitute for that said specified item.
- 4) The burden and cost of proving the quality, suitability and cost of an alternative shall be borne by the Contractor. All information required by the Architect/Engineer in judging an alternative shall be supplied by the Contractor at the Contractor's expense. The Architect/Engineer's costs in evaluating a proposed alternative, irrespective of its acceptance, will be reimbursed by the Contractor to the Owner. In the case of approved alternatives, the Contractor shall also reimburse the Owner for the Architect/Engineer's costs to revise the Contract Documents.
- 5) The Contractor certifies that, if approved and incorporated into the Work, there will be no increase in cost to the Owner or in Contract Time and the proposed alternative shall conform substantially to the detailed requirements of the item specified in the Contract Documents.
 - a. Where use of an alternative material involves redesign of or changes to other parts of the Work, the cost and the time required to affect such redesign or change will be considered in evaluating the suitability of the alternative material. All costs pertaining to redesign and changes in other parts of the Work, including remedial work to completed work, shall be at the Contractor's expense,
 - b. No action relating to the approval of alternative materials will be taken until the request for approval of the alternative materials is made in writing by the Contractor accompanied by complete data as to the quality, suitability and cost of the materials proposed. Such request shall be made at least 60 days before the early start date of the activity. Any delays in receiving approval shall be the responsibility of the Contractor.
 - c. The Architect/Engineer will examine and review the proposed alternative with the Owner and return it, within twenty-one (21) calendar days from the date of its receipt at the Architect/Engineer's office, to the Contractor noted with the final decision. If the final decision approves either an equal or a substitution, the approval must also contain the Owner's written approval. When requested by the Architect/Engineer, the Contractor shall resubmit such Shop Drawings, descriptive data and samples as may be required. Contractor is solely responsible for submitting alternatives in a timely fashion so as not to impact project schedule; in the event that Owner's or Architect/Engineer's review of an alternative delays the project, or redesign of the project required to accommodate the alternative delays the project, such delay shall be considered non-compensable delay.

- d. Where classification, rating, or other certification by a body such as, but not limited to, Underwriters' Laboratories Inc. (UL), National Electrical Manufacturer's Association (NEMA), or American Railway Engineering Association (AREA) is a part of the specification for any material, proposals for use of alternative materials shall be accompanied by reports from the listed body, or equivalent independent testing laboratory, indicating compliance with Contract Documents requirements. Testing required proving equality of the material proposed shall be at the Contractors expense.
 - e. Approval of an alternative material will be only for the characteristics and use named in such approval, and shall not change or modify any Contract requirement, or establish approval for the material to be used on any other Project for the Owner.
- 6) Source of Supply and Quality of Materials: The Contractor shall furnish all materials and products required to complete the Work except those designated to be furnished by the Owner.
 - a. Notwithstanding prior inspection and approval by the Architect/Engineer, only materials conforming to the requirements of the Contract Documents shall be incorporated in the Work.
 - b. The materials shall be manufactured, handled, and incorporated so as to ensure completed work in accordance with the Contract Documents.
- 7) Defective Materials: Contractor-furnished materials not conforming to the requirements of the Contract Documents will be rejected, whether in place or not. Rejected material shall be removed immediately from the Work site. No rejected material, the defects of which have been subsequently corrected, shall be used in the Work. The Owner may cause the removal and replacement of rejected material and the cost thereof will be deducted from any monies due or to become due to the Contractor.
- 8) Handling of Materials: Materials shall be transported, handled, and stored by the Contractor in a manner which will ensure the preservation of their quality, appearance, and fitness for the Work. Materials shall be stored in a manner to facilitate inspection.
- 9) The Owner will have no responsibility to the Contractor concerning local material sources.
 - a. The Contractor shall make all necessary arrangements with the owners of material sources. The Contractor shall pay all costs in connection with making such arrangements, exploring, developing and using material sources, whether or not indicated, except such costs as the Owner expressly agrees in writing to assume.
- 10) Disposal of Material Outside the Work Site: Unless otherwise specified in the Contract Documents, the Contractor shall make his own arrangements for properly disposing of waste and excess materials outside the Work Site and he shall pay all costs, therefore. Contractor shall comply with all local, state, and federal requirements when disposing of waste and excess materials.
 - a. Prior to disposing of material outside the Work Site, the Contractor shall obtain written permission from the owner on whose property the disposal is to be made. The Contractor shall file with the Architect/Engineer said permit, or a certified copy thereof, together with a written release from the property owner absolving the Owner from any and all responsibility in connection with the disposal of material on said property.

- 11) Property Rights in Materials: The Contractor shall have no property right in materials after they have been attached or affixed to the Work or the soil, or after payment has been made by the Owner to the Contractor for materials delivered to the site of the Work, or stored subject to or under the control of the Owner, as provided in these Contract Documents. However, the Contractor shall be responsible for the security of the material on-site until Final Acceptance by the Owner.

C. Methods of Sampling and Testing

- 1) Sampling and testing of all materials shall be as set forth in the Contract Documents. Except for quality control testing and any other testing that may be the direct responsibility of the Contractor as set forth in the Contract Documents, the testing of samples and materials will be made at the expense of the Owner by the project testing laboratory. The Contractor shall furnish the required samples without charge. Any and all fees for non-conforming materials or work shall be solely borne by the Contractor. The Contractor shall give sufficient notification to the Field Representative of the placing of orders for or receipt of materials to permit testing.
- 2) The Field Representative may inspect, at its source, any specified material or assembly to be used in the Work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the Work and to obtain samples required for its acceptance of the material or assembly. Should the Field Representative conduct plant inspections, the following shall exist:
 - a. The Field Representative shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.
 - b. The Field Representative shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of materials being furnished.
 - c. If required by the Field Representative, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.
- 3) It is understood and agreed that the Owner shall have the right to retest any material which has been tested and approved at the source of supply after it has been delivered to the site. The Field Representative shall have the right to reject only material which, when retested, does not meet the requirements of the Contract Documents. In such an event, the cost of re-testing shall be borne by the Contractor if it results in a rejected material.
- 4) All inspections and testing of materials, assemblies and equipment will be performed in Miami-Dade County. If the Contractor's material or manufacturing sources are such that inspections or tests cannot be made in Miami-Dade County, all traveling and lodging expenses in connections with such inspections and testing shall be borne by the Contractor.

D. Meetings

- 1) A pre-construction conference will be held prior to the issuance of the Notice to Proceed to discuss the work to be performed under this contract. The Contractor and its major subcontractors shall be required to attend this meeting. The Contractor will be advised of the time, date, and location of the meeting.

- 2) The Contractor shall attend weekly construction coordination meetings at a time and place to be designated by the Architect/Engineer. These meetings are intended to determine job progress, identify job problems, assist in solving and preventing job problems, and promote coordination with all entities involved in the Contract and with other Contractors. The Contractor shall cause subcontractors and suppliers to attend as he deems advisable, or as requested by the Architect/Engineer. Unless otherwise provided for in these Contract Documents, the Contractor shall be responsible for generating and distributing meeting minutes for all such meetings. Notwithstanding, the Owner may generate and disseminate supplemental meeting minutes, as may be necessary in the owner's discretion.

E. Permits and Compliance with Laws

- 1) Unless otherwise provided for in these Contract Documents, the Contractor shall be responsible for obtaining necessary licenses and permits and for complying with applicable Federal, State, County and Municipal laws and latest codes and regulations in connection with the prosecution of the Work. (For payment of permit(s), see Special Provisions). No time extensions will be allowed for delays in obtaining the required permits unless revisions directly caused by the Owner, or its agents are required to the Contract Drawings due to changes in codes, regulations, and applicable contract standards during the contract term. See Special Provisions for additional permit requirements.
- 2) The Owner will not pay or reimburse the Contractor for any penalties relating to his permits or fees as a result of the Contractor's failure to timely obtain all his permits, inspections, and approvals.
- 3) The Contractor shall observe and comply with all applicable Federal, State, County and other laws, codes, ordinances, rules, and regulations of the Federal, State and County governments, all authorities having jurisdiction, and any and all programs developed in compliance therewith, in any manner affecting the conduct of the Work.
- 4) Dewatering of excavations shall be performed in accordance with the applicable provisions of the County's Department of Regulatory and Economic Resources (RER), Florida Department of Environmental Protection (DEP), U.S. Environmental Protection Agency (EPA) and the South Florida Water Management District (SFWMD) Dewatering Permits and/or any and all authorities having jurisdiction and any other requirements specified in the Contract Documents. The means and methods of dewatering shall be determined by the Contractor who shall bear the full cost of same as part of the contract price.
- 5) All construction activities shall be subject to the pollution prevention requirements established under the National Pollutant Discharge Elimination System (NPDES) program under the Clean Water Act regulating storm water discharge from construction sites.
- 6) Upon completion of all of the work contemplated under the Contract Documents, the Contractor shall obtain and deliver to the Field Representative such Certificate(s) of Occupancy or Certificate(s) of Completion as required by the Florida Building Code and/or authority having jurisdiction.
- 7) The Contractor shall be subject to and comply with all the provisions of Miami-Dade County Code Section 2-8.4.1, which provides that, whenever any individual or corporation or other entity attempts to meet its contractual obligations with the County through fraud, misrepresentation or material misstatement, the County shall, whenever practicable, terminate the Contract. The

Contractor is further directed to Section 10-38 of the Miami-Dade County Code, which provides for the debarment of County contractors.

- 8) The use of explosives will not be permitted under this Contract, except that powder and/or explosive fasteners may be allowed with the prior written consent of the Owner.

F. Coordination and Access

- 1) Other Contracts: The Owner may undertake or award other contracts for additional work, and the Contractor shall fully cooperate and coordinate with other Contractors and the Owner and carefully fit his own work to such additional work. The Contractor shall not perform any act which will interfere with the performance of work by any other contractor or by the Owner. The Contractor shall be responsible for obtaining all necessary scheduling details from other Contractors and these requests must be provided, in writing, to the Owner. The Owner, or, if authorized in writing by the Owner, the Architect/Engineer shall have the authority to resolve conflicts related to coordination between Contractors.
- 2) In the event of interference between the work of the Contractor and other contractors working concurrently at the Site, the Field Representative will instruct the Contractor as to which work has priority in performance and such instructions shall be binding upon the Contractor.
- 3) Utility companies, railroads, municipal agencies, and County tenants/lessees having facilities within the limits of the Work shall always have access to their facilities for operations, inspection, and repair.
- 4) Lands to be furnished by the County for construction operations, roads, or for other purposes, will be specifically shown on the drawings or provided for in the Specifications. Should the Contractor find it necessary to use any additional land for the construction operations or for other purposes during the construction of the work, they shall provide for the use and restoration of such lands at their own expense.
- 5) Rights-of-way for work to be done under the Contract will be provided by the County. Nothing herein contained, however, and nothing marked on the drawings, shall be interpreted as giving the Contractor exclusive occupancy of the territory provided. When two or more contracts are being executed at one time on the same or adjacent land in such a manner that work on one contract may interfere with that on another, the Owner, or, if directed in writing by the Owner, the Architect/Engineer will decide which Contractor shall cease work, and which shall continue, or whether the work of both contracts shall progress at the same time, and in what manner. When the territory of one contract is a necessary or convenient means of access for the execution of another contract, the Engineer may grant to the Contractor so desiring such privilege of access to the territory as the Engineer shall deem to be appropriate, and no such decision shall be made the basis of any claim for delay or damage, except as provided in Article 8 herein.

G. Rights in Land and Improvements

The Contractor shall make no arrangements with any person to permit occupancy or use of any land, structure or building within the Work Site for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the Owner and any property owner, former property owner or tenant of such land, structure or building. The Contractor shall not occupy County-owned property outside the Work Site without obtaining prior written approval from the County.

H. Interference With Existing Utilities

- 1) Attention of the Contractor is specifically directed to the need for careful control of all aspects of his work to prevent damage to cables, ducts, water mains, sewers, fire mains, telephone cables, fuel lines, radar cables, and any other existing overhead or underground utilities and structures.
- 2) Before commencing work in any given area, the Contractor shall contact utility companies to identify any potential conflicts. Further, the Contractor shall also carefully review the plans, survey, and search the site for utility locations, and determine possible utility conflicts. All known above and underground utilities, including, but not limited to, electrical, telephone, communications, lighting cables, fuel lines, sewer, drainage and water pipes, and other existing structures are shown on the Plans for reference purposes only, but no guarantee is expressed or implied that the information is accurate. It shall be the sole responsibility of the Contractor to ascertain and/or verify the location of any and all such utilities or structures using magnetic and electronic detectors and by hand excavation or other appropriate measures before performing any work that could result in damage to such existing utilities or structures. The Contractor shall make a thorough search of the particular location for underground utilities or structures whether or not shown on the drawings before excavation work is commenced in any particular location. To this end the Contractor shall provide and maintain throughout the term of the Contract, electronic and magnetic detecting devices capable of locating underground or other non-observable utilities or structures. The Contractor shall, after locating primary and critical existing utilities, mark their location with indelible material or other means satisfactory to the Field Representative and maintain above ground physical identification during the work.
- 3) In the event of damage to, or accidental disruption of utilities or other facilities as a result of the Contractor's operations, the Contractor shall take immediate steps to repair or replace all damage and to restore all services. Further, the Contractor shall engage any additional outside services which may be necessary to prosecute repairs on a continuous "around the clock" basis until services are restored. The Contractor shall also provide and operate any supplemental temporary services to maintain uninterrupted use of the facilities. All costs involved in making repairs and restoring disrupted service resulting from the Contractor's work shall be borne by the Contractor and the Contractor shall be fully responsible for any and all claims resulting from the damage.

I. Protection of Existing Facilities, Vegetation, Structures, Utilities, and Improvements

- 1) The Contractor shall preserve and protect existing vegetation such as trees, shrubs, and grass on or adjacent to the work site which are not indicated to be removed and which do not unreasonably interfere with the construction work and he shall replace in kind the vegetation, shrubs, and grass damaged by him at his own expense.
- 2) The Contractor shall protect from damage all utilities, foundations, walls, or other parts of adjacent, abutting or overhead buildings, railroads, bridges, structures, surface and subsurface structures at or near the site of the Work and shall repair or restore any damage to such facilities, except utilities, resulting from failure to comply with the requirements of this Contract or the failure to exercise reasonable care in the performance of the Work. If, after receipt of notification from the Architect/Engineer, the Contractor fails to or refuses to repair any such damage promptly, the Owner may have the necessary Work performed and charge the cost thereof to the Contractor.

- 3) At points where the Contractor's operations are adjacent to utility facilities, damage to which might result in expense, loss, disruption of service or other undue inconvenience to the public or to the owners, Work shall not be commenced until all arrangements necessary for the protection thereof have been made by the Contractor. The Contractor shall be solely and directly responsible to the owners and operators of such utilities for any damage, injury, expense, loss, inconvenience, or delay, caused by the Contractor's operations.
- a. Where public utilities or their appurtenances interfere with permanent construction, unless otherwise specified, work involved in permanently relocating or otherwise altering such public utilities and their appurtenances will not be a part of this Contract but will be done by utility owners at no cost to the Contractor. If the Contractor wishes to have utilities temporarily relocated, he shall make necessary arrangements with utility owners and reimburse them at his own expense for cost of the Work. The Contractor shall keep the Architect/Engineer advised of temporary relocation arrangements.
 - b. The Contractor shall not repair or attempt to repair utility damage but shall immediately contact the utility owner. The Contractor shall obtain the name, address, and telephone number of each utility company that the work will affect and the person in such utility company to contact. He shall submit to the Architect/Engineer said names, addresses and telephone numbers.
- 4) The Contractor shall comply with the latest version of the Florida Building Code, Florida Fire Prevention Code or the Code under which the Contract Documents were approved, whichever is applicable at the time the Work is performed.
- 5) In order to safeguard the owners and tenants of abutting property and at the same time prevent unjust or fraudulent claims against the Contractor the Government, State, the Owner, and the Architect/Engineer in respect thereto, the Contractor shall cause a detailed examination of abutting property to be made before construction is begun. The owner or tenant of each parcel or structure or his or their duly authorized representative will be invited to be present during the examination by a notice in writing delivered by the Contractor to a person in charge of the premises or structure, or by the mailing of the notice to the owner at the premises. The Architect/Engineer will attend while the Contractor makes the detailed examination. A complete record including photographs of the existing conditions of each parcel or structure shall be made in triplicate, signed by the Contractor, Owner, and the Architect/Engineer and one copy will be delivered to the Owner, one to the Architect/Engineer and one will be retained by the Contractor. At such time as the Architect/Engineer may direct, or upon the filing of the verified statement by the owner, tenant, lessee, operator, or occupant of the building structure, and in any event, upon the completion of any work that in the opinion on the Architect/Engineer might affect the abutting property, the Contractor will make another detailed examination of such abutting property. A complete record of the then existing conditions of said property will be made in triplicate, signed by the Contractor and one copy will be delivered to the Owner, one to the Architect/Engineer and one will be retained by the Contractor. In any action, which may be brought by any owner, tenant, lessee, operator, or occupant of abutting property to recover under the provisions of this article or any paragraph hereof, the record of the existing conditions of each parcel will be prima facie evidence of the conditions thereof at the time of the making of the examination.

- 6) The Contractor shall maintain access to fire hydrants and fire alarm boxes throughout the prosecution of the Work. Hydrants, alarm boxes and standpipe connections shall be kept clear and visible at all times unless approved otherwise. If visibility cannot be maintained, the Contractor shall provide clearly visible signs showing the location of the fire hydrant, fire alarm box or standpipe connection. The Contractor shall promptly notify the authority having jurisdiction of any impairment to any fire systems.

J. Damage to the Work and Responsibility for Materials

- 1) The Contractor shall be responsible for materials delivered and work performed until completion and Final Acceptance of the entire construction thereof, except those materials and work which may have been accepted under the applicable sections of this article and shall take all necessary steps to protect the Work, from all causes, at his expense.
- 2) The Contractor shall bear the risk of injury, loss or damage to any and all parts of the Work for whatever cause, whether arising from the execution or from the non-execution of the Work, except as provided for in this article. The Contractor shall rebuild, repair or restore work and materials which have been damaged or destroyed from any cause before Completion and Acceptance of the Work and shall bear the expense thereof. The Contractor shall provide security including, but not limited to, security guards, temporary drainage systems and erection of temporary structures and temporary fencing as necessary to protect the Work and materials from damage.
- 3) The Contractor shall be responsible for materials not delivered to the site for which any progress payment has been made to the same extent as if the materials were so delivered.
- 4) The Contractor's responsibility for material shall be the same for Owner-furnished material, upon receipt of said material from the Owner, under this Contract as for Contractor-furnished material.
- 5) Relief from Maintenance and Responsibility: The Contractor may request, in writing, from the Owner, that the Owner relieve the Contractor of the duty of maintaining and protecting certain portions of the Work, as described in this paragraph, which have been completed in all respects in accordance with the requirements of the Contract. Such action by the Owner will relieve the Contractor of responsibility for injury or damage to said completed portions of the Work resulting from use by the Owner or the public for any cause, but not from injury or damage resulting from the Contractor's own operations or negligence. Portions of the Work for which the Contractor may be relieved of the duty of maintenance and protection, as provided in this paragraph, include the following:
 - A. Early possession by the Owner of any portion of the Work, in accordance with the Contract Documents.
 - B. This Paragraph 5 does not relieve the Contractor of responsibility for repairing or replacing defective work or materials in accordance with the Contract requirements
- 6) If it is specifically stated in the Specifications that the Department will furnish materials or equipment to the Contractor for incorporation into the work for which this Contract pertains, the County shall not be liable for any: expenses, losses, damages, claims or demands including but not limited to, all direct costs of Contractor such as labor, material, job overhead, and profit markup but also includes any costs for modifications or changes in sequence of work to be performed, delays, rescheduling, disruptions, extended direct overhead

or general overhead, acceleration, material or other escalation which includes wages, and other impact cost, or inflationary factors, arising out of any late delivery of such materials or equipment caused by any force Majeure. Compliance with delivery schedules by the Department shall be excused when delays are caused by force Majeure, and, if the delay causes the Contractor to exceed the Contract time stipulated for the final completion of the Project, a non-compensable time extension in the Contract time. An extension in this Contract time will be allowed equal to the length of the delay.

K. Emergencies

- 1) In an emergency affecting the safety of life, the Work, or adjacent property, the Contractor shall notify the Owner, the Field Representative, or the Architect/Engineer as early as possible that an emergency exists. In the meantime, without special instruction as to the manner of dealing with the emergency, the Contractor shall act at his own discretion to prevent such threatened loss or injury. As emergency work proceeds, the Owner, the Field Representative, or the Architect/Engineer may issue instructions, which the Contractor shall follow. Contractor shall present any claims for compensation for emergency work under this section as claims for Extra Work; however, the Contract shall not be entitled to claim Extra Work for if the Contractor did not cause or contribute to the occurrence of the emergency via its actions or omissions.
- 2) For purposes of this article, an emergency is defined as an act or event that has occurred or may imminently occur and which is not caused by actions or inactions of the Contractor, which, if no immediate action is taken may affect the safety of life, the work, or adjacent property. This article does not apply to steps taken by the Contractor to protect the Work, adjacent structures, utilities, existing vegetation, etc. under other sections of the Contract Documents. Furthermore, this article does not apply to preparations the Contractor may make prior to storms or hurricanes or other acts of God.

L. Accident Prevention

- 1) Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - a. All persons on the Site or who may be affected by the Work;
 - b. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and other property at the Site or adjacent thereto, including trees, shrubs lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction.
- 2) Contractor shall comply with all applicable laws and regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection.
- 3) Upon notification from the Owner or its representative(s), the Contractor shall promptly correct any deficiencies affecting the safety and wellbeing of the construction workers and the public that have been identified by the notice.

- 4) Should a situation of imminent danger be identified, work in the affected area must be suspended immediately until the condition has been corrected. Imminent danger is defined as the exposure or vulnerability to harm or risk that is impending or about to occur as defined by the Field Representative or the Architect/Engineer. The Contractor will not be entitled to future claims alleging impacts caused by the Owner stoppage of the Work due to safety reasons.
- 5) When the Contract involves work on a plant, pump station or other site or restricted area, the Contractor shall comply with the Owner's Process Safety Management Plan, or other safety management plan or Operation Directives as may be promulgated by Owner prior to the commencement of the work and shall instruct their personnel as required by that plan.

M. Warranty of Work

- 1) Except where longer periods of warranty are indicated for certain items, the Contractor warrants the Work under the Contract to be free from faulty materials and workmanship for a period of not less than one (1) year from the date of Substantial Completion. This one-year period shall be covered by the Surety Performance Bond as specified in this Contract, except that in the case of defects or failure in a part of the work which the Owner takes possession of prior to Substantial Completion, such a period shall commence on the date the Owner takes possession. Upon receiving notification from the Owner or any public body, to whom the ownership of the Work has been transferred or who has agreed to maintain the Work, the Contractor shall immediately remedy, repair, or replace, without cost to the Owner or other notifying party and to the entire satisfaction of the notifying party, defects, damages, or imperfections due to faulty materials or workmanship appearing in said Work within said period of not less than one year. Remedial work shall carry the same warranty as the original work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve him of any obligation under the Contract. Notwithstanding, the correction of latent defects shall not be considered as warranty work.
- 2) The Contractor, at no additional expense to the Owner, shall also remedy damage to equipment, the site, or the buildings or the contents thereof, which is the result of any failure or defect in the Work, and restore any Work damaged in fulfilling the requirements of the Contract. Should the Contractor fail to remedy any such failure or defect within ten (10) days after receipt of notice thereof, the Owner will have the right to replace, repair, or otherwise remedy such failure or defect and deduct all costs from the Contractor's pay request or Payment and Performance Bond if final payment has been made.
- 3) The Contractor will correct all latent defects discovered within ten (10) years after Substantial Completion provided that the Owner shall notify the Contractor of each latent defect within the time specified by law and shall provide the Contractor with an opportunity to conduct test as contemplated in Chapter 558, Fla. Stat. The Contractor, without prejudice to the terms of the Contract, shall be liable to the Owner for all damages sustained by the Owner resulting from latent defects, fraud, or such gross mistakes as may amount to fraud, discovered after the stated guarantee and warranty periods have expired. If the Contractor fails to act within ten (10) days, the Owner reserves the right to have the work performed by others at the expense of the Contractor, and the Contractor agrees to pay the Owner the actual cost associated with procurement, implementation, and management thereof upon demand. The Owner shall also be entitled to reasonable attorney's fees, necessarily incurred upon the Contractor's refusal to pay the above costs.

- 4) Subcontractors', manufacturers' and suppliers' warranties and guaranties, expressed or implied, with respect to any part of the Work and any material used therein shall be deemed obtained and shall be enforced by the Contractor for the benefit of the Owner provided that, if directed by the Owner, the Contractor requires such subcontractors, manufacturers, and suppliers to execute such warranties and guaranties, in writing, directly to the Owner.
- 5) The rights and remedies of the Owner provided in this article are in addition to and do not limit any rights and remedies afforded by the Contract or by law.
- 6) Nothing in the above intends or implies that this warranty shall apply to work that has been abused or neglected by the Owner, its agents or other public body, utility or railroad to which ownership has been transferred.

END OF ARTICLE

8. CONTRACT TIME

A. Notice to Proceed

- 1) The Contract shall be effective 10 days after notice is provided to the Contractor of contract award (“the effective date”) The Contractor shall, immediately after the effective date of the contract: deliver the specified bonds and certificates of insurance to the Owner, if same were not delivered prior to the effective date; apply for all necessary permits; provide a schedule and a schedule of values in accordance with the requirements herein. Contract time shall not begin on the effective date, but instead shall begin upon issuance of a Notice to Proceed. Contractor shall use continuous diligent good faith efforts to provide bonds, insurance, schedules, schedule of values, and to cause the issuance of permits. The failure of Contractor to utilize such continuous diligent good faith efforts shall render the Contractor in default of this Agreement. Alternatively, if the Contractor is unable to obtain all necessary permits within 30 days, through no fault of the Contractor, the Owner has the option, but not the obligation, to terminate the Contract, without fault to the Contractor or the Owner, effective immediately upon written notice by the Owner or give the Contractor additional time to obtain the permits.
- 2) Upon receipt of all required bonds and insurance, issuance of all required permits, and approval by the Owner of the Schedule and the Schedule of values, the Owner may issue a Notice to Proceed. Except as specifically authorized in writing by the Owner, the Contractor is not authorized to perform work (other than obtaining permits) under the Contract until the effective date of the Notice to Proceed, upon which the Contractor shall commence work and shall diligently prosecute the Work to completion within the time limits specified. The Contract time commences on the start date shown on the Notice to Proceed. The Notice to Proceed shall be effective as of the day it is issued by Owner.
- 3) Any Work Performed by the Contractor (other than obtaining permits) prior to Notice-To-Proceed shall be at the Contractor’s own risk and shall not be considered as the basis for any claim.

B. Schedules

- 1) The Contractor shall provide, maintain, and submit monthly updated schedules in strict accordance with the Contract Documents. The Contractor shall at all times maintain an electronic schedule in the critical path methodology (“CPM”) format or in a format as designated in the technical specifications (e.g., Microsoft Project, Primavera, etc).The Special Provisions and Division 01 of the Technical Specifications may contain further specific requirements for the form, content and date of submission of the baseline schedule and all schedule updates. The County shall approve this schedule prior to issuance of Notice to Proceed. The approved schedule shall be the Baseline Construction Schedule.
- 2) The Contractor shall prosecute the Work in accordance with the approved Baseline Construction Schedule or most recently approved revision to the baseline schedule. In the event that progress along the critical path is delayed, the Contractor shall revise his planning to include additional forces, equipment, shifts or hours as necessary to meet the time or times of completion specified in this Contract at no additional cost to the Owner, unless the Contractor has demonstrated it is entitled a compensable time extension pursuant to the terms of this Contract. In addition, the Contractor shall revise his schedule to reflect these recovery actions

and submit it to the Owner for review and acceptance it being understood that such acceptance will be as to the format and composition of the schedule and not the Contractor's means and methods. Additional costs resulting therefrom will be borne by the Contractor. Delayed progress is defined as:

- a. A delay in the start or finish of any activity on the critical path of the approved baseline schedule or most recently approved revision to the baseline such that the last activity in the critical path occurs after the contract time; or
 - b. A delay in the start or finish of any non-critical activity which consumes more than the available float shown on the approved baseline schedule or most recently approved revision to the baseline, thereby making the activity critical and late; or
 - c. A projected completion date shown on a schedule update which is later than the contractual completion date; or
 - d. Any combination of the above.
- 3) Failure of the Contractor to comply with the requirements under this provision will be grounds for determination that the Contractor is not prosecuting the Work with such diligence as will ensure completion within the Contract Time. Upon such determination, the Owner may terminate the Contractor's right to proceed with the Work, or any separate part thereof, in accordance with the Contract Documents. If in the Contractor's estimation, the cause(s) of delay are beyond the Contractor's control, the Contractor shall adhere to the sections of the Contract Documents related to extensions of time, claims and others as appropriate.
- 4) The Contractor shall be responsible for scheduling and coordinating the work of all crafts and trades, subcontractors, and suppliers, required to perform the Work and to complete the Work within the prescribed time. Any inefficiency or loss of productivity in the labor, materials, or special equipment of the Contractor or its subcontractors of any tier, from any cause, shall be the responsibility of the Contractor. No reimbursement of these or any other costs can be requested by or granted to the Contractor or any of its subcontractors of any tier for inefficiency or loss of productivity in labor, materials, or special equipment, except as specified in the paragraph in this article dealing with Liquidated Indirect Costs, for delays in the performance and completion of the Work directly caused by the Owner or its authorized representatives. Other than the exception described above, additional costs may only be paid to the Contractor as a result of additional Work added to the Contract scope of work.

C. Extensions of Time and Classification of Types of Delays

- 1) Once a delay has been identified and it has been established through a Time Impact Analysis that a delay affects the Project's end date or contractually mandated milestone date, the delay must be classified to determine responsibility and to compute damages, if any. Before the Contractor can submit a request for time extension, claim or any request for additional compensation involving or related to time, the Contractor must classify the delay(s) in accordance with the following classifications. These delay classifications shall be used by the Owner and the Contractor in resolving any time-related disputes. Delays fall into three basic categories: non-excusable, excusable, and compensable.
 - a. Non-excusable delays are those delays to the critical path which were foreseeable at the time of contract award or delays caused by the Contractor due to the Contractor's

fault or negligence or his/her own inefficiencies or problems, due to his/her inability to coordinate subcontractors and/or other flaws in his/her planning. In these types of delays, the Contractor is not entitled to extra time or compensation and the Owner may be allowed to assess Liquidated Damages or actual damages, depending on the contract provisions.

- b. Excusable delays are those delays to the critical path beyond the Contractor's control and without the active interference of the Owner, such as extreme weather, force majeure, strikes, and delays caused by third parties (i.e. not the Contractor or the Owner). Contractors are granted a time extension but no additional compensation for the extended time of performance for excusable delays.
- c. Compensable delays are delays to the critical path caused by active interference or participation of the Owner or Owner's consultant. Examples of compensable delays are failure of the Owner to provide right-of-way, introducing late design changes, late review of shop drawings by the Owner or his Architect/Engineer and failure of the Owner to coordinate the work of various prime Contractors. In the case of a compensable delay, the compensation for the extended period of performance shall be the Liquidated Indirect Costs as specified in the Contract Documents. Where a delay is caused by Extra Work, the direct costs of the Extra Work shall be paid for in accordance with Section 9 herein.
- d. Concurrent delays involve two or more delays to the critical path occurring at the same time (irrespective of whether each delay would if analyzed alone, be compensable or non-compensable), either of which had it occurred alone, would have affected the end date of the Project.
- e. The compensability of concurrent delays depends on the types of delays involved. The following shall determine the effects of concurrent delays on time extensions and compensable costs:
 - i. EXCUSABLE DELAY CONCURRENT WITH A NON-EXCUSABLE DELAY. For excusable delays concurrent with non-excusable delays, the Contractor is entitled to a time extension only. For example, it rains the day footings are to be excavated (excusable delay) but the excavation equipment was down for repairs (non-excusable delays).
 - ii. NON-EXCUSABLE DELAY CONCURRENT WITH A COMPENSABLE DELAY. For non-excusable delays concurrent with compensable delays, the Contractor is entitled to a time extension only. For example, if the Owner introduces a design change for a beam but the Contractor has failed to submit the shop drawings for said beam in a timely manner. This would be an example of a non-excusable delay (late shop drawings) concurrent with a compensable delay (Owner introducing design change).
 - iii. EXCUSABLE DELAY CONCURRENT WITH A COMPENSABLE DELAY. For excusable delays concurrent with compensable delays, the Contractor is entitled to a time extension only. For example, the Owner does not provide the necessary right-of-way to begin construction (compensable delay) but the Contractor's forces are on strike (excusable delay).

- 2) Time Extensions: The Contractor may be granted an extension of time and will not be assessed Liquidated Damages for any portion of the delay in completion of the Work, arising from acts of God, acts of the public enemy, fires, floods, epidemics, quarantine restrictions, freight embargoes, strikes, labor disputes, or weather more severe than the norm, provided that the aforesaid causes were not foreseeable and did not result from the fault or negligence of the Contractor, and provided further that the Contractor has taken reasonable precautions to prevent further delays owing to such causes, and has given to the Architect/Engineer immediate verbal notification, with written confirmation within 48 hours, of the start of the delay of: (1) the cause or causes of delay, (2) the schedule activities impacted by the delay, (3) a rough order of magnitude estimate of the duration of the delay, and (4) potential measures to recover the schedule. Within thirty (30) days after the end of the delay, the Contractor shall furnish the Architect/Engineer with detailed information concerning the circumstances of the delay, the actual number of days actually delayed, the appropriate Contract Document references, and the measures taken to prevent or minimize the delay; notwithstanding, where monthly schedule updates are required prior to the end of the delay, that monthly updated schedule shall reflect all delay experienced through the date of the submittal. All requests for extension of time shall be submitted in accordance with the Contract Documents. Failure to submit such information will be sufficient cause for denying the delay claims, irrespective of the Contractors entitlement to a time extension or liquidated damages. The Owner will ascertain the facts and the extent of the delay, and its findings thereon will be final and conclusive subject to the dispute provisions in the Contract Documents. The extensions of time granted for these reasons shall be considered excusable and shall not be the basis for any additional compensation.
- a. Weather more severe than the norm shall apply only as it affects particular portions of the Work and operations of the Contractor, as determined by the Architect/Engineer. Weather more severe than the norm is defined as any situation exceeding the mean data as recorded by The National Climatic Data Center, Asheville, North Carolina, and published by the National Oceanic and Atmospheric Administration (this data is taken from the table of normal, means, and extremes in the latest version of the "Local Climatological Data, Annual Summary with Comparative Data, Miami, Florida"). For the calculation of delays due to rain, precipitation of 0.01 inches or more a day occurring during normal work hours shall be considered to be a rainy day, if the rain actually prevented the Contractor from performing work. The effects of weather less severe than the norm may be taken into account in granting time extensions at the Owner's sole discretion.
 - b. An extension of time will not be granted for a delay to the critical path caused by a shortage of materials, except Owner-furnished materials, unless the Contractor furnishes to the Architect/Engineer documentary proof that he has diligently made every effort to obtain such materials from every known source within reasonable reach of the Work. The Contractor shall also submit proof, in the form of a CPM network analysis data, that the inability to obtain such materials when originally planned, did in fact cause a delay in final completion of the Work which could not be compensated for by revising the sequence of his operations. Only the physical shortage of material will be considered under these provisions as a

cause for extension of time. No consideration will be given to any claim that material could not be obtained at a reasonable, practical, or economical cost, unless it is shown to the satisfaction of the Architect/Engineer that such material could have been obtained only at exorbitant prices, entirely inconsistent with current rates taking into account the quantities involved and the usual practices in obtaining such quantities.

- 3) Delays Caused by the Owner: If the Contractor's performance of the Work along the critical path is delayed by any condition or action directly caused by the Owner, and which was not foreseeable by the Contractor at the time the Contract was entered into, the Contractor shall, provide notification in accordance with the Contract Documents, of any such delay and of the anticipated results thereof. The Contractor shall cooperate with the Owner and use its best efforts to minimize the impact on the schedule of any such delay. In instances where the Owner causes a delay which is responsible for extending the Contract beyond the completion date, the Contractor may claim Liquidated Indirect Costs as specified in the paragraph in this article dealing with Liquidated Indirect Costs. These delays shall be considered compensable, except for the period in which these delays may be concurrent with Contractor-caused delays. If a delay on the part of the Owner is concurrent, that is, if it occurs at the same time as a Contractor-caused delay, the Owner-caused delay shall be considered an excusable delay for the portion of the Owner-caused delay which is concurrent with the Contractor-caused delay.
- 4) Delays Beyond Contractor's Control Not Caused by the Owner: If Contractor's performance of the Work along the critical path is delayed by any conditions beyond the control and without the fault or negligence of Contractor and not caused by the Owner, and if the Owner determines that the delay was beyond the control and without the fault or negligence of the Contractor and not foreseeable by the Contractor at the time this Contract was entered into, the Owner will determine the duration of the delay based on the documentation provided by Contractor, and may extend the time of performance of this Contract provided; however, that Contractor shall cooperate with the Owner and use its best efforts to minimize the impact on the schedule of any such delay. These delays shall be considered excusable, and the Contractor shall not be entitled to, and hereby expressly waives recovery of, any damages suffered by reason of the delays contemplated by this paragraph and extension of time shall constitute Contractor's sole remedy for such delays.
- 5) In addition to the delays in the Work specified in this section, delays in the Work directly caused by an act or omission by an owner of an adjoining property, or by tenants or permittees on County property, will not be considered an Owner-controlled delay. An owner of an adjoining property is a person, firm, corporation, partnership, or other organization who either owns or occupies, or both, structures, or parcels or both, immediately adjacent to the Work Site. Extension of time for those delays will be considered excusable and shall be treated as specified in this article, provided that:
 - a. The Contractor has, in accordance with this article, given to the Architect/Engineer immediate verbal justification, with written confirmation within 48 hours of the delay; and
 - b. The Contractor establishes, to the satisfaction of the Architect/Engineer, that:
 - i. The delay was caused directly by an act or omission by the owner of the adjoining property; and

- ii. The Contractor has taken reasonable precautions and has made substantial effort to minimize the delay.
- 6) A Change Order will be furnished to the Contractor within a reasonable period of time, after approval of a request for extension of time, specifying the number of days allowed, if any, and the new dates for completion of the Work or specified portions of the Work. All requests for time extension shall be in accordance with the Contract Documents. With the exception of time extensions covered under the time contingency allowance in the contract, pursuant to Section 9-3 of the Code of Miami-Dade County. All change orders shall be in full accord with the Contract Documents. The Board of County Commissioners shall not be bound by the recommendation of County Staff with respect to time extensions, and may accept, reject, or modify change orders in its sole discretion.
- 7) Additional requirements for the submittal of time extension requests may be included in the Technical Specifications,

D. Substantial Completion, Final Completion and Final Acceptance

- 1) The following items must be satisfied before Substantial Completion, as defined in the Contract Documents, will be approved:
 - a. All Work must be completed to the satisfaction of the appropriate permitting agencies having jurisdiction over the Work. The Contractor must furnish the Owner with a “Temporary Certificate of Occupancy” or a “Certificate of Completion,” as applicable, from the permitting agency unless circumstances arise outside the contract scope that prohibits such certificates from being issued (i.e. utility connections).
 - b. All operational systems which may include but not be limited to electrical systems, security systems, irrigation systems and fire systems, must be completed in accordance with the Contract Documents, tested and approved.
 - c. All plumbing, heating, ventilation, and air conditioning systems must be completed, tested, and approved. Whenever the scope of work includes a facility or building, an HVAC test and balance report must be submitted and approved as a condition precedent to Substantial Completion.
 - d. The punch list may not be so extensive or of a nature that the Contractor’s completion will significantly interfere with the Owner’s beneficial use of the facility.
- 2) When the Contractor believes that all the Work or designated portion thereof required by the contract is substantially completed, the Contractor shall submit to the Field Representative and the Architect/Engineer a request for Substantial Completion inspection. The Contractor, the Field Representative, the Architect/Engineer, sub-consultants, and the Owner shall meet at the Project site for the purpose of making a combined inspection of the Work. During this inspection, any item of work remaining to be done or Work to be corrected shall be noted on a Punch List. If the Field Representative and/or the Architect/Engineer and the Owner indicate on this inspection report that the Work is substantially complete, a Certificate of Substantial Completion will be issued to the Contractor. The Certificate of Substantial Completion shall establish the date of Substantial Completion and shall have attached the Punch List reflecting any items to be completed or corrected, but which do not prevent beneficial use and occupancy, and shall state the date by which the Punch List is to be completed. The completion time for

the Punch List shall not be greater than 60 days from the date of issuance of the Certificate of Substantial Completion.

- 3) If any of the conditions listed in this article are not met and the Work has not been completed, or the Owner determines that the final Punch List cannot be completed within sixty (60) days, a Certificate of Substantial Completion shall not be issued. The Contractor shall continue work, reducing the number of items on the Punch List that were not met. Additional inspections shall be scheduled as necessary until Substantial Completion is declared. However, costs incurred by the Owner for any inspections beyond a second inspection will be charged back to the Contractor.
- 4) In the event the Contractor fails to achieve Substantial Completion within the period specified in the Contract for completion, the Contractor shall be liable for Liquidated Damages and the Owner has, as its option, the right to, after 10 calendar day-notice to the Contractor, to remove such work from the Contract, in which case the value of the work, as measured by the Owners' cost to have such work performed by others, shall be deducted from Contractor's final payment, whether or not the Owner causes such work to be performed. In the event that the Owner chooses to remove such work, there shall not be any further non-excusable delays charged to the Contractor beyond the 10 days following notice to the Contractor. However, the Contractor shall not be relieved of any non-excusable delays incurred through the date of termination. The Punch List and the Contract shall remain open until all the Work is complete and accepted. The current retainage will be used to offset any Liquidated Damages and any back charges, after which, any surplus retainage will be released to the Contractor. If the retainage is insufficient to cover the Liquidated Damages and any back charge, the Owner will bill the Contractor for the balance and the Contractor shall promptly remit to the Owner an amount equal to the billing.
- 5) Final Completion: When the Owner or Architect/Engineer considers all Work indicated on the Punch List to be complete, the Contractor shall submit written certification that:
 - a. Work has been inspected for the compliance with the Contract Documents.
 - b. Work has been completed in accordance with the Contract Documents, and that deficiencies listed within the Certificate of Substantial Completion and its attachments have been corrected.
 - c. Work is completed and ready for Final Inspection.
- 6) Should the Owner and/or Architect/Engineer inspection find that Work is incomplete, he will promptly notify the Contractor in writing listing all observed deficiencies. The Contractor shall be responsible for all Direct and Indirect Costs to the County resulting from the Contractor's failure to complete the Punch List items within the time allowed for completion.
- 7) The Contractor shall remedy deficiencies and send a second certification. Another inspection will be made that shall constitute the final inspection. Provided that work has been satisfactorily completed, the Architect/Engineer will notify the Contractor in writing of Final Acceptance as of the date of this final inspection.
- 8) Prior to Final Acceptance, the Contractor shall deliver to the Field Representative complete As-Built drawings, all approved Shop Drawings, maintenance manuals, pamphlets, charts, parts lists and specified spare parts, operating instructions and other necessary documents required

for all installed materials, equipment, or machinery, all applicable warranties and guarantees, and the appropriate Certificate of Occupancy.

- 9) Upon notification of Final Acceptance to the Contractor, the Architect/Engineer will request and consider closeout submittals from the Contractor including but not limited to the final Contractor's Affidavit and Release of All Claims.
- 10) The Contractor, without prejudice to the terms of the Contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.
- 11) Re-Inspection Fees: Should the status of completion of the Work require re-inspection of the Work by the Owner and the Architect/Engineer due to failure of the Work to comply with the Contractor's representations regarding the completion of the Work, the Owner will deduct from the final payment to the Contractor, fees and costs associated with re-inspection services in addition to scheduled Liquidated Damages.

E. Use and Possession

The Owner shall have the right to occupy, take possession of or use any completed or partially completed portions of the Work. Such possession or use will not be deemed an acceptance of work not completed in accordance with the Contract. While the Owner is in such possession, the Contractor, notwithstanding the provisions of the Contract Documents, will be relieved of the responsibility for loss or damage to those portions of the Work occupied by Owner, excepting those resulting from the Contractor's fault or negligence or breach of warranty. The Contractor shall be responsible for maintenance of all equipment in these areas until these responsibilities are turned over to the County in writing. If such prior possession or use by the Owner delays the progress of the Work or causes additional expense to the Contractor, a Contract change in the Contract price, or the time of completion will be made, and the Contract will be modified in writing accordingly.

F. Liquidated Damages and Liquidated Indirect Costs

- 1) The parties to the Contract agree that time, in the completion of the Work, is of the essence. The Owner 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 Liquidated Damages on a daily basis for each Day that individual milestones, both interim and cumulative as specified in the Contract Documents, are not timely achieved or that Contract Time is exceeded due to a non-excusable delay. These Liquidated Damages shall be assessed, not as a penalty, but as compensation to the Owner for expenses which are difficult to quantify with any certainty and which were incurred by the Owner due to the delay. The amount of Liquidated Damages assessed shall be an amount, as stipulated in the Contract Documents, 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.
- 2) The Owner and the Contractor recognize and agree that the precise amount of the Contractor's Indirect Costs 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, Liquidated Indirect Costs recoverable by the Contractor, shall be assessed on a daily basis for each Day the Contract Time is delayed due to compensable delay.

These Liquidated Indirect Costs shall be paid to the Contractor in full satisfaction of all costs and damages caused by compensable excusable delays, except for Direct Costs. There shall be no Liquidated Indirect Costs payable for time directly related to Extra Work for which a Change Order has been issued.

- 3) The amount of Liquidated Indirect Costs recoverable shall be an amount, as stipulated in the Contract Documents per day for each day the Contract is delayed due to compensable excusable delay. Unless otherwise specified in the Contract, for lump sum contracts, the daily amount of Liquidated Indirect Costs will be calculated by dividing the total amount in the Contractor's approved Schedule of Values for General Requirements by the Contract duration (in days) after deducting any general conditions costs directly paid by the Owner during the execution of the Project. The amount of the Liquidated Indirect Costs calculated in accordance with this formula shall be stated in the Notice-to-Proceed. For unit price contracts, the daily amount of Liquidated Indirect Costs will be calculated as defined in the formula below:

$$\frac{(\text{Amount of Bid} \times 8\%) \text{ less any General Requirements items paid independently/individually}}{\text{Original Contract Duration (In Days)}}$$

- 4) In the event the Contractor fails to perform any other covenant or condition (other than time-related) of this Contract relating to the Work, the Contractor shall become liable to the Owner for any actual damages which the Owner may sustain as a result of such failure on the part of the Contractor. The Owner reserves the right to retain these amounts from monies due the Contractor.
- 5) Nothing in this article shall be construed as limiting the right of the Owner to terminate the Contract and/or to require the Surety to complete said Project and/or to claim damages for the failure of the Contractor to abide by each and every one of the terms of this Contract as set forth and provided for in the Contract Documents.
- 6) Consequential Damages: This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination. Nothing contained in this Section shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents. Notwithstanding anything whatsoever contained in this Agreement to the contrary, the Parties expressly agree that no Party to this Agreement shall be liable to any other Party or Parties to this Agreement for any special, consequential, or exemplary damages of any kind whatsoever, whether arising in contract, warranty, tort (including but not limited to negligence), strict liability, or otherwise, including without limitation losses of use, profits, business reputation and financing.

END OF ARTICLE

9. PROGRESS PAYMENTS

A. Payments

- 1) The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials, for performing all work under the Contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof.
- 2) The Owner will make progress payments monthly as the work proceeds. Prior to issuance of the Notice to Proceed, unless the Special Provisions provide for the payment to be determined by using a cost-loaded CPM, the Contractor shall, furnish a Schedule of Values for review and approval by the Owner consisting of a detailed cost breakdown of each lump sum bid item in the Bid Form in such detail as the Architect/Engineer shall request, showing the amount included therein for each principal category of the work, to provide the basis for determining the amount of progress payments. Unit price bid items shall be paid for in accordance with the Bid Form. The Schedule of Values shall clearly indicate the amount to be paid by the Contractor to each individual subcontractor. Notice to Proceed shall not be issued, and the Contractor cannot submit monthly invoices, without an approved Schedule of Values.
- 3) In making such progress payments, a maximum of 5 percent of the estimated amount shall be retained from each progress payment made to the Contractor until 50 percent Completion of the work has been established. 50 percent completion is defined as the point in time when at least 50 percent of the Work under contract has been physically and satisfactorily completed in accordance with the intent of the Contract Documents as determined by the Architect/Engineer. At this point, the retainage amount withheld from each subsequent progress payment may be reduced, at the discretion of the Owner, provided the Owner finds that satisfactory progress is being made. Also, whenever the Work is Substantially Complete, the Owner, if it considers the amount retained to be in excess of the amount adequate for its protection, may release to the Contractor all or a portion of such excess amount.
- 4) Material and work covered by progress payments shall become the sole property of the Owner. This provision shall not be construed as relieving the Contractor from the sole responsibility for material and work upon which payments have been made, the restoration of damaged work or as waiving the right of the Owner to require the fulfillment of the terms of the Contract.
- 5) Progress payments will be made in accordance with the Miami-Dade County Code, Florida Statute, s. 218.70 Florida Prompt Payment Act, and Florida Statute, s. 218.735.
 - a. The Contractor's attention is directed to Florida Statute, s. 218.735, revising provisions regarding timely payment, revising deadlines for the payment of contractors, subcontractors, sub-subcontractors, materialmen and suppliers. The contractor shall remit payment due to subcontractors within 10 days after the contractors' receipt of payment. The subcontractor shall remit payment due to sub-subcontractors and suppliers within seven (7) days after the subcontractors' receipt of payment. Dispute resolution is provided within the Statute.
 - b. The Contractor's attention is further directed to Miami Dade County Code Section 10-33.02, Section 2-8.1.4 , Section 2-8.1.1.1.1 and Section 2-8.1.1.1.2 , providing for prompt payments of fourteen (14) days upon receipt of an approved invoice are made

to prime contractor certified as Miami Dade County certified small businesses or prime contracts with Miami Dade County certified small businesses are participating as subcontractors by County agencies and the Public Health Trust; creating dispute resolution procedures for payment of County and Public Health Trust obligations; and requiring the prime Contractor to issue prompt payments within two (2) days upon receipt of payment from the owner, and have the same dispute resolution procedures as the County, for all small business subcontractors. Failure of the Contractor to issue prompt payment to small businesses, or to adhere to its dispute resolution procedures, may be cause for suspension, termination, and debarment, in accordance with the terms of the County contract or Public Health Trust contract and debarment procedures of the County.

- 6) No progress payments will knowingly be made for work not in accordance with this Contract, but payment of a requisition shall not constitute acceptance of non-conforming work or otherwise constitute a waiver of any of the Owner's rights under the Contract
- 7) Applications for progress payments shall be in the format as prescribed by the Owner. These applications shall be supported by evidence, which is required by this article. Each application for payment shall clearly indicate the amount to be paid to the Contractor as well as the amount to be paid to each of the Contractor's subcontractors and suppliers, based on work installed and approved at the time of the application. The Contractor shall certify, pursuant to the Miami-Dade County False Claims Ordinance, that the work for which payment is requested has been done and that the materials listed are stored where indicated. Those items on the progress payment application that, in accordance with the applicable sections of the Contract Documents, compensate for Force Account Work, for materials not yet incorporated in the work, or for work under change orders negotiated on a cost-reimbursable basis will, under procedures of the Owner, be subject to the Owner's audit review of the Contractor's records supporting the payment application. Audits will be performed so as not to interfere with timely processing of applications for payment. If audit indicates the Contractor has been overpaid under a previous payment application, that overpayment will be credited against current progress payment applications. For a period of five years from Final Acceptance of the Contract, the Contractor shall maintain and make available for audit inspection and copying by the Owner, State and the Government and their authorized representatives, all records subject to audit review.
- 8) The Owner, at its discretion, may authorize payment for materials not yet incorporated into the Work, whether or not delivered to the Work Site. The value of materials on hand but not incorporated into the Work will be determined by the Field Representative, based on actual invoice costs to the Contractor, and such value will be included in a monthly application for payment only if the materials have been properly stored on the Site, provided that such materials meet the requirements of the Contract Documents, and are delivered to acceptable locations on Site or in bonded warehouses that are acceptable to the Owner; materials paid for in this manner shall be kept segregated from other materials purchased by Contractor and shall not be used for other projects undertaken by Contractor. Such delivered costs of stored or stockpiled materials may be included in the next application for payment after the following conditions are met:
 - a. The material has been stored and stockpiled in a manner acceptable to the Field Representative at or on the Work site or in a secure storage facility within Miami-Dade County or other location as approved by the Architect/Engineer. If such

materials are stored outside Miami-Dade County, the Contractor shall accept responsibility for and pay all personal and property taxes that may be levied against the Owner by any state or subdivision thereof on account of such storage of such material. The Owner will permit the Contractor, at his own expense, to contest the validity of any such tax levied against the Owner and in the event of any judgment or decree of a court against the Owner, the Contractor agrees to pay same.

- b. The Contractor has furnished the Field Representative with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the Field Representative with satisfactory evidence that the materials and transportation costs have been paid including but not limited to certified bills of sale for such materials and insurance certificates or other instruments, in writing, and in a form as required by the Owner. The Architect/Engineer may allow only such portion of the amount represented by these bills as, in his opinion, is consistent with the reasonable cost of such materials.
- d. The Contractor has furnished the Owner legal title (free of debts, claims, liens, mortgages, taxes, or encumbrances of any kind) to the material so stored and stockpiled and subject only to the Owner's payment for the materials as reflected in the application for payment. All such materials so accepted shall become the property of the Owner. The Contractor at his own expense shall mark such material as the property of the Owner and shall take such other steps, if any, the Owner may require or regard as necessary to vest title in the Owner to such material.
- e. The Contractor has furnished the Owner evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work. The cost of the material included in an application for payment which may subsequently become lost, damaged, or unsatisfactory shall be deducted from succeeding applications for payment irrespective of the cause and whether or not due to the negligence, carelessness or fault of the Owner.
- f. It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of its responsibility for furnishing and placing such materials in accordance with the requirements of the Contract Documents and does not waive Owner's right to reject defective material when it is delivered to the Site until such material is delivered to the Site and satisfactorily incorporated into the work.
- g. In no case will the amount in an application for payment for material on hand exceed the Contract price for such material, the Contract price for the Contract item in which the material is intended to be used or the value for such material established in the approved Schedule of Values. Payment for material furnished and delivered as indicated above will be based on 100 percent of the cost to the Contractor and retention will be withheld as specified in the Contract Documents. In any event, partial payments for materials on hand will not exceed 70 percent of the item's Bid Price, including taxes and shipping, or the agreed amount within the Schedule of Values.

- h. No partial payment will be made for stored or stockpiled living or perishable plant materials.
 - i. The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this Article.
 - j. Materials may be subject to being purchased by the Owner directly under the County's "Direct Material Purchase Program" and installed by the Contractor, as applicable, in accordance with the Special Provisions.
- 9) Payment of the Contract lump sum price for General Requirements, if applicable, will be made in the following manner:
 - a. The General Requirements Lump Sum amount, including cost for bonds and insurance, shall be paid in proportion to the total percent of completion. The Owner will consider requests for payment for bonds and insurance under the General Requirements after receipt of certified invoices from the Contractor showing that the Contractor has paid them.
 - b. The Owner reserves its right to withhold payment for General Requirements, in whole or in part, at the Owner's sole discretion, in accordance with Paragraph 11 below.
- 10) If any claim is filed against the project for labor, materials, supplies or equipment which the Owner has determined to have been incorporated on the site and the Contractor has not paid for, the Owner will have the right to retain from payments otherwise due the Contractor, in addition to other amounts properly withheld under this article or under other provisions of the Contract, an amount equal to such amounts claimed.
- 11) In addition to the provisions of this article and other relevant sections of the Contract Documents, payment may also be withheld proportionately for the following reasons:
 - a. Reasonable doubt that the Work can be completed for the unpaid balance of the Contract Sum,
 - b. Reasonable indication that the Work will not be completed within the Contract Time,
 - c. Damage to another Contractor,
 - d. Unsatisfactory prosecution of the Work by the Contractor,
 - e. Failure of the Contractor, or his subcontractors, to pay wage rates, when applicable as required by the Contract.
 - f. In the event the Surety on the Performance and Payment Bond provided by the Contractor becomes insolvent, or is placed in the hands of a receiver, or has its right to do business in the State of Florida suspended or revoked as provided by law. In this case, payment will continue when the Contractor provides a good and sufficient Bond(s) as required by the Contract Documents, in lieu of the Bond(s) so executed by such Surety.
 - g. If any work or material is discovered which, in the opinion of either the Architect/Engineer or the Field Representative, is defective, or should a reasonable

doubt arise on the part of either the Architect/Engineer or the Field Representative as to the integrity of any part of the work completed previous to the final acceptance and payment. In this case, there will be deducted from the first application for payment subsequent to the discovery of such work, an amount equal in value to the defective or questioned work, and this work will not be included in any subsequent applications for payment until the defects have been remedied or the causes for doubt removed.

- 12) The Contactor shall submit with each monthly invoice, or as otherwise directed by the County, certified payroll forms for all the Contractor's employees on the job, as well as for all subcontractors regardless of tier in accordance with applicable Responsible Wages and Benefits in accordance with Miami-Dade County Code Section 2-11.16). Failure to provide this information will cause the Contracting Officer, Field Representative, and/or Architect/Engineer to return the invoice to the Contractor until such time as the Contractor properly submits the required information.
- 13) Failure to comply with the insurance requirements listed in the Contract Documents may result in the Owner's withholding or delaying payment to the Contractor.
- 14) In accordance with Miami-Dade County Implementing Order 3-9, Accounts Receivable Adjustments, if money is owed by the Contractor to the County, whether under this Contract or for any other purpose, the County reserves the right to retain such amount from payment due by County to the Contractor under this Contract. Such retained amount shall be applied to the amount owed by the Contractor to the County. The Contractor shall have no further claim to such retained amounts which shall be deemed full accord and satisfaction of the amount due by the County to the Contractor for the applicable payment due herein.

B. Taxes

- 1) Except as may be otherwise provided for in the Contract Documents, the price or prices bid for the Work shall include full compensation for all federal, state, local and foreign taxes, fees and duties that the Contractor is or may be required to pay and the Contractor shall be responsible for the payment thereof during the prosecution of the work.
- 2) The Contractor's attention is directed to the fact that materials and supplies necessary for the completion of this Contract are subject to the Florida Sales and Use Tax, in accordance with Section 212.08, Florida Statutes, as amended. The Contractor shall not collect taxes upon making delivery to the Owner.
- 3) The Owner, at its sole discretion, upon request of the Contractor and where appropriate, may furnish to the Contractor appropriate evidence to establish exemption from any taxes, fees or duties which may be applicable to the agreement and from which the Owner is exempt.

C. Tax Exempt Owner Purchase Materials

The owner may incorporate specifications for tax exempt owner purchase in all covered contracts. A tax-exempt owner purchase is one made directly by the County which is intended to be tax exempt in accordance with Section 212.08(6) of the Florida Statutes and Rule 12A-1.094 of the Florida Administrative Code, as the same may be amended. A covered contract is a contract for the construction, improvement or rehabilitation of property which is estimated to exceed ten million dollars (\$10,000,000.00) in cost.

The contractor must include Florida State Sales Tax and other applicable taxes in his bid for materials, supplies, and equipment. The owner, being exempt from sales tax, reserves the right to make direct purchases of various construction equipment, materials or supplies included in the Contractor's bid and/or contract, substantially in accordance with the contract.

OWNER DIRECT PURCHASE PROCEDURES

- A) Contractor shall provide Owner's Representative a list of all intended suppliers, vendors, and materialmen for consideration as Owner Direct Purchased materials. This list shall be submitted at the same time as the preliminary schedule of values and the Project schedule. The Contractor shall submit a description of the materials to be supplied, estimated quantities and prices.
- B) Upon request from Owner, and in a timely manner, Contractor shall submit the attached Purchase Order Requisition Form to the Owner's Representative, to specifically identify the materials which Owner has, at its sole option, elected to purchase directly. On the Purchase Order Requisition Form, the Contractor will provide the Owner the required quantities of material at the price established in the vendor's quote to the Contractor, less any sales tax associated with such price.
- C) Such Purchase Order Requisition Forms are to be submitted to Owner's designated representative no less than two (2) weeks prior to the need for ordering such Owner Direct Purchased Materials, in order to provide sufficient time for Owner review and approval and to assure that such Directly Purchased Materials may be directly purchased by Owner and delivered to the Project site so as to avoid any delay to the Project.
- D) After receipt of the Purchase Order Requisition Form, Owner shall prepare its Purchase Order for equipment, materials or supplies which the Owner chooses to purchase directly. Promptly, within two (2) business days of receipt of each Purchase Order, the Contractor shall verify the terms and conditions of the Purchase Order prior to its issuance to supplier and in a manner to assure proper and timely delivery of items. After such verification by the Contractor, The Owner shall issue the Purchase Order to the supplier or vendor. The Purchase Order shall require that the supplier provide the required shipping and handling insurance. The Purchase Order shall also require the delivery of the Owner Direct Purchased Materials on the delivery dated provided by the Contractor in the Purchase Order Requisition Form and shall indicate F.O.B. jobsite. The Owner's Purchase Order shall also provide that the supplier shall invoice the Owner directly for the items purchased and not the Contractor. Owner shall immediately provide Contractor with copies of such invoices it receives. The Owner's Purchase Orders shall contain or be accompanied by the Owner's exemption certificate and must include the Owner's name, address, and exemption number with issue and expiration date shown. The Owner shall issue each supplier or vendor a Certificate of Entitlement on the Certificate of Entitlement Form attached hereto with each Purchase Order.

- E) All shop drawings and submittals shall be made by the Contractor in accordance with the Project Specifications.
- F) Contractor shall be fully responsible for all matters relating to the receipt of materials in accordance with these Procedures, including, but not limited to, verifying correct quantities, verifying documentation of orders in a timely manner, coordinating purchases, providing and obtaining all warranties and guarantees in favor of and for the benefit of the Owner required by the Contract Documents, inspection and acceptance of the goods at the time of delivery. At the time of, and subsequent to, the delivery of such materials, the Owner shall be liable for all loss or damage to equipment and materials purchased pursuant to the Purchase Order. The Contractor shall coordinate delivery schedules, sequence of delivery, loading orientation, and other arrangements normally required by the Contractor for the particular materials furnished. The Contractor shall provide all services required for the unloading, handling and storage of materials through installation. The Contractor agrees to indemnify and hold harmless the Owner from any and all claims of whatever nature resulting from non-payment of goods to suppliers arising from the actions or directions of Contractor. Notwithstanding the foregoing, the Owner shall be responsible for payment of the invoices issued by the supplier or vendor pursuant to the procedures in Paragraph G below.
- G) As Owner Direct Purchased Materials are delivered to the jobsite, the Contractor and the Owner's Representative, shall visually inspect all shipments from the suppliers, and approve the vendor's invoice issued to the Owner for material delivered. The Contractor shall assure that each delivery of Owner Direct Purchased Material is accompanied by documentation adequate to identify the Purchase Order against which the purchase is made. This documentation may consist of a delivery ticket and an invoice from the supplier delivered to the Owner (and provided to Contractor) conforming to the Purchase Order, together with such additional information as the Owner or Contractor may require. The Contractor shall verify in writing to the Owner's Representative that the Materials were received in order for the Owner to agree to approve the invoice for payment of the invoice issued. The Owner shall have the right to assign Owner personnel to verify and audit the accuracy of all Direct Purchase documents.
- H) The Contractor shall insure that Owner Direct Purchase materials conform to the Specifications, and determine prior to incorporation into the Work if such materials are patently defective, and whether such materials are identical to the materials ordered and match the description on the bill of lading. If the Contractor discovers defective or nonconformity's in the Owner Direct Purchased Material upon such visual inspection, the Contractor shall not utilize such nonconforming or defective materials in the Work and instead shall promptly notify the Vendor of the defective or non-conforming condition in order to pursue repair or replacement of those materials without any undue delay or interruption to the Project. Additionally the Contractor shall notify the Owner of such occurrence. If the Contractor fails to perform such inspection and otherwise incorporates Owner Direct Purchased materials, the condition of which it either knew or should have known by performance of an inspection, Contractor shall be responsible for all damages to

Owner resulting from Contractor's incorporation of such materials into the Project, including liquidated or delay damages. In the event that materials furnished are found to be defective or nonconforming, the Contractor shall promptly take action to remedy the defect or nonconformance so as not to delay the work.

- I) The Contractor shall be responsible for obtaining and managing all warranties and guarantees in favor of and for the benefit of the Owner for all materials and products as required by the Contract Documents. All repairs, maintenance or damage repair calls shall be forwarded to the Contractor for resolution with the appropriate supplier or vendor.
- J) The transfer of possession of Owner Direct Purchased Materials from the Owner to the Contractor shall constitute a bailment for mutual benefit of the Owner and the Contractor. The Owner shall be considered the bailor and the Contractor the bailee of the Owner Direct Purchased materials. Owner Direct Purchased Materials shall be considered returned to the Owner for purposes of its bailment at such time as they are incorporated into the Project or consumed in the process of completing the Project. Bailee shall have the duty to safeguard, store and protect all Owner Direct Purchased Materials.
- K) The Contractor shall maintain insurance in favor of and for the benefit of the Owner pursuant to the requirements set forth in the Owner and Contractor Agreement which shall be sufficient to protect against any loss of or damage to Owner Direct Purchased equipment, materials or supplies. Such insurance shall cover the value of any Owner Direct Purchased Materials not yet incorporated into the Project from the time the Owner first takes title which shall be at the time of delivery and acceptance of the materials by the Contractor as provided in Paragraph F above.
- L) On a monthly basis, Contractor shall be required to review invoices submitted by all suppliers of Owner Direct Purchased Materials delivered to the Project site during that month and either concur or object to the Owner's issuance of payment to the supplier, based upon Contractor's records of materials delivered to the site and any defects in such materials.
- M) In order to arrange for the prompt payment to the supplier, the Contractor shall provide to the Owner, a list indicating the acceptance of the goods or materials in accordance with the established monthly Payment Request Schedule. The list shall include a copy of the applicable Purchase Order, invoices, delivery tickets, written acceptance of the delivered items, and such other documentation as may be reasonably required by the Owner. Upon receipt and verification of the appropriate documentation, the Owner shall prepare a payment to the supplier based upon the receipt of data provided. This payment will be released, delivered and remitted directly to the supplier by the Owner. The Contractor agrees to assist the Owner to immediately obtain partial or final release of lien waivers as appropriate.

- N) Salvage materials shall be the property of the Owner and stored or removed from the site by the Contractor at the Owner's discretion.
- O) From the time of delivery and acceptance, the Owner shall have and retain title to any and all Owner Direct Purchased materials.
- P) Upon completion of the project, the Contractor shall execute and deliver to the Owner, one or more deductive Change Orders, referencing the full value of all Owner Direct Purchased materials purchased directly, plus all sales tax savings associated with such materials in Contractor's bid to Owner's Representative.

D. Payments to Subcontractors and Suppliers

- 1) The Contractor shall pay all subcontractors for and on account of work performed by such subcontractors in accordance with the terms of their respective subcontracts and in accordance with Miami-Dade County Code Section 10-33.02 and Florida Statute s. 218.735.
- 2) Before the Contractor can receive any payment, except the first payment, for monies due him as a result of a percentage of the work completed, he must provide the Architect/Engineer with duly executed release of claim from all subcontractors and suppliers who have performed any work or supplied any material on the project as of the date, stating that said subcontractors or suppliers have been paid their proportionate share of all previous payments. In the event such affidavits cannot be furnished, the Contractor may, at the Owner's sole discretion after the Contractor demonstrates justifiable reasons, submit an executed Consent of Surety to Requisition using the form provided in the Contract Documents identifying the subcontractors and the amounts for which the Statement of Satisfaction cannot be furnished.
- 3) The Contractor's failure to provide a Consent of Surety to Requisition Payment will result in the amount in dispute being withheld until (1) the Statement of Satisfaction is furnished, or (2) Consent of Surety to Requisition Payment is furnished. The subcontractor(s) shall submit with each monthly invoice the Certified Payroll forms for all employees on the job in accordance with applicable Provisions. Failure to provide this information will cause the Architect/Engineer to return the invoice to the Contractor until such time as the Contractor properly submits the information.

E. Contract Prices - Bid Form

Payment for the various Bid Items listed in the Bid Form shall constitute full compensation for furnishing plant, labor, equipment, appliances, and materials and for performing operations required to complete the Work in conformity with the Contract Documents. All costs for work shown or indicated by the Contract Documents, although not specifically provided for by a Bid Item in the Bid Form, shall be included in the most appropriate Bid Item price for the items listed. Except for the relief provided by the applicable section of the Contract Documents governing Differing Site Conditions, the Contractor will not be entitled to additional compensation for providing an activity

or material necessary for the completion of the Work in accordance with the Contract even though the activity or material is not included in a specific Bid Item or indicated in the Contract Documents.

F. Final Payment

- 1) After the Work has been accepted by the Owner, subject to the provisions of the Contract Documents, a final payment will be made as follows:
 - a. Prior to Final Acceptance of the Work, the Contractor shall prepare and submit a proposed final application for payment to the Architect/Engineer showing the proposed total amount due the Contractor, segregated as to Bid Item quantities, force account work, and other bases for payments; deductions made or to be made for prior payment; amounts to be retained; any claims the Contractor intends to file at that time or a statement that no claims will be filed; and any unsettled claims, stating amounts. Prior applications and payments shall be subject to correction in the proposed final application for payment. Claims filed with the final application for payment must be otherwise timely under these General Conditions.
 - b. The Owner will review the Contractor's proposed final application for payment and necessary changes, or corrections will be forwarded to the Contractor. Within 10 days thereafter, the Contractor shall submit a final application for payment incorporating changes or corrections made by the Architect/Engineer together with additional claims resulting therefrom. Upon approval by the Owner, the corrected proposed final application for payment will become the approved final application for payment.
 - c. If the Contractor files no claims with the final application for payment and no claims remain unsettled within 30 days after final inspection of the Work by the Architect/Engineer and the Owner, and agreements are reached on all questions regarding the final application for payment, the Owner, in exchange for an executed release of all claims and properly executed close-out documents specified in Paragraph 3 below, will pay the entire sum found due on the approved final application for payment.
 - d. Upon final determination of any and all claims, the Owner, in exchange for properly executed close-out documents specified in Paragraph 3 below, will pay the entire sum found due on the approved final application for payment, including the amount, if any, allowed on claims.
 - e. The release from the Contractor will be from any claims arising from the Work under the Contract. If the Contractor's claim to amounts payable under the Contract has been authorized by the Owner for assignment pursuant to the relevant sections of the Contract Documents, a release may be required from the assignee.
 - f. Final payment will be made within 30 days after approval of the final notice and resolution of Contractor's claims, or 30 days after Final Acceptance of the Work by the Owner, whichever is later. If a final application for payment has not been approved within 30 days after final inspection of the Work, the Owner shall make payment of sums not in dispute without prejudice to the rights of either the Owner or the Contractor in connection with any disputed items.

- g. Prior to payment of a claim settlement, the claim may be audited by the Owner and may be subject to approval by the funding agencies.
 - h. Final payment made in accordance with this article will be conclusive and binding against both parties to the Contract on all questions relating to the amount of work done and the compensation paid.
- 2) With the final application for payment, the Contractor shall return and submit final releases of claim from himself, from each subcontractor of record and from other subcontractors or material suppliers who may have notified the Owner that they were furnishing labor or materials for this project. These releases from subcontractors and suppliers shall be final, originals, notarized and executed on the form provided by the Owner and included in the Contract Documents, all in accordance with all applicable Florida Statutes. In addition, the Contractor shall execute and return to the Owner all the enclosed close-out documents. In the event that all of the above releases cannot be furnished, the Contractor may, at the Owner's sole discretion after the Contractor demonstrates justifiable reasons, submit a Consent of Surety to Final Payment in a form acceptable to the Owner, recognizing lack of such releases of claim. Furthermore, the Contractor and the Surety shall agree in writing, in a form acceptable to the Owner, to indemnify, defend and hold harmless the Owner from any claims of subcontractors and suppliers who refuse to execute final releases.
- 3) The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:
- a. Faulty or defective Work appearing after Final Completion;
 - b. Failure of the Work to comply with the requirements of the Contract Documents, discovered after Final Completion;
 - c. The performance of audits to seek reimbursement of any overpayments discovered as a result of an audit as provided in the Contract Documents;
 - d. The enforcement of those provisions of the Contract Documents which specifically provide that they survive the completion of the Work;
 - e. The enforcement of the terms of the Payment and Performance Bonds against the Surety;
 - f. Terms of all warranties/guarantees required by the Contract Documents.
- 4) The acceptance of final payment shall constitute a waiver of all claims by the Contractor.
- 5) Escalation of Bid Items
- Q) A dedicated allowance account has been established in this contract for escalation of contractor Unit Prices. The funds in the dedicated allowance account may not be used for any purpose other than escalation of Unit Prices as provided for below. Funds in the dedicated allowance account are the property of the Owner, and any unused funds at the end of the Contract shall remain property of the Owner. The Contractor expressly agrees that it is solely responsible for all cost escalations which exceed the value of the dedicated allowance account. Payment shall be made in a lump sum, based on escalation occurring in the preceding 365 days, as outlined below.

- R) The Contractor shall be entitled to escalation of its Unit Prices 365 days after award of the contract, and every 365 days thereafter.
- S) The Contractor shall utilize the most recent statistical data available as published by the Bureau of Labor Statistics.
- T) The formula for the alteration of the Unit Prices shall be the percentage change for the previous 12 months with a not-to-exceed percentage change of five percent (5%) for each bid item. Should the Bureau of Labor Statistics make a major CPI revision, such as a change to the applicable CPI base period, it remains that the Unit Prices shall be altered utilizing the percentage change of the most recent 12 months as published within the changed CPI. The percentage change in Unit Prices shall be computed similar to the following example:

CPI for the most recent month 135.8
 Less CPI for the month 12 months previous 129.9
 Equals the index point change 5.9
 Divided by previous period CPI.. 129.9
 Equals 0.0454
 The result is multiplied by 100 0.0454 x 100
 Which equals the percentage change multiplier 4.54

The percentage multiplier shall be rounded to two decimal places using the 5/4 rounding method, e.g., if the 3rd digit to the right of the decimal is a 5 through 9, then the 2nd digit to the right of the decimal is rounded up one value; or if the 3rd digit to the right of the decimal is 0 through 4, then the 2nd digit to the right of the decimal remains as is.

- E) Following each escalation period, the Contractor shall submit a request for escalation during the prior 365 days. The Owner shall, upon receipt of a proper request submitted in accordance with the provisions of these General Conditions, issue a work order for a lump sum amount representing the cost of escalation for all Unit Price items accepted and paid by the Owner during the preceding 365 days (Unit Price work accepted and paid multiplied times the percentage change multiplier). The Contractor shall at all times throughout the contract submit monthly invoices based on the Unit Prices contained in the bid, and shall not submit monthly invoices based on escalated pricing. Escalation Unit Prices shall only be paid retroactively and in a lump sum. Where the Dedicated Allowance Account is insufficient to pay for Escalated Unit Prices, the Owner shall pay the Contractor to the remaining value in the Dedicated Allowance Account and Owner shall have no further liability for escalated costs.

In the event that base contract work is not broken out into Unit Prices (i.e., for projects which were bid on a lump sum basis) escalation shall apply to the costs of such project as broken out in the approved Schedule of Values as if such costs were Unit Prices.

END OF ARTICLE

10. CHANGES

A. Changes

NOTE: "OVERHEAD" AS USED IN THIS SECTION IS DEFINED IN SECTION 1 DEFINITIONS - PAGE 8

- 1) The Owner reserves the right to, at any time, without notice to the sureties and without invalidating the Contract, by written notice or order designated as a Change Notice or Change Order, make any change in the Work within the general scope of the Contract including but not limited to changes:
 - a. In the Contract Documents;
 - b. In the method or manner of performance of the Work;
 - c. In Owner-furnished facilities, equipment, materials, services, or site or;
 - d. Directing acceleration in performance of the Work.

The Owner may authorize, via Allowance Account Work Order, Extra Work which does not change any provision of the General Covenants and Conditions or the Contract Documents, if the value of such work is less than the value remaining in the applicable Allowance Account and/or Time Contingency Account.

- 2) In the event the Owner exercises its right to change, delete or add work under the Contract, such work will be ordered and paid for as provided for in the Contract Documents.
- 3) Changes in the work may be initiated by the issuance of a Change Notice by the Architect/Engineer. The Contractor shall submit a proposal to the Architect/Engineer and the Owner for their review, in accordance with the Contract Documents, within five days after receipt of a Change Notice. The Contractor shall maintain this proposal, for acceptance by the Owner, for a minimum of 90 calendar days after submittal. The cost or credit to the Owner for any change in the work shall be determined in accordance with the provisions of the Contract Documents. The Contractor shall not be compensated for effort expended in preparing and submitting price quotes.
- 4) In the event the Contractor fails to provide the full cost and time estimate for the change work or refuses to execute a full accord Change Order, the Owner will, at its sole discretion, 1) determine the total cost and time impacts of the change and compensate the Contractor and/or extend the Contract Time, if applicable, through a unilateral Change Order signed only by the Owner; or 2) direct the Contractor to proceed with the Work under the Force Account provisions of this article. Failure of the Contractor to submit his total and final estimated cost and time impact within the time period specified on the Change Notice form shall constitute a waiver by the Contractor to claim additional costs or time beyond that which has been determined by the Owner. Any disputes arising out of an Owner determination shall be resolved in accordance with the dispute provisions in the Contract Documents. Pending the Owner's final decision, the Contractor shall proceed diligently with the performance of the Work under the Contract.
- 5) Changes in the work covered by Unit Prices, as stated in the Contract Documents shall be all inclusive. These prices will include all Direct and Indirect Costs and means and methods of

execution. To be compensable, units must be measured daily by the Contractor and approved in writing by the Owner or his authorized representative.

- 6) The following mark-ups on Extra Work shall apply to all changes in the Work performed under this article:
 - a. For Extra Work performed by the Contractor's own forces, the Contractor agrees that proposed cost to perform said Extra Work will in no event include a rate for total overhead in excess of 20 percent of the actual costs of the Extra Work.
 - b. For Extra Work performed by a subcontractor's forces, the Contractor agrees that the overhead, for each sub-contractors, sub-subcontractors, and suppliers, shall not exceed 15% of the total of all sub-contractor's actual direct costs of the Extra Work. The Contractor may then add five percent (5%) times the subcontractor's or sub-tier subcontractor's actual Direct Cost as direct compensation for the Contractor's Overhead and all other costs associated with the subcontractors Extra Work at all tiers.
- 7) Increases to the Contract Amount shall be authorized by a Change Order executed by the Contractor, the Contractor's Surety and the Owner and approved by the Board of County Commissioners; where the Board of County Commissioners has delegated via Ordinance authority to County Staff to execute change orders, such change orders are subject to ratification by the Board of County Commissioners as described in such ordinance. BCC. Decreases to the Contract amount shall be by Change Order or Work Order as determined by the Owner and shall also be subject to BCC approval when the decrease results from a reduction in the scope of the work.
- 8) A cost of bonds for Change Orders that impact the Contract price shall be established by the Contractor's actual reimbursement costs, as approved by the Owner, based on the original Contract Amount and the original amount reimbursed to the Contractor for bonds at the commencement of the Work. This cost of bonds shall be added to all credit amounts allowed by the Owner. For Change Orders paid under the Allowance Account, no additional bond cost will be allowed unless the Allowance Account is not included in the original Contract Amount. In this case, additional bond costs for these Change Orders will be considered.
- 9) Any claim for payment of Extra Work that is not covered by a Change Order or Work Order will be rejected by the Owner.

B. Allowance Accounts

- 1) Certain portions of work which may be required to be performed by the Contractor under this Contract are either unforeseeable or have not yet been designed, and the value of such work, if any, is included in the Contract as a specific line item(s) entitled "Allowance Account(s)."
 - a. The Allowance Account (Contingency) can be used to reimburse the Contractor for 1) furnishing all labor, materials, equipment and services necessary for modifications or Extra Work required to complete the Project because of unforeseeable conditions and; 2) for performing construction changes required to resolve: Owner directed changes in the work, unforeseen conditions (if compensation for same is otherwise allowed under the contract), revised regulatory requirements, work required by any Authority Having Jurisdiction (if not required

due to errors or omissions of the Contractor), and for making final adjustment to estimated quantities shown on the Schedule of Values or amounts bid in the Bid Form to conform to actual quantities installed.

- b. Other Allowance Account(s) (Dedicated) may be used as specified in the Contract Documents to fund specific items of work at the sole discretion of the Owner. These dedicated allowance accounts shall be used only for the purposes approved pursuant to a written Work Order issued by the Owner or his authorized representative.
- 2) At such time as work is to be performed under the Allowance Account(s), if any, the work shall be incorporated into the Schedule and the Schedule of Values and shall in all respects be integrated into the construction as a part of the Contract as awarded.
- 3) The Work Order for the required work will be issued by the Owner or Architect/Engineer upon receipt from the Contractor of a satisfactory proposal for performance of the work, and the acceptance thereof by the Architect/Engineer and the Owner. If the Contractor and the Owner are unable to agree upon an amount of compensation or; if the nature of the work is such that a Unit Price or Lump Sum price is not economically practical or if the change work is deemed essential to the Project and actual conditions require work to be swiftly conducted to avoid or minimize delays, the Work Order may be issued to perform the work on a Force Account basis. In the event that an equitable adjustment for the said change work cannot be arrived at, either by mutual agreement or under the dispute provisions of the Contract Documents, the compensation hereunder will be the total compensation for this work.
- 4) No Work Orders shall be issued against an Allowance Account if such Work Orders in the aggregate exceed the authorized amount of that Allowance Account, provided however that such excess may be authorized by appropriate Change Order.
- 5) The unexpended amounts under the allowance accounts shall remain with the Owner and the Contractor shall have no claim to the same.

C. Deletion or Addition of Work

- 1) In the event the Owner exercises its right to delete any portion(s) of the work contemplated herein, such deletion will be ordered, and the Contract Total Amount and Time may be adjusted as provided for in these Contract Documents by Change Order or by Work Order, as appropriate. The Contractor shall be reimbursed for any actual reasonable expenses incurred prior to the notice of deletion of work as a result of preparing to perform the work deleted. In the event of a dispute between Owner and Contractor as to the adjustment to the amount of time, the dispute shall be handled in accordance with these General Conditions.
- 2) Deleted Work - Lump Sum Bid Item(s): The Contractor shall credit the Owner for the reasonable value of the deleted work determined from the approved Schedule of Values, subject to approval by the Architect/Engineer. If the reasonable value of the deleted work cannot be readily ascertained from the Schedule of Values submitted in accordance with these General Conditions, or if requested by the Architect/Engineer, the Contractor shall supply all data required by the Architect/Engineer, including the actual agreements executed by the Contractor with the subcontractors and suppliers affected by the deleted work, to substantiate the amount of the credit to be given the Owner. The Contractor shall also submit for the Owner's approval a revised schedule of values reflecting the work remaining under the Contract following the deletion.

- 3) No payment(s) shall be made to the Contractor by the Owner for loss of anticipated profit(s) from any deleted work.
- 4) In the event the Owner exercises its right to add to any portion of the work contemplated herein, such addition will be ordered, and the Contract Total Amount and Contract Time will be adjusted as provided for in these Contract Documents, by Change Order or by Work Order as appropriate. In the event of a dispute between Owner and Contractor as to the adjustment to the Amount or the Time, the dispute shall be handled in accordance with the Contract Documents.

D. Increased or Decreased Quantities (Unit Prices)

- 1) This section applies to Owner-initiated additions or deletions from the Work and to the unit prices contained within this contract and controls payments or credits for variations between estimated and actual quantities required to complete the Work, even though the additions or deletions may be distinct or separate structures or activities and regardless of the fact that the addition or deletion is a result of field adjustments, site conditions, a design change, or any other cause. Increases or decreases will be determined by comparing the actual quantity required to the Architect/Engineer's estimated quantity in the Bid Form.
- 2) If the actual quantity of Bid Item varies from the Architect/Engineer's quantity estimate by 25 percent or less, payment for the Bid Item will be made at the Contract unit price. If the actual quantity varies from the Bid quantity by more than 25 percent, the compensation payable to the Contractor will be the subject of review by the Contractor and the Architect/Engineer and a Contract adjustment will be made by means of a Change Order in accordance with the Contract Documents to credit the Owner with any reduction in unit prices or to compensate the Contractor for any increase in unit price resulting from variations between estimated and actual quantities. The unit price to be re-negotiated shall be only for that quantity above 125 percent or below 75 percent of the original bid quantities.
- 3) The Contractor shall submit to the Architect/Engineer all data required to substantiate the amount of compensation requested, therefore. In no event shall the Contractor be entitled to compensation greater than the aggregate amount of all the Unit Prices times the original bid quantities of Work reflected in the Bid Form.
- 4) No compensation will be made in any case for loss of anticipatory profits, loss of bonding capacity or consequential damages.

E. Extra Work

- 1) Except as otherwise expressly provided above, all additional work ordered, work changed or work deleted shall be authorized by Work Order(s) or Change Order(s). All changed or added work so authorized shall be performed by the Contractor at the time and in the manner specified. The Change Order shall include, as a minimum:
 - a. Scope of work to be added, deleted, or modified;
 - b. Cost of work to be added, deleted, or modified;
 - c. The Contract time extension or reduction in contract time in the case of deleted work required to perform the work to be added, deleted, or modified;
 - d. Full release of claims associated with the Contract through the date of the change order, or, if the Owner and Contractor cannot agree on entitlement to a claim, a

reservation of the specific claims at issue; such reservation must, to be effective: identify each specific claim reserved, the scope of the work, the maximum cost of the work associated with the claim, and the maximum number of days of Contract time requested.

The Work Order shall include, at a minimum:

- a. Scope of work to be added, deleted, or modified;
 - b. Cost of work to be added, deleted, or modified;
 - c. The Contract time extension required to perform the work to be added, deleted, or modified;
 - d. Full release of claims associated with the work order work, or a reservation of claims identified as to each claim reserved, the scope of the work, the maximum cost of the work, and the maximum number of days of Contract time requested, shall be specified.
- 2) If Work is ordered, changed, or deleted which is not covered by Unit Prices, then, the Owner and the Contractor shall negotiate an equitable adjustment to the Contract Price for the Direct Costs for the performance of such work in accordance with this article. Indirect Costs for Work ordered, changed, or deleted may be reimbursed for Excusable and Compensable Delay as defined in these Contract Documents.
- a. In order to reimburse the Contractor for additional Direct Costs, either by Work Order, Change Order or any other means, the Contractor must have additional work added to the Contract Scope of Work. The additional cost of idle or inefficient labor, from any cause, or the additional cost of labor made idle or inefficient from any cause will not be considered a reimbursable additional Direct Cost. Special equipment or machinery, which is made idle or inefficient by the Work ordered, changed, or deleted, may be reimbursable if approved by the Architect/Engineer as an unavoidable cost to the Contractor, caused by the Owner.
 - b. Costs of special equipment or machinery, not already mobilized on the site, approved by the Architect/Engineer, shall be calculated using the current issue of the Associated Equipment Distributors (AED) Manual plus any required mobilization. The selection of which of the AED rates (daily, weekly, monthly) to be used to calculate these costs shall be as follows:
 - i. Between one (1) day and seven (7) days, use the daily rate.
 - ii. Between seven (7) days and 30 days, use the weekly rate.
 - iii. Greater than 30 days, use the monthly rate.
 - c. For less than one (1) day hourly rates, use the daily rate divided by eight (8).
 - d. For overtime hourly rates use the daily rate divided by eight (8), the weekly rate divided by 40, or the monthly rate divided by 176 as appropriate.
 - e. Costs for Special Equipment and Machinery already mobilized on the site, shall not exceed the monthly rate stated in the AED Manual, divided by 176, per hour that the

Special Equipment and Machinery is in use on the work plus any required re-mobilization.

- f. The cost calculation shall not combine rates within the range of a time extension. It shall use decimals of the time extension rate that the extension falls under. For example, the cost calculation for a piece of Special Equipment with an approved delay of 45 days shall be one and one-half (1.5) months times the monthly rate, not one (1) month at the monthly rate, plus two (2) weeks at the weekly rate, plus one (1) day at the daily rate.
- g. Rental for special equipment and machinery, not already mobilized to the site, shall be an amount equal to the appropriate daily, weekly, or monthly rental rate for such equipment, in accordance with the current issue of Associated Equipment Distributors' (AED) "Compilation of Nationally Averaged Rental Rates and Model Specifications for Construction Equipment" (notwithstanding the caveats contained therein that such rental rates are not for use by government agencies) for each and every rental period (in weeks, days, or months as applicable) that the special equipment or machinery is in use on the work plus any required mobilization. Payment for special equipment and machinery already mobilized to the site shall not exceed the monthly rate stated in the AED standards divided by 176 to establish a per hour rate that the special equipment and machinery is in use on the Work, plus any required re-mobilization.
- h. For indirect costs, the Contractor shall be allowed a percentage mark-up as set forth in paragraph (6) above...

F. Differing Site Conditions

- 1) The Contractor shall immediately, upon discovery and before such conditions are further disturbed, notify the Architect/Engineer in writing of: 1) subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents, or 2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.
- 2) The Architect/Engineer will promptly investigate the conditions, and if such conditions materially differ from those warranted by the County, and if same cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under the Contract, a Contract change may be made, and the Contract modified in writing in accordance with the Contract Documents.
- 3) No claim of the Contractor under this article will be allowed unless the Contractor has given the notice required in the Contract Documents.
- 4) No claim by the Contractor for a Contract change hereunder will be allowed if asserted after final payment under this Contract.
- 5) If the Owner is not given written notice prior to the conditions being disturbed, the Contractor will be deemed to have waived his right to assert a claim for additional time and compensation arising out of such changed conditions.

G. Force Account

- 1) If the Owner and the Contractor cannot reach agreement on an equitable adjustment to the Contract Price for any work as prescribed above, then the Extra Work will be performed on a Force Account basis as directed by the Architect/Engineer and paid for subject to the maximum markups specified in this Contract for changes in the work.
- 2) In the event Extra Work is performed on a Force Account basis, then the Contractor and the subcontractor(s), as appropriate, shall maintain itemized daily records of costs, quantities, labor and the use of authorized Special Equipment or Machinery. Copies of such records, maintained as follows, shall be furnished to the Architect/Engineer daily for approval, subject to audit.
 - a. Comparison of Record: The Contractor, including its subcontractor(s) of any tier performing the work, and the Architect/Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor, the subcontractor performing the work, and the Architect/Engineer or their duly authorized representatives.
 - b. Statement: No payment will be made for work performed on a force account basis until the Contractor has furnished the Architect/Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:
 - i. Name, classification, date, daily hours, total hours, rate and extension for each laborer, tradesman, and foreman.
 - ii. Designation, dates, daily hours, total hours, rental rate, and extension of each unit of special machinery and equipment.
 - iii. Quantities of materials, prices, and extensions.
 - iv. Transportation of materials.

The statements shall be accompanied and supported by a receipted invoice of all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from its stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

- c. Authorization of Special Equipment and Machinery: No compensation for special equipment or machinery shall be made without written authorization from the Architect/Engineer. The Architect/Engineer shall review and evaluate any special equipment or machinery proposed by the Contractor for use on a force account basis. As part of its evaluation, the Architect/Engineer shall determine whether any of the special equipment or machinery being proposed by the Contractor will be concurrently used on the Project, including approved changes, or on other force account work on the Project. If the Architect/Engineer determines that such a concurrent use of special equipment or machinery is being proposed by the Contractor, prior to the authorization of such special equipment or machinery, the Architect/Engineer and thereto Contractor shall establish a straight-line prorated billing mechanism based on the actual percentage of time that the equipment or

machinery is required to be used on the force account work(s). Special equipment or machinery which is approved for use by the Architect/Engineer shall be reviewed and accounted for on a daily basis as provided in the Comparison of Record and Statement paragraphs of this section of the Contract.

- d. Inefficiency in the Prosecution of the Work: If in the Owner's or Architect/Engineer's opinion, the Contractor or any of its subcontractors, in performing Force Account Work, is not making efficient use of labor, materials or equipment or is proceeding in a manner which makes Force Account Work unnecessarily more expensive to the Owner, the Owner or Architect/Engineer may, in whole or part, direct the Contractor in the deployment of labor, material and equipment. By way of illustration, inefficiency may arise in the following ways, including but not limited to: 1) the timing of the Work, 2) the use of unnecessary labor or equipment, 3) the use of a higher percentage of journeymen than in non-force account Work, 4) the failure to procure materials at lowest price, or 5) using materials of quality higher than necessary.

H. Contractor Proposals - General

The Contractor may at any time submit to the Architect/Engineer for review proposed modifications to the Work, including but not limited to, changes in the Contract Time and/or Contract Amount, supported by a cost/price proposal. Upon acceptance of the proposed modifications by the Owner, a Work Order or Change Order will be issued. Denial of a proposed modification will neither provide the Contractor with any basis for claim for damages nor release the Contractor from contractual responsibilities. A Contract change in the form of a Contract price reduction will be made if the change results in a reduction of the cost of performance and the Contractor will not be entitled to share in said savings unless the proposal is made in accordance with Paragraph I of this article. Except as provided in Paragraph I below, the Contractor will not be compensated for any direct, incidental or collateral benefits or savings the Owner receives as a result of the proposal.

I. Value Engineering Change Proposals

The Contractor may submit to the Architect/Engineer one or more cost reduction proposals for changing the Contract requirements. The proposals shall be based upon a sound study made by the Contractor indicating that the proposal:

- 1) Will result in a net reduction in the total Contract amount;
- 2) Will not impair any essential function or characteristic of the Work such as safety, service life, reliability, economy of operation, ease of maintenance and necessary standardized features;
- 3) Will not require an unacceptable extension of the Contract completion time; and
- 4) Will require a change in the Contract Documents and such change is not already under consideration by the Owner.
 - a. The Owner may accept in whole or in part any proposal submitted pursuant to the previous paragraph on Value Engineering Change Proposals by issuing a Change Order which will identify the proposal on which it is based. The Change Order will provide for a Contract change in the Contract price and will revise any other affected provisions of the Contract

Documents. The equitable adjustment in the Contract price will be established by determining the net savings resulting from the accepted change. The net savings resulting from the change will be shared between the Contractor and the Owner on the basis of 50 percent for the Contractor and 50 percent for the Owner and will be limited to one Value Engineering Change Proposal per Change Order. Net savings will be determined by deducting from the proposal's estimated gross savings 1) the Contractor's costs of developing and implementing the proposal (including any amount attributable to a subcontractor) and 2) the estimated amount of increased costs to the Owner resulting from the change, such as evaluation, implementation, inspection, related items, and Owner -furnished material. Estimated gross savings will include Contractor's labor, material, equipment, overhead, profit and bond. The Contract price will be reduced by the sum of the Owner's costs and share of the net savings. For the purposes of this article, the applicable provisions of the Contract Documents shall be used to determine the equitable adjustment to the Contract price.

- b. The Owner will not be liable for delay in acting upon, or for failure to act upon, any proposal submitted pursuant to of this article. The decision of the Owner as to the acceptance or rejection of any such proposal under the Contract will be final. The submission of a proposal by the Contractor will not in itself affect the rights or obligations of either party under the Contract.
- c. The Contractor shall have the right to withdraw part or all of any proposal he may make under Paragraph 2 of this article at any time prior to acceptance by the Owner. Such withdrawal shall be made in writing to the Architect/Engineer. Each such proposal shall remain valid for a period of 60 days from the date submitted. If the Contractor wishes to withdraw the proposal prior to the expiration of the 60-day period, they will be liable for the cost incurred by the Owner in reviewing the proposal.
- d. The Contractor shall specifically identify any proposals under Paragraph 2 of this article with the heading "Value Engineering Change Proposal," or the proposal will be considered as made under Paragraph 1 of this article.

2) The Contractor, in connection with each proposal for a Contract Change Notice under this article, shall furnish the following information:

- a. A description of the difference between the existing Contract requirement and the proposed change, and the comparative advantages and disadvantages of each, justification when a function or characteristic of an item is being altered, and the effect of the change on the performance of the end item;
- b. An analysis and itemization of the requirements of the Contract which must be changed if the Value Engineering Change Proposal is accepted and a recommendation as to how to make each such change (e.g., a suggested specification revision);

- c. A separate detailed cost estimate for both the existing Contract requirement and the proposed change to provide an estimate of the reduction in costs, if any, that will result from acceptance of the Value Engineering Change Proposal taking into account the costs of development and implementation by the Contractor;
 - d. A prediction of any effects the proposed change would have on collateral costs to the Owner such as government-furnished property costs, costs of related items, and costs of maintenance and operation;
 - e. A statement of the time by which a Contract modification accepting the Value Engineering Change Proposal must be issued so as to obtain the maximum cost reduction, noting any effect on the Contract completion time or delivery schedule; and
 - f. Identification of any previous submission of the Value Engineering Change Proposal to the Owner, including the dates submitted, the numbers of the contracts involved, and the previous actions by the Owner.
- 3) The Contractor waives any and all claims relating to any delay that may arise out of a Value Engineering Change Proposal.

END OF ARTICLE

11. CLAIMS AND DISPUTES

A. Notice of Claims

- 1) The Contractor will not be entitled to additional time or compensation otherwise payable for any act or failure to act by the Owner, the happening of any event or occurrence, or any other cause, unless he shall have given the Architect/Engineer a written notice of claim therefore as specified in this article.
- 2) The Contractor shall provide immediate verbal notification with written confirmation within 48 hours of any potential claims and of the anticipated time and/or cost impacts resulting thereof. The written notice of claim shall set forth the reasons for which the Contractor believes additional compensation and/or time will or may be due, the nature of the costs involved and the approximate amount of the potential claim.
- 3) It is the intention of this article, that differences between the parties arising under and by virtue of the Contract shall be brought to the attention of the Architect/Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken.
- 4) The notice requirements of this article are in addition to those required in other articles of these Contract Documents.
- 5) The Contractor shall segregate all costs associated with each individual claim including but not limited to labor, equipment, material, subcontractor and supplier costs, and all other costs related to the claim. In the event that the Contractor has multiple claims, the Contractor will segregate each claim individually including the respective costs associated with each claim. Failure to segregate claims and their respective costs will be grounds for the Owner's rejection of the claim. No "total cost claims" shall be allowed under this Contract.
- 6) The Contractor must maintain a cost accounting system as a condition for making a claim against the Owner. The cost accounting system must segregate the costs of the work under the Contract (non-claims-related) from claims-related and other Contractor costs through the use of a job cost ledger and be otherwise in compliance with general accounting principles.
- 7) If the Owner decides to pay all or part of a claim for which notice was not timely made, the Owner does not waive the right to enforce the notice requirements in connection with any other claim.
- 8) Inasmuch as the notice of claim requirements of this article are intended to enable the Architect/Engineer to investigate while facts are fresh and to take action to minimize or avoid a claim which might be filed thereafter, the Contractor's failure to make the required notice on time is likely to disadvantage the Owner. Therefore, a claim that does not comply with the notice requirements above shall not be considered unless the Contractor submits with his claim proof showing that the Owner has not been prejudiced by the Contractor's failure to so comply and, in the event the Owner has been prejudiced by the Contractor's failure to submit a timely notice of claim, the Owner will reduce any equitable adjustment claimed by the Contractor to reflect the damage.

B. Claim Submittals

- 1) Claims or requests for equitable adjustments filed by the Contractor shall be filed in full accordance with this article no later than 30 calendar days after the act giving rise to the claim and in sufficient detail to enable the Owner to ascertain the basis and amount of said claims. In the case of continuing or on-going claim events, the Contractor shall be allowed to periodically amend his claim to more accurately reflect the impact of said claim, until the end of the claim event. No claims for additional compensation, time extension or for any other relief under the Contract shall be recognized, processed, or treated in any manner unless the same is presented in accordance with this Article. Failure to present and process any claim in accordance with this Article shall be conclusively deemed a waiver, abandonment, or relinquishment of any such claim, it being expressly understood and agreed that the timely presentation of claims, in sufficient detail to allow proper investigation and prompt resolution thereof, is essential to the administration of this Contract.
- 2) The Owner will review and evaluate the Contractor's claims. It will be the responsibility of the Contractor to furnish, when requested by the Architect/Engineer, such further information and details as may be required to determine the facts or contentions involved in his claims. The cost of claims preparation or Change Order negotiations shall not be reimbursable under this Contract.
- 3) Any work performed by the Contractor prior to Notice-to-Proceed (NTP) shall not be the basis for a claim from the Contractor of any kind.
- 4) Each claim must be certified by the Contractor as required by the Miami-Dade Code, False Claims Act (see Code Section 21-255, et seq.), and accompanied by all materials required by Miami-Dade County Code Section 21-257. A "certified claim" shall be made under oath by a person duly authorized by the claimant, and shall contain a statement that:
 - a. The claim is made in good faith;
 - b. The claim's supporting data is accurate and complete to the best of the person's knowledge and belief;
 - c. The amount of the claim accurately reflects the amount that the claimant believes is due from the Owner; and
 - d. The certifying person is duly authorized by the claimant to certify the claim.
- 5) In order to substantiate time-related claims (delays, disruptions, impacts, etc.), the Contractor shall, if applicable and as determined by the Owner, submit, in triplicate, the following information (schedule information shall be provided in electronic format with all logic visible):
 - a. Copy of Contractor's notice of claim in accordance with this article. Failure to submit the notice is sufficient grounds to deny the claim.
 - b. The approved, as-planned Schedule in accordance with the applicable section of the Contract Documents and computer storage media, if applicable.
 - c. The as-built Schedule reflecting changes to the approved schedule up to the time of the impact in question and computer storage media if applicable.
 - d. The basis for the duration of the start and finish dates of each impact activity and the reason for choosing the successor and predecessor events affected in the schedule

shall be explained. Also, the basis for the duration of any lead/lags inserted into the schedule and the duration in related activity duration shall be explained.

- e. A marked-up as-built Schedule indicating the causes responsible for changes between the as-planned and as-built schedule and establishing the required cause and effect relationships.
- f. After indicating specific time related changes on the as-built schedule, the documentation must be segregated into separate packages with each package documenting a specific duration change identified previously. This documentation package shall include Change Orders, Change Notices, Work Orders, written directions, meeting minutes, etc., related to the change in duration.
- g. The Contractor assumes all risk for the following items, none of which shall be the subject of any claim and none of which shall be compensated for except as they may have been included in the compensation described under Liquidated Indirect Costs: 1) home office expenses or any Direct Costs incurred allocated from the headquarters of the Contractor; 2) loss of anticipated profits on this or any other project, 3) loss of bonding capacity or capability; 4) losses due to other projects not bid upon; 5) loss of business opportunities; 6) loss of productivity on this or any other project; 7) loss of interest income on funds not paid; 8) costs to prepare, negotiate or prosecute claims and 9) costs spent to achieve compliance with applicable laws and ordinances (excepting only sales taxes paid shall be reimbursable expense subject to the provisions of the Contract Documents).
- h. All non-time-related claim items for additional compensation for Direct Costs shall be properly documented and supported with copies of invoices, time sheets, rental agreements, crew sheets and the like.
- i. Cost information shall be submitted in sufficient detail to allow for review. The basis for the budgeted or actual costs shall include man-hours by trade, labor rates, material, and equipment costs etc. These costs shall be broken down by pay item and Construction Specification Institute (CSI) Division.
- j. The documentation for budgeted cost shall, as a minimum, include:
 - i. Copies of all the Contractor's bid documents, bid quotes, faxed quotes, emailed quotes etc.
 - ii. Copies of all executed subcontracts.
 - iii. Other related budget documents as requested by the Architect/Engineer.
- k. The documentation for actual cost shall, as a minimum, include:
 - i. Time Sheets.
 - ii. Materials invoices
 - iii. Equipment invoices
 - iv. Subcontractors' payments
 - v. Other related documents as required by the Architect/Engineer.

1. The Contractor shall make all his books, employees, work sites and records available to the Owner or its representatives for inspection and audit.
- 6) No payment shall be made to the Contractor by the Owner for loss of anticipated profit(s) from any deleted work. Contractor shall not be entitled to any compensation for loss of efficiency, loss of productivity, disruption, loss of opportunity, or other similar indirect costs except via entitlement to Liquidated Indirect Damages as provided for herein. As indicated above, the Architect/Engineer and the Field Representative shall be allowed full and complete access to all personnel, documents, work sites or other information reasonably necessary to investigate any claim. Within 60 days after a claim has been received, the claim shall either be rejected with an explanation as to why it was rejected or acknowledged. Once the claim is acknowledged, the parties shall attempt to negotiate a satisfactory settlement of the claim, which settlement shall be included in a subsequent Work Order or Change Order. If the parties fail to reach an agreement on a recognized claim, the Owner shall pay to the Contractor the amount of money it deems reasonable, less any appropriate retention, to compensate the Contractor for the recognized claim.
- 7) Failure of the Contractor to make a specific reservation of rights in the form provided for above regarding any such disputed amounts in the body of the Change Order which contains the payment shall be construed as a waiver, abandonment, or relinquishment of all claims for additional monies resulting from the claims embodied in said Change Order. However, once the Contractor has properly reserved rights to any claim, no further reservations of rights shall be required, and the Contractor shall not be required to repeat the reservation in any subsequent change order. Prior reservation of rights may however be further limited or waived by express reference, in subsequent change orders. Notwithstanding the aforementioned, at the time of final payment under the Contract, the Contractor shall specify all claims which have been denied and all claims for which rights have been reserved in accordance with this section. Failure to so specify any particular claim shall be constructed as a waiver, abandonment, or relinquishment of such claim.

C. Disputes

- 1) The following provisions shall govern disputes under this Contract unless the Special Provisions to this Contract contain the requirement for the use of an alternate dispute resolution method. For example, for large projects of great complexity, a Dispute Review Board (DRB) may be employed by the Owner to settle disputes in lieu of the Department Director or Office of the Mayor (OOM) designee as specified below. In this case, the DRB alternative shall be specified by the individual department in the Special Provisions and, if utilized, shall supersede this dispute provision.
 - a. In the event the Contractor and Owner are unable to resolve their differences concerning any determination made by the Architect/Engineer or Owner on any dispute or claim arising under or relating to the Contract (referred to in this Section as a "Dispute"), either the Contractor or Owner may initiate a dispute in accordance with the procedure set forth in this article. Exhaustion of these procedures shall be a precondition to any lawsuit permitted hereunder.
 - b. For contracts with a value of \$5 million or less, all Disputes under this Contract shall be decided by the Department Director or his designee. For contracts valued at more than \$5 million, Disputes shall be decided by a designee appointed by the OOM.

Decisions rendered by the Department Director or OOM designee shall not be binding but shall be admissible in a court of competent jurisdiction.

- c. As soon as practicable, the Department Director or OOM designee shall adopt a schedule for the Contractor and Owner to file written submissions stating their respective positions and the basis, therefore. The written submissions shall include copies of all documents and sworn statements in affidavit form from all witnesses relied on by each party in support of its position. Within 20 working days of the date on which such written submissions are filed, the Department Director or OOM designee shall afford each party an opportunity to present a maximum of one hour of argument. The Department Director or OOM designee may decide the Dispute on the basis of the affidavits and other written submissions if, in his opinion, there is no issue of material fact, and the party is entitled to a favorable resolution pursuant to the terms of this Contract. As part of such decision, the Department Director or OOM designee shall determine the timeliness and sufficiency of each notice of claim and claim at issue as provided in this article. The Department Director or OOM designee shall have the authority to rule on questions of law, including disputes over contract interpretation, and to resolve claims, or portions of claims, via summary judgment where there are no disputed issues of material fact. Furthermore, the Department Director or OOM designee is authorized by both parties to strike elements of claims seeking relief or damages not available under the contract (such as, but not limited to, claims for lost profits, off-site overhead, loss of efficiency or productivity claims or claim's preparation costs) by summary disposition.
- d. In the event that the Department Director or OOM designee determines that the affidavits or other written submissions present issues of material fact, he shall allow the presentation of evidence in the form of lay or expert testimony directed solely to the issues which he may specifically identify to require factual resolution. The testimonial portion of the process shall not exceed one day in duration per side, including opening statements and closing arguments, if allowed by the Department Director or OOM designee at his reasonable discretion.
- e. No formal discovery shall be allowed in connection with any proceeding under this article. Notwithstanding the foregoing, both parties agree that all of the audit, document inspection, information and documentation requirements set forth elsewhere in this contract shall remain in force and effect throughout the proceeding. The Department Director or OOM designee shall not schedule the hearing until both parties have made all their respective records available for inspection and reproduction and the parties have been afforded reasonable time to analyze the records. The continued failure of a party to comply with the document inspection, examination, or submission requirements set forth in this contract shall constitute a waiver of that party's claims and/or defenses, as applicable. Hearsay evidence shall be admissible but shall not form the sole basis for any finding of fact. Failure of any party to participate on a timely basis, to cooperate in the proceedings, or to furnish evidence in support or defense of a claim all of which shall be a criterion in determining the sufficiency and validity of a claim.
- f. The Department Director or OOM designee shall issue a written decision within 15 working days after conclusion of any testimonial proceeding and, if no testimonial

proceeding is conducted, within 45 days of the filing of the last written submission. This written decision shall set forth the reasons for the disposition of the claim and a breakdown of any specific issues or subcontractor claims. As indicated previously, the decision of the Department Director or OOM designee is not binding on the parties but will be admissible in a court of competent jurisdiction.

- g. If either party wishes to protest the decision of the Department Director or OOM designee, such party may commence an action in a court of competent jurisdiction, within the periods prescribed by law, it being understood that the review of the court shall be limited to the question of whether or not the Department Director or OOM designee's determination was arbitrary and capricious, unsupported by any competent evidence, or so grossly erroneous to evidence bad faith.
- h. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract and in accordance with the Architect/Engineer's interpretation. Any presentation or request by the Contractor under this article will be subject to the same requirements for Submittal of Claims in this article.

D. Terminations

1) Termination for Convenience

- a. The Owner may at its option and discretion terminate the Contract, in whole or, from time to time in part, at any time without any default on the part of the Contractor by issuing a written Notice of Termination to the Contractor and its Surety, specifying the extent to which performance of work under the Contract is terminated and the date upon which such termination becomes effective, at least 10 days prior to the effective date of such termination.
- b. In the event of Termination for Convenience, the Owner shall pay the Contractor for all labor performed, all materials and equipment furnished by the Contractor and its subcontractors, materialmen and suppliers and manufacturers of equipment less all partial payments made on account prior to the date of cancellation as determined by the Field Representative and approved by the Architect/Engineer. The Contractor will be paid for:
 - i. The value of all work completed under the Contract, based upon the approved Schedule of Values and/or Unit Prices,
 - ii. The value of all materials and equipment delivered to but not incorporated into the work and properly stored on the site,
 - iii. The value of all bonafide irrevocable orders for materials and equipment not delivered to the construction site as of the date of cancellation. Such materials and equipment must be delivered to the Owner to a site or location designated by the Department prior to release of payment for such materials and equipment.
 - iv. The values calculated under i., ii., and iii. above shall be as determined by the Field Representative and approved by the Architect/Engineer.

- c. In the event of termination under this article, the Contractor shall not be entitled to any anticipated profits for any work not performed due to such termination.
- d. In the event of termination under this article, the Owner does not waive or void any credits otherwise due the Owner at the time of termination, including Liquidated Damages, and back charges for defective or deficient work.
- e. Upon termination as indicated above, the Field Representative shall prepare a certificate for Final Payment to the Contractor.

2) Termination for Default of Contractor

- a. The Contract may be terminated in whole or, from time to time in part, by the Owner for failure of the Contractor to comply with any requirements of the Contract Documents including but not limited to:
 - i. Failure to perform the work or failure to provide sufficient workers, equipment, or materials to assure completion of work in accordance with the terms of the Contract, and the approved Schedule, or
 - ii. Failure to provide the Schedule for the Project by the date due, or
 - iii. Failure to provide adequate shop drawings by the dates indicated in the approved Schedule for the Project, or
 - iv. Failure to replace the superintendent in the time allotted, if required, or
 - v. Performing the work unsuitably or neglecting or refusing to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, after written directions from the Field Representative, or
 - vi. Violating the terms of the Contract or performing work in bad faith, or
 - vii. Discontinuing the prosecution of the work, or
 - viii. Failure to resume work which has been discontinued within a reasonable time after notice to do so, or
 - ix. Abandonment of the Contract, or
 - x. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or failure to maintain a qualifier, or
 - xi. Allowing any final judgment to stand against him unsatisfied for a period of ten (10) days, or
 - xii. Making an assignment for the benefit of creditors, or
 - xiii. For any other cause whatsoever, fails to carry out the work in an acceptable manner or to comply with any other Contract requirement.
- b. Before the Contract is terminated, the Contractor and its Surety will be notified in writing by the Architect/Engineer or the Field Representative of the conditions which make termination of the Contract imminent (Notice to Cure). The Contract may be terminated by the Owner ten (10) days after said notice has been given to the Contractor and its Surety unless a satisfactory effort acceptable to the Owner has been made by the Contractor or its Surety to correct the conditions. If the Contractor

fails to satisfactorily correct the conditions giving rise to the termination, the Owner may declare the Contract breached and send a written Notice of Termination to the Contractor and its Surety.

- c. The Owner reserves the right, in lieu of termination as set forth in this article, to withhold any payments of money which may be due or become due to the Contractor until the said default(s) have been remedied. In the event of Termination for Default, the Owner also reserves the right, in cases where the damages calculated by the Owner are expected to exceed the amount the Owner anticipated recovering from the Surety, to withhold amounts for work already performed.
- d. In the event the Owner exercises its right to terminate the Contract for default of the Contractor as set forth herein, the Owner shall have the option of finishing the work, through any means available to the Owner, or having the Surety complete the Contract in accordance with its terms and conditions. In case that the Owner decides to have the Surety take over the remaining performance of the Work, the time or delay between Notice of Default and start of work by the Surety is a non-excusable delay. If the Surety fails to act promptly, but no longer than thirty (30) calendar days after the Owner notifies the Surety of the Owner's decision to have the Surety complete the work, or after such takeover fails to prosecute the Work in an expeditious manner, the Owner may exercise any of its other options including completing the Work by whatever means and method it deems advisable. No claims for loss of anticipated profits or for any other reason in connection with the termination of the Contract shall be considered.
- e. Payments for the various Bid Items listed in the Bid Form will constitute full compensation for all expenses incurred in consequence of discontinuance of all or any portion of the Work except as provided in this section of the Contract Documents. In no event will compensation be made for anticipatory profits or consequential damages as a result of a discontinuance of all or any portion of the Work.
- f. The Contractor shall immediately upon receipt communicate any Notice of Termination for Default issued by the Owner to the affected subcontractors and suppliers at any tier.
- g. If, after Notice of Termination of the Contractor's right to proceed under the provisions of this article, it is determined for any reason that the Contractor was not in default under the provisions of this article, or that the Contractor was entitled to an extension of time under the Contract Documents, the rights and obligations of the parties shall be the same as if the Notice of Termination had been issued pursuant to the section of this article dealing with Termination for Convenience.

3) Termination for National Emergencies

- a. The Owner shall terminate the Contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction Contract as a direct result of an Executive Order of the President of the United States with respect to the prosecution of war or in the interest of national defense.

- b. When the Contract, or any portion thereof, is terminated before completion of all items of work in the Contract, payment will be made for the actual number of units or items of work completed at the Contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits or for any other reason in connection with the termination of the Contract shall be considered.

4) Implementation of Termination

- a. If the Owner cancels or terminates the Contract or any portion thereof, the Contractor shall stop all work on the date and to the extent specified in the Notice of Termination and shall:
 - i. Cancel all orders and Subcontracts, to the extent that they relate to the performance of the work terminated and which may be terminated without costs;
 - ii. Cancel and settle other orders and Subcontracts, except as may be necessary for completion of such portion of the Work not terminated, where the cost of settlement will be less than costs which would be incurred were such orders and subcontracts to be completed, subject to prior approval of the Field Representative;
 - iii. Settle outstanding liabilities and claims arising out of such termination of orders and subcontracts, with the approval or ratification of the Owner, to the extent it may require, which approval or ratification shall be final for the purposes of this Article;
 - iv. Transfer title and deliver to the Owner, in the manner, at the time, and to the extent, if any, directed by it, in accordance with directions of the Field Representative, all fabricated or un-fabricated parts, all materials, supplies, work in progress, completed work, facilities, equipment, machinery or tools acquired by the Contractor in connection with the performance of the work and for which the Contractor has been or is to be paid;
 - v. Assign to the Owner in the manner, at the times and to the extent directed by it, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Owner will have the right, at its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;
 - vi. Deliver to the Field Representative As-Built Documents, complete as of the date of cancellation or termination, plans, Shop Drawings, sketches, permits, certificates, warranties, guarantees, specifications, three (3) complete sets of maintenance manuals, pamphlets, charts, parts lists, spare parts (if any), operating instructions required for all installed or finished equipment or machinery, and all other data accumulated by the Contractor for use in the performance of the work;
 - vii. Perform all work as may be necessary to preserve the work then in progress and to protect materials, plant, and equipment on the site or in transit

thereto. The Contractor shall also take such action as may be necessary, or as the Architect/Engineer may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the Owner has or may acquire an interest;

- viii. Complete performance of each part of the work not terminated by the Notice of Termination;
- ix. Use his best efforts to sell, in the manner, at the time, to the extent, and at the price or prices directed or authorized by the Owner, property of the types referred to above; provided, however, that the Contractor a) shall not be required to extend credit to any purchaser, and b) may acquire any such property under the conditions prescribed by and at a price or prices approved by the Owner; provided, further, that the proceeds of any such transfer or disposition will be applied in reduction of any payments to be made by the Owner to the Contractor under this Contract or will otherwise be credited to the price or cost of the work covered by this Contract or paid in such other manner as the Owner may direct;
- x. Termination of the Contract or a portion thereof shall neither relieve the Contractor of its responsibilities for the completed work nor shall it relieve its Surety of its obligation for and concerning any just claim arising out of the work performed;
- xi. In arriving at the amount due the Contractor under this article, there will be deducted, (1) any claim which the Owner may have against the Contractor in connection with this Contract and (2) the agreed price for, or the proceeds of sale of materials, supplies or other items acquired by the Contractor or sold, pursuant to the provisions of this article, and not otherwise recovered by or credited to the Owner.

5) Suspension of Work

- a. The Owner reserves the right to temporarily suspend execution of the whole or any part of the Work without compensation to the Contractor.
- b. In case the Contractor is actually and necessarily delayed by any act or omission on the part of the Owner, as determined by the Owner in writing, the time for completion of the Work shall be extended by the amount of the time of such delay as determined by the Owner, and an allowance may be made for actual direct costs, if any, which may have been borne by the Contractor. Such requests for additional time and/or compensation must be made in accordance with the applicable sections of the Contract Documents.
- c. Only the actual delay necessarily resulting from the causes specified in this Article, shall be grounds for extension of time. In case the Contractor is delayed at any time or for any period by two or more of the causes specified in this Article, the Contractor shall not be entitled to a separate extension for each one of the causes but only one period of extension will be granted for the delay.

- d. In case the Contractor is actually and necessarily delayed in the performance of the Work from one or more of the causes specified in this Article, the extension of time to be granted to the Contractor shall be only for such portion of the Work so delayed. The Contractor shall not be entitled by reason of such delay to an extension of time for the completion of the remainder of the Work. If the Contractor shall be so delayed as to a portion of the Work they shall nevertheless proceed continuously and diligently with the prosecution of the remainder of the Work. No demand by the Contractor that the Owner determine and certify any matter of extension of time for the completion of the Work or any part thereof will be of any effect whatsoever unless the demand be made in writing at least 30 days before the completion date of the Work or any part thereof for which Liquidated Damages are established when meeting those dates is claimed to have been delayed by a suspension under this Article. Owner's determination as to any matter of extension of time for completion of the Work or any part thereof shall be binding and conclusive upon the Contractor.
- e. Permitting the Contractor to finish the Work or any part thereof after the time fixed for completion or after the date to which the time for completion may have been extended or the making of payments to the Contractor after any such periods shall not operate as a waiver on the part of the Owner of any rights under this contract.
- f. The Contractor shall insert in each subcontract a provision that the subcontractor shall comply immediately with a written order of the Owner to the Contractor to suspend the Work, and that they shall further insert the same provision in each subcontract of any tier.

END OF ARTICLE

12. MISCELLANEOUS PROVISIONS

A. Third-Party Beneficiary

No contractual relationship will be recognized under the Contract other than the contractual relationship between the Owner and the Contractor. There shall be no third-party beneficiary to this Contract.

B. Venue

Any litigation which may arise out of this Contract shall be commenced either in the Eleventh Judicial Circuit Court in and for Miami-Dade County, Florida, or in the United States District Court, Southern District of Florida.

C. Governing Laws

- 1) The Contractor shall, during the term of this Contract and in the prosecution of the work, be governed by the statutes, regulatory orders, ordinances and procedures of the United States of America, the State of Florida, and Miami-Dade County including, but not limited to, the Florida Building Code and Florida Fire Prevention Code.
- 2) The Contractor(s) shall comply with all applicable laws including, but not limited to, the Small Business Enterprise (SBE) programs (including, without limitation, SBE-Construction, SBE-Architectural and Engineering, and SBE-Goods, SBE-Services); Responsible Wages and Benefits program; Community Workforce Program; Residents First Training and Employment programs as set forth in Sections 10-33.02, 2-10.4.01, 2-8.1.1.1.2, 2-8.1.1.1.1, 2-11.16, 2-1701, and 2-11.17 of the Code; the Sustainable Buildings Program; Chapter 119 of the Florida Statutes regarding public records laws; the State of Florida and the County's Prompt Payment laws as set forth in Sections 2-8.1.4 and 10-33.02 of the County's ordinances; the County's Inspector General requirements as set forth herein; the County's Art in Public Places requirements as set forth herein; and provide the requisite bonding in accordance with Section 255.05 of the Florida Statutes, as well as the insurance requirements set forth in this Agreement

Specifically, the Contractor and his subcontractors shall comply with Miami-Dade County Resolution Nos. R-1386-09 and R-138-10 governing the treatment of SBE-CON firms.

- 3) In addition, the Contractor agrees to abide by all federal, state, and local procedures, as may be amended from time to time, regarding how documents that the Contractor has access to, are handled, copied, and distributed, particularly documents that contain sensitive security information.

D. Successors and Assigns

The Owner and the Contractor each bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. The Contractor shall not assign the Contract or sublet it as a whole without the written consent of the Owner, nor shall the Contractor assign any moneys due or to become due the Contractor hereunder, without the previous written notice to the Owner. Consent will not be given to any proposed assignment, which would relieve the Contractor or his Surety of their responsibilities under the Contract.

E. Written Notice

- 1) Written notice to the Contractor shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to any officer of the corporation for whom it was intended or if delivered at or sent by registered or certified mail to the last business address known to those who give the notice.
- 2) Written notice to the Owner shall be deemed to have been duly served if delivered in person, delivered at or sent by registered or certified mail to the individual identified in the Special Provisions.

F. Indemnification

- 1) In consideration of this Agreement, and to the maximum extent permitted by Chapter 725, Florida Statutes, as may be amended, the Contractor agrees to indemnify, protect, defend, and hold harmless the Government, State, County, their elected officials, officers, employees, consultants, and agents from claims, liabilities, damages, losses, and costs including, but not limited to reasonable attorney's fees at both the trial and appellate levels to the extent caused by the negligence, recklessness, or intentionally wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of the Work.
- 2) The indemnification obligation under this clause shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor and/or any subcontractor under worker's compensation acts, disability benefit acts, or other employee benefit acts.
- 3) In the event that any claims are brought, or actions are filed against the Owner with respect to the indemnity contained herein, the Contractor agrees to defend against any such claims or actions regardless of whether such claims or actions are rightfully or wrongfully brought or filed. The Contractor agrees that the Owner may select the attorneys to appear and defend such claims or actions on behalf of the Owner. The Contractor further agrees to pay at the Contractor's expense the attorneys' fees and costs incurred by those attorneys selected by the Owner to appear and defend such claims or actions on behalf of the Owner. The Owner, at its sole option, shall have the sole authority for the direction of the defense, and shall be the sole judge of the acceptability of any compromise or settlement of any claims or actions against the Owner.
- 4) To the extent this indemnification clause or any other indemnification clause in this Agreement does not comply with Chapter 725, Florida Statutes, as may be amended, this provision and all aspects of the Contract Documents shall hereby be interpreted as the parties' intention for the indemnification clauses and Contract Documents to comply with Chapter 725, Florida Statutes, as may be amended.
- 5) This Section shall survive expiration or termination of this Agreement.

G. Audit Rights

- 1) Access to Records
 - a. The Contractor shall, during the term of this Contract and for a period of five years thereafter, allow the Owner and its duly authorized representatives to inspect all payroll records, invoices for materials, books of account, job cost ledgers, Project correspondence and Project-related files and all relevant records pertinent to the Contract.

- b. The Owner retains the right to audit accounts and access all files, correspondence and documents in reference to all work performed under this Contract. The Owner shall be provided full access upon request to all documents, including those in possession of subcontractors or suppliers during the work and for a period of five years after the completion of the Work. In case of any litigation regarding this Project, such rights shall extend until final settlement of such litigation. Failure to allow the Owner access shall be deemed a waiver of Contractor's claims.
- c. The Contractor shall maintain a banking account within Miami-Dade County for all payments to laborers, subcontractors and vendors furnishing labor and materials under this Contract. All records shall be maintained in Miami-Dade County for the term of this Contract.

2) Inspector General

- a. According to Section 2-1076 of the Code of Miami-Dade County, Miami-Dade County has established the Office of the Inspector General (IG) which may, on a random basis, perform audits, inspections, and reviews of all, on any County/Trust contracts, throughout the duration of said contracts. This random audit is separate and distinct from any other audit by the County. To pay for the functions of the Office of the Inspector General, any and all payments to be made to the Contractor under this contract will be assessed one quarter (1/4) of one (1) percent of the total amount of the payment, to be deducted from each progress payment as the same becomes due unless this Contract is federally or state funded where federal or state law or regulations preclude such a charge or where such a charge is otherwise precluded by Special Condition. The Contractor shall, in stating its agreed prices, be mindful of this assessment which will not be separately identified, calculated, or adjusted in the proposal or Bid Form.
- b. The Miami-Dade Office of the Inspector General is authorized to investigate County affairs and empowered to review past, present, and proposed County and Public Health Trust programs, accounts, records, contracts and transactions. In addition, the Inspector General has the power to subpoena witnesses, administer oaths, require the production of witnesses, and monitor existing Projects and programs. Monitoring of an existing Project or program may include a report concerning whether the Project is on time, within budget and in conformance with the Contract Documents and applicable law. The Inspector General shall have the power to audit, investigate, monitor, oversee, inspect and review operations, activities, performance and procurement process including but not limited to Project design, bid specifications, (bid/proposal) submittals, activities of the (Contractor/ Vendor/ Consultant), its officers, agents and employees, lobbyists, County and Public Health Trust staff and elected officials to ensure compliance with the Contract Documents and to detect fraud and corruption.
- c. Upon 10 days written notice to the Contractor, the Contractor shall make all requested records and documents available to the Inspector General for inspection and copying. The Inspector General is empowered to retain the services of independent private sector inspectors general to audit, investigate, monitor, oversee, inspect and review operations, activities, performance and procurement process

including but not limited to Project design, bid specifications, (bid/proposal) submittals, activities of the (Contractor/ Vendor/ Consultant), its officers, agents and employees, lobbyists, County staff and elected officials to ensure compliance with the Contract Documents and to detect fraud and corruption.

- d. The Inspector General shall have the right to inspect and copy all documents and records in the (Contractor/Vendor/Consultant's) possession, custody or control which in the Inspector General's sole judgment, pertain to performance of the contract, including, but not limited to original estimate files, change order estimate files, worksheets, proposals and agreements from and with successful subcontractors and suppliers, all Project-related correspondence, memoranda, instructions, financial documents, construction documents, (bid/proposal) and contract documents, back-change documents, all documents and records which involve cash, trade or volume discounts, insurance proceeds, rebates, or dividends received, payroll and personnel records and supporting documentation for the aforesaid documents and records.
- e. The Contractor shall make available at its office at all reasonable times the records, materials, and other evidence regarding the acquisition (bid preparation) and performance of this contract, for examination, audit, or reproduction, until three (3) years after final payment under this contract or for any longer period required by statute or by other clauses of this contract. In addition:
 - i. If this contract is completely or partially terminated, the Contractor shall make available records relating to the work terminated until three (3) years after any resulting final termination settlement; and
 - ii. The Contractor shall make available records relating to appeals or to litigation or the settlement of claims arising under or relating to this contract until such appeals, litigation, or claims are finally resolved.
- f. The provisions in this section shall apply to the (Contractor/Vendor/Consultant), its officers, agents, employees, subcontractors, and suppliers. The (Contractor/Vendor/Consultant) shall incorporate the provisions in this section in all subcontracts and all other agreements executed by the (Contractor/Vendor/Consultant) in connection with the performance of this contract.
- g. Nothing in this section shall impair any independent right to the Owner to conduct audits or investigative activities. The provisions of this section are neither intended nor shall they be construed to impose any liability on the Owner by the (Contractor/Vendor/Consultant) or third parties.

H. Severability

In the event any article, section, sub-article, paragraph, sentence, clause or phrase contained in the Contract Documents shall be determined, declared or adjudged invalid, illegal, unconstitutional or otherwise unenforceable, such determination, declaration or adjudication shall in no manner affect the other articles, sections, sub-articles, paragraphs, sentences, clauses or phrases of the Contract Documents, which shall remain in full force and effect as if the article, section, sub-article, paragraph, sentence, clause or phrase declared, determined or adjudged invalid, illegal, unconstitutional or otherwise unenforceable was not originally contained in the Contract Documents.

I. Payment and Performance Bond

- 1) A single instrument Payment and Performance Bond, satisfactory to the Owner, for twice the penal sum (no less than 100 percent of the total maximum contract amount for payment-related issues and 100 percent of the total maximum contract amount for performance-related issues), shall be required of the Contractor.
 - a. The bond shall be written through surety insurers authorized to do business in the State of Florida as Surety, with the following qualifications as to management and financial strength according to the latest edition of Best's Insurance Guide, published by A.M. Best Company, Oldwick, New Jersey:

Bond (Total Contract) Amount	Best's Rating
\$500,001 to \$1,500,000	B V
\$1,500,001 to \$2,500,000	A VI
\$2,500,001 to \$5,000,000	A VII
\$5,000,000 to \$10,000,000	A VIII
Over \$10,000,000	A IX

- 2) On Contract amounts of \$500,000 or less, the Bond provisions of Section 287.0935, Florida Statutes shall be in effect and surety companies not otherwise qualifying with this paragraph may optionally qualify by:
 - a. Providing evidence that the surety has twice the minimum surplus and capital required by the Florida Insurance Code at the time the Invitation to Bid is issued.
 - b. Certifying that the surety is otherwise in compliance with the Florida Insurance Code, and
 - c. Providing a copy of the currently valid Certificate of Authority issued by the United States Department of Treasury under 31 U.S.C. 9304-9308.

Surety insurers shall be listed in the latest Circular 570 of the U.S. Department of the Treasury entitled "Surety Companies Acceptable on Federal Bonds," published annually. The Bond amount shall not exceed the underwriting limitations as shown in this circular.

- 3) For Contracts in excess of \$500,000 the provisions of the Contract Documents will be adhered to, plus the surety insurer must have been listed on the U.S. Treasury list for at least three consecutive years, or currently hold a valid Certificate of Authority of at least 1.5 million dollars and listed on the Treasury list.
- 4) Payment and Performance Bonds guaranteed through U.S. Government Small Business Administration or Contractors Training and Development Inc. will also be acceptable.
- 5) The attorney-in-fact or other officer who signs a Payment and Performance Bond for a surety company must file with such Bond a certified copy of his/her power of attorney authorizing him/her to do so.
- 6) The cost of the Bonds shall be included in the Bid.

- 7) The required Bond shall be written by or through and shall be countersigned by, a licensed Florida agent of the surety insurer, pursuant to Section 624.425 of the Florida Statutes.
- 8) The Bond shall be delivered to the Contracting Officer in accordance with the instructions within the Notice of Award.
- 9) In the event the Surety on the Payment and Performance Bond given by the Contractor becomes insolvent, or is placed in the hands of a receiver, or has its right to do business in its State of domicile or the State of Florida suspended or revoked as provided by law, the Owner shall withhold all payments under the provisions of these Contract Documents until the Contractor has given a good and sufficient Bond in lieu of Bond executed by such Surety.
- 10) Cancellation of any bond, or non-payment by the Contractor of any premium for any Bond required by this Contract, shall constitute a breach of this Contract. In addition to any other legal remedies, the Owner at its sole option may terminate this Contract or pay such premiums and deduct the costs thereof from any amounts that are or may be due to the Contractor.

J. Insurance

The Contractor shall maintain the insurance set forth in the Special Provisions throughout the performance of this Contract until the Work has been completed by the Contractor and accepted by the Owner.

K. Conflict of Interest

- 1) The Contractor or his employees shall not enter into any Contract involving services or property with a person or business prohibited from transacting such business with Miami-Dade County pursuant to Section 2-11.1 of the Code of Miami-Dade County, Florida, known as the Miami-Dade County Conflict of Interest and Code of Ethics Ordinance.
- 2) In the event the Contractor, or any of its officers, partners, principals, or employees are convicted of a crime arising out of, or in connection with, the work to be done or payment to be made under this Contract, this Contract, in whole or any part thereof may, at the discretion of the Owner, be terminated without prejudice to any other rights and remedies of the Owner under the law.
- 3) In accordance with the Code of Miami-Dade County, no officer or employee of Miami-Dade County during his tenure or for two years thereafter shall have any interest, direct or indirect, in this Contract or the proceeds thereof.

L. Rights in Shop Drawings

- 1) Shop Drawings submitted to the Architect/Engineer by the Contractor, pursuant to the Work, may be duplicated by the Owner and the Owner may use and disclose, in any manner and for any purpose Shop Drawings delivered under this Contract.
- 2) This paragraph shall be included in all subcontracts hereunder at all tiers.

M. Patent and Copyright

- 1) If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the surety shall indemnify and save harmless the Owner, the Field Representative, and the Architect/Engineer from any and all claims for

infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the prosecution or after the completion of the work.

- 2) The Contractor shall warrant that the materials, equipment, or devices used on or incorporated in the Work shall be delivered free of any rightful claim of any third party for infringement of any United States patent or copyright. The Contractor shall defend, or may settle, at his expense, any suit or proceeding against the Owner or the Architect/Engineer so far as based on a claimed patent or copyright infringement which would result in a breach of this warranty, and the Contractor shall pay all damages and costs awarded therein against the Owner or the Architect/Engineer due to such breach. The Contractor shall report to the Architect/Engineer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this Contract of which the Contractor has knowledge. In the event of any claim or suit against the Owner on account of any alleged patent or copyright infringement arising out of the performance of this Contract or out of the use of any supplies furnished or work or services performed hereunder, the Contractor shall furnish to the Owner when requested, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Contractor.
- 3) The Contractor shall bear all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the Work. In such case materials, equipment, devices, or processes are held to constitute an infringement and their use enjoined, the Contractor, at his expense shall:
 - a. Secure for the Owner the right to continue using said materials, equipment, devices, or processes by suspension of the injunction or by procuring a license or licenses; or
 - b. Replace such materials, equipment, devices or processes with non-infringing materials, equipment, devices, or processes; or
 - c. Modify them so that they become non-infringing or remove the enjoined materials, equipment, devices, or processes and refund the sum paid therefore without prejudice to any other rights of the Owner.
- 4) The preceding paragraph shall not apply to any materials, equipment or devices, specified by the Owner or the Architect/Engineer or manufactured to the design of the Owner or the Architect/Engineer or in accordance with the details contained in the Contract Documents; and as to any such materials, equipment or devices the Contractor assumes no liability whatsoever for patent or copyright infringement and the Owner will hold the Contractor harmless against any infringement claims arising therefrom.
- 5) Patent rights to patentable invention, item or ideas of every kind or nature arising out of the Work, as well as information, designs, specifications, know-how, data and findings shall be made available to the Government for public use, unless the Owner shall, in specific cases where it is legally permissible, determine that it is in the public interest that it not be so made available.
- 6) The sense of this article shall be included in all subcontracts. The foregoing states the entire liability of the Contractor for patent or copy infringement by use of said materials, equipment, or devices.

N. The Contractor shall be responsible for acknowledging the County's Recycling Programs when hauling materials that meets the requirement for a commercial business establishment. Please contact the Department of Solid Waste Management at dswm@miamidade.gov or visit www.earth911.com to search for recycling or disposal options and locations.

O. Historical, Scientific and Archaeological Discoveries

All articles of historical, scientific, or archaeological interest uncovered by the Contractor during progress of the Work shall be preserved and reported immediately to the Architect/Engineer. Further operations of the Contractor with respect to the find, including disposition of the articles, will be decided by the Owner.

P. Use of Owner's Name in Contractor Advertising or Public Relations

The Owner reserves the right to review and approve Owner-related copy prior to publication. The Contractor shall not allow Owner-related copy to be published in Contractor's advertisement or public relations programs until submitting the Owner-related copy and receiving prior approval from the Owner. The Contractor shall agree that published information on the Owner or the Owner's program shall be factual and in no way imply that the Owner endorses the Contractor's firm, service or product. The Contractor shall insert the substance of this provision, including this sentence, in each subcontract and supply Contract or purchase order.

Q. Accounts Receivable Adjustments

In accordance with Miami-Dade County Implementing Order 3-9, Accounts Receivable Adjustments, if money is owed by the Contractor to the County, whether under this Contract or for any other purpose, the County reserves the right to retain such amount from payment due by County to the Contractor under this Contract. Such retained amount shall be applied to the amount owed by the Contractor to the County. The Contractor shall have no further claim to such retained amounts which shall be deemed full accord and satisfaction of the amount due by the County to the Contractor for the applicable payment due herein.

R. User Access Program (UAP)

Pursuant to Miami-Dade County Code Section 2-8.10. User Access Program in County Purchases this Contract is subject to a user access fee under the County's User Access Program (UAP) in the amount of two percent (2%). All construction services provided under this contract are subject to the two percent (2%) UAP. This fee applies to all Contract usage whether by County Departments or by any other governmental, quasi-governmental or not-for-profit entity. From every payment made to the Contractor under this contract (including the payment of retainage), the County will deduct the two percent (2%) UAP fee provided in the ordinance and the Contractor will accept such reduced amount as full compensation for any and all deliverables under the contract. The County shall retain the two percent (2%) UAP for use by the County to help defray the cost of its procurement program. Contractor participation in this pay request reduction portion of the UAP is mandatory.

S. Residents First Training and Employment Program

Except where state or federal laws or regulations mandate to the contrary, all contractors and subcontractors of any tier performing on a County Construction Contract shall satisfy the requirements of this Article. In accordance with Section 2-11.17 of the Code of Miami-Dade County and Implementing Order No. 3-61, which are available online at

www.miamidade.gov/smallbusiness/business-development-legislation.asp, all contractors and subcontractors of any tier on (i) construction contracts valued in excess of \$1,000,000 for the construction, demolition, alteration and/or repair of public buildings, or public works; or (ii) contracts or leases valued in excess of \$1,000,000 for privately funded construction, demolition, alteration or repair of buildings, or improvements on County-owned land, shall comply, if applicable, with the following:

- 1) Bidders must:
 - a. Submit a completed Responsible Contractor Affidavit (Form RFTE 1), along with the Bid Submittal Package. RFTE 1 shall verify the following:
 - i Prior to working on the project, all persons employed by the contractor on the project to perform construction have completed the OSHA 10-hour safety training course; and
 - ii Contractor will make its best reasonable efforts to have 51 percent of all construction labor hours performed by Miami-Dade County residents. County residents employed in furtherance of the goal set forth in the County's Community Workforce Program (CWP) shall be counted towards the 51 percent goal.
 - b. In the event that form RFTE 1 is not submitted along with the bid package, the County will provide a notice that the bidder has 48 hours from the time of notification to submit the form or their bid or proposal will be deemed nonresponsive and disqualified.
- 2) Prior to the issuance of a Notice to Proceed, contractors must also submit the following:
 - a. A Construction Workforce Plan (Form RFTE 2) and supporting documentation;
 - b. A list of all subcontractors to be used on the project;
 - c. A Responsible Subcontractor Affidavit (Form RFTE 1) for each subcontractor; and;
 - d. A list of all employees currently employed by the contractor.
- 3) Submit OSHA Safety Training Affidavit (Form RFTE 3) with all certified payrolls.
- 4) Submit a Workforce Performance Report (Form RFTE 4) within 30 business days of completion of the Project.
- 5) Any lessee shall include requirements of Section 2-11.7 of the Code of Miami-Dade County and Implementing Order No. 3-61, including the right of the County to access the contractor's and subcontractors' records to verify compliance, in any contract, subcontract, or sublease. Lessee shall be responsible to the County for payment of compliance monitoring costs and any penalties found due.

T. Employ Miami-Dade Program

In order to promote Employ Miami-Dade Program, pursuant to Administrative Order 3-63, and except where federal or state laws or regulations mandate to the contrary, all County construction contracts shall include notification to the Contractor regarding the use of the Employ Miami-Dade Register, the minimum number of participants on the contract, and details regarding the County's evaluation of the Contractor's efforts to promote this legislation by using participants on the contract,

which will be used as part of the responsibility review for consideration on new County contract awards. The provision of this legislation shall apply to County contracts valued in excess of \$1,000,000 for the construction, demolition, or alteration/repair of public buildings or public works projects, funded completely or partially by Miami-Dade County.

U. Public Records and Contracts for Services Performed on Behalf of Miami-Dade County

The Contractor shall comply with the Public Records Laws of the State of Florida, including but not limited to: (1) keeping and maintaining all public records that ordinarily and necessarily would be required by Miami-Dade County (County) in order to perform the service; (2) providing the public with access to public records on the same terms and conditions that the County would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S., or as otherwise provided by law; (3) ensuring that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and (4) meeting all requirements for retaining public records and transferring, at no cost, to the County all public records in possession of the Contractor upon termination of the contract and destroying any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements upon such transfer. In addition, all records stored electronically must be provided to the County in a format that is compatible with the information technology systems of the County. Failure to meet any of these provisions or to comply with Florida's Public Records Laws as applicable shall be a material breach of the agreement and shall be enforced in accordance with the terms of the agreement. **If the contractor has questions regarding the application of Chapter 119, F.S. to the contractor's duty to provide public records relating to this contract, contact the custodian of public records via phone at (305) 375-5773, or via email at isd-vss@miamidade.gov. Offices are located at 111 NW 1st Street, Suite 1300, Miami, FL 33128.**

END OF ARTICLE

13. APPLICABLE LEGISLATION

Contractors and subcontractors are required to abide by all applicable federal, state, and local laws and ordinances, as they may be amended from time to time. Applicable local laws and ordinances include, but are not limited to, the following:

A. Resolutions

<http://www.miamidade.gov/govaction/searchleg.asp>

- R-1049-93 - Affirmative Action Plan Furtherance and Compliance
- R-385-95 - Policy prohibiting contracts with firms violating the American with Disabilities Act (ADA) and other laws prohibiting discrimination on the basis of disability ADA requirements, are a condition of award, as amended by Resolution R-182-00
- R-531-00 - Prohibition of contracting with individuals and entities while in arrears with the County
- R-894-05 - Independent Private Sector Inspector General (IPSIG) Services
- R-183-00 - Family Leave Requirements
- R-185-00 - Domestic Violence Leave
- R-1386-09 - Community Small Business Development Program; directing County Mayor to include additional subcontractor provisions in all future contracts, where applicable unless waived by the Board of County Commissioners
- R-138-10 - Resolution requiring that construction contracts include language mandating that the scope of work of SBEs be separately stated and accounted for in schedule of values.
- R-63-14 - Contractor Due Diligence

B. Administrative Orders

<http://www.miamidade.gov/ao/home.asp?Process=completelist>

- 3-20 - Independent Private Sector Inspector General (IPSIG) Services
- 3-37 - Community Workforce Program (CWP)
- 3-39 - Standard Process for Construction of Capital Improvements, Acquisition of Professional Services, Construction Contracting, Change Orders and Reporting
- 10-10 - Duties and Responsibilities of County Departments for Compliance with the Americans with Disabilities Act (ADA)

C. Implementing Orders

<http://www.miamidade.gov/ao/home.asp?Process=completelist>

- 3-9 - Accounts Receivables Adjustments
- 3-21 - Bid Protest Procedure
- 3-22 - Small Business Enterprise (SBE) Program for the Purchase of Construction Services
- 3-41 - Small Business Enterprise (SBE) Program for the Purchase of Goods and Services
- 3-61 - Residents First Training and Employment Program

D. Code of Miami-Dade County:

- https://library.municode.com/fl/miami_-_dade_county/codes/code_of_ordinancesSection 2-1 Rule 5.09 Statement of consideration of impact of sea level rise.
- Section 2-1076 - Office of the Inspector General
- Section 2-2113 First Source Hiring Referral Program
- Section 2-8.1 - Contracts and Purchases
- Sections 2-8.1.1 Bids from related parties and bid collusion for the purchase of goods and services, leases, permits, concessions, and management agreements.
- Section 2-8.1(d) Disclosure required of contractors and entities transacting business with Miami-Dade County.
- Section 2-8.1(f) Listing of subcontractors required
- Section 2-8.2.6.1 Buy American Iron and Steel Products
- Section 2-8.2.6.2 Cybersecurity and Information Technology
- Section 2-8.2.7 Economic Stimulus Ordinance
- Section 2-8.4 - Protest Procedures
- Section 2-8.5 - Local Preference
- Section 2-8.5.1 - Local Certified Veteran Business Enterprise
- Section 2-8.8 - Fair Subcontracting PracticesSection 2-8.8(4) Reporting of subcontracting policies procedures and payments
- Section 2-8.10. - User Access Program in County Purchases.
- Section 2-10.4.01 Small Business Enterprise – Architecture & Engineering Program
- Section 2-10.33.02 Small Business Enterprise – Construction Program
- Section 2-10.7 Sales Tax Exemption Program
- Section 2.11.1 - Conflict of Interest and Code of Ethics
- Section 2-11.1 (i)-(r) Financial Disclosure
- Section 2-11.16.1 Construction Contract Fee for Affordable Housing
- Section 2-11.16. Responsible Wages and Benefit Program
- Section 2-11.17 Residents First Training and Employment Program
- Section 2-1076 Office of the Inspector General
- Section 2-1701 Community Workforce Program
- Section 9-71 through 9-75 Sustainable Building Program
- Section 10-34 - Listing of Subcontractors Required
- Section 11A-38 through 11A-52 Discrimination
- Section 21-255 through 21-266 False Claims Ordinance

**TECHNICAL SPECIFICATIONS:
SPECIAL TERMS & CONDITIONS**



RPQ NO. TP-0000018108



TP-0000018108 - 3001387
PROJECT CIP172
METROMOVER FIRE ALARM CONTROL PANEL UPGRADE



Abstract

The Conformed Contract requires the installation of a Proprietary Supervising Station System to monitor all Metromover locations defined herein that have new fire alarm panels furnished and installed by the contractor. The new system requires that UL listed devices and equipment must be used to ensure that the system will meet the requirements for a UL listed Proprietary Supervisory Alarm System when all Metromover stations have the new Fire Alarm panels and devices installed, tested, commissioned, and accepted by THE Department of Transportation and Public Works. The furnished system must meet the requirements of NFPA 72, 26.4. 2.1.

It is required that the products, equipment and work provided and performed by the contractor must meet all applicable sections of NFPA 72 and Underwriters Laboratories (UL) requirements for a Proprietary Supervisory Alarm System and all requirements as determined by the Authorities having Jurisdiction over the locations where the work is performed. There shall be no exceptions to these requirements.

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TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.1 SCOPE AND INTENT

1. The work included consists of all supervision, labor, materials, approved drawings, and permits required to remove the existing Fire Alarm System at all Metromover Stations and Maintenance Shops and to install a new Proprietary Supervising Station Alarm System at all Metromover Stations and Maintenance Shops. The Government Center Metromover Station is excluded from this project.
2. This project scope includes the replacement of all the existing pull stations, smoke and heat detectors, any other existing fire alarm devices, and the addition of new devices as required by the AHJ to meet all the applicable Codes. All new fire alarm panels will be addressable.
3. The new systems to be furnished and installed shall consist of the following:
 - A. All new materials to include fire alarm panels and devices shall be supplied by the contractor to form a Proprietary Supervising Station Alarm System.
 - B. Each Metromover Station shall have a Voice Evacuation Communication System. The Metromover Maintenance buildings shall have Voice Evacuation Communication Systems only if the AHJ requires one installed.
 - C. The new Signal-Receiving equipment in the Proprietary Supervising Station located in Mover Central Control consisting of two new Notifier or approved equal computes listed for Proprietary Supervising Station Alarm Systems, two new listed monitors, two new listed Uninterruptible Power Supply units and any other component required for the new UL Proprietary Supervising Station Alarm Systems. The two new La Marche model A32 series UPS systems or approved equal with all sub-system components utilizing a 48VDC bus and listed under the UL 1481 Fire Protective Signaling Standard shall feed each new Proprietary Monitoring Station computer (Signal-Receiving equipment).
 - D. The Contractor shall provide a complete set of drawing approved by the Authority Having Jurisdiction (AHJ) and shall obtain all required permits. The AHJ shall be the City of Miami and/or the Miami Dade County
4. The new equipment shall be compatible with the existing Metrorail Green Line Signal-Receiving equipment in Department of Transportation and Public Works (DTPW) Proprietary Supervising Station located at the Stephen P. Clark Center 5th floor, Central Control Facilities (CCF), located at 111 NW 1st Street, Miami, Florida.

5. Connection and Integration of the existing Fiber Optic infrastructure with the new Proprietary Supervising Alarm System to form a Fiber Optic ring to communicate the new fire alarm panels with the two new Signal-receiving computers located in Mover Central Control.
6. The Contractor shall complete the installation of the two Metromover new Signal-Receiving computers before the Contractor can begin the installation of the Metromover fire alarm panels. Third Street, Knight Center, Miami Avenue and Wilkie D Ferguson Metromover stations shall be completed first due to the condition of the existing fire alarm system.
7. Connection and integration of the existing Halon System panel where a Halon/FM 200 System exists. Any new devices, existing panel programming, or any other requirement to interface the panels with the existing systems is included in this project.
8. The Alarm System must be a Proprietary Supervising Station Alarm System that permits the Department of Transportation and Public Works to be the owner and operator and to monitor alarms for properties under DTPW ownership as the single owner as defined in NFPA 72, 26.4. 2.1.

1.2 PROJECT OVERVIEW

1.2.1 GENERAL

1. The Contractor shall install new fire alarm addressable systems in twenty-three (23) existing Metromover locations. Most of the Metromover Station consists of the station itself and a separate building (the Electrical Substation) which could be adjacent to, in proximity to, or some distance away from the Metromover station.
2. The Department of Transportation and Public Works (DTPW) located at the Stephen P. Clark Center, 111 NW 1st Street, 5th floor Miami, Fla. encloses the Central Control Facilities (CCF) and Metromover Central Control. The new Proprietary Monitoring Station computers shall be located at the Metromover Central Control.
3. The Proprietary Signal-Receiving computers shall be connected to two (2) uninterrupted power supply (UPS) capable of operating the fire alarm system according to NFPA-72. The UPS capacity shall meet all NFPA-72 requirements and shall be installed in accordance to NFPA 111, Standard on Stored Electrical Energy Emergency and Standby Power Systems, for a Type O, Class 24, Level 1 system. These two (2) new UPS to be provided under this project will be located in the SPCC 4th floor next to the four (4) existing UPS dedicated to the existing Fire Alarm Proprietary Supervising Station Alarm Systems.
4. There is one main Maintenance Building for vehicles repairs and one Auxiliary Maintenance Building where Mover cars are lubed and washed. This Auxiliary Maintenance Building is located next to the School Board Station. The

Auxiliary Maintenance Building and the School Board Station are protected by one fire panel and both buildings are considered as one location.

5. Brickell City Center (Eight Street) and the Freedom Tower Stations have existing Notifier 320 fire panels and Voice Evacuation Communication panels (one a Wheelock and the other a Notifier respectfully) which needs to be upgraded to become part of the Proprietary Supervising Station Alarm System and send fire alarm signals to the Proprietary Supervising Station computers. The fire panel and the Voice Evacuation Communication System panel shall be replaced, if need be, to match the same brand and model of the other locations by the end of the contract.
6. The Proprietary Supervising Station Alarm System shall be integrated with the existing Fiber Optic infrastructure and made operational, responsive, and fully functional to monitor and supervise the new Metromover fire panels and the new Metromover Proprietary Supervising Station computers to be located at Metromover Central Control as a Turnkey project.
7. The Contractor shall install a web-based device that acts as an HTML server that allows remote viewing of the connected Proprietary Supervising Alarm System network via the Internet or the Intranet. The web-based interfaces with the Internet/intranet using an IP-based wire Ethernet connection. The Contractor shall install the Cat 6 cable to connect the web-based device to the DTPW network switch/Intranet as directed.
8. The Contractor shall provide a minimum of 4 classes of 16 hours each to train DTPW personnel. The factory trained representative shall provide training classes. There shall be one class per shift and the 4th class shall be to catch the Technicians and Supervisors which didn't attend any of the first 3 classes. The classes shall include the Fire Alarm Control Panels and Emergency Voice Evacuation System installed at the Metromover locations. The training shall be for Technicians with some experience in installing addressable fire alarm systems. The course covers the features, functions and capabilities of the installed addressable control panels, EVAC panels, power supplies, detectors, modules, etc. The class shall include hands-on devices connections and exercise in basic keypad disabling and re-enabling devices. Provide a Power Point presentation with the complete training to be used by DTPW to train new Technicians in the future. Handson demonstrations of the operation for all system components and the network nodes should be included.
9. The Contractor shall also provide factory programming classes to four DTPW employees for the installed fire alarm panels and the ability to operate four Licenses/Software keys to upload/download programs to the panels in the field from laptops.

10. METROMOVER CENTRAL CONTROL, STATIONS, AND BUILDINGS

There are twenty-three (23) existing Metromover locations as follows:

	Location	Address
1	School Board	50 NE 15 Street
2	Adrienne Arsht Center	1455 Biscayne Boulevard
3	Museum Park	1191 Biscayne Blvd
4	Eleventh Street	1098 NE Second Avenue
5	Park West	800 NE Second Avenue
6	Freedom Tower *(See Note 1)	600 NE Second Avenue
7	College North	100 NE 5 Street
8	Wilkie D. Ferguson, Jr.	90 NW 5 Street
9	Miami Avenue	90 South Miami Avenue
10	Third Street	250 South Miami Avenue
11	Knight Center	100 SE Second Street
12	Bayfront Park	150 Biscayne Boulevard
13	Dupont Plaza	16 SE 2 ST
14	First Street	225 NE First Street
15	College/Bayside	225 NE 3 Street
16	Riverwalk	88 SE 4 Street
17	Fifth Street	35 SE 5 Street
18	Eighth Street *(See Note 1)	59 SE 8 Street
19	Tenth Street	1011 SE First Avenue
20	Brickell	1001 SW First Avenue
21	Financial District	50 SE 14 Street
22	Stephen P. Clark Center	111 NW First Street – 4 th and 5 th floors
23	Mover Maintenance	100 S.W. 1st Avenue
NOTE1: These stations have a Notifier Fire Panel in each station. The panels must be modified to support and be included in a fiber optic ring network for communications with the Central Control facility for alarm reporting.		

1.3 ORDER OF WORK:

The stations listed below shall be the first three where the Fire alarm Panels and devices furnished and installed are to be completed before the other stations listed in Section 1.2.2

1. Wilkie D. Ferguson
2. Third Street
3. Knight Center

1.4 WORK COVERED BY CONTRACT DOCUMENTS:

1. Furnish, Install and test an approved fire alarm system in the Metromover Stations and Buildings shown above in 1.2.2.

Remove and dispose of the existing fire alarm system being replaced. Existing ionization detectors shall be returned to the original manufacturer for proper disposal. There are devices in some elevators shafts and escalators which are not required by Code and shall be removed along with the wires and conduits feeding them. In case the elevator or escalator must be taken off-line (shut down) for more than one hour during revenue hours the Contractor shall request DTPW permission at least 72 hours before the work commence.

1.5 MEASUREMENT AND PAYMENT:

1.5.1 MEASUREMENT

Work under this Section shall not be separately measured for payment.

1.5.2 PAYMENT

Work under this Contract shall be paid per building and when the fire alarm systems installation is completed at any of the Metromover buildings, and the fire panel is sending all the signals to Metromover Central Control. All the signals received at the Metromover Central Control (DTPW Proprietary Monitoring Station computers) shall display a complete description of the device address and location in addition to the building drawings depicting the exact location in the building floor plans. DTPW will also require the building fire alarm system's final inspections approved for the buildings department inspectors, Miami-Dade Fire Department inspectors as required, and by all other Authorities having jurisdiction (AHJs) to be considered finished.

Additional requirements are provided in Division 1, GENERAL CONDITIONS.

PART 2 - BASIC ELECTRICAL REQUIREMENTS

GENERAL SCOPE

2.1 SCOPE

The work included consists of design, engineering, supervision, labor, materials, and installation required for the complete, satisfactory, and approved fire alarm system as indicated in these specifications, or as may be reasonably implied, for the installation of a completed fire alarm system as a Turnkey project.

2.2 STATE REQUIREMENT FOR CONTRACTORS PERFORMING THE INSTALLATION

1. The fire alarm contractor shall comply with the Florida Statutes Chapter 489.5185 that specifies the requirements for employment of personnel performing work on the fire alarm system.
2. Every individual working on DTPW properties shall obtain approval from DTPW Office of Safety (OSS). A background check shall be performed by the Office of Safety and each employee shall attend a safety training class before the ID card is issued.

2.3 SAFETY CERTIFICATION

Safety Certification of the new Train To Wayside system (Wayside system) is required. Safety Certification is the process of verifying that Operating System elements comply with a formal list of safety requirements. The Contractor shall adhere to the safety certification process outlined in the Department of Transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Each plan is project specific, and the contractor will develop the plan for this project and provide it to the project manager within 90 days of the notice to proceed.

Safety Certification is required as defined in the Federal Transportation Administration (FTA) State Safety Oversight Rule (49 CFR Part 659). The Fire Alarm system that is furnished by the contractor must be safety certified as mandated by the FDOT Fixed Guideway Transportation Systems State Safety Oversight Program Standard and the Department of Transportation and Public Works' Safety and Security Certification Program Plan for Rail Fixed Guideway Systems. Both documents describe testing and certification processes which must be conducted to ensure safe operation of the track and all governing systems. Upon successful completion of the testing, certification will be submitted to FDOT, in Tallahassee. In supporting the safety certification process, the Contractor shall carry out a detailed accounting of all correspondence and documentation to verify that all safety related requirements, activities, tests, inspections and action items have been completed and satisfied and shall document these results in a Safety Report which shall be submitted to the County for its review and acceptance 30

calendar days prior to the Contractors written application for Substantial Completion.

2.4 SPECIFICATIONS, CODES, STANDARDS AND COMPLIANCE

1. Reference within the Specification to standards, codes or reference specifications implies that any item, product, or material so identified shall comply with all minimum requirements as stated therein, except packaging and shipping, unless otherwise indicated.
2. The Specifications, Codes and Standards indicated below and in other locations, including the current addenda, amendments, and errata, referred to by basic designation only, form a part of this Specification.
3. Only the currently adopted edition of the following codes are applicable:
 - A. Florida Building Code (FBC)
 - B. Florida Fire Prevention Code (FFPC)
 - C. Fire Alarm Code, NEPA-72
 - D. Standard for Fixed Guideway Transit and Passenger Rail Systems, NFPA-130
 - E. Life Safety Code, NFPA-101
 - F. National Electrical Code, NEC, NFPA-70
 - G. Halon Fire Extinguishing System, NFPA-12A
 - H. Underwriters' Laboratories (UL)
 - I. American National Standards Institute (ANSI)
 - J. Federal Specification (Fed. Spec.)
 - K. Florida Statutes Chapter 489.5185
 - L. ADA
 - M. Other Applicable Codes from NFPA
 - N. Additionally, designs, work practices, and conditions shall conform to the Occupational Safety and health Act of 1970 (OSHA)

PART 3 - PRODUCTS AND REQUIREMENTS

3.1 MATERIALS AND EQUIPMENT

1. All materials and equipment shall be new and U.L. listed.
2. All materials and equipment shall be use-specific and U.L. listed for the purpose.
3. All Fire Alarm equipment for this project shall be rated power limited.

3.2 SYSTEM SMOKE DETECTORS-INITIATION

1. Smoke Detectors shall be installed as per NFPA-72 and have direct and unobstructed access from an A-Frame ladder positioned on the floor under the device. All detectors shall be visible standing under the device at floor level.
2. Detectors shall not be located in direct airflow or in places of high velocity air movement or in direct line in front of air diffusers (supply or return) or closer than 3 feet from an air supply diffuser or return air opening as per NFPA-72 and any other applicable Code.
3. Detectors shall be located on the ceiling or on the sidewall between 4 inches and 12 inches from the ceiling and as per NFPA-72.

3.3 PULL STATIONS-INITIATION

Pull stations shall be installed 48 inches Above Finished Floor (AFF) and as per of the Florida Building/ADA Codes.

3.4 DUCT DETECTORS-SUPERVISORY INITIATION

1. Duct detectors shall be provided for systems above 2000 cfm in the air supply duct downstream of the air filters and ahead of any branch connections in the air supply as per NFPA-90A.
2. For air conditioning (A/C) systems greater than 15,000 cfm, duct detectors shall also be provided at the air return for each story of a common return per NFPA-90A.
3. A/C duct detectors shall produce a supervisory signal at the fire alarm control panel (FACP) as per NFPA-90A. The status of the duct detectors shall be monitored and displayed at the FACP.
4. Where smoke detectors are installed in concealed locations more than 10 feet (3.0 m) above the finished floor or in arrangements where the detector's alarm or supervisory indicator is not visible to responding personnel, the detectors shall be provided with remote alarm or supervisory indication at the same height as Manual Pull Stations and as close as possible to the concealed device. Duct Detectors shall be installed as per NFPA-72 and have direct access from an A-Frame ladder positioned on the floor under the device.

3.5 OTHER INITIATION DEVICES

Other initiation devices shall be part of an integrated into this system. Heat Detectors, Water flow Switches, Tamper Switches, equipment status switches monitored via Monitoring Modules, beam detectors, flame detectors etc. whenever required by the set of plans and approved by the AHJ and DTPW. Heat Detectors shall have direct and unobstructed access with an A-Frame ladder positioned on the floor under the device.

3.6 AUDIBLE ALARM EVACUATION SIGNALS

1. Voice Evacuation Signals: Speakers shall be provided and shall be automatically transmitted and shall be as follows: 2 cycles of Code-3, followed by the voice message, followed by 2 cycles of Code-3 as per NFPA-72.
2. Aside from the Metromover Stations or any other building requiring Emergency Voice Evacuation equipment, the separate Buildings and Electrical Substation Buildings shall use the distinctive Evacuation: A Three-Pulse Temporal Pattern (Code-3) shall be used for evacuation signals as per NFPA-72.
3. When one single fire alarm panels protects more than one building, each building fire alarm will only be announced at the building where the fire alarm was originated unless otherwise require by the AHJ.
4. No Voice Evacuation speaker shall be required under this contract in the Electrical Substations unless require by the AHJ.

3.7 AUDIBLE NOTIFICATION

1. Audible notification shall be performed via individual Speakers, or a combination Speaker/Strobe in every Metromover Station.
2. Audible notification shall be performed via individual Horn or combination Horn/Strobe, at the separate Electrical Substations or Buildings.
3. Installation: Mounting height for speakers shall be no less than 90 inches and below the finish ceilings no less than 6 inches as per NFPA-72. Ceiling mounted speakers shall be allowed. Mounting height for Speaker/Strobe combination unit shall be no less than 80 inches and no greater than 96 inches Above Finish Floor (AFF) and as required by NFPA-72 and ADA..

3.8 VISUAL NOTIFICATION

1. Visual notification shall be performed via Strobes either individual unit or a combination Speaker/Strobe or Horn/Strobe.
2. Strobes shall be clear xenon type, with a minimum intensity of 75 candelas as required by the Florida Building and the AHJ.
3. All strobes within a zone/floor shall be synchronized as per NFPA-72.

4. Installation: Strobes and Speaker/Strobe combination devices shall be placed 90 inches above the highest floor level within the space or 6 inches below the ceiling whichever is lower as per the Florida Building Code and NFPA-72.
5. Strobes shall be placed no more than 15 feet from the end of the corridor and no more than 100 feet between corridor strobes as per NFPA-72.
6. Ceiling Strobes shall be placed as per NFPA-72.
7. The distance from any place to a visual device shall not exceed 50 feet and as required by the Florida Building Code.

3.9 NOTIFICATION EVACUATION

The alarm notification signal shall annunciate the entire Metromover Station, Electrical Substation, or ancillary building. The fire alarm notification should be confined to the building where the initiating signal was originated and according to NFPA-72.

3.10 ELEVATOR RECALL FOR FIRE FIGHTERS SERVICES

1. The fire alarm contractor shall install the necessary wiring to the Elevator Controllers at the elevator machinery rooms for the elevator controller to provide the Elevator Recall Function as per the Safety Code for Elevators and Escalators ASME A 17.1 and NFPA-72. Visual Warning for each elevator or group of elevators shall be installed for the elevator visual warning according to the Safety Code for Elevators and Escalators ASME A 17.1 and the AHJ.
2. System smoke detectors (or heat detectors) part of the building fire alarm system shall be located at:
 - A. Elevator lobbies at each floor served by the elevator
 - B. At the elevator machinery room.
 - C. Control Modules and relays used for interfacing the elevator controller shall be placed no greater than 3 feet from the elevator controller as per NFPA-72.
 - D. The fire alarm contractor shall coordinate with the Elevator Contractor and DTPW to connect the fire alarm system Control Modules and integrate the signal into the elevator controller.
 - E. Every Elevator shall have a minimum of four (4) fire alarm relays installed for each Elevator Emergency Control Function Interfaces.
 - F. Unless there are sprinklers installed in the elevator shaft and the Code or the AHJ requires them, no smoke or heat detectors are required to be installed in the elevator shaft.

- G. Escalators should get no detection install unless is required by the applicable Code or the AHJ. The existing smoke detectors protecting the escalators, related boxes, conduits, shall be removed.

3.11 ELEVATOR EQUIPMENT SHUT DOWN

1. Only elevator machinery rooms and hoist ways which have been provided with sprinkler system shall require the elevator equipment power to be shut down before any water is released. The fire alarm contractor shall provide a system heat detector, connected to the building fire alarm system, at the elevator machinery rooms and hoist ways.
2. Heat detectors shall be installed within 2 feet of the sprinkler head and shall be rate-of-rise heat detectors.
3. The fire alarm contractor shall interface the shunt trip breaker in the elevator machinery room and provide the signal to actuate the trip mechanism.
4. Integrity of the operating power: The power to the shunt trip breaker shall be monitored for integrity. Control circuit to shut down elevator power be shall monitored for the presence of voltage. Loss of voltage to control the circuit for the disconnecting means shall cause a supervisory signal to be indicated at the control unit and the remote annunciators.

3.12 REMOTE ANNUNCIATOR PANEL

1. The Remote Annunciator Panel will be located distant from the Fire Alarm Control Panels and by the station entrance. The Annunciator shall be capable of supplement the display of the FACP as per NFPA-72, shall be located to at a readily visible location to ensure readability by the occupants. The AHJ shall approve its location.
2. Remote Annunciator Panels shall not be placed where it is exposed to direct sunlight due to LED degradation.
3. Remote Annunciating panel shall be listed for wet locations unless install within a building. A listed enclosure approved by the AHJ may be used to enclose the Remote Annunciator in damp or wet locations.
4. If approved by the AHJ, the Remote Annunciator Panel located where conditions exceed the manufacturer's humidity or temperature specifications shall be installed inside a watertight NEMA enclosure 4, 4X, 6, 6P, and shall be used in conjunction with a Minihorn (continuous mode), placed within 10 feet from the Remote Annunciator Panel, to annunciate supervisory and trouble signals. The Minihorn shall be placed inside a louvered metal housing to prevent vandalism.

3.13 SECONDARY SUPPLY/POWER-BACKUP

1. Fire Alarm Systems connected to a Proprietary Station shall have battery capacity as per NFPA-72 shall operate in quiescent mode for 24 hours and at end of that period, operate all notification appliances for 15 minutes.

3.14 SUPERVISION OF SPRINKLER SYSTEM DEVICES

The fire alarm contractor shall connect and integrate the following devices to the fire alarm system.

1. All the Tamper and Flow switches throughout the buildings.
2. Post Indication Valve Tamper Switch.
3. Back Flow Preventer Tamper Switch.
4. The fire alarm contractor shall verify the position of the above devices.

PART 4 - EXECUTION

4.1 INSTALLATION

Provide and install the system in accordance with the plans and specifications, in accordance with the codes listed in this specifications, applicable codes, and the manufacture's recommendations. All wiring installed in strict compliance with all the provisions of Florida Building Code, the NFPA-70 NEC and the NFPA-72.

All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring & Fiber Optic diagrams, schematics, physical equipment sizes, etc., before beginning the system installation. Refer to the connection diagram for all specific system installation / termination / wiring data.

The new Fire Alarm panels and Emergency Voice Evacuation panels will be installed in rooms where there is Air Conditioning present.

1. The contractor shall install all fiber cables, conductors and fire alarm cables inside IMC or Rigid conduits above ground and PVC schedule 80 for underground installations (any other NFPA 70 installation method shall not be accepted unless is approved by DTPW, the AHJ, and the Engineer of Record). Existing conduits can be used whenever possible if the existing conduit integrity remains undamaged and the conduit meets NEC requirements. The conduit fill shall not exceed 40% of the conduit Cross-Sectional Area for the Power Limited and Non-Power Limited circuits. The NEC separation of conductors for Power Limited conductors with other types of conductors shall be maintained. Flexible Liquid Tight Conduit in length of 3 feet or less shall be accepted when flexibility is required.

The minimum size for IMC, Rigid, or PVC conduit is $\frac{3}{4}$ inch.

The minimum size for Flexible Liquid Tight Conduit is $\frac{1}{2}$ inch.

2. The fire alarm contractor shall install the fire alarm cables in a neat and workmanlike manner. Conduits shall be attached or supported by the building structure by straps, clamps, hangers and the like. The installation method shall not damage the cables. Conductors splice inside gutters, auxiliary wireways, or junctions boxes shall be done in removable Terminal blocks, plug in type and have sufficient capacity for 18 to 12 AWG wire. Bussmann Terminal Block, 300VAC Voltage, 20 Amps, 12 AWG Maximum Wire Size, 22 AWG Minimum Wire Size or approved equal shall be acceptable. Gutters, auxiliary wireways, or junction boxes containing six or less conductors are exempt from the terminal block requirement.
3. Wires, cables, or fire alarm equipment installed in Damp and/or Wet environments shall be listed and approved for Wet locations. Wires and cables not installed within a building shall be listed for wet locations.
4. The contractor shall not "T-tap" Signaling Line Circuits, Initiating Circuits, or Data Circuits (there is an exception detailed below). Addressable Notifier

Isolators or approved equal shall be supplied and installed by the Contractor to isolate/segment every floor, building, and when there are more than 16 devices installed in a circuit. One auxiliary gutter can be installed above the main fire alarm panel and one auxiliary gutter can be installed below the fire alarm panel. The Isolators shall be installed next to the fire alarm panel or the auxiliary gutters. T-Tap shall only be permitted in the before mentioned auxiliary gutters.

5. There shall be at least one Data and/or Signaling Circuit Surge Protector per circuit. They will be installed in its own electrical box next to the fire alarm panel, power supply, emergency evacuation panel or any other fire alarm equipment.
6. All new junction boxes shall be sprayed red and labeled "Fire Alarm". Uniform and consistent wiring color code shall be maintained throughout the installation.
7. Every wire or cable shall be identified by print numbers at the Fire Panels, junction boxes, auxiliary gutters, device boxes, and every time the wire or cable is spliced or terminated. The numbers shall be of the polyolefin shrink tube numbering system or approved equal by DTPW. In addition, the Fire alarm circuits shall be identified at terminals and junction locations to comply with NEC Article 760.

Every fire alarm device, component, and junction box shall be externally identified by engraves tags. Every tag shall be at least 2 inches high by 4 inches wide with a red background and with the device address or signaling circuits/device numbers engraved on it. In addition, the End of the Line devices shall display the letters EOL. The tags shall be attached to the building structure with screws or rivets as close to the Fire Alarm components as possible. The 2 inches high by 4 inches tags with the address and circuit information for smoke and heat sensors mounted in the ceiling shall be attached to the building surface next to the device box so it can be read standing under the device. All the Smoke and Heat sensors shall be label with an additional polyester labeling tape with the device address.

8. The contractor shall have the responsibility to coordinate with DTPW to schedule the installation and access to buildings and to coordinate with its own subcontractors or with other contractors/building occupants working on the related areas.

The contractor shall be escorted by DTPW Personnel when working at any DTPW property. The work shall be carried out from 6:00 a.m. to 2:00 p.m. (1st Shift), or 2:00 p.m. to 10:00 p.m. (2nd Shift), or 10:00 p.m. to 6:00 a.m. (3rd Shift) as required and shall minimize any Patron's inconvenience and shall guard their safety.

The contractor shall only be allowed to work in one building at a time to guarantee proper DTPW support/escorts. The contractor shall be allowed to start the installation of the new fire alarm system on no more than two stations/buildings at a time but shall work in only one building at a time unless otherwise approve by DTPW. When the installation is completed at any of the

two stations, then the contractor can begin the installation on the next station/building. There shall be no more than four open permits at the time.

9. The Contractor shall follow the manufacturers' installation instructions and recommendations for materials and equipment. The contractor shall provide on-site supervision of the equipment installation.
10. The electrical wiring providing power to the Fire Alarm Control Panel, the Emergency Voice Evacuation Control Panel, the Power Boosters and other fire alarm equipment that require 120VAC power shall be protected by surge protectors in compliance with the NFPA-70 (NEC) and specifically Articles 760, 770 and 800.
11. Support: Conduits installed outdoor, in wet or damp locations shall be strapped with T&B Rigid and IMC Conduit Strap 1275 Series or approved equal. The straps are rugged malleable iron with a galvanized finish and every strap shall be installed with a Conduit Spacer with electro-zinc plated finish to prevent accumulation of moisture and minimized conduit rust from wall condensation.
12. The fire alarm equipment shall be supplied by a new 120VAC branch circuit and shall be effectively grounded to the system ground via an equipment grounding conductor.
13. Circuits and equipment shall be properly protected in accordance with NFPA-70 (NEC).

Each 120VAC dedicated branch circuits supplying the fire alarm panels and other fire alarm equipment shall have surge protection. The surge protector shall be a minimum 4 feet away from the equipment being protected and follow the manufacturer installation instructions.

The Initiating Device Circuits or Data cables' shield shall be connected to the Fire Alarm panel and the continuity shall be maintained until the last device in the circuit.

Signaling Line Circuits (SLC), Initiating Circuits, or Data Signaling Circuits protectors shall be grounded to the electrode grounding conductor as per NEC.

Each panel or fire alarm equipment shall have one protector install on each circuit (SLC, speakers, or NACs) connecting the equipment to the field devices.

14. The cable installation shall comply with the separation and use of conductors and cables as specified in the National Electrical Code. Power-limited cables shall not be placed in the same conduit, cable tray, manhole, etc. with Class 1, non-power limited circuits, and medium power network-powered broadband communication circuits.
15. Fire alarm circuits extending beyond one building (interbuilding) shall meet the installation requirements of NEC 760.32, Article 760 Parts II, III, and IV of Article 800 and shall meet the installation requirements of Part I of Article 300. Each interbuilding circuit shall be protected by a listed primary protector at each end

of the interbuilding circuit. Installation of primary protectors shall also comply with 110.3(B).

16. Contractor shall check with DTPW before programming the Fire Alarm System to obtain the administrators and users access codes, disable button assignments, room names, etc. The fire alarm panel program shall display a detail location description of the device in addition of the device address and shall match the true location and the As Built drawings. It is the Contractor's responsibility to get the Engineer of Record to revise the drawings to reflect on the plans the device location. The Contractor shall connect the two output relays modules to existing PLC points. One module shall be activated on general fire alarm and the other module shall be activated by any trouble in the panel. The contractor shall install one output relay module to mute the station Public Announcement systems (PA) and shall make the connections to the existing equipment to accomplish the silencing of all station announcements.
17. After the new fire alarm system replaced the old fire alarm system, the abandoned cables shall be completely removed, and the conduit remove if possible. When is not possible to remove the existing conduit, the remainder conduit shall meet Code and be terminated with a box at each of the conduit ends.
18. Opening around penetrations through fire-resistant-rated walls, partitions, floors or ceiling shall be fire stopped using approved methods to maintain the fire resistance ratings.
19. After the completion of the installation the contractor shall clean all dirt and debris from the inside and outside of the fire alarm equipment, the rooms and areas where the equipment was installed.
20. Upon completion, the contractor shall certify in writing to DTPW that it has completed the installation of the system, has verified the correct operation of the entire fire alarm system, the emergency voice evacuation systems, the extinguishing system interconnection, and the Fiber Optic network communication system and shall provide the documentation required.

4.2 WARRANTY

1. The fire alarm control panel, devices, voice panels, computers, and the UPS equipment shall have a manufacturer's warranty for a term of one (1) year.
2. The contractor shall warrant the fire alarm system wiring, equipment, all work performed, all materials and equipment to be free from mechanical and electrical defects for a minimum period of one (1) year from the date the installation is completed, tested, certified and the installation is approved by the AHJ and accepted by the DTPW Project Manager. The full cost of all corrective actions, labor, and materials required to correct any defect(s) during this one-year period shall be included in the submittal bid.

3. The contractor shall provide a quote to DTPW in the bid for the option to extend the warranty for an additional three-year term which shall commence after the standard initial warranty term expires. At the County's discretion, the County may elect to exercise the option to purchase the three-year extended warranty.

PART 5 - FIRE ALARM SYSTEM

5.1 GENERAL SPECIFICATIONS

1. The system shall be classified as a Proprietary Supervising Station Alarm System. The fire alarm design shall be based on the prescriptive provisions of NFPA-72, current adopted edition.
2. The contractor shall install the Fire Alarm System as per approved plans. DTPW shall review and approved the fire alarm plans before the Contractor submit them to the County or City of Miami for approval. The Miami Dade Fire Department (MDFD) or City of Miami Fire Department may have additional requirements at the time the plans are presented to them for approval or at the time of inspection. There shall be no additional cost to DTPW for any changes requested by the MDFD.
3. The contractor shall provide a complete installation, testing and programming of the system and make the system operational and deliverable to DTPW in a Turnkey manner. DTPW shall not provide any additional subcontracting or work to complete this project.
4. The Contractor shall provide the last updated Approved set of Plans, one additional hardcopy, two electronic copies in CAD format, and two electronic copies in PDF format, all reflecting the fire alarm system at the time it was approved by the AHJ and accepted by DTPW. All drawings shall be provided to DTPW for review and approval.

5.2 FIRE ALARM SYSTEM DESCRIPTION

1. Under normal condition, the front panel shall display a "NORMAL" message and the current time and date.
2. The Performance of Signaling Line Circuits (SLCs) shall be in accordance with the requirements for Class B. No T-Taps shall be accepted except on the auxiliary gutter located right above or below the new fire alarm panels.
3. Should an abnormal condition be detected, the appropriate LED shall flash. The panel audible signal shall pulse for alarm conditions and sound steadily for trouble and supervisory conditions
4. The panel shall display the following relative to the abnormal condition of a point in the system.
 - A. Custom Location label (40 characters minimum).

- B. Type of device (i.e. heat, smoke, pull station, water flow).
 - C. Point status (i.e. alarm, trouble).
 - D. Room number.
5. Pressing the appropriate acknowledge shall acknowledge the alarm, supervisory, or trouble condition.
6. Alarm Silencing
Should the "Alarm Silence" button be pressed, all audible notification appliances, horns, and speakers shall be deactivated.
7. Under an alarm condition, the system shall shut down all associated AHU's and exhaust fans within the building.
8. System Reset: The "System Reset" button shall be used to return the system to its normal state after an alarm condition has been remedied (local only).
9. History Logging: The control panel shall have the ability to store a minimum of six hundred (600) events.
10. System Trouble Reminder: Should a trouble condition be present within the system and the audible trouble signal silenced, the trouble signal shall resound at preprogrammed time intervals to act as a reminder that the fire alarm system is not 100% operational. Both the time interval and the trouble reminder signal shall be programmable and set to 24 hours.
11. Detection Operation:
- A. Addressable Devices shall provide an address-setting means. Submit information on the means used.
 - B. Detectors shall be intelligent and addressable and shall connect with two wires to the Fire Alarm Control Panel Initiating Line Circuits.
 - C. Addressable smoke and thermal detectors shall provide dual alarm and power LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel and both LEDs shall be placed into steady illumination by the control panel to indicate that an alarm condition has been detected. If required, the flashing mode operation detector LEDs shall be optional through the system field program.
 - D. Smoke detector sensitivity shall be set through the Fire Alarm Control Panel and shall be adjustable in the field through the field programming of the system. Sensitivity may be automatically adjusted by the panel on a time-of-day basis.
 - E. Using software in the Fire Alarm Control panel (FACP), detectors shall automatically compensate for dust accumulation and other slow

environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA-72.

- F. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature.
- G. The detectors shall provide a test means whereby they shall simulate and alarm conditions and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
- H. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (Photo, Thermal).
- I. Devices shall be approved for the location (Damp, Dry, or Wet) they shall be installed.

5.3 ALARM SEQUENCE

1. The system alarm operation subsequent to the alarm activating of any manual station, automatic detection device, or sprinkler flow switch is to be as follows:
 - A. All audible alarm notification appliances (NAC) shall sound the alarm signal until silenced by the alarm silence switch at the control panel or at the Proprietary Monitoring Station.
 - B. All visual and audio alarm notification appliances shall display/sound a continuous pattern until System is reset.
 - C. An immediate and automatic notification shall be send to the approved Miami-Dade Mover Central Control in the SPCC showing the Metromover building in alarm, the type of alarm and all specifications of the alarm condition.
 - D. The mechanical controls shall activate the air handling systems and the exhaust fans per life safety specification. NFPA-90A and NFPA-101.
 - E. A Code-3 pulsing alarm tone shall occur within the control panel until acknowledged.
2. Alarm, trouble, and supervisory conditions shall be immediately displayed on the control panel front alphanumeric display. If more alarms or troubles are in the system, the operator may scroll to display new alarms. All alarms and trouble and supervisory signals shall also be immediately displayed at Metromover Proprietary Monitoring Station in downtown Miami via the Fiber Optic communication system over the existing Fiber Optic cables.

5.4 SUPERVISION

1. IDC shall be Class B
2. SLC shall be Class B
3. IAC shall be Class B
4. Each independently supervised circuit shall include discrete panel readout to indicate disarrangement conditions per circuit
5. The incoming power to the system shall be supervised so that any power failure shall be audibly and visually indicated at the control panel and the remote enunciator. A green "power on" LED shall be displayed continuously while incoming power is present.
6. The system batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control panel and the remote enunciator panel.
7. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes.

5.5 POWER REQUIREMENTS

1. The Fire Alarm panel, power supplies, and Emergency Evacuation panels shall receive 120 V AC power via a dedicated circuit terminated/connected inside every equipment and shall have surge protection in accordance with UL 864. The surge protector shall be installed in an electrical box mounted at least 4 feet minimum away from the fire alarm equipment being protected.
2. The systems shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 V AC power in a normal supervisory mode.
3. Battery Backup shall be twenty (24) hours with (15) fifteen minutes of alarm operation at the end of this period.
4. All circuits requiring system-operating power shall be 24 VDC and shall be individually fused at the control panel. The Contractor shall install 24VDC interposing relays for all 120VAC control circuits like exhaust fans, motorized dampers, and any other equipment which interfaces with the fire alarm panels with 120 VAC control circuits.

5.6 FIBER OPTIC SYSTEM DESCRIPTION

1. Each Metromover Station has an existing single mode Fiber Optic interface that sends signals via a Fiber Optic network. – Each Metromover station has existing available single mode Fiber Optic cable that is available for use in a ring configuration between the Stephen P. Clark Center 4th floor and each of the Metromover stations.
2. There is existing single mode Fiber Optic cable installed between each of the Metromover stations and the fourth floor of the SPCC Building. The Fiber Optic cable is terminated in patch panels that are located in equipment cabinets at each Metromover Train Control and Communications rooms in the stations. In the SPCC building, all Fiber Optic cables from the stations are terminated in an equipment cabinet located on the fourth floor. All existing Fiber terminations use LC UPC connectors. The contractor shall install new Fiber Optic cables from the existing Fiber Optic patch panels to the new fire alarm panels or monitoring computers in metal conduit. Flexible Liquid Tight Conduit in length of 3 feet or less shall be accepted when flexibility is required. The conduit or flexible conduit minimum sizes shall be ¾ inches.
3. The Metromover Station existing fire alarm interface are two sets of dry contacts Relays connected to a Programmable Logic Controller (PLC) that sends discrete on/off signals to the Mover Central Control. This interface is to remain. Two fire alarm interposing relays shall be installed for each fire panel to send summarized trouble and alarm to Mover Central Control through the existing PLC equipment.
4. The scope of the work is to replace the existing method of communication and replace it with a single mode Fiber Optic based system via the Fiber Optic cable using the digital communications capability of the new Fire Alarm System Panels.

5. Each station shall communicate digitally with the Central Station.
6. DTPW personnel shall approve the Fiber Optic cables and jumpers to be installed at each Metromover location. – All Fiber Optic cable and jumpers that are installed by the contractor shall be single mode, OS2.
7. The contractor shall be responsible to deliver a complete and operational system, which includes the communication hardware and programming of the Metromover locations Fire Alarm System Panels and the Proprietary Supervising stations.
8. The communications system shall comply with the NFPA-72 on Communication Methods of Supervising Stations Fire Alarm Systems which shall include but shall not be limited to the following:
 - A. The system shall comply with the FCC rules and regulations.
 - B. The equipment shall be installed in compliance with NFPA-70 NEC
 - C. Provision shall be made to monitor the integrity of the transmission technology and its Fiber Optic communication path.
 - D. Any failure shall be annunciated as the Proprietary supervising Station according to NFPA-72.
 - E. If communication cannot be established with the supervising station, an indication of this failure to communicate shall be annunciated at the Metromover Station.
 - F. If a portion of the communication path cannot be monitored for integrity, redundant communication path shall be provided.
 - G. Provision shall be made to monitor the integrity of the redundant communications path.
 - H. Failure of both, the primary and the redundant communication path shall be annunciated at the supervising monitoring station according to NFPA-72.
 - I. System units as the supervising monitoring station shall be restored according to NFPA-72.

PART 6 - SIGNAL RECEIVING EQUIPMENT IN THE PROPRIETARY SUPERVISING STATION

6.1 DESCRIPTION

1. The DTPW Transit Control Center Facility (CCF), which is the system Proprietary Monitoring Station is located downtown on the 5th floor of the Government Center building. The Proprietary Monitoring Station is dedicated to the Miami-Dade County Transit system and does not have any private subscribers.

This specification includes the furnishing, installation, connection, and testing of a PC or workstation based graphical facilities monitoring system; including Underwriters Laboratories (UL) listed application software and hardware complete and ready for operation with the Metromover building drawings loaded and ready to display all devices in the field including the trouble signal from the Uninterrupted Power Supplies installed in the SPCC 4th floor.

2. The basic system shall be Underwriters Laboratories (UL) listed for the following:
 - Control Units for Proprietary Fire Protective Signaling Systems,
3. The system shall comply with the requirements of NFPA-72 for Proprietary Signaling System Receiving Unit.
4. The system and associated equipment as specified herein shall be manufactured 100% by a single U.S. manufacturer (or division thereof) and be compatible with the existing Metrorail fire alarm equipment and added to the existing fire alarm network.
 - A. The manufacturer shall be of the highest caliber and quality with the latest hardware and software available.
 - B. An ISO 9001 certified company shall manufacture the system.

6.2 SCOPE

1. A PC based graphical facilities monitoring system shall be installed in accordance to the project specifications, drawings, and approved by DTPW.
2. The PC based graphical facilities monitoring system shall include one touch screen or LCD 23 inches wide screen monitor, one PC based graphical workstations, all input/output devices, network communications media, control equipment, auxiliary control devices, power supplies, and wire / Fiber Optic media as shown on the drawings and specified herein.
3. A supervised interface to NOTIFIER fire alarm control panels (or approved equal) and NOTIFIER-NET (or approved equal) shall be made available.
4. The system shall employ an advanced technology network to monitor and control various fire and other facility information over a network.

5. The system shall include a device that allows remote viewing of the ONYXWorks system or approved equal via the Miami Dade County intranet.
6. The system shall include a redundant interface for NOTI-FIRE-NET network or approved equal for survivability.
7. The system shall allow a mixture of different technologies and manufacturers' equipment to operate on the same network and provide the operator with a consistent look and operation for all monitored equipment.
8. The system shall support a variety of topologies and media and shall provide an industry standard open architecture transport layer protocol.
9. Using standard RS-232 ports on existing and future monitoring and control systems used by the facility, the system shall connect to and interpret status change data transmitted from the ports and provide graphic annunciation, control, history logging and reporting as specified herein.
10. The system shall be electrically supervised and monitor the integrity of all conductors.
11. The system shall provide E-Mail functions capability to send system information via an email server to an email account.
12. The system shall utilize Boolean logic for automatic event response.

6.3 SUBMITTALS

1. General

1. Two hard copies and two electronic copies of all submittals shall be provided to DTPW for review and approval. The Electronic copies shall be provided in the native format in which they are created and shall include application and version information on the application that was used (includes any CAD applications and/or other formats) to create all drawings and other electronic information that shall be submitted.
2. All references to manufacturer's model numbers and other pertinent information herein are intended to establish minimum standards of performance, function and quality.
3. Equivalent compatible equipment (UL listed) from other manufacturers may be considered as a substitution for the specified equipment as long as the minimum standards are met and they are approved by DTPW.
4. Substitute equipment proposed by the contractor as equal to the equipment specified herein shall meet or exceed the minimum specified standards and specifications of the specified equipment. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

2. Shop Drawings

1. Two hard copies, two electronic copies in CAD format, and two electronic copies in PDF format, with of all drawings shall be provided to DTPW for review and approval.
2. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
3. Wiring diagrams shall indicate all wiring for each item of equipment and the interconnections between the items of equipment.
4. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, battery calculations, conduit layouts and shall be approved by the AHJ.

3. Manuals

1. Submit simultaneously with the shop drawings & submittals one complete operating manual and technical data sheets. The submittals shall include hardcopies of the approved set of plans and one set of equipment installation and maintenance manuals for each location and shall also include the Initial Inspection Report and the Record of Completion. The contractor shall provide in electronic format every document provided in hardcopies. The contractor will provide all the software used to program the fire alarm panel/equipment, the original software installed in the Proprietary Monitoring Station, and backup copies for each panel/computers programming for every location.
2. Provide a clear and concise description of operation that gives in detail, the information required to properly operate the equipment and system.
3. Approvals shall be based on complete submissions of manuals together with shop drawings.

4. Certifications

1. Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer and factory trained on all equipment contained in the submittal. Include names and addresses in the certification.
2. Provide the manufacturer certification documentation for field technicians performing field final connections and system programming.

5. Applicable Publications

1. The publications listed below form a part of this specification. The publications are referenced in text by the basic designation only.

2. NFPA 70 – National Electric Code (NEC).
3. NFPA 72 – National Fire Alarm Code.
4. UL No. 50 – Cabinets and Boxes.
2. UL No. 294 – Access Control System Units.
3. UL No. 864 – Control Units for Fire Protective Signaling Systems.
4. UL No. 1076 – Proprietary Burglar Alarm Units and Systems.
5. UL No. 1481 – Power Supplies for Fire Protective Signaling Systems.
6. Local and State Building Codes.
7. All requirements of the Authority Having Jurisdiction (AHJ).

6. Approvals.

The system shall have the following listings:

- UL for Proprietary Supervising Station Alarm Systems

6.4 WORKSTATION PERFORMANCE

1. The network shall interface and report the individually monitored system's status via a user-friendly Graphical User Interface (GUI) based software workstation.
2. The software shall operate under Microsoft® Windows® 10 or newer, 64-bit OS as manufactured by Microsoft Corporation. The Contractor shall provide DTPW CDs with the original operating system as well as every other software operating on each PC and any software require to re-build the machines back up in case of a total equipment failure.
3. The GUI based software shall graphically represent each facility being monitored with floor plans and icons depicting the actual locations of the various systems; and / or sensors' locations as well as view the system events in text mode.
4. The software shall use a 1920 pixels X 1080 pixels GUI display capable of showing a large primary floor plan display, a key map representative of a larger view of the primary display and its relationship to the facility being monitored, the current operator, number of fire, supervisory, pre-alarms, troubles, and security events within the network as well as outstanding events and acknowledged events.
5. The software shall have the capacity of at least 1,000 screens / floor plans or as dictated by hard drive space and installed VIDEO and RAM memory for efficient operation.
6. The software shall have the ability to float and dock windows to support dual monitor display.
7. The workstation shall have the ability to support graphic printing of all data including graphical floor plans, system activity, history, and guidance text. A Windows® compatible printer shall be supported for the graphics and report printer options.

8. The workstation software shall permit automatic navigation to the screen containing an icon that represents the system or sensor in the event of an off-normal condition.
9. The system/sensor icon shall indicate the type of off-normal condition, flash, and change to the color associated with the off-normal condition (e.g., RED for ALARM and YELLOW for TROUBLE).
10. The software shall allow the attachment of text (TXT) files, sound (WAV) files, image (BMP) files, and video (AVI) files to each system or sensor icon allowing additional information to be provided to the system operator for responding to the off-normal condition. The software shall have the ability for an attachment for each major event type per device.
11. The software shall allow the importation of externally developed floor plans in Drawing Exchange Format (DXF), Windows Metafile (WMF), JPEG (JPG), Graphics Interchange Format (GIF) and Bitmap (BMP) format.
12. The software shall provide automatic navigation to the screen containing the icon of any system or sensor when an event is initially annunciated. In addition, operator navigation to screens containing outstanding events shall be accomplished by “clicking on” the event from either the acknowledged or unacknowledged event.
13. History Manager. The software shall contain a History Manager, which shall record all system events with a time and date stamp as well as the current system operator’s name. The History Manager shall provide the following functionality:
 - A. The system shall provide the ability to store all off-normal events experienced by the various sub-systems that are monitored by the system.
 - B. All events shall be recorded with a time and date stamp and the system operator shall be provided with the ability to log a pre-defined response or a custom comment for each off- normal event and have that comment stored in the history file with the time, date, and operator name.
 - C. Provide the ability to conduct searches and generate subsequent reports, based on all events for a single system / device address, a specific node, a specific type of off-normal condition and date range (mm/dd/yy to mm/dd/yy) or combinations of these search parameters. The number of entries in the history file that match the determined search criteria shall be displayed.
 - D. The History Manager shall automatically back-up the history file at 2,500,000 events.
 - E. It shall be possible to pre-select data fields for reporting and then saving the report as a template. It shall also be possible to schedule the pre-defined report to print at a designated time.

- F. The History Manager shall provide the operator with the ability to select the number of days or number of months to back-up history.
14. Alarm Monitoring. The system shall provide for continuous monitoring of all off-normal conditions regardless of the current activity displayed on the screen.
1. If an operator is viewing the history of a sub-system and an alarm condition should occur, the system shall automatically navigate to the graphic screen showing the area where the off-normal event is occurring.
 2. The system shall prioritize all off-normal events as defined by National Fire Alarm Code® 72 into the following categories: fire alarms, troubles, supervisory alarms, pre- alarms and security alarms.
 3. The system shall display a running count of all events by type in an alarm summary window. The alarm summary window shall include at least five counters, defaulted to Alarm, Pre-Alarm, Trouble, Security, and Supervisory events.
 4. The system shall show a running list of all unacknowledged events and acknowledged events and allow the system operator to acknowledge an event by “double-clicking” on that event in the Unacknowledged Events box. The Unacknowledged and Acknowledged Events boxes shall contain an abbreviated description of the off-normal condition.
 5. The details of the condition may be viewed by selecting event in the unacknowledged events box.
 6. The system shall allow the attachment of user-definable text files, image files, video files, and sound files to each device / system monitored (for every event state) in order to facilitate the operators and response personnel's response to the off-normal condition.
 7. The system shall record all events to the system's hard drive. A minimum of 2,500,000 events shall be stored.

15. Reports & Logs:

1. The system shall provide for the ability to generate reports based on system history.
2. The system shall allow the system operator to enter custom comments up to 255 characters for each event and have those comments recorded in the system's history file.

16. Boolean Logic.

1. An automated event response application shall be provided to automatically perform actions across the entire system based on network activity.
2. The event response application shall allow event responses (actions) based on predefined user conditions using simplified Boolean logic.
3. Actions shall be configured to be executed immediately or timed as required.

17. Control Aspects of System Software

1. The system shall have the ability to monitor and control the following NOTIFIER® Fire Alarm Panels using NOTI-FIRE-NET Network or approved equal, or Embedded Gateway interfaces: AFP-1010, AM2020, AFP-200, AFP-300/400, and ONYX® series control panels or approved equal.
2. The Gateway interfaces shall be constructed in a redundant configuration with two NFN Gateway computers monitoring the same nodes, the action to acknowledge any event on one PC shall acknowledge the same event on the other PC.
3. The system shall provide an NFN Gateway interface for direct connections to the Notifier Network or approved equal containing the following panels: AFP-1010, AM2020, AFP- 200, and the AFP-300/400 as well as ONYX® series control panels or approved equal.
4. The system shall provide an Embedded Gateway interface for remote connections of the Notifier Network or approved equal, containing the following panels via Ethernet (TCP/IP infrastructure): ONYX® series control panels or approved equal.
5. The NFN Gateway and the Embedded Gateway shall:
 - A. Serves as a bridge between an ONYXWorks® Workstation and a NFN network or approved equal, and it uses that Workstation as the primary reporting station for the NFN network or approved equal.
 - B. Translates a NFN network's panel and device data into data that can be interpreted by the ONYXWorks® Workstation software application or approved equal.
 - C. Monitors NFN networks using ARCNET network architecture.

6. The workstation shall provide configuration utilities for monitoring and control profiles. These profiles shall be user definable for distribution of monitoring and control allowances for operators per workstation.
7. Under no condition shall any sub-system be required to rely on the network for any data processing required to perform its particular function. Each individual sub-system shall be in effect “stand-alone” as to ensure its continued operation should a disruption in communication with the system be experienced. The software shall be password protected and provide for the definition of security profiles for operator access control.
8. The software shall contain provision for defining monitoring profiles of pre-selected Nodes for monitoring. This shall include provision for status types within the selected NODES.
9. The software shall support sending real-time off-normal event notifications to designated email addresses.
10. The software shall support live voice paging for mass notification to NOTIFIER voice evacuation system (or approved equal) over Internet Protocol (IP) is not required.
11. The PC based graphical facilities monitoring system shall include a Configuration Tool that provides the following features:
 - A. Allows operators the ability to create and edit graphics
 - B. Set up Gateway Connections and define their nodes
 - C. Set system operating mode
 - D. Add and edit objects on screens
 - E. Configure colors and sounds for the status classes

6.5 GENERAL

1. The product(s) shall be manufactured and provided by NOTIFIER® or an approved equal. Model numbers specified are those of NOTIFIER® or approved equal and are to establish the minimum standard of operating characteristics and quality.
2. Substitute equipment proposed as equal to the equipment specified herein shall meet or exceed the minimum specified standard. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, capabilities, performance, and quality of the specified equipment.

3. All equipment and components shall be new, and the manufacturer's current model. The materials, equipment, and devices shall be tested and listed by a nationally recognized approval agency listed in Section 8.1.5 – APPROVALS.

6.6 WORKSTATIONS

1. The system shall be an ONYX Works® Facilities Monitoring System or approved equal.
2. The system shall operate on no less than an IBM compatible UL listed Intel Quad Core processor operating at 2.4 GHz on the Microsoft® Windows® 10 or Windows 11, 64-bit OS platform.
3. The workstations shall have no less than 16 Gigabytes of RAM, Solid-State Hard Drive with no less than 240 Gigabytes of storage space, a minimum of 64 megabytes of video RAM, internal supervisory CPU watchdog board with audible annunciator, 100 Base-T Ethernet NIC card, a 104 key keyboard, and a mouse type pointing device with a center wheel.
4. The workstations shall come equipped with all necessary gateway modules to allow connection to the network(s) it monitors as standard equipment. All workstations shall support Ethernet communications and Fiber Optic data transmission.
5. Each workstation shall support dual SVGA monitors and be supplied with one 23 inches flat screen LCD monitor with integrated speakers and touch screen monitors.
6. The computer shall be capable of networking to additional computers using an existing ethernet network and these computers shall be capable of operating as workstations and/or gateways for local area or wide area ethernet networks.
7. Alarm annunciation shall appear on both workstations and may be silenced at either workstation. When any signal is acknowledged at one workstation automatically shall acknowledge the other workstation eliminating the need to acknowledge the same alarm or trouble on both workstations.
8. Only one workstation and operator shall be in command of the system for global alarm acknowledgement at any time.

6.7 PRINTERS

1. The contractor is required to provide a printer, it shall be located in the CCF/Metromover Central Control area and connected to the workstation for graphics and report printing. The Contractor shall confirm with DTPW the exact printer location. A soundproof enclosure shall be provided as detailed in 4.D below to minimize ambient noise in CCF. The printer will be enclosed in a new soundproof enclosure to minimize ambient noise in CCF room.
2. Model PRN-7 or approved equal, 80-column dot matrix tractor feed industrial grade printer for event and date-stamped printouts of off-normal events and status changes per workstation.
3. There are two existing printers (one connected to the Simplex TSW computers and the other one connected to the Notifier ONYX computers) that the Contractor shall relocate inside the CCF room and shall provide two new soundproof enclosure to minimize ambient noise in CCF room. The new printers' location shall be on the side of CCF video wall next to the office of Rail Traffic Controller Supervisors.
4. The printer's soundproof enclosures shall include the following:
 - A. Acoustical foam for superior sound deadening.
 - B. $\frac{3}{4}$ inch laminate covered high-density particleboard for strength.
 - C. Printer enclosure paper slots shall allow the paper to feed from the bottom & exit from the back.
 - D. Cooling fan and accessory outlet is standard to prevent your printer from overheating.
 - E. Clear Plexiglas cover for easy viewing of paper. Molded for a precise & snug fit.
 - F. Memory hinges hold Plexiglas lid in position to prevent unexpected closing.
 - G. Base board with 1/4" vibration pad.
 - H. ISO 9002 certified and UL recognized.

The Contractor shall confirm with DTPW the exact new printers' locations.

6.8 NOTIFIER® MONITORING NETWORK

1. The NOTIFIER® monitoring network or approved equal shall consist of a network based on proven peer-to-peer technology and support standard NCM cards and High Speed NCM cards.
2. The network consisting of the standard NCM cards shall have single-mode Fiber Optic cable, wire (twisted pair copper media in a style 4 or style 7 configuration), or combination wire/Fiber communications with support of up to 103 nodes with a data communications rate of 312,500 BPS.

3. Wire networks shall support 12 AWG, 1 Pair Shielded to 24 AWG, 4 Pair Unshielded following the manufacturer's guidelines.
4. Wire to Fiber conversions cards.
5. The network consisting of the High Speed NCM cards shall have the ability to use Fiber Optic cable (both multi-mode and single-mode), wire (twisted pair copper media in a style 4 or style 7 configuration), or combination wire/Fiber communications with support of up to 200 nodes with a data communications rate of 12MB (wire) or 100MB (Fiber).
6. Wire networks shall support 12 AWG, 1 Pair Shielded to 24 AWG, 4 Pair Unshielded following the manufacturer's guidelines.
7. Fiber Optic network interfaces shall support single-mode (9/125 μ m) Fiber with a maximum optical budget of 30dB. All Fiber connectors to the existing Fiber DTPW infrastructure shall be LC UPC.
8. Wire to Fiber conversions cards.

6.9 INTEGRATION NETWORK

1. Digital Alarm Communicator Receiver Network
 - A. The system shall provide a digital alarm communicator receiver (DACR) gateway with a RS-232 interface to the following digital alarm communicator receivers for wide area event reporting: Ademco 685, Silent Knight 9500 and 9800, Radionics D6600, and Teldat Visor Alarm.
 - B. Each gateway shall support up to 10 digital alarm communicator receivers for alarm and trouble information from reporting devices.
2. Workstations Network:
 - A. Computers shall be networked using Ethernet supporting the use of TCP/IP protocol for local area systems.
 - B. The network shall support multiple clients (e.g., workstations, configuration applications, and automated response applications), NFN Gateway, High Speed NFN Gateway, and (200) Embedded Gateways.
 - C. A UL listed Ethernet Hub shall be supplied for connection of multiple workstations, gateways, clients, and/or network printers.
 - D. System shall be UL listed to communicate between clients and gateways over a business computer network (shared IP).

6.10 GENERAL

All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturers' installation manuals

for all wiring & Fiber Optic diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the riser/connection station drawings for all specific system installation / termination / wiring data.

6.11 SYSTEM SETUP AND CONFIGURATION

1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. At a minimum, Field Technicians shall be factory certified.
2. The factory trained and certified technician shall install initial data and artwork at each workstation including:
 - A. Distribution of monitoring, control and security profiles as requested by DTPW.
 - B. Area diagrams, floor plans, key maps and screen titles shall be installed in each PC to show every addressable device in the field when an alarm, trouble or supervisory alarm signal to show the room and area of the location from where the signal is originating.
 - C. Auto-navigation criteria.
 - D. Guidance text as approved by DTPW. Each computer screen layouts shall resemble the existing Notifier Metrorail screen layouts.

6.12 FINAL INSPECTION

At the final inspection a factory trained representative of the manufacturer of the major equipment shall demonstrate that the system function properly in every respect. Approved set of Plans, manuals, software, and drawings installed in each PC shall be deliver to DTPW.

6.13 INSTRUCTION/TRAINING

Provide instruction as required for operating the system with a Power Point presentation which shall be used by DTPW to train new operator in the future. Hands on demonstrations of the operation for all system components and the entire system including user-level program changes and functions shall be provided. A factory trained and certified representative shall provide instructions for no less than three training sections to be scheduled by DTPW to train the Technician in the three shifts.

6.14 DOCUMENTATION

Prior to the final payment, the contractor must provide all documentation needed to obtain UL certification as a Proprietary Supervising Station Alarm System. Documentation shall include the Record of Completion and the Acceptance Test Report and all other documentation that is required to maintain a UL certification as a Proprietary Supervising Station Alarm System over the life of the system.

PART 7 - HALON FIRE EXTINGUISHING SYSTEM DESCRIPTION

7.1 GENERAL

1. Metromover Stations may have an existing Halon/FM 200 Extinguishing System. The system was designed to work independently with its own controller, smoke detectors etc.
2. The Contractor shall install three devices to monitor the existing Halon/FM 200 panels. The devices shall monitor trouble, alarm and agent release or second alarm.

PART 8 - FIRE DETECTION AND ALARM SYSTEM INTELLIGENT REPORTING FIRE DETECTION SYSTEM

8.1 GENERAL

8.1.1 RELATED SECTIONS

1. Section - Building Automation and Control.
2. Section - Fire Suppression.
3. Section - Fire Alarm Communications Horizontal Cabling.

8.1.2 DESCRIPTION:

1. The fire alarm system shall comply with requirements of NFPA-72 for Proprietary Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.
2. The fire alarm system shall be manufactured by an ISO 9001:2008 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.
3. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof). It's acceptable for peripheral devices to be manufactured outside of the U.S. by a division of the U.S. based parent company.
4. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.
5. The installing company shall employ factory trained technicians on site to guide the final checkout and to ensure the systems integrity.

8.1.3 Fire Emergency Voice Alarm Communications System

1. The Fire Emergency Voice Alarm Communications System (Voice Evacuation panel) shall comply with NFPA-72, Chapter 24 requirements.
2. The Voice Evacuation Control Panel shall be UL 864 listed (Fire Protective Signaling), UL 2572 listed (Mass Notification), ULC listed and Compliant with Unified Facilities Criteria UFC 4-021-01.
3. The installing company shall employ factory-certified technicians on site to guide the final check-out and to ensure the systems integrity.

8.1.4 APPLICABLE STANDARDS AND SPECIFICATIONS

1. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.
2. National Fire Protection Association (NFPA) - USA:
 - No. 12 Extinguishing Systems (low and high)
 - No. 12A Halon 1301 Extinguishing Systems
 - No. 13 Sprinkler Systems
 - No. 15 Water Spray Systems
 - No. 16 Foam / Water Deluge and Spray Systems
 - No. 17 Dry Chemical Extinguishing Systems
 - No. 17A Wet Chemical Extinguishing Systems
 - No. 2001 Clean Agent Extinguishing Systems
 - No. 72 National Fire Alarm Code
 - No. 70 National Electric Code
 - No. 90A Air Conditioning Systems
 - No. 101 Life Safety Code
3. Underwriters Laboratories Inc. (UL) - USA:
 - No. 268 Smoke Detectors for Fire Protective Signaling Systems
 - No. 864 Control Units for Fire Protective Signaling Systems
 - No. 2572 Mass Notification Systems
 - No. 217 Smoke Detectors, Single and Multiple Station
 - No. 228 Door Closers - Holders for Fire Protective Signaling Systems
 - No. 268A Smoke Detectors for Duct Applications
 - No. 521 Heat Detectors for Fire Protective Signaling Systems
 - No. 464 Audible Signaling Appliances
 - No. 38 Manually Actuated Signaling Boxes
 - No. 1481 Power Supplies for Fire Protective Signaling Systems
 - No. 346 Water flow Indicators for Fire Protective Signaling Systems
 - No. 1076 Control Units for Burglar Alarm Proprietary Protective Signaling Systems
 - No. 1971 Visual Notification Appliances

- No. 2017 Standard for General-Purpose Signaling Devices and Systems
 - No.60950 Safety of Information Technology Equipment
4. Local and State Building Codes.
 5. All requirements of the Authority Having Jurisdiction (AHJ).

8.1.5 APPROVALS

1. The system shall have proper listing and / or approval from the following nationally recognized or regional agencies:
 - UL Underwriters Laboratories, Inc.
 - ULC Underwriters Laboratories Canada
 - FM Factory Mutual
 - NYFD New York Fire Department
 - CSFM California State Fire Marshal
2. The system shall be approved for use in Marine applications by the following agencies.
 - A. United States Coast Guard
 - B. Lloyd's Register
 - C. American Bureau of Shipping
3. The system shall be certified for seismic applications in accordance with the International Building Code (IBC). For OSHPD applications in California the system shall be Pre-Approved for seismic applications. The basis for qualification of seismic approval shall be via shake table testing.

8.2 PRODUCTS

8.2.1 Fire Alarm Control Panel/Network Node

FACP or network node shall be a NOTIFIER Model NFS-320 or approved equal and shall contain a microprocessor based Central Processing Unit (CPU) and power supply in an economical space saving single board design. The CPU shall communicate with and control the following types of equipment used to provide a fully functioning and approved system:

1. Intelligent addressable smoke and thermal (heat) detectors,
2. Addressable modules
3. Printer
4. Annunciators
5. Other system-controlled devices

A FACP or network node NOTIFIER Model NFS2-640 or approved equal shall also be acceptable to DTPW.

8.2.2 System Capacity and General Operation

1. The FACP shall be capable of communicating on Noti-Fire-Net or approved equal, over a Local Area Network (LAN) or approved equal or Wide Area Network (WAN) or approved equal utilizing a peer-to-peer, inherently regenerative communication format and protocol. The network shall support communication speeds up to 100 Mb and support up to 200 panels / nodes per network.
2. Each network node shall provide or be capable of 318 intelligent / addressable devices per SLC loop.
3. The Notification Appliance Circuits shall be programmable to Synchronize with System Sensor, Gentex and Wheelock Notification Appliances.
4. The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch rubber keys for the field programming and control of the fire and gas detection system.
5. The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes. The contractor shall provide DTPW all the software and licenses for PC based programmed of the fire alarm equipment by DTPW personnel if the County chooses to do the programming.
6. The system shall allow the programming of any input to activate any output or group of outputs. Systems that have limited programming (such as general alarm), have complicated programming (such as a diode matrix), or require a laptop personal computer are not considered suitable substitutes.
7. The FACP shall support up to 20 logic equations, including "and," "or," and "not," or time delay equations to be used for advanced programming. Logic equations shall require the use of a PC with a software utility designed for programming.
8. The FACP or each network node shall provide the following features:
 - A. Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.
 - B. Detector sensitivity test, meeting requirements of NFPA-72.

- C. Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.
 - D. Up to nine sensitivity levels for alarm, selected by detector. The alarm level range shall be 0.5 to 2.35 percent per foot for photoelectric detectors, 0.5 to 2.5 percent per foot for ionization detectors, 0.5 to 4.0 percent per foot for acclimate detectors and 1.0 to 4.0 percent per foot for multi-criteria (IntelliQuad and IntelliQuad PLUS) detectors. The system shall also support sensitive advanced detection laser detectors with an alarm level range of .02 percent per foot to 2.0 percent per foot. The system shall also include up to nine levels of Pre-alarm, selected by detector, to indicate impending alarms to maintenance personnel.
 - E. The ability to display or print system reports.
Alarm verification, with counters and a trouble indication to alert maintenance personnel when a detector enters verification 20 times.
9. PAS presignal, meeting NFPA-72 requirements.
- 1. Self-optimizing pre-alarm for advanced fire warning, which allows each detector to learn its particular environment and set its prealarm level to just above normal peaks.
 - 2. Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.
 - 3. Control-by-time for non-fire operations, with holiday schedules.
 - 4. Day / night automatic adjustment of detector sensitivity.
 - 5. Device blink control for sleeping areas.
10. The FACP shall be capable of coding main panel node notification circuits in March Time (120 PPM), Temporal (NFPA-72 A-2-2.2.2), and California Code. Panel notification circuits (NAC 1, 2, 3 and 4) shall also support Two-Stage operation, Canadian Dual Stage (3 minutes) and Canadian Dual Stage (5 minutes). Two stage operation shall allow 20 Pulses per Minute (PPM) on alarm and 120 PPM after 5 minutes or when a second device activates. Canadian Dual stage is the same as Two-Stage except shall only switch to second stage by activation of Drill Switch 3 or 5 minute timer. The panel shall also provide a coding option that shall synchronize specific strobe lights designed to accept a specific "sync pulse."

11. For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download and shall have the ability to upgrade the manufacturers (FLASH) system code changes. This program shall also have a verification utility, which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA-72 requirements for testing after system modification.
 - A. This utility shall provide the ability to create and print NFPA style Test and Inspection reports
 - B. This utility shall provide the ability to create and print Device Maintenance information
12. The 80-character display keypad shall be an easy to use QWERTY type keypad, similar to a PC keyboard. This shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
13. Each FACP or FACP network node shall support one SLC. Each SLC interface shall provide power to and communicate with up to 159 intelligent detectors (ionization, photoelectric, multi-criteria, thermal, laser, fire/CO) and 159 intelligent modules (monitor, control, relay, releasing) for a loop capacity of 318 devices. SLC shall be capable of NFPA-72 Style 4, Style 6, or Style 7 (Class A or B) wiring.
14. CPU shall receive analog information from all intelligent detectors to be processed to determine whether normal, alarm, pre-alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information shall also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.
15. The fire alarm panels, network interfaces, emergency voice evacuation panels, and any other component of the Proprietary Supervising Station Alarm System shall the latest version systems components available (latest components cards) from the manufacturer at the time of the installation and shall have the latest software version available by the manufacturer at the time of the installation.

8.2.3 SERIAL INTERFACES

1. The system shall include two serial EIA-232 interfaces. Each interface shall be a means of connecting UL Listed Information Technology Equipment (ITE) peripherals.
2. EIA-232 interface shall be used to connect an UL-Listed 40 or 80 column printer. Printers that are not UL-Listed are not considered acceptable substitutes.
3. The system shall include an EIA-485 port for the serial connection of optional annunciators and remote LCD displays.
4. The EIA-485 interface may be used for network connection to a Proprietary-receiving unit.

8.2.4 SPECIFIC SYSTEM OPERATIONS

1. Smoke Detector Sensitivity Adjust: A means shall be provided for adjusting the sensitivity of any or all addressable intelligent detectors in the system from the system keypad. Sensitivity range shall be within the allowed UL window and have a minimum of 9 levels.
2. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification delay shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.
3. Point Disable: Any addressable device may be enabled or disabled through the system keypad.
4. Point Read: The system shall be able to display or print the following point status diagnostic functions:
 - A. Device status
 - B. Device type
 - C. Custom device label
 - D. View analog detector values
 - E. Device zone assignments
5. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that shall be capable of storing up to 800 events. Up to 200 events shall be dedicated to alarm and the remaining events are general purpose. Systems that do not have dedicated alarm storage, where events are overridden by non-alarm type events, are not

suitable substitutes. Each of these activations shall be stored and time and date stamped with the actual time of the activation. The contents of the history buffer may be manually reviewed, one event at a time, or printed in its entirety. The history buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable substitutes.

6. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent detector and shall analyze the detector responses over a period of time. If any intelligent detector in the system responds with a reading that is above or below normal limits, then the system shall enter the trouble mode, and the particular detector shall be annunciated on the system display and printed on the optional printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.
7. Pre-Alarm Function: The system shall provide two levels of pre-alarm warning to give advance notice of a possible fire situation. Both pre-alarm levels shall be fully field adjustable. The first level shall give an audible indication at the panel. The second level shall give an audible indication and may also activate control relays. The system shall also have the ability to activate local detector sounder bases at the pre-alarm level, to assist in avoiding nuisance alarms.
8. Software Zones: The FACP shall support 142 independent programmable software zones. Each panel should have at least one software zone programmed to disable all the water flow devices, one software zone to disable the fare collection equipment, one software to disable the relays sending the summarized alarms and troubles to the PLC, one software zone to disable the Halon/FM 200 release, one software zone to disable the air conditioning units shutdown, and one software zone to disable the network card to remove the node from the network.
9. Multiple agent releasing zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.
10. Mass Notification Override: The system shall be UL 2572 listed for Mass Notification and shall be capable, based on the Risk Analysis or as directed by the AHJ, of being programmed so that Mass Notification/Emergency Communications events take precedence over fire alarm events. The system shall mute any local announcements when the fire alarm or the Emergency Communication Systems are activated.

11. The fire alarm control panel shall include a walk test feature. It shall include the ability to test initiating device circuits and notification appliance circuits from the field without returning to the panel to reset the system. Operation shall be as follows:
 - A. Alarming an initiating device shall activate programmed outputs, which are selected to participate in walk test, for 3 seconds.
 - B. Introducing a trouble into the initiating device shall activate the programmed outputs for 8 seconds.
 - C. All devices tested in walk test shall be recorded in the history buffer.

8.2.5 CONVENTIONAL ASPIRATING DETECTION

1. An optional air aspiration detection system shall be available.
2. The aspirating system shall support multiple sensitivity settings.
3. The aspirating system shall operate from 24 VDC.
4. The aspirating system shall provide alarm and trouble relays used to activate a fire alarm control panel.

8.2.6 ASPIRATION SYSTEM INTERFACE

The system shall be capable of supporting Interface Modules for integrating VESDA Aspiration detectors into SLC loop of the fire alarm control panel. The Interface Module shall support up to 19 aspiration detectors, each SLC loop shall support one interface module.

8.2.7 HIGH LEVEL ASPIRATION SYSTEM INTERFACE

The system shall be capable of supporting a High Level Interface for VESDA Aspirating Detection Systems. The interface shall support up to 100 detectors and allow the fire alarm network to monitor and control events on the aspiration system.

8.2.8 COMMUNICATOR

1. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.
2. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the

ability for split reporting of panel events up to three different telephone numbers.

3. The UDACT shall be capable of transmitting events in 4+2, SIA, and Contact ID.
4. Communication shall include vital system status such as:
 - A. Independent Zone (Alarm, trouble, non-alarm, supervisory)
 - B. Independent Addressable Device Status
 - C. AC (Mains) Power Loss
 - D. Low Battery and Earth Fault
 - E. System Off Normal
 - F. 12 and 24 Hour Test Signal
 - G. Abnormal Test Signal (per UL requirements)
 - H. EIA-485 Communications Failure
 - I. Phone Line Failure
5. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 3,064 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
6. The UDACT shall be capable of being programmed with the same programming utility as the host FACP, and saved, edited and uploaded and downloaded using the utility. UDACT shall be capable of being programmed online or offline. The programming utility shall also support upgrading UDACT operating firmware.
7. The UDACT shall be capable of generating Central Station reports providing detailed programming information for each point along with the central station point address.
8. An IP or IP/GSM Communicator option shall be available to interface to the UDACT and be capable of transmitting signals over the internet/intranet or Cellular (GSM) network to a compatible receiver.

9. Smoke Control Annunciator
 - A. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan. To ensure compliance the units supplied shall meet the following UL categories:
 1. UUKL
 2. PAZX
 3. UDTZ
 4. QVAX
 5. The requirements of NFPA 90A, HVAC
 6. NFPA 92A & 92B, Smoke Control. The control System shall be field programmable for either 90A operation or 92A/B operation to allow for future use and system expansion.
 - B. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.
 - C. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physical switch position only are not acceptable.
 - D. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.
 - E. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic display.

8.2.9 GATEWAY & WEBSERVER

1. Common Alerting Protocol (CAP) Gateway: The system shall support an optional CAP Gateway (Common Alerting Protocol). The CAP Gateway translates fire system messages to industry standard CAP messages for integration with CAP-compliant clients. A CAP gateway shall be available from the fire alarm control panel manufacturer.

2. LEDSIGN Gateway: The system shall support an optional and proprietary LEDSIGN Gateway to interface to LED signs that shall automatically display emergency messages. The signs shall be capable of storing up to 100 messages that can be activated via system programming with the ability to be manually overridden. The Sign Gateway shall support up to 10 independent signs, each sign capable of playing an independent message. Multiple LEDSIGN Gateways can be used in network applications. An LEDSIGN gateway shall be available from the fire alarm control panel manufacturer.
3. BACnet Interface Gateway: The system shall be capable of being interfaced with BACnet compliant clients. A BACnet interface supporting BACnet/IP communication shall be available from the fire alarm control panel manufacturer.
4. MODbus Interface Gateway: The system shall be capable of being interfaced with MODbus compliant clients. A MODbus interface supporting MODbus/TCP communication shall be available from the fire alarm control panel manufacturer.
5. Noti-Fire-Net Gateway or approved equal: The system shall provide an IP based gateway to enable the panel or local Noti-Fire-Net or approved equal to be connected to the two ONYXWorks workstation or approved equal, via dedicated Fiber Optic or Intranet. This gateway shall also support the ability to integrate the system to an interactive firefighter's display. The Noti-Fire-Net Gateway or approved equal, shall be available from the fire alarm control manufacturer.
6. Webserver: The system shall provide a webserver allowing remote connection via the Internet or Intranet. Authorized users shall have the ability to view panel/network history, event status and device properties. The webserver shall also support sending event information via email or text to up to 50 registered users, the webserver shall be available from the fire alarm control panel manufacturer, installed, and operational by the conclusion of this project.
7. Web Portal Interface: The system shall supply an interfaced with a web portal to integrate with Inspection and Service Manager Utilities. The web portal and inspection and service manager utilities for the fire alarm control panels. The Contractor shall set up the Notifier eVance Services or approved equal for one client and shall provide the necessary licenses to operate the service at no extra cost to DTPW.

8.2.10 SYSTEM COMPONENTS & ADDRESSABLE DEVICES

1. General
 - A. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.

- B. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.
- C. Detectors shall be intelligent (analog) and addressable and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.
- D. Addressable smoke and thermal detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash green under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady red illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.
- E. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. The panel on a time-of-day basis shall automatically adjust sensitivity.
- F. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA-72.
- G. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a sounder base with a built-in (local) sounder rated at 85 DBA minimum, a relay base and an isolator base designed for Style 7 applications. The system shall also support an intelligent programmable sounder base, the programmable sounder base shall be capable of providing multiple tones based on programming and at a minimum shall be capable of providing a Temp-4 tone for CO (Carbon Monoxide) activation and a Temp-3 tone for fire activations and be capable of being synchronized with other programmable sounder bases and common area notification appliances; 85 DBA minimum.
- H. The detectors shall provide a test means whereby they shall simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
- I. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).

- J. Detectors shall operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.
 - K. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.
 - L. A magnetic test switch shall be provided to test detectors and modules. Detectors shall report an indication of an analog value reaching 100% of the alarm threshold.
 - M. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.
 - N. Addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status; NOTIFIER model # NBG-12LX or approved equal. They shall use a key operated test-reset lock and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key. The key used to reset the pull station shall be the same as the key used to lock and unlock the FACP door(s).
 - O. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
 - P. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.
2. Intelligent Photoelectric Smoke Detector: The intelligent photoelectric smoke detector shall be NOTIFIER model # FSP-851 or approved equal and shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
 3. Intelligent VIEW® Laser Photo Smoke Detector: The intelligent laser photo smoke detector shall be a spot type detector, NOTIFIER model # FSL-751 or approved equal that incorporates an extremely bright laser diode and an integral lens that focuses the light beam to a very small

volume near a receiving photo sensor. The scattering of smoke particles shall activate the photo sensor.

- A. The laser detector shall have conductive plastic so that dust accumulation is reduced significantly.
 - B. The intelligent laser photo detector shall have nine sensitivity levels and be sensitive to a minimum obscuration of 0.02 percent per foot.
 - C. The laser detector shall not require expensive conduit, special fittings or PVC pipe.
 - D. The intelligent laser photo detector shall support standard, relay, isolator and sounder detector bases.
 - E. The laser photo detector shall not require other cleaning requirements than those listed in NFPA-72. Replacement, refurbishment or specialized cleaning of the detector head shall not be required.
 - F. The laser photo detector shall include two bicolor LEDs that flash green in normal operation and turn on steady red in alarm.
4. Intelligent Ionization Smoke Detector: The intelligent ionization smoke detector shall be NOTIFIER model # FSI-851 or approved equal and shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.
5. Intelligent Multi Criteria Acclimating Detector: The intelligent multi-criteria Acclimate® Plus™ detector shall be an addressable device, NOTIFIER model # FAPT-851 or approved equal that is designed to monitor a minimum of photoelectric and thermal technologies in a single sensing device. The design shall include the ability to adapt to its environment by utilizing a built-in microprocessor to determine its environment and choose the appropriate sensing settings. The detector design shall allow a wide sensitivity window, no less than 1% to 4% per foot obscuration. This detector shall utilize advanced electronics that react to slow smoldering fires and thermal properties all within a single sensing device.
- A. The microprocessor design shall be capable of selecting the appropriate sensitivity levels based on the environment type it is in (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes (as walls are moved or as the occupancy changes).
 - B. The intelligent multi criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish

between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.

6. Intelligent Thermal Detectors: The intelligent thermal detectors shall be NOTIFIER FST- series or approved equal, addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. A high heat thermal detector rated at 190 degrees Fahrenheit shall also be available. The thermal detectors shall connect via two wires to the fire alarm control panel signaling line circuit.
7. Intelligent Duct Smoke Detector: The smoke detector housing shall accommodate an intelligent photoelectric detector that provides continuous analog monitoring and alarm verification from the panel. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system. The Intelligent Duct Smoke Detector shall support the installation of addressable photoelectric detector capable or being tested remotely. The Intelligent Duct Detector housing shall be model # DNR(W) and the remote test capable photoelectric smoke detector shall be NOTIFIER model # FSP-851R or approved equal.
8. IntelliQuad™ Advanced Multi-Criteria Intelligent Detector or approved equal.
 - A. Intelligent multi-criteria fire detector shall be a NOTIFIER model number FSC-851 or approved equal. Smoke detector shall be an addressable intelligent multi-criteria smoke detector. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical carbon monoxide (CO) sensor, a daylight-filtered infrared sensor and solid-state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.
 - B. The intelligent multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in an effort to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The product design shall be capable of selecting the appropriate sensitivity levels based on the environment type chosen by user in which it is installed (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes.

- C. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20% of the drift range is remaining, when 100% of drift range is used, and when there is a chamber fault to show unit requires maintenance.
- D. The detector shall indicate CO trouble conditions including 6 months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following:
1. Low chamber trouble
 2. Thermistor trouble
 3. CO self-test failure
 4. IR self-test failure
 5. Freeze warning
- E. The detectors shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detectors shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 99 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.
- F. The detectors shall provide a test means whereby they shall simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel. There are three test methods: functional magnet, smoke entry aerosol, or direct heat method.
- G. The detectors shall provide two LEDs to provide 360° visibility. The LEDs are placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED, sounder base, and / or relay base (optional accessories). The external remote alarm can be interconnected to other sounder or relay bases for activating all devices in a space via a single alarming unit.
- H. Two LEDs on the sensor are controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, can cause

the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.

- I. The detectors shall be ceiling-mount and shall be plug-in mounted into a twist-lock base. These detectors shall be constructed of off-white UV resistant polymer and shall be detachable from the mounting base to simplify installation, service and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. Mounting base shall be mounted on junction box which is at least 1.5 inches (3.81 cm) deep. Mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
 - A. 4.0 inches (10.16 cm) square box with and without plaster ring.
 - B. 4.0 inches (10.16 cm) octagonal box.
 - C. 3.5 inches (8.89 cm) octagonal box.
 - D. Single-gang box.
- J. Meets Agency Standards
 - A. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
 - B. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
 - C. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling
- 9. IntelliQuad™ PLUS Advanced Multi-Criteria Intelligent Fire/CO Detector or approved equal.
 - A. Advanced Multi-Criteria Fire/CO detector shall be NOTIFIER model # FCO-851 or approved equal and shall be an addressable advanced multi-criteria smoke detector with a separate signal for carbon monoxide (CO) detection per UL 2075 standards.
 - B. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical CO sensor, a daylight-filtered infrared (IR) sensor and solid-state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.
 - C. The advanced multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in order to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The detector shall be capable of selecting the appropriate sensitivity levels based on the

environment type (office, manufacturing, kitchen, etc.) in which it is installed, and then have the ability to automatically change the setting as the environment changes.

- D. The CO detector component shall be capable of a functional gas test using a canned test agent to test the functionality of the CO sensing cell.
- E. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20 percent of the drift range is remaining, when 100 percent of drift range is used, and when there is a chamber fault to show the unit requires maintenance.
- F. The detector shall indicate CO trouble conditions, including six months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following: low chamber trouble, thermistor trouble, CO self-test failure, IR self-test failure, and freeze warning.
- G. The detector shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detector shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 159 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.
- H. The detector shall provide a test means whereby it shall simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel. There shall be four test methods: functional magnet, smoke entry aerosol, carbon monoxide aerosol or direct heat method.
- I. The detector shall provide two LEDs to provide 360° visibility. The LEDs shall be placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED. The detector shall be capable of connecting to a sounder base that provides both temporal 3 and temporal 4 patterns for fire and CO alarm.

- J. Two LEDs on the sensor shall be controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, shall cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.
 - K. The detector shall be plug-in mounted into a twist-lock base. The detector shall be constructed of off-white, UV-resistant polymer and shall be detachable from the mounting base to simplify installation, service and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. The mounting base shall be mounted on a junction box that is at least 1.5 inches (3.81 cm) deep. The mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
 - 1. 4.0 inches (10.16 cm) square box with and without plaster ring.
 - 2. 4.0 inches (10.16 cm) octagonal box.
 - 3. 3.5 inches (8.89 cm) octagonal box.
 - 4. Single-gang box.
 - 5. Double-gang box
 - L. Meets Agency Standards
 - 1. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
 - 2. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
 - 3. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling
 - 4. UL 2075 – Gas and Vapor Detector and Sensors – Systems Connected
10. Intelligent Addressable Aspiration Detector: The intelligent aspiration detector shall be NOTIFIER model # FSA-8000 or approved equal, an addressable aspiration detector that communicates directly with the fire alarm control panel via the SLC communication protocol, no modules or high-level interfaces shall be required. The fire alarm control panel shall support up to thirty-one intelligent aspiration detectors per SLC loop. The aspiration detector shall have dual source (blue LED and infra-red laser) optical smoke detection for a wide range of fire detection with enhanced immunity to nuisance particulates. The FACP shall be capable of monitoring and annunciating up to five smoke event thresholds and eleven trouble conditions. Each event threshold shall be capable of being assigned a discrete type ID at the FACP.
11. Intelligent Addressable Reflected Beam Detector: The intelligent single-ended reflected beam smoke detector shall connect with two wires to the fire alarm control panel signaling line circuit (SLC). The detectors shall consist of a transmitter/receiver unit and a reflector and shall send

data to the panel representing the analog level of smoke density. The detector shall be capable of being tested remotely via a keyswitch; NOTIFIER model # FSB-200 or approved equal. Model # FSB-200S shall be equipped with an integral sensitivity test feature.

12. Addressable Dry Contact Monitor Module

- A. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs. The addressable monitor module shall be NOTIFIER model # FMM-1 (Class A or B) or FMM-101 (Class B) or approved equal.
- B. The IDC zone shall be suitable for Style D/Class A or Style B/Class B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
- C. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
- D. For multiple dry contact monitoring, a module shall be available that provides 10 Style B or 5 Style D input circuits; NOTIFIER model # XP10-M or approved equal.

13. Two Wire Detector Monitor Module

- A. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (a N.O. dry contact device); and shall be NOTIFIER model # FZM-1 or approved equal.
- B. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
- C. For multiple 2-wire smoke detector circuit monitoring a module shall be available that provides 6 Style B/Class A or 3 Style D/Class B input circuits; NOTIFIER model # XP6- MA or approved equal.

14. Addressable Control Module

- A. Addressable control modules shall be provided to supervise and control the operation of one conventional circuit of compatible Notification Appliances, 24 VDC powered, polarized audio/visual notification appliances and shall be NOTIFIER model # FCM-1 or approved equal.
- B. The control module NAC may be wired for Style Z or Style Y (Class A/B) with a current rating of 2 Amps for Style Z and 3 Amps for Style Y.
- C. Audio/visual power shall be provided by a separate supervised circuit from the main fire alarm control panel or from a supervised UL listed remote supply.
- D. For multiple circuit control a module shall be available that provides 6 Style Y (Class B) or 3 Style Z (Class A) control circuits and shall be NOTIFIER model # XP6-C or approved equal.

15. Addressable Releasing Control Module

- A. An addressable FlashScan releasing module shall be available to supervise and control compatible releasing agent solenoids and shall be NOTIFIER model # FCM-1-REL or approved equal.
- B. The module shall operate on a redundant protocol for added protection.
- C. The module shall be configurable for Style Z or Style Y (Class A/B) and support one 24 volt or two 12-volt solenoids.

16. Addressable Relay Module:

- Addressable Relay Modules shall be available for HVAC control and other network building functions; NOTIFIER model # FRM-1 or approved equal.
- The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.
- The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.
- For multiple relay control a module shall be available that provides 6 programmable Form-C relays; NOTIFIER model # XP6-R or approved equal.

17. Addressable Two-In / Two-Out Monitor/Relay Module:

An addressable Two-In / Two-Out module shall be available and shall be NOTIFIER model # FDRM-1 or approved equal.

The two-in/two-out module shall provide two Class B/Style B dry-contact input circuits and two independent Form-C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

18. Isolator Module: Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building and shall be NOTIFIER model # ISO-X or approved equal.

- A. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
- B. The isolator module shall not require address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
- C. The isolator module shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

PART 9 – FIRE EMERGENCY VOICE COMMUNICATION PANEL

9.1 GENERAL

1. The Fire Emergency Voice Alarm Communications System shall be a FIRELITE Emergency Voice Evacuation Panel, or a NOTIFIER FirstCommand NFC-50/100, or a NOTIFIER DVC Digital Voice Command, or approved equal, and shall contain a microprocessor-based Central Processing Unit (CPU). The CPU shall distribute and control emergency voice messages over the speaker circuits. The Voice Evacuation Control Panel shall be capable to have two input microphones: one by the Voice Evacuation Control Panel and the second by the annunciator panel if required by the AHJ.
2. The Fire Emergency Voice Alarm Communications System shall be UL 864 listed (Fire Protective Signaling), UL 2572 listed (Mass Notification), ULC listed and Compliant with Unified Facilities Criteria UFC 4-021-01.
3. The system shall provide the capability to interface to distributed voice evacuation control panels from the same manufacturer.
4. The Fire Emergency Voice Alarm Communications System shall be activated by the Fire Alarm Control Panel via a direct serial connection allowing the Fire Alarm Control panel to control speaker circuit(s) and message activation.
5. Shall have as minimum requirements:
 - A. Integral 50 Watt, 25 Vrms audio amplifier with optional converter for 70.7-volt systems. The system shall be expandable to 100 watts total if the installation requires additional power via the insertion of an additional 50-watt audio amplifier module into the same cabinet.
 - B. Speaker circuit shall be wired Class B.
6. Integral Digital Message Generator with a memory capacity for up to fourteen messages, each message shall be up 60 seconds long. These messages shall be field programmable without the use of additional equipment. One of the messages shall announce the “fire alarm test is being conducted at this building” and another message shall announce “the test has concluded”.
7. Built in alert tone generators with steady, slow whoop, high/low and chime tone field programmable.
8. The Voice Control Panel shall be capable of detecting and annunciating the following conditions: Loss of Power (AC and DC), System Trouble, Ground Fault, Alarm, Microphone Trouble, Message Generator Trouble, Tone Generator Trouble, and Amplifier Fault.
9. The Voice Control Panel shall be fully supervised including microphone, amplifier output, message generator, speaker wiring, and tone generation. When the microphone or microphones are active, all the other building announcements shall be muted.

10. Speaker outputs shall be fully power-limited and shall comply with the voice intelligibility requirements detailed in NFPA-72.
11. Amplifiers shall be supplied power independently to eliminate a short on one circuit from affecting other circuits.
12. The Voice Control Panel shall provide full supervision on both active (alarm or music) and standby conditions.
13. Optional distributed amplifier units shall be available to increase total system capacity to up to 24 speaker circuits and up to 1,100 watts of power.

9.2 A. Speakers

1. The Speaker appliance shall be System Sensor SpectrAlert Advance Speaker or approved equal. The speaker shall be listed to UL 1480 for Fire Protective Signaling Systems. It shall be a dual-voltage transformer speaker capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.
2. A universal mounting plate shall be used for mounting ceiling and wall speaker products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate.
3. Speakers shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker design shall isolate speaker components to reduce ground fault incidents.
4. The speaker shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction.
5. All notification appliances shall be backward compatible.

Ceiling Speaker	Wall Speaker
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9.3 B. Speaker Strobes

1. The Speaker Strobe appliance shall be System Sensor SpectrAlert Advance Speaker Strobe or approved equal. The speaker strobe shall be listed to UL 1971 and UL 1480 and be approved for fire protective signaling systems. It shall be a dual-voltage transformer speaker strobe capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.
2. A universal mounting plate shall be used for mounting ceiling and wall speaker strobe products. The notification appliance circuit and amplifier wiring shall

terminate at the universal mounting plate. Also, SpectrAlert Advance speaker strobes and the Sync•Circuit™ Module MDL3 accessory or approved equal, if used, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts (includes fire alarm panels with built in sync). When used with the Sync•Circuit Module MDL3, 12-volt rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 16.5 to 33 volts. If the notification appliances are not UL 9th edition listed with the corresponding panel or power supply being used, then refer to the compatibility listing of the panel to determine maximum devices on a circuit.

3. Speaker strobes shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker strobe design shall isolate speaker components to reduce ground fault incidents.
4. The speaker strobe shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, 110, or 115 when operating on 24V. The strobe shall comply with NFPA-72 and the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range.
5. All notification appliances shall be backward compatible.

Ceiling Speaker

Wall Speaker

6. Strobe lights shall meet the requirements of the ADA, UL Standard 1971 and be fully synchronized.

9.4 TEST

The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA-72.

1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, insulation, and required circuits resistance.
2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
3. Verify activation of all water flow switches.
4. Open initiating device circuits and verify that the trouble signal actuates.
5. Open and short signaling line circuits and verify that the trouble signal actuates.
6. Open and short notification appliance circuits and verify that trouble signal actuates.
7. Ground all circuits and verify response of trouble signals.
8. Check presence and audibility of tone at all alarm notification devices.
9. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
10. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
11. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.
12. When the system is equipped with a Voice Evacuation Control panel, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying voice messages.

9.5 FINAL INSPECTION

1. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.
2. The Engineer of Record shall provide a "Sequence of Operation" included in the final approved set of plans. The final approved set of plans shall represent the exact number and locations of every device in the complete system.
3. The Contractor shall test and document every signal is received at the FACP is also displayed at the computers located at CCF/Metromover Central Control.
4. After the final inspections have been completed, the Contractor shall delivery to DTPW all the installation and Maintenance manuals, a copy of the each panel program, the approved set of plans with the correct amount and location of every device in the system, the Record of Completion, the Initial Inspection Test results, a list of every component showing manufacturer part numbers, quantities and serial numbers. All these documents shall be delivered in hardcopy and in electronic format. The electronic documents shall be provided in the native format in which they were created and shall include the name of application used to create the drawings and version information on the application (includes any CAD applications and/or other applications or programs) used to create all drawings and other electronic information that shall be submitted.



DEPARTMENT OF TRANSPORTATION AND PUBLIC
WORKS

Metromover Fire Panel Upgrade
APPENDIX B - TECHNICAL DIVISIONS

APPENDIX B

Technical Divisions



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SECTION 011000
GENERAL SUMMARY OF WORK

011000-1 PART 1: GENERAL
011000-1-1 DESCRIPTION

011000-1-2 SUMMARY OF WORK

- A. The Contractor shall install new Fire Alarm System equipment as defined in this document for the purposes of improving upon the existing or nonexistent systems.
- B. The Contractor shall ensure that the existing Systems stay operational until all new systems have been tested and commissioned and accepted. The Contractor shall ensure that any Work being performed by the Contractor does not impair in any way the existing Metromover Systems. The Contractor is responsible for any such impairment and shall correct the impaired Metromover System to maintain it in a state of good working order and operational and functional readiness. Since this equipment is vital to the operation of the transit service, the Contractor shall only use tested and approved equipment means and methods. The Contractor is also reminded that space is limited in the rooms where the work is to be carried out and other locations where equipment is to be installed, and the installation and operation of the existing and new systems must all be accommodated within this restricted space.

The intent of this solicitation is to provide a new Fire Alarm System in the Metromover Stations as provided in the technical requirements document.

The contractor must comply with the following requirements:

- Obtain all required permits to perform the work as defined in the contract documents.
- Furnish new Fire Alarm equipment in each of the Metromover stations and the Joseph P. Bryant maintenance facility.
- Install equipment provided to ensure compliance with all applicable local building and Miami-Dade Fire Department requirements.
- All Fire Panels shall be connected in a ring topology using existing single-mode fiber optic cable.
- Furnish and install workstations in the Metromover Central Control facility in the Stephen P. Clark building.
- Furnish and install Uninterruptable Power Supplies as required for an Underwriters Lab (UL) listing of the equipment that is provided.
- Perform integration tests on the entire system after all equipment has been installed.
- Commission the entire system prior to final testing and acceptance by the Department of Transportation and Public Works.
- Close all open permits with all Authorities having Jurisdiction over the Fire Alarm System.
- Close all permits before the end of the project.
- Ensure that the new Fire Alarm system is UL listed for all stations and other locations where the work is performed for self-monitoring before the end of the contract.
- Provide and perform all equipment and work required to ensure that the new Fire Alarm system meets all safety and operation requirements to permit closures and all other AHJ requirements that will enable DTPW to accept the new Fire Alarm system to provide the protection that it designed and intended to provide.

011000-1-3 APPLICABLE CODES, STANDARDS, AND ORDINANCES

The latest edition of all standards shall apply, unless otherwise indicated by DTPW. All Work hereunder shall be performed in accordance with the following and any other applicable Codes, Standards and Ordinances not referenced or mentioned in APPENDIX A or APPENDIX B:



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- A. Contractor shall adhere and conform to DTPW's Adjacent Construction Safety and Construction Safety Manual 2-07.
- B. Contractor shall adhere and conform to DTPW's Public Transportation Agency Safety Plan (PTASP). The Contractor shall submit a Site-Specific Safety and Certification Plan as required.
- C. Contractor shall conform to all applicable Federal, State, and County regulations, ordinances and any other controlling legal rules, regulations, or requirements that govern the work being performed.
- D. Contractor shall conform to the requirements of the Local Authority or Authorities Having Jurisdiction for all Mechanical, Electrical and all other work associated with this project.
- E. Contractor is responsible for obtaining current versions of each referenced standard prior to commencement of work.
- F. Work shall be performed in accordance with applicable portions of the Florida Building Code, DTPW construction, and safety manuals and local ordinance requirements.
- G. Electrical installation work shall comply with the standards of the National Electric Code (NEC) and the National Fire Protection Agency (NEC NFPA 70-2011).
- H. Other guiding standards to be adhered to:
 - a. ADA (Americans with Disabilities Act)
 - b. EIA/TIA (Electrical Industries Association/Telecommunications Industries Association)
 - c. ANSI (American National Standards Institute)
 - d. Factory Mutual (FM)
 - e. IEEE (Institute of Electrical and Electronics Engineers)
 - f. NECA/FOA 301-2009, Standard for Installing and Testing Fiber Optic cables
 - g. NECA 303-2005, Standard for Installing Closed-Circuit Television (CCTV)
 - h. NECA 100-2006, Symbols for Electrical Construction Drawings
 - i. NECA 111-2003, Standard for Installing Non-Metallic Raceways (RNC,ENT,LFNC) (ANSI)
 - j. NECA/BICSI 568-2006, Standard for Installing Commercial Building Telecommunications Cabling
 - k. NECA 331-2009, Standard for Building and Service Entrance Grounding and Bonding
 - l. NECA 1-2006, Standard Practices for Good Workmanship in Electrical Contracting (ANSI)
 - m. NECA/NEMA 105-2007, Recommended Practice for Installing Metal Cable Tray Systems (ANSI)
 - n. NECA 400-2007, Recommended Practice for Installing and Maintaining Switchboards (ANSI)
 - o. NECA 407-2009, Standard for Installing and Maintaining Panelboards (ANSI)
 - p. NECA 200-2010, Standard for Installing and Maintaining Temporary Power at Construction Sites (ANSI)
 - q. NECA/NEMA 605-2005, Recommended Practice for Installing Underground Nonmetallic Utility Duct (ANSI)
 - r. NECA/NACMA 120-2006, Standard for Installing Armored Cable (AC) and Metal-Clad



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Cable (MC)

- s. Codes and Regulations: Unless otherwise required herein, the Contractor's means and methods shall be governed by current enforceable applicable local, state, and national codes and the following guides, publications, manuals, and specifications. The more stringent requirements shall take precedence:
 - 1. American National Standards Institute (ANSI)
 - 2. National Electrical Code (NEC)
 - 3. National Fire Protection Association (NFPA)
 - 4. Occupation Safety and Health Administration (OSHA)
 - 5. Underwriters' Laboratories, Inc. (UL)
 - 6. Federal Specifications (FS)
 - 7. American Society for Testing and Materials (ASTM)
 - 8. Instrument Society of America (ISA)
 - 9. Fire Prevention and Safety Code as applicable
 - 10. Federal Occupational Safety and Health Administration (OSHA) standards
 - 11. Public Works Manual as applicable
 - 12. Local codes and ordinances

011000-1-4-1 DESCRIPTION OF THE WORK: ENGINEERING CRITERIA

- A. DTPW's submittal scope provides general information and options, as well as some specific requirements that reflect various operational or performance requirements applicable to the submittal. The affected systems and subsystems include the following:
 - 1. Existing Metromover Fire Alarm System
 - 2. Station Electrical Systems
- B. These criteria are intended to promote uniformity of a solution, and to standardize the type of equipment used and its location throughout the system. The Summary of Work reflects a standard of quality that is consistent with the activity of the Metromover System, and the submittal scope translates the above intent into practical statements that the Contractor shall use as a basis for meeting contract requirements, documentation, and supervision of the implementation and commissioning stages of the project.
- C. In addition to the above requirements, there are interrelated issues that must also be considered. These include the following:
 - Functionality – how well the overall integrated system meets the defined requirements:
 - 1. Contractor's approach and implementation
 - 2. Maintainability and reliability
 - 3. Spare capacity
 - 4. Standardizations of the following:
 - 5. Components and equipment
 - 6. DTPW operating procedures and practices



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- D. The Contractor shall ensure that an evaluation of project concepts and overall documentation are coordinated with and adhere to DTPW Operational Guidelines. This document is not intended to restrict the ingenuity of the Contractor during the final implementation and construction process. Contractors are encouraged to consider improved solutions that build on the framework and standards established in this document.

011000-1-4-2 IMPLEMENTATION PHASES

- A. The project shall be implemented within the period of time as defined in the RPQ.

011000-1-4-3 INTERFACE DEFINITION AND CONTROL

The proposed solution and construction of all the subsystem elements shall entail close coordination with several other system elements. In every case of a system element interface, that interface shall be defined, controlled, and changed only by DTPW. Subsystem interfaces within each element subsystem shall be defined and controlled in the submittal process by DTPW.

011000-1-4-4 MECHANICAL

- A. Corrosion Control: Particular attention shall be paid to the presence of electrically dissimilar metals that are in contact with a conductive fluid. Where the interconnection of different metals is necessary, they shall be electrically isolated using approved dielectric materials. Material selections shall be submitted to DTPW for approval. Mechanical systems shall be protected using approved methods.
- B. Access for Inspection: All equipment that may be subject to corrosion, or that may require periodic maintenance, shall allow for reasonable access for inspection.

**011000-2 PART 2: PRODUCTS
EQUIPMENT, SPARE PARTS, AND SPECIAL TOOLS**

The Contractor shall ensure that an adequate supply of on-site spare parts for new and upgraded systems and equipment will be available to keep the new systems and equipment operational. During the warranty and maintenance period, the Contractor shall provide a working inventory of parts at the contracted inventory level. At the end of the warranty period, the Contractor shall provide DTPW with the contracted inventory of spare parts for the continued maintenance of the systems.

1. The need for spare parts shall be assessed by the Contractor and recommendations provided subject to approval of DTPW. It is preferred that spares kept on site are kept at a minimum. The intention is to avoid purchasing and storing materials if these can be made available as needed, with spares only being paid for when required.
2. The Contractor shall provide five sets of any special tools, devices, fixtures, monitoring equipment, and other devices that are required to monitor, maintain, and adjust all systems and equipment provided herein. The Contractor shall have access to two sets of this equipment for the warranty and maintenance period. Upon completion of the warranty period, the tools shall be returned to DTPW after being calibrated and certified as being in "like new" condition.
3. Replacement Parts: The Contractor shall provide evidence that replacement spare parts are available for ten years after final acceptance and completion of the system installation. Proof may include information from the equipment manufacturers regarding the timeline for the end of OEM support of the equipment that is furnished under the contract.
4. A warranty officer shall be identified to whom all warranty claims shall be submitted by DTPW. The warranty officer shall be responsible for coordinating all aspects of warranty claims as defined in SECTION 011000-2-1, 2.
5. START OF WARRANTY – Warranty of all new Systems shall begin upon final acceptance.

**011000-3 PART 3: EXECUTION OF WORK
011000-3-1 GENERAL**



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- A.** The Contractor shall provide the following as applicable: solution and analysis, preparation of documentation, all manufactured equipment, and other components, materials and supplies, construction services, fabrication, shipping/receiving, expediting, storing of materials during construction, demolition, removal and disposal services, hardware and software, installation, integration, debugging, testing, training of personnel, project management, quality assurance, and demonstration required to deliver an operable, safe, and reliable operating system in conformance with all of the requirements of this Agreement. The Contractor shall be responsible for identifying and rectifying, with the County, any conflicting requirements within the Agreement and with any referenced codes, standards, ordinances, rules, or regulations.

B. COOPERATION WITH OTHER CONTRACTORS

1. In addition to complying with the requirements of the Contract, the Contractor shall cooperate with other contractors on other ongoing projects or in conjunction with other contractors performing work under this contract. Contracts for concurrent work or scheduled during the period of this Contract may not yet be identified but will be provided by DTPW at a reasonable time during the execution of the Work.
2. Since other contracts may be prosecuted concurrently with the work performed under this contract, interface coordination is required.
3. The Contractor must coordinate with DTPW for access, deliveries of materials, and designation of assigned work areas.

C. CONTRACTOR REPRESENTATIVES

Within five days after receiving the NTP, the Contractor shall designate in writing the name, official mailing address, and telephone number of the Contractor's representative having complete authority to represent and to act for the Contractor and the subcontractors.

D. WORK RESTRICTIONS

The Contractor shall adhere to the following requirements for scheduling access, and work schedules should reflect the following general and location-specific access restrictions:

1. Contractor access to facilities is to be coordinated with DTPW's Project Manager two weeks in advance.
2. The existing Fire Alarm System shall operate in parallel with the existing Fire Alarm system until the new system has been tested and is fully accepted.
3. Weekly meetings are to be held to coordinate Contractor's work areas, schedule DTPW escorts, plan track access, and schedule power outages or any other variances of normal service activities.
4. Project work schedules require the following:
 - I. A two-week notice is required for access to locations that impact Metromover operations and safety aspects.
 - II. DTPW escorts are required to work while on DTPW property.
 - III. Careful and cautious coordination is required for work to be performed in and around the Metromover System.
 - IV. The Contractor shall supply software, equipment, and the Migration Plan. New software and hardware shall be verified before installation into DTPW's production (live) systems. Such software and hardware cutovers will be restricted to non-revenue hours (1 am to 4 am).

DTPW Project Manager or a designee will determine the procedures that will be followed when retiring equipment.



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- E. WORK SEQUENCE:** The Contractor shall sequence all implementation and systems work in phases to accommodate DTPW's operating and occupancy requirements during the implementation period. Work must also be performed in accordance with the approved Migration Plan and the Staging Plan. The construction schedule (project schedule) is to be coordinated with the DTPW Engineer.



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A. FINAL REVIEW

100 Percent Submittal: The Contractor shall provide a final submittal after review and approval of preliminary review by DTPW. The submittal shall provide the features, functions, and detailed technical specifications of the system at the 100 percent completion level. The final submittal documentation provided shall include the documentation specified in APPENDIX B, SECTION 013300. The final submittal shall proceed in the following sequence and include the specified steps:

1. Progress meetings
2. Issuance of associated documents
3. Completed final submittal review session with DTPW
4. DTPW internal review
5. DTPW comments to Contractor
6. Comment review and updated final submittal documents
7. Approval of final submittal documents by DTPW

011000-3-2-1 SYSTEMS SUBMITTAL DOCUMENTATION:

The Contractor shall provide systems submittal documentation to DTPW in accordance with the approved Project Schedule and Migration Plan. At a minimum, all submittals shall contain the following:

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011000-3-2-2 SYSTEMS DOCUMENTATION

- A. Executive Summary: A summary of documentation material provided in all deliverables, an overview of the entire system, describing all major components (system and subsystems) of the project, and special features of the project that address performance, expansion, system security, ease of use, and maintainability.
- B. Submittal Overview: A description of the overall submittal. This shall include the advantages and disadvantages of the submittal, and the justification of why the submittal is the best implementation to meet DTPW's requirements.
- C. System Architecture: A system-level graphic representation of all hardware components and their interconnections. This shall include identification of the interfaces between all existing and proposed devices and systems.
System Processing Narratives: Detailed narrative descriptions of each major processing activity to be performed by the project. The narratives should describe how all equipment interacts in an integrated environment to satisfy the functional requirements of the project objectives. These narratives shall be clear and comprehensive explanations of how each of DTPW's functional requirements is supported by the project.
- D. Security Features: Description of all physical and logical system security features, computer-controlled and physical, designed into the project to control and monitor the system and its components. In addition, describe all equipment, features, and components that protect the equipment used in the project from physical hazards such as fire, flood, wind, electrical power surges, brownouts, blackouts and hackers and other unauthorized system intrusions or alterations.
- E. System Reliability: An analysis of system reliability based on the mean-time between failures (MTBF) and mean time to repair (MTTR) for each major component and subsystem, including calculations, methods, and supporting documentation. Where the configuration requires redundant or high-availability components or equipment, the Contractor shall also provide a description of the hardware and software features incorporated to meet the requirements for high availability in the event of the failure of one or more system components.
- F. Failure Handling and Recovery: A failure/recovery matrix showing the types of failures and describing the process of reporting these failures (including whether it is automatic or semiautomatic). This shall include descriptions of system diagnostics to detect and isolate failures.

011000-3-2-3 EQUIPMENT SOFTWARE DOCUMENTATION

The Contractor shall provide:

- A. Software Architecture: System-level illustrations, such as flowcharts and block diagrams illustrating the overall structure of the project's systems. These diagrams shall include the major processing functions performed by each subsystem or major module, their interaction with each other, and their interaction with the users of those systems.
- B. Where applicable, Database and Data Management Structure: A description of the overall organization of the files and of any database to be used in the project. This description shall include full details regarding any third-party database products, such as version, release, functional characteristics, operational requirements, and any other relevant characteristics of the products.
- C. Operator Interface: Operator and user tools and techniques employed to ensure an easy-to-use, consistent, and efficient interface between the maintenance personnel and the systems that comprise the functional system.
- D. System Performance Analysis: An explanation of the capability of the project to meet the performance



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requirements. The contractor shall fully describe, explain, and document the analysis that was used to support its statements of performance, durability, and availability. Where such documentation relies upon third-party manufacturers' claims, promises, or warranties, or relies upon the claims, promises, or warranties of a manufacturer's marketing or sales representative, the Contractor shall submit documentation of said promises, representations, and warranties. Contractor shall provide complete product information for any automated tools used in this analysis.

011000-3-2-4 HARDWARE DOCUMENTATION

- A. Hardware Specifications: A final full bill of materials and complete specifications for each hardware element is required. Hardware specifications must include an explanation of equipment functionality and the underlying operational characteristics.
- B. Component Drawings: Drawings that clearly and completely indicate the function of each hardware component. The drawings shall indicate termination points of devices and interconnections required for system operation; interconnections between modules and devices; spacing of components; and location, mounting, and positioning details.

011000-3-2-5 FIELD EQUIPMENT DOCUMENTATION

- A. Hardware Specifications: A full bill of materials and complete specifications for each field element. Equipment specifications must include an expansion of equipment functionality and theory of operation.
- B. Component Drawings: Drawings that clearly and completely indicate the function of each equipment element. The drawings shall indicate termination points of devices and the interconnections required for system operation; interconnections between modules and devices; spacing of components; and the location, mounting, and positioning details.
- C. Detailed Drawings: Conduit and cable drawings (end to end), schedules, equipment locations, cable plans, and wiring/ termination diagrams.

011000-3-2-6 SYSTEM OPERATING DOCUMENTATION

The Contractor shall provide all documents, manuals, and printed materials necessary for the effective operation of the project's systems and components. The documents provided shall be in bound copies and provided in an electronic version, as described in the specification APPENDIX B, SECTION 013300. This documentation shall include at least the following specific manuals:

A. STANDARD OPERATIONS PROCEDURES MANUAL

This manual shall be provided to include graphical depictions and explanations of the system operation for all operator functions. This manual shall be for instructional, study, and refresher use, and shall explain all features and functions of the project's systems for day-to-day operations. The manual shall also have a section on problems and exception conditions so operators can resolve common operating problems. The manual shall also contain instructions on how to perform normal maintenance. This manual shall be submitted for approval.

B. EMERGENCY PROCEDURES MANUAL

This manual shall be provided to include graphical depictions and explanations of the system operations for all emergency functions specified to be under operator control. This manual shall explain all features and functions of the project's systems for emergency operations. This manual shall be submitted for approval.

C. SYSTEMS ADMINISTRATOR'S MANUAL

This manual must include graphical depictions and a written description of all functions required for software modifications and development as may be applicable. This manual shall contain all procedures necessary for the monitoring and administration of the project's systems. At a minimum, the manual shall contain separate sections for the following topics: Start-up and shut-down procedures; instructions



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for the cold start of the systems equipment; backup and recovery protocols; performance analysis; scheduled maintenance; user management; audit and control functions; report production; configuration control; system diagnostics; database integrity; special requests; and a list of expendable supplies. A separate removable section of the Systems Administrator's Manual shall contain information on the proper administration and control of the security features built into the system. This section shall also address maintenance of user identifiers, password control, and security policy review. Also contained therein shall be information on appropriate review of security control measures for ensuring adherence through various types of reporting mechanisms and utilities or third-party security software. This manual shall be submitted for approval.

D. SITE-SPECIFIC MANUALS

These manuals shall be provided as necessary to document site-specific configuration parameters, detailed system configuration narratives, default parameters/actions/descriptors, and component addresses and locations. These manuals shall be submitted for approval.



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011000-3-2-7 SYSTEMS DEVELOPMENT

The contractor shall integrate all system components into a fully functional system consistent with the requirements set forth herein and in the Technical Requirements documentation, or as may be approved pursuant to the RFP and approved FDR systems submittal, and consistent with the contract-approved system document. The contractor shall complete the programming, parameterization, and any tailoring needed to customize or otherwise modify commercial off-the-shelf (COTS) products for DTPW. The contractor shall provide detailed change control procedures for handling hardware and software upgrades to the project's systems and components after the approval of FDR. Contractor shall provide appropriate controls to ensure that the source code production load modules are synchronized in all versions and revisions at all facilities.

011000-3-2 PROJECT PHASING AND MIGRATION PLANS

011000-3-3-1 PROJECT PHASING

The Contractor shall submit a multi-step Implementation Plan with a written description and plans sheets detailing each phase of the work. To include:

1. Installation of systems equipment
2. Cutover per Migration Plan

011000-3-3-2 IMPLEMENTATION AND MIGRATION

The contractor shall implement the system submittal for migration of the existing system into the new system. The contractor shall submit updates to the Migration Plan describing all activities and tasks associated with the installation and implementation of the system at the facilities. The Migration Plan submitted and approved concurrently with the preliminary and final review of systems submittals shall phase in migration from the existing system to the new system. As part of the Migration Plan, Contractor shall provide documentation addressing equipment reliability projections, systems administration, and procedural changes that will result from the migration to the new system.

- A. Installation: The Contractor shall install hardware, infrastructure, communications equipment software, and systems provided for under this contract in accordance with local building codes, the National Fire Protection Association, the National Electrical Code, and all other applicable standards and industry practices. Contractor shall furnish all labor, tools, cable conduit, and supplies required to install all equipment and systems. The contractor shall remove and dispose of all debris. The installation of any new equipment shall not impair the existing equipment or communications networks. Any requirement for additional power requirements will be subject to approval by DTPW. The contractor shall define its times and methods of equipment delivery, subject to DTPW's review and approval.
- B. Migration of and integration with existing systems with the new project The Contractor shall implement the systems consistent with the approved Migration Plan, which shall include at least the following tasks:
 1. Install and test the new systems head-end equipment, consisting of hosts and monitoring workstations.
 2. Convert existing database, point identification, and naming conventions to the new systems.
 3. Manage database synchronization between the existing systems and the project's new systems.
 4. Define and coordinate infrastructure, network subsystems, and communications support.
 5. Ensure that the communication network is functioning at 100 percent to each communication port before scheduling migration to the project's new equipment, and confirm the equipment is communicating with the existing unmodified systems, and other systems required (as provided for under FDR) before migrating the control device from the existing equipment.

Following the accepted plan bring the functions of the original existing equipment over to the



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new equipment in a controlled, phased approach, ensuring that a fall back to the original systems can be accomplished with no disruption to existing operations in the event of any migration difficulties.

6. Provide documentation of all problems and corrective actions that occur while implementing the integration of new systems, and create a historical database to be used in future developments or changes to the project after the initial cut-over.

011000-3-3-3 Upon commencement of installation Work in facilities, the Contractor shall make every effort to complete the Work in a minimum amount of time. In the event of slippage from the approved schedules, additional shifts as required—including work on Saturdays, Sundays, and holidays—shall be scheduled to complete the Work as scheduled for no additional cost to DTPW.

011000-3-3-4 The Migration Plan should also address periods of time/duration during the migration process when components of the existing Metromover Fire Alarm system may be taken out of service. Notice should be given in advance of any scheduled interruption of the existing equipment and approved by DTPW. Notice to DTPW for these interruptions shall be in accordance with the red tag requirements, as specified in the contract. Scheduled interruptions must be kept to a minimum.

011000-3-4 DISMANTLING AND EXISTING CONDITIONS - CONTRACTOR REMOVES

- A. All items to be removed shall be indicated to be removed with utmost care and without damage, and those items not designated to be reused shall be marked to be delivered to DTPW or disposed of as per their written instructions.
- B. All alterations, and removals necessary shall be indicated. This shall include removal and rerouting of all electrical items required to complete the intended installation.
- C. Any designed alterations will not disrupt any of DTPW's or County (building owner) operations.
- D. The submittal shall indicate that where wiring devices are shown to be removed on plans, all associated wiring and conduit back to the source shall be removed. If other loads are served from the same circuit, continuity of the circuit shall be maintained.
- E. The submittal shall avoid interference with the use of passage to and from adjoining buildings or areas not included in the project.
- F. As-Built Drawings: As-built drawings shall be extensions of the Contractor's drawings and shop drawings. They shall clearly identify the "as-built" conditions applicable at the time of practical completion.

END OF SECTION 011000



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**SECTION 013300
SUBMITTALS**

PART 1: GENERAL

013300-1 DESCRIPTION

- A. This section summarizes requirements and procedures for submitting documents defined herein for review by DTPW.
- B. General requirements for submittals are detailed in this section.

013300-2 QUALITY CONTROL

- A. Prepare shop drawings and record documents to a high standard of quality, such as set forth in DOD-STD-100, ANSI Y14 series, or other relevant lower-tier specification defining equal drafting quality.
- B. Reference standards: American National Standards Institute (ANSI) ANSI Y14 Series American Drafting Standards.

013300-3 SUBMITTALS (CDRL)

- A. Shop Drawings: Fabrication or layout drawings required by individual Technical Provisions - Systems sections for permanent incorporation in the Work.
- B. Working Drawings: This refers to the Contractor's plan for temporary equipment or structures such as decking, temporary bulkheads, support of excavation, support of utilities, ground water control, and forming, and for such other work as may be required for construction but does not become an integral part of the permanent work. Submit working drawings and signed and stamped associated calculations as required by contract sections for temporary work that will not become a part of permanent structures included in this contract.
- C. Samples: Samples of materials or equipment submitted to DTPW for review before incorporating in the work as required by individual contract sections.
- D. Certification: Notarized certificates or certified test results submitted that demonstrate proof of compliance with Technical Provisions - Systems for products, materials, equipment, systems, and qualifications of personnel, manufacturers, fabricators, and installers.
- E. Calculations: Where required by individual Technical Provisions - Systems sections, signed and stamped by a professional engineer.
- F. Test Procedures and Reports: Provide test procedures for review by DTPW before commencement of testing. Provide test reports, in DTPW-reviewed format, for review by DTPW.
- G. Documentation: Documents required to be submitted by the contract, including miscellaneous items such as delivery tickets, batch tickets, and bills of materials.
- H. Product Data: Manufacturer's literature, catalog cuts, and material safety data sheets.
- I. Operations and Maintenance Manuals: Operations and maintenance manuals for equipment and systems as required by the contract.
- J. Systems Submittal Packages: Submitted to DTPW for review as required by the contract.
- K. Software: Any software utilized in any processor-driven component.

013300-4 SUBSTITUTIONS

- A. Substitutions consist of preparing, submitting, amending, and updating lists of products or methods of



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construction which the Contractor proposes to furnish and install instead of those indicated.

- B. Propose substitutions in accordance with provisions indicated, and include documentation on methods of construction, materials, products, and supplies that are proposed for substitution instead of items shown or methods indicated or implied in the contract documents. All substitutions must be approved by the Engineer.

013300-5 CHANGES

Changes proposed by the Contractor to items listed in DTPW-reviewed submittals will not be permitted unless those changes have been submitted to, and reviewed in writing by DTPW.

013300-6 MASTER LIST OF SUBMITTALS:

Identify submittals required and determine the date on which each submittal is required in order to conform to the contract's submittal schedule.

013300-7 SUBMITTAL FORMAT AND INSTRUCTIONS

- A. Submittals: Show the following information when applicable:
1. Names of Contractor, subcontractors, suppliers, manufacturers, and, when applicable, the seal and signature of a professional engineer
 2. Identification of product by description, model number, style number, serial
 3. number or lot number, and finish numbers
 4. Subject identification by contract drawing or technical provisions reference
 5. Relation to adjacent structures or materials
 6. Field dimensions, clearly identified as such
 7. Applicable standards, such as ASTM or federal specification numbers
 8. Identification of deviations from contract documents



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9. Contractor's stamp, signed and dated, certifying the following:
 - I. Review of submittals for compliance with contract requirements
 - II. Verification of field measurements
 - III. Verification of subcontractors' work for accuracy
 - IV. Compatibility of the work shown thereon with affected trades and other contracts
 - V. Action Block: Include a blank space, 5 inches wide by 2.5 inches high, in the lower right corner, just above the title block, in which DTPW may indicate action taken. Shop drawings without this space will be returned without review for compliance.
 - VI. Technical details of equipment to be installed shall be supplied at the same time that equipment general arrangements and layout drawings for the area are submitted. Include all space requirements for installation, maintenance and replacement, service connections required, environmental requirements, weights, foundation, and fixing details, etc.
 - VII. Make submittals sufficiently in advance so review may be made by DTPW at least 30 calendar days before commencement of related work.
 - VIII. Allow 30 calendar days for review of each submittal cycle by DTPW.
 - IX. Ship submittals prepaid by overnight express delivery or hand-carry them to DTPW.
 - X. Accompany submittals with a Contractor transmittal form containing the following information:
 - a. Contractor's name, address, and telephone number for home office or field office
 - b. CDRL number and title
 - c. Submittal number based on individual volume title, section number, and date
 - d. Contract title and number
 - e. Supplier's, manufacturer's, or subcontractor's name, address, and telephone number
 - f. Subject identification, including contract drawing, volume title, section, and article reference
 - g. Identification of deviations from contract documents if any
 - h. Copy of subcontractor's or supplier's transmittal to Contractor
 - XI. Provide sufficient data with subsequent submittals initiated by the Contractor for consideration of corrective procedures for review. Make subsequent submittals in the same manner as initial submittals.
 - XII. Incomplete or partial submittals may be returned to the Contractor without review.
 - XIII. Illegible facsimile copies of any portion of a submittal will not be accepted.

013300-8 QUANTITIES

- A. One reproducible drawing and five prints of each shop drawing and working drawing (Reproducible drawings and prints that are of poor quality are not acceptable.)
- B. Six copies of manufacturer's standard schematic drawings
- C. Four copies of manufacturer's calculations, and four copies of manufacturer's standard data
- D. Six copies of manufacturer's printed installation, erection, application, and placing instructions
- E. Three samples of each item specified in the various Technical Provisions - Systems sections, unless



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otherwise specified

- F. Six copies of inspection reports, test reports, and certificates of compliance
- G. Six copies of engineer's calculations, with seal and signature of an engineer
- H. Twelve copies of submittal packages
- I. Six copies of Contractor's weekly report

013300-9 CONTRACTOR'S REVIEW

Review all submittals, and stamp and sign them as reviewed and approved before submission to DTPW. Failure to comply with this requirement will result in immediate return of the submittal without review.

013300-10 DTPW'S REVIEW

DTPW will provide timely reviews of the Contractor submittals identified in the CDRL and throughout the contract documents. The Contractor may continue with the work, pending receipt of DTPW's review comments, at its (the Contractor's) own risk.

A. Review Stamp

- 1. Review of submittals and the action taken, either NO EXCEPTIONS TAKEN or EXCEPTIONS TAKEN, may be indicated with a review stamp. DTPW's representative may affix the review stamp, mark the action block, and sign and date the stamp.
- 2. The review stamp action block marks have the following meanings:
 - I. NO EXCEPTIONS TAKEN: Every illustration and description appears to conform to the respective requirements of the contract documents; that (a) submittal development may continue, or that (b) fabrication, assembly, manufacture, installation, application, and erection of the illustrated and described product may proceed, in the case of final submittals; and that the submittal need not be resubmitted.
 - II. EXCEPTIONS TAKEN: The submittal is deficient to the degree as described by the notes on the actual submittal and/or as contained in the letter of exception and clarification attached to the returned submittal; that the Contractor shall not assume that the reviewer has completed a thorough review of the submittal; and that the submittal needs revision and it must be corrected to conform to the respective requirements of the contract documents. Re-submittal requirements shall be described in the letter of exception and clarification.

B. Review by Other Agencies

Various agencies designated by DTPW may have review stamps or other acceptance methods different from those of DTPW. The Contractor shall work with the designated agencies and obtain acceptance in the clearest and most straightforward manner possible. If a submittal requires review, acceptance, or approval from an agency other than DTPW, the Contractor shall gain such concurrence prior to submission to DTPW.

- C. Review of submittals by DTPW or a designated agency shall not relieve the Contractor from responsibility for errors or omissions in the submittals, or from deviations from the contract documents, unless submittals containing such deviations were submitted to DTPW with the deviations specifically called to the attention of DTPW in the letter of transmittal, and reviewed by DTPW as a contract change order.
- D. The Contractor shall notify DTPW in writing immediately of any review comments or suggested revisions by DTPW or other entity which the Contractor considers contrary to the requirements of the contract.
- E. After review of submittals, the Contractor shall distribute prints or copies of accepted documents to the



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following:

1. Contractor's field office
2. DTPW representative's field office
3. Affected and concerned subcontractors, suppliers, and fabricators
4. Affected and concerned members of the Contractor's workforce

013300-11 CONTRACTOR'S RESPONSIBILITIES

- A. Coordinate each submittal with requirements of the work. Place particular emphasis on ensuring that each submittal of one trade is compatible with other submittals of that trade, and with submittals of other trades.
- B. Review by DTPW of submitted drawings and associated calculations does not relieve Contractor of responsibility for errors or omissions in the drawings and associated calculations, or from deviations from the contract documents, unless such deviations were specifically called to the attention of DTPW in the letter of transmittal submitted with the drawings. The Contractor is responsible for correctness, accuracy, and completeness of the drawings; for shop fits and field connections, dimensions, and quantities; and for results obtained by use of such drawings.
- C. Contractor's liability to DTPW, in case of deviations in the submittals from requirements of the contract documents, is not relieved by DTPW review of submittals containing deviations, unless DTPW expressly approves deviations by issuing a change notice.
- D. Do not start work for which submittals are required until submittals bearing the stamp of DTPW, and signatures indicating review, have been received.
- E. Before making submittals, ensure products are available in quantities required by the contract.
- F. Verify field measurements, catalog numbers, and similar data.
- G. Re-submittals: Make any corrections required by DTPW and resubmit for review. The Contractor shall direct specific attention in writing on resubmitted shop drawings to revisions other than the corrections by DTPW on the previous submittal.
- H. **Contract Deliverable List**
 1. Prepare, and keep up to date, a contract deliverable list showing numbers and titles of each submittal, months and years in which submittals will be made, and current status of review by DTPW.
 2. Indicate review priority for any items required on an early basis.
 3. Send copies of the entire list to DTPW at monthly intervals.
 4. Distribute copies of revised pages of the list whenever a drawing is revised and resubmitted.

013300-12 SHOP DRAWINGS

- A. Prepare shop drawings on a sheet, maximum size of 22 inches by 36 inches, to a scale large enough to easily depict and annotate each of the various pertinent items. Provide blank space for the action stamp.
- B. Submit final, corrected, reproducible drawing of each shop drawing, and show the work as actually installed, placed, erected, and applied.

013300-13 BOOK OF PLANS

The Contractor shall submit a complete Book of Plans upon acceptance of the system.



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013300-14 PRODUCT DATA

- A. Modify the manufacturer's standard schematic drawings to delete information that is not applicable to the contract. Supplement standard information with additional information applicable to this contract.
- B. Modify the manufacturer's standard catalog cuts, brochures, diagrams, schedules, performance charts, illustrations, calculations, and other descriptive data to delete information that is not applicable to the contract. Failure to comply with this requirement will result in rejection of the submittal. Indicate dimensions, clearances, performance characteristics, capacities, wiring and piping diagrams, controls, and other information as required.
- C. Modify the manufacturer's printed installation, erection, application, and placing instructions to delete information that is not applicable to the contract.
- D. Include appropriate information as required herein and by the contract.
- E. Submit certificates of compliance to DTPW for those products for which no samples and test results are specified; certificates should be submitted not later than 30 days before products are installed. A copy of the certificate should accompany the product for which the certificate is prepared. Include on the certificate the following:
 - 1. A statement that the product complies with respective requirements indicated
 - 2. A certified copy of test results pertaining to the product
 - 3. Submittal date, Contractor's name and address, contract title and number, product represented and its location in the contract, producer's name, product trade name and catalog number, place of product origin, test date, testing organization's name and address, quantity of the product furnished, and related contract drawing, volume title, and section numbers
 - 4. A notarized signature of an officer or other authorized representative of the manufacturer or producer
- F. When materials or equipment are required to conform to the standards of organizations such as the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), the National Electrical Manufacturers Association (NEMA), or Underwriters Laboratories (UL), submit proof of such conformance to DTPW for review. If an organization uses a label or listing to indicate compliance with a particular standard, said label or listing will be acceptable evidence, unless otherwise specified in individual sections. In lieu of a label or listing, Contractor may submit a certificate from an independent testing organization (one that has been reviewed by DTPW, and found competent to perform acceptable tests). The certificate shall state that item has been tested in accordance with the specified organization's standard.

013300-15 SAMPLES

- A. Only where applicable, submit samples of sizes and quantities to clearly illustrate full color range and functional characteristics of products and materials, including attachment devices. Indicate country of origin.
- B. Erect field samples and mock-ups at the work site, as specified in contract sections and as may be necessitated by the Contractor submitting value engineering proposals or substitutions; locations must be acceptable to DTPW.
- C. Include appropriate information as required, and indicate the pertinent contract section. Submit product data to accompany samples.
- D. Review of a sample shall only be for the characteristics or use named in such review, and shall not be construed to change or modify any contract requirements. Materials and equipment incorporated in work shall match reviewed samples.



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- E. Certain samples may be tested by DTPW as specified. Reviewed samples not destroyed in testing will be retained by DTPW. Samples not destroyed in testing and reviewed with exception taken will be returned to Contractor at Contractor's expense, if so requested at time of submission.
- F. Failure of any material to pass specified tests will be sufficient cause for refusal to consider, under contract, any further samples of same brand and make of that material. DTPW reserves the right to take exception to any material or equipment that previously has proved unsatisfactory in service.
- G. Samples of various materials or equipment delivered on site or in place may be taken by DTPW for testing. Samples failing to meet contract requirements will automatically void previous reviews of items tested.
- H. When tests are required, only one test of each sample proposed for use will be made at DTPW's expense. Samples that do not meet contract requirements will be rejected. Retesting of additional samples will be made by DTPW at Contractor's expense.
- I. DTPW reserves the right to require submission of samples or site mock-ups of any material, whether or not such submission is specifically mentioned in the contract.

013300-16 WORKING DRAWINGS

- A. Identify working drawings by a submittal number based on volume title and section number, and provide a reference to pertinent contract drawing numbers. Use a working drawing sheet with a maximum size of 22 inches by 36 inches. B. Have working drawings prepared, stamped, and signed by an engineer of the involved discipline.
- B. Verify field measurements and coordinate with pertinent contract drawings from other contracts, where applicable.
- C. Do not begin work for which working drawings and associated calculations are required until drawings and calculations have been reviewed by DTPW; DTPW's corrections, if any, have been addressed; and submittals have been returned to the Contractor with the required review stamps and signatures.
- D. Distribute copies of working drawings and calculations after DTPW review.

013300-17 CALCULATIONS: Have calculations required by Technical Provisions - Systems sections stamped and signed by a professional engineer of the involved discipline. When calculations accompany drawings in a submittal, the body of the calculations must contain cross references to the individual drawing to which the page of the calculations pertains.

013300-18 SUBMITTAL PACKAGES: Submit designs for the work to DTPW for review. Submit in the following stages:

A. Conceptual submittal:

- 1. Identify all systems, subsystems, equipment, or other elements that will later be the subject of preliminary and final submittal submissions, and which together constitute the whole submittal for Contractor's Work.
- 2. Identify the function of each system, subsystem, equipment, or other element within the overall submittal, and specify relationships and interfaces between such elements.
- 3. If at any time in the preparation of the preliminary and final designs, the Contractor wishes to modify conceptual submittal by dividing any system or subsystem into a number of smaller systems (or by reconfiguring interfaces or for any other reason), the Contractor shall resubmit conceptual submittal for re-review.

4. Preliminary submittal:

- 1. Make a separate preliminary submittal submission for each element of the overall submittal, as



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identified in the conceptual submittal.

2. Submit in sufficient detail to evaluate progress and technical adequacy of the selected submittal approach.
3. Submission shall represent, at a minimum, a 50 percent completion level.
4. Clarify and confirm as necessary all technical aspects of all interfaces with other elements of Contractor's overall submittal, and of any interfaces with facilities.

B. Final submittal:

1. Make a separate final submittal submission for each element of overall submittal, as identified in the conceptual submittal.
2. Submission shall represent not less than 95 percent completion.
3. Note that DTPW will not normally review a final submittal submission until at least a satisfactory preliminary submittal submission has been received for all interfacing elements, and will give only a conditional review until such time as the final submittal submission has been received for all interfacing elements.

013300-19 SOFTWARE

License and disclose to DTPW software utilized in any processor-driven component, according to the nature of the software selected:

- A. Commercially Available Software: Pass on to DTPW the following:
 1. All documentation, new and unused, received with the software from supplier.
 2. A non-exclusive license in perpetuity to use software in all processor devices in which it is installed by Contractor.
- B. High-Level Software and Operating Systems: For any software that is the property of the Contractor, provide the following support:
 1. A non-exclusive license in perpetuity to utilize software in all processor devices in which it is installed by Contractor.
 2. An undertaking, in effect for as long as the software is in operation, to provide DTPW with updated software if any defects or deficiencies in software become known to the Contractor from any source.
 3. Full and detailed documentation of software. Place the documentation in escrow such that it will become property of DTPW if the software owner ceases trading as a commercial company.
- C. Application Software and Databases: Provide the following support:
 1. A non-exclusive license in perpetuity to use software in all processor devices in which it is installed by Contractor.
 2. Full and detailed documentation, including operational descriptions, flow diagrams, and detailed program or data listings to allow DTPW to maintain and modify the software or ensuing databases without seeking additional information from the Contractor.

013300-20 SUBSTITUTIONS

- A. The list of materials, products, and supplies, and the list of methods of construction proposed for substitution of those indicated, will be considered only if those requests have been submitted. Review of substitute items or methods will be only for characteristics and the use named in the acceptance. This review will not be interpreted as a modification of the contract, nor will it establish precedence of products and methods for other portions of the project. Review of a substitution does not relieve the Contractor of responsibility for fulfilling requirements of the contract documents. DTPW will judge the quality and suitability of substitute items or methods, and its decisions are final. If use of substitute products or methods involves redesign of other parts of the work, the Contractor shall perform the



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redesign and submit it for review by DTPW, bear the cost of redesign, and include the direct cost of evaluating substitutions by DTPW.

- B. Include the following information with documentation for materials, products, and supplies:
1. Complete data substantiating the compliance of the proposed substitution with the requirements of the contract documents.
 2. Identification of materials, products, or supplies, including manufacturer's name, address, catalog name, and number.
 3. Installation characteristics, installation drawings, and manufacturer's literature, including product description, performance and test data, and reference standards (if pertinent).
 4. Name and address of projects on which the product was used under similar circumstances, and date of installation.
 5. Itemized comparison of proposed substitution with the item specified. Include in a tabular form differences in materials, size, finish, estimated life, estimated maintenance, availability of spare parts and repair services, energy consumption, performance capacity, salvageability, and manufacturer's warranties.
 6. Effect of the change on the construction schedule.
 7. Accurate cost data for the proposed substitution in comparison with the product specified.
 8. Equitable adjustment and credit which the Contractor proposes to offer DTPW.
 9. When applicable or requested by DTPW, provide off-the-shelf samples of the specified item and the proposed substitution.
- C. Certify the following when making a request for substitution:
1. The individual submitting the request has personally investigated the proposed item and determined it to be equivalent, or superior, to that indicated. Update the information as new or different data becomes known.
 2. Furnish the same warranty for substitution as for the product specified.
 3. Coordinate installation of the reviewed substitution into the work, and make those changes, subject to review by DTPW, required for the work to be complete in all respects.
 4. Waive claims for additional costs related to substitution.
 5. Provide complete cost data, including related costs, except the costs of the DTPW redesign or review of the Contractor's submittal.
- D. Substitutions that are merely indicated or implied on shop drawings or product data submittals will not be considered unless a formal request for substitution has been submitted in conformance with this section.
- E. Include the following information in documentation for construction methods:
1. Detailed description of proposed methods.
 2. Working drawings illustrating the methods.
 3. Itemized comparison of proposed substitute methods with methods shown, and with product implied or specified. Include differences in estimated time for execution, labor, materials, and revisions to the construction process, and cost.

END OF SECTION 013300



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SECTION 016025
QUALITY ASSURANCE - SYSTEMS ASSURANCE

016025-1 PART 1: GENERAL

016025-1-1 DESCRIPTION

- A. This section consists of systems assurance requirements for the Metromover Fire Alarm System. Also defined are certain system configuration requirements relating to system availability.
- B. Availability requirements are defined in terms of system function availability and system equipment availability. Requirements for error monitoring, maintainability, expandability, and minimum life are also defined.

016025-1-2 REQUIREMENTS

The requirements specified herein shall be included in the systems assurance program plan submitted in accordance with APPENDIX B, SECTION 016025-1-2-B titled Submittals (CDRL).

A. QUALITY ASSURANCE PROGRAM

The Contractor shall submit a final Quality Assurance Plan (QAP) for review and approval by DTPW, within 30 days after the Notice to Proceed (NTP). The Contractor's QAP shall, at minimum, adhere to, and contain the 15 quality elements corresponding to the FTA QA/QC Guidelines, FTA-IT-90-5001-02.1 (as revised). DTPW may use the Contractor's QAP as a basis for planning the auditing activities and witnessing of inspections, as well as any testing or other activities for which DTPW determines monitoring is warranted.

- 1. The QAP submitted for review and approval must be in accordance with IEEE 730. The Contractor's software QAP shall be submitted within 30 working days of the effective date of NTP. The Contractor and all subcontractors shall provide a software QAP for all software items.
- 2. The Contractor's QAP shall ensure adequate quality throughout all areas of the contract. The Contractor shall impose its own DTPW-approved QAP requirements on all subcontractors and suppliers for this project.
- 3. The QAP shall describe, in detail, how the Contractor will comply with the required activities that include managing, designing, purchasing, fabricating, installing, inspecting, testing, handling, storing, and shipping. The QAP shall identify the methods to verify the coordination of all relevant activities, specifically including manufacturing, testing, inspection, safety, reliability, and maintainability
- 4. The QAP shall include all inspection/Test Plans, procedures, and forms that the Contractor will use to ensure that materials, processes, personnel, and products comply with the requirements of the contract documents. All inspection/Test Plans, procedures, and forms referenced in the QAP shall be submitted to DTPW for review and approval.



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5. DTPW may use the QAP and associated documents as a basis for planning and performing quality assurance audits as part of the quality assurance oversight requirements.
6. The Contractor's quality assurance representative (QAR) shall be a quality assurance professional with experience in quality management of capital projects, and is subject to DTPW approval.
7. The QAR shall be given sufficient authority to ensure that quality is consistently maintained. The QAR shall not be replaced by the Contractor without prior approval of DTPW.

B. SUBMITTALS (CDRL)

1. Quality Assurance Plan: The Contractor shall submit the final QAP that is in accordance with IEEE 730 for review and approval. The Contractor shall submit a proposed QAP with its proposal—revising it as required within 30 days after NTP—for review and approval by DTPW.
2. Availability Analyses: Include these analyses in preliminary and final submittal submittals.
3. The System Availability and Reliability Test Plan: Plan is due 60 calendar days prior to start of test. Include test procedures.
4. The System Availability and Reliability Test Report: Report is to be submitted within 10 days of the completion of the test.
5. Safety Plan in compliance with DTPW's Safety Certification Plan. Refer to accompanying APPENDICES for Construction and other Safety and Security related requirements.

016025-2 PART 2: PRODUCTS

Products are not required for this section.

016025-3 PART 3: EXECUTION

016025-3-1 AVAILABILITY ENGINEERING

- A. The Contractor shall supply and implement the components and functionality of a Fire Alarm System so that a single component failure will not cause the loss of any system function. The configuration shall also protect the system against multiple device failures where devices have high failure rates or potentially long repair times. The physical placement of the Fire Alarm System station equipment shall minimize the possibility that any single component or device failure will affect the system or device.
- B. The Contractor shall ensure that the Fire Alarm System systems shall provide a minimum functional availability of 99.999 percent. That is, the ratio of total test time minus downtime (attributable to either the unavailability of hardware or functions) to total test time shall be equal to or greater than 0.9999999. The Fire Alarm System availability and reliability test, described above, should list the requirements, responsibilities, and definitions for a 300-hour availability test, during which conformance to the availability criteria described herein shall be demonstrated.
- C. Function Availability
 - 1 The systems as defined in this solicitation shall be considered functionally available when all functions have been tested and accepted by DTPW.
 - 2 All functions shall be executing at their specified rates to all applicable locations on the line.
 - 3 All "on demand" functions requested by a user, or other periodic functions that normally operate on the primary processor, shall also be available. If a redundant backup processor is normally used for any background or load-sharing tasks, then all functions that normally operate on a redundant backup processor shall be available on a primary processor.
- D. Individual Device Availability:

In addition to the system availability requirements, the following device availability requirements shall



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apply:

1. With the exception of Item A. above, all devices, including processors, shall support a minimum hardware availability of 99.999 percent.
- E. Availability Analysis: Calculations shall be submitted to substantiate the submittal of the Fire Alarm System equipment. As a minimum, the calculations shall include the following:
1. Subsystem definitions and related assumptions.
 2. Subsystem breakdown figures of availability.
 3. Component failure rates (mean time between failures [MTBF] assumed in the calculations and the basis of the failure rates used).
 4. The maintenance figures (mean time to repair [MTTR] used in the calculations. The outage times for repair shall be based on the premise that all spare parts in the Contractor's lists of spare parts are retained on hand at all times, and that all recommended maintenance cycles are completed.
 5. There shall be no devices with unusually high failure rates or potentially long repair times (compared to the mean values).



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016025-3-2 ERROR MONITORING

The Fire Alarm System shall continuously monitor the performance of its components. All control system devices (both primary and backup) shall be monitored at all times for both recoverable and non-recoverable errors. Both recoverable and non-recoverable error statistics shall be accumulated for all devices. The error statistics required are defined in APPENDIX B, SECTION 16782.

016025-3-3 MAINTAINABILITY

A. Once any failure has been detected in the Fire Alarm System, its cause shall be promptly isolated and corrected. To permit the efficient diagnosis and correction of hardware problems, the Fire Alarm System shall be designed to permit diagnostic programs to be executed while the Fire Alarm System is either online or offline. In the online mode, the running of a diagnostic shall not affect the functional operation or performance of the Fire Alarm System.

B. The diagnostic system shall support complete maintenance of all hardware elements being maintained by the on-call technician. It shall permit the diagnosis of any hardware fault and the isolation of any hardware subassembly without requiring additional test equipment such as an oscilloscope. The system philosophy shall be to diagnose problems to the level of circuit boards and sub-assemblies that can be replaced as a unit.

C. Disconnection and repair of any failed device shall not interrupt the operation of the Fire Alarm System unless disconnection and repair of the device's system bus interface is required.

016025-3-4 EXPANDABILITY

Over the useful life of the Fire Alarm System, many developments may result in additional requirements for the Fire Alarm System. The need for new LNPs, new application software, and new communication interfaces will necessitate spare capability in the Fire Alarm System.

016025-3-5 HARDWARE SUPPLIER EXPERIENCE

The manufacturers of hardware, firmware, and software used in the Fire Alarm System and other parts of the system shall have documented experience in the manufacture and supply of the above for 10 or more years, and must be ISO 9001 certified. All central processing units (CPUs) proposed for use in the Fire Alarm System shall have been initially released to customers by the equipment manufacturer after January 1, 2021, and all proposed system peripheral devices and LNPs shall have been initially released after January 1, 2021. All other equipment supplied shall be the manufacturer's current production. In addition, the equipment manufacturer's discontinuance of maintenance support or availability of spare parts shall not have been announced for any of the above-proposed equipment at the time of contract award.

016025-3-6 Fire Alarm System AVAILABILITY AND RELIABILITY TEST

Subsequent to the successful completion of the field tests for all stages of the work, a 720-hour Fire Alarm System availability and reliability test shall be conducted to verify the entire control system's ability to meet its availability and reliability requirements. The Fire Alarm System availability and reliability test shall not be started until all variances and anomalies have been resolved and corrected. The scheduling of this test shall be dependent on mutual agreement between the Contractor and DTPW.

A. Reliability Requirements

1. The reliability of the Fire Alarm System shall be such that during the 720-hour test period there shall be no more than five system restarts, processor failovers, or CPU failovers.
2. During the same 720-hour test period there shall be no more than 10 device failovers or device failures of any kind for the line.
3. Restarts, failures, or failovers that result from causes that are not directly attributable to the Fire Alarm System shall not be counted in the reliability test statistics.

B. Test Responsibilities

1. The Contractor is responsible for managing and executing the Fire Alarm System availability and

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reliability tests. The tests shall consist of normal system operations, without special test equipment or procedures. All logs and records defined in the Fire Alarm System availability and reliability test procedures shall be maintained. Operate the system according to procedures described in DTPW-reviewed contract documentation. Provide preventive and corrective maintenance of all newly installed equipment.

2. During the availability and reliability test period, DTPW reserves the right to require modifications to the Fire Alarm System with regard to report formats, LNPs, database, and application software. Such modifications prior to passenger service will be described to the Contractor at least three weeks in advance of implementation to allow assessment of impact on the Fire Alarm system availability and reliability test, except where such changes are necessary to maintain communications and control.

C. **Test Definitions:** Successful implementation of the Fire Alarm System availability and reliability test depends on mutual agreement of the definitions and procedures, as well as their incorporation into the Test Plan. The Fire Alarm System availability and reliability Test Plan shall incorporate the following definitions as a minimum. 1. Downtime:

1. Downtime shall be considered to occur wherever the criteria for successful operation are not satisfied. In the event of multiple failures, the total elapsed time for repair of all problems (not each individual problem) shall be counted as downtime. All the time that the Fire Alarm System is in the process of restarting or failing over shall be counted as system downtime.
2. Hold-time: During a test of this nature, certain contingencies may occur that are beyond the control of either DTPW or the Contractor. These contingencies may cause the Fire Alarm System to be down, but at the same time are not valid for the purpose of measuring Fire Alarm System availability and reliability. Such periods of downtime may be declared "hold-time" by mutual agreement of DTPW and the Contractor. These periods shall not be considered in availability and reliability statistics as either downtime or successful operation time for acceptance purposes. Specific instances in which a holding period may be declared are as follows:
 - I. Scheduled shutdown: During scheduled shutdowns, or if an equipment failure occurs while its backup device is scheduled out of service, the resulting system outage shall be hold-time, provided that service can be restored, according to Contractor-specified procedures, within 30 minutes.
 - II. Power interruption and environmental excursion: Loss of power or manual shutdown in the event of loss of environmental control shall be considered hold-time. If the Fire Alarm System is operated during a period of power or environmental conditions beyond those specified by the equipment manufacturers, any resultant downtime shall not be counted. Failure of software pertaining to system power disruption shall not be classified as hold-time.
 - III. Corrected submittal defect: Hold-time may be declared by mutual agreement of DTPW and the Contractor in the event that the Contractor identifies a solution to a previously encountered problem and wishes to implement it to avoid similar future occurrences. In such a case, hold-time shall be allowed in increments of 120 hours to allow verification of the corrective action.
 - IV. Logistic delays: Prior to commissioning of the Fire Alarm System, if repairs are delayed due to previous repair requirements, hold-time may be declared by mutual agreement if the delay is beyond the control of either party and the Contractor is pursuing replacement parts in an expeditious fashion. Any parts the Contractor may require for successful completion of the availability test shall be available within 24 hours.



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- V. Human error: Hold-time may be declared by mutual agreement of DTPW and the Contractor in the event of a failure caused by human error. Hold-time will not be declared if the human error is caused by incorrect or incomplete Contractor-supplied documentation or training.
- VI. Failure of other equipment: Hold-time may also be declared in the event of system failure caused by malfunction of equipment and systems interfacing with, but not a part of, the Fire Alarm System.

D. Test satisfaction

After the elapse of 1,200 hours of cumulative test time, test records shall be examined to determine conformance with the availability and reliability criteria.

1. Retest

- I. If all test objectives have not been met, submit a proposed plan for corrective action for DTPW review. The plan shall include proposed changes and appropriate supporting data. The proposed plan shall clearly identify a specific method of verifying the effectiveness of changes.
- II. The specified performance and required characteristics of the equipment shall not be changed to achieve the availability and reliability requirements unless reviewed by DTPW.
- III. Once the changes have been reviewed and implemented, the Fire Alarm System availability and reliability test shall continue until the specified reliability is achieved based on a consecutive 720-hour period, exclusive of hold-time, and the specified availability is achieved based on one of the following time periods:
 - i Total elapsed test time
 - ii Consecutive 720-hour period of test time, exclusive of hold-time
- IV. In order to establish that all failures have been satisfactorily repaired, no downtime, intermittent failures, or more than one failover shall have occurred within 120 hours of the Fire Alarm System availability and reliability test's conclusion. The test shall be extended, if necessary, to satisfy this requirement.

2. Device availability

After the satisfactory conclusion of the 1,200-hour Fire Alarm System availability and reliability test, the availability of each system device shall be measured against the device availability criteria.

- A. If one or more system devices do not meet the defined availability and reliability criteria, submit a proposed plan for corrective action to DTPW for review. The plan shall include proposed changes and appropriate supporting data. The proposed plan shall clearly identify a specific method of verifying the effectiveness of any changes.
- B. The specified performance and required characteristics of the equipment shall not be changed to achieve the availability and reliability requirements unless reviewed by DTPW.
- C. Once the plan is reviewed, correct any identified availability problems to the satisfaction of DTPW.

- 3. Make all necessary corrections to the Fire Alarm System in order to meet the availability and reliability requirements. All test records, results, calculations, and implemented corrections shall be presented by the Contractor in an Fire Alarm System Availability and Reliability Test Report at the conclusion of the test.

END OF SECTION 016025



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SECTION 017843
SPARE PARTS AND MAINTENANCE MATERIALS

019100-1 PART 1: GENERAL

017843-1-1 GENERAL

The Contractor shall confirm and update as necessary the lists of spare parts, and of special tools and test equipment, throughout the period of the contract, keeping them up to date with the latest agreed submittal requirements.

017843-1-2 SUBMITTALS (CDRL)

- A. After completion of all final submittal submittals, the Contractor shall reassess the system requirements and revise the spare parts list and the special tools and test equipment list, to reflect the full requirements of the actual system submittal. The listed spare parts and test equipment shall be consistent with the results of the availability analyses described in APPENDIX B, SECTION 16025, and shall be submitted not more than 60 days after completion of the final submittal submittal.
- B. Detailed packing lists of items delivered shall be supplied with the delivered items and submitted to DTPW within 15 days of each delivery.

017843-1-3 GENERAL

- A. All spare parts shall be identical to the equivalent installed item, and shall meet all requirements of the appropriate sections of the contract.
- B. All items shall be complete and ready for installation except for the wire or cable necessary for external connections.
- C. The Contractor shall supply a recommended list of spare parts based on failure rates and time required to order. The Price Schedule includes a line item for spare parts.

017843-1-4 GENERAL

- A. Furnish all special tools and test equipment detailed in the final DTPW-reviewed version of the special tools and test equipment list.
- B. Deliver all spare parts, special tools, and test equipment to the stores area of the shop; items should be suitably packed for warehouse storage and clearly marked with a unique identification.
- C. Complete delivery of all items no earlier than 90 days prior to the start of system testing, and no later than 30 days prior to the start of system testing. Delivery may be staggered to allow for the staged commissioning of the line.
- D. Complete delivery of all items no earlier than 90 days prior to the start of system testing, and no later than 30 days prior to the start of system testing. Delivery may be staggered to allow for the staged commissioning of the line.

END OF SECTION 17843



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SECTION 019100
CUTOVER AND MIGRATION PLAN

019100-1 SUMMARY

- A. The existing Metromover Control Center room is operated 24 hours a day, 7 days a week. The control room shall remain fully functional and capable of assuming control of DTPW's Metromover operations until the new control room has completed final acceptance.

019100-2 MIGRATION PLAN

- A. Within 30 days of Notice to Proceed (NTP), the Contractor shall submit a final high-level Migration Plan for DTPW review. The plan shall include general discussion on how the Contractor plans to construct and cut-in the new control room with existing online systems and applications with little or no impact to DTPW operations. The Migration Plan should include the following details as a minimum:
1. What training must be completed prior to formal migration of control to the new equipment
 2. Detailed fallback contingencies should issues arise with the new control room when it attempts to assume control of revenue services
 3. Staffing plan detailing skills, assignments, locations, and contact information of the Contractor's key personnel during cutover
 4. Staffing and support requirements from DTPW
- B. DTPW shall have 30 days to review and comment on the Contractor's Migration Plan.

019100-3 BUILD-OUT

- A. Demolition, alterations, and construction for the new DTPW control room shall be planned and staged to minimize impact in the existing control room operations.
- B. The Contractor shall verify all existing and proposed wiring associated with this project.
- C. Construction activities resulting in noise conditions that could hinder existing Metro operations shall be kept to a minimum, and shall be coordinated with DTPW Engineer. At no time will heavy construction be authorized during peak revenue periods.
- D. The Contractor shall identify and present to DTPW all rack space required for this project.
- E. Submission of a construction schedule does not guarantee the Contractor access to the control facilities when requested.



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019100-4 DRAWINGS

The Contractor shall verify all drawings received from DTPW.

019100-5 SUBMITTALS (CDRL)

A. Refer to APPENDIX B, SECTION 013300, Submittals, for submittal procedures.

END OF SECTION 019100



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**SECTION 16120
WIRE AND CABLE**

16120-1 PART 1: GENERAL

16120-1-1 DESCRIPTION

This section addresses the furnishing and installation of non-Fiber Optic wire and cable for the Metromover Fiber Replacement Project. All requirements of section 16120 apply to this work.

16120-1-2 SUBMITTALS - Refer to APPENDIX B, SECTION 013300. SUBMITTALS, for submittal procedures.

- A. Contractor shall submit the following drawings:
 - I. Shop drawings and manufacturer's literature showing details of fabrication and technical data for each type of cable to be furnished
 - II. Working drawings showing specialized requirements for installation and termination
 - III. Cable plan showing the locations and functions of all cables to be installed
 - IV. Detailed installation wiring diagram and cabling diagram: Any special precautions associated with cabling shall be clearly identified. All the cable and wiring terminations shall be shown on drawings, and all terminal markings, cable connector markings, and cable lengths shall be clearly indicated. Submit test reports for all tests.
- B. Contractor shall document manufacturer's qualifications and certifications.

16120-2 PART 2: PRODUCTS

16120-2-1 WIRE AND CABLE

- A. General
 - 1. Identify cables as to manufacturer, year of manufacture, insulation type, conductor size, and voltage rating in accordance with manufacturer's standard method, and subject to review by DTPW.
 - 2. Use only flame-retardant and low-smoke-emission cables with insulating and jacketing materials capable of a 40-year average service life.
 - 3. Use cables suitable for installation at minus 15 degrees C.
 - 4. Use only cable with characteristics that meet or exceed the limits prescribed by the manufacturer of connected equipment.
 - 5. When RJ-21 connectorized cables are used, they should be constructed of 25 twisted pairs, with an overall shield.



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6. Main Distribution Frame (MDF) cross-connections:
 - I. Non-data (non-binary) signal cross-connects should have the following characteristics:
 - a CAT6 Plenum rated cable
 - b Construction: Twisted-pair construction
 - c Conductors: Tinned, 24 AWG, solid copper
 - II. Data (binary) signal cross-connects:
 - a CAT6 Plenum rated cable
 - b Construction: Twisted-pair construction, with individual shields
 - c Conductors: Tinned, 24 AWG, solid copper
- B. Minimum voltage ratings for both AC and DC:
 1. External wiring for module, equipment, signal, and instrumentation circuitry: 300 volts
 2. Power circuitry: 600 volts
- C. Conductors

Conductors should be sized to ensure operation of the equipment based on the anticipated equipment loads and operating parameters for the systems, in accordance with NFPA 70, chapter 3, article 310, and as specified herein. Use coated conductors of annealed copper wire in accordance with ASTM B 33; Class B and Class C stranded conductors conforming to ASTM B 8, Table 2; and Class G stranded conductors conforming to ASTM B 173, as follows:

 1. Equipment module, signal, and instrumentation external wiring: No. 20 AWG minimum, Class B
 2. Rack-to-rack and wiring: 20 AWG minimum, Class B
 3. All other circuits: No. 14 AWG minimum, Class B
- D. Cable Assembly
 1. Use single-conductor and multiple-conductor cables with tight-fitting, free-stripping, very flame resistant and low smoke type modified ethylene tetrafluorethylene (ETFE) material for insulation and jackets. Cables should be certified for continuous operation at 150 degrees C in dry locations.
 2. Insulation thickness
 - I Multi-Conductor Cables: Minimum average of 0.01575 inches (0.4 mm) and absolute minimum of 0.01378 inches (0.35 mm). Test at 3,000 volts AC for 5 minutes.
 - II Single-Conductor Cables: Minimum average of 0.009843 inches (0.25 mm) for No. 20 AWG. Minimum average of 0.01181 inches (0.3 mm) No. 14 AWG. Minimum average of 0.01575 inches (0.4 mm) and absolute minimum of 0.01378 inches (0.35 mm) for No. 12 AWG or larger. Each shall be tested at 3,000 volts AC for 5 minutes.



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III Jacket thickness

- a. For single-conductor cables, as specified for insulation
- b. Overall thickness on multiple-conductor cables shall be per industry standards for similar use
- c. Conductor Identification
 - i. Identify the conductors of twisted-pair cables in accordance with IPCEA S-19-81, paragraph 5.6.3.4, except where otherwise provided by referenced REA specifications.
 - ii. Except as otherwise specified, each insulated conductor in multiple conductor cables shall be identified with a specific number, or shall have a different color or tracer color combination.
 - iii. Power cable colors shall be coded as follows:
 - A01. Conductor 208/120 Volts
 - A02. A Black
 - A03. B Red
 - A04. C Blue
 - A05. Neutral White
 - A06. Ground Green

16120-2-2 MASTER CLOCK SYSTEM CABLES: NOT APPLICABLE

16120-2-3 WIRE DISTRIBUTION SYSTEM: The following criteria apply to distribution system cable.

- A. Cable Construction: Twisted-pair construction, individual shield on each pair
- B. Conductors: Tinned, 24 AWG minimum, solid copper

16120-2-4 WIRE FOR CROSS-CONNECTIONS: Cable distribution system cable used for cross-connections at MDF locations shall use shielded cross-connections on data signals to destination at MDF.

16120-2-5 WIRE DISTRIBUTION SYSTEM CABLES

- A. Construction: Twisted-pair construction, individual shield on each pair
- B. Conductors: Tinned, 24 AWG minimum, solid copper

16120-3-1 PART 3: EXECUTION

16120-3-1-1 INSTALLATION

- A. Install wire and cable in accordance with manufacturer's recommendations and applicable codes and standards.
- B. Do not exceed minimum bending radius as permitted by ICEA S-19081, and cable manufacturer.
- C. Install cables in the equipment rooms in overhead cable trays and in the Interior location within SPCC, beneath the raised computer floor.
- D. Verify that the raceway conduit system is free of obstructions by pulling a suitable wire brush, swab, and mandrel through the raceway conduit to remove extraneous matter.
- E. Ensure that the raceway conduit system is dry before installation of cable, and use lubricant approved by the cable manufacturer to facilitate pulling cable.
- F. Determine maximum cable lengths and pulling tensions to avoid excessive pulling tensions or more bands than the manufacturer recommends.
- G. Provide at least 20 percent spare conductors (but not less than four such conductors) in all multiple-conductor cables (other than individual twisted-pair cables). Provide sufficient wire length to reach the farthest terminal point within equipment where spare wiring is not to be terminated. Spare wiring shall



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be readily accessible.

- H. Do not allow wires to cross one another when pulled into a conduit. Prevent kinking in conduit fittings or boxes. All cables and wires to be installed in a conduit shall be installed at the same time.
- I. Do not pull into trays or troughs. Cables shall be laid, with a minimum amount of crossover, in the trays and troughs and secured at least every 3 feet; cables shall not be pulled tightly around bends. Conduits for cables entering or leaving trays shall be rigidly attached and supported at their ends by suitable brackets and conduit straps on the sides of the trays.
- J. Wire and cable shall be permanently tagged as specified in APPENDIX B, SECTION 16120.
- K. All exposed wires and cables entering or leaving equipment housings, junction boxes, etc., shall be protected from abrasion. Openings in equipment enclosures and junction boxes shall have split ring plastic grommets.
- L. Seal all fire-rated openings.
- M. Open wiring on individual equipment racks shall be neatly arranged, bundled, and tied approximately every 3 inches with nylon straps.
- N. All wiring within cabinets and enclosures shall be neatly arranged, bundled, and tie-wrapped every 6 inches with nylon straps.
- O. All communications wiring shall be separated from power cables.
- P. The ANSI/TIA/EIA 606-A Standard for Telecommunications cabling system shall be used in all labeling methodologies. Classes of Administration 1 through 4 inclusive shall be used as applicable. All new wiring shall be labeled with a designation and labeling structure that is compliant with ANSI/TIA/EIA 606-A, and shall be submitted for approval by the Engineer. Labeling shall be on all origination and destination ends of all installed cables.

16120-3-1-2 SPLICES AND TERMINATIONS

Wires and cables shall be continuous between equipment rooms and intended termination points at the equipment. Splices will not be permitted except as specifically authorized in writing by DTPW. All terminations shall be made in accordance with the cable manufacturer's recommendations. Termination hardware shall require DTPW's review.



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16120-3-1-3 TESTING

Test all cables for continuity, shorts, opens, crossed pairs, and grounded conductors. Each cable connector and MDF terminal shall be verified and recorded by connector pin number or terminal number and the wire color that is to be connected, per DTPW reviewed drawings. All testing shall conform to APPENDIX B, SECTION 16950 except where more stringent testing is specified in this section.

END OF SECTION 16120



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SECTION 16749
CABLE DISTRIBUTION SYSTEM

16749-1 PART 1: GENERAL

16749-1-1 DESCRIPTION

The work specified in this section consists of submittal, furnishing, and installation of a cable distribution system as required.

16749-1-2 DEFINITION

The cable distribution system shall provide for the logical interconnection and intra-connection of system components, and facilitate the shared use of metallic cable plant.

16749-1 DESCRIPTION OF COMPONENTS

- A. Main Distribution Frame (MDF): Shall provide a common access and cross-connect point for twisted pair system interfaces. The MDF shall consist of a series of co-located, contiguous terminal blocks mounted on frames in a single area.
- B. Cables: Connecting cables from various systems.
- C. Cross-Connections: Jumpers (cross-connections) shall be installed between various blocks on the MDF and distributed terminal blocks as part of the installation procedure associated with each system.

16749-1-3 SUBMITTALS (CDRL)

Refer to APPENDIX B, SECTION 013300, Submittals for submittal procedures.

- A. Preliminary Submittal:
 - 1. Block diagrams: Showing terminal blocks, frames, manufacturer's model numbers, and location of equipment.
 - 2. Certification: Manufacturer's certification that all cable and equipment meet specified requirements.
 - 3. Product data: Manufacturer's catalog cuts, material specifications, installation instructions, and other pertinent data for all furnished products.
- B. Final Submittal:
 - 1. Elevation drawings of MDFs detailing cabling routing, bay number, terminal block number, and application.
 - 2. OEM practice publications for all apparatus supplied.
 - 3. Documentation detailing screens and operator interface to database software user application and system manager application programs.
- C. Pre-Acceptance Requirements:
 - 1. Operations and maintenance manual that includes as-built drawings and written documentation of articles 1.4 A and B, accurately depicting the cable distribution system's in-service condition.
 - 2. In-service database software, complete with all connections of the cable distribution systems and the operations manuals.
- D. Test Procedures and Reports: Submitted as required by contract.



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16749-2 PART 2: PRODUCTS

16749-2-1 MDF – TRAIN CONTROL AND EQUIPMENT ROOMS

- A. Main Distribution Frame (MDF):
1. Construction: Double-sided (vertical and horizontal sides), floor mounted, equipped with end and guard rails, grounding buses and all mounting hardware.
 2. Verticals: Shall be assigned as follows as required:
 1. Vertical #1: Used for outside plant cable termination on protectors.
 2. Vertical #2: Used for termination of internal house distribution and tie-cables.
 3. Vertical #3: Reserved for analog terminations of fiber optic digital channel banks only. Provide additional verticals as required per Contractor's submittal.
 4. Horizontal shelves: Shelves B through E, inclusive; used only for PABX terminations.
 3. Height: 2.75 meters
 4. Level "A" vertical and horizontal block positions shall not be used.
- B. Connectorized Terminal Blocks: Blocks connectorized on the equipment side may be used. The cross connect side shall be wire-wrap. All blocks shall be 8 26 terminals on the cross-connect side, unless otherwise approved. All unused block locations shall be equipped with an equal number of one-side connectorized and wire-wrap on both sides. All blocks, except protector connectors, shall be mounted on swivels.
- C. MDF Identification: MDF verticals shall be numbered from left to right and lettered "A" through "L" from bottom to top; the letter "I" shall not be used. MDF horizontal shelves shall be lettered "A" through "L" from bottom to top; the letter "I" shall not be used. Horizontal side columns shall be numbered from right to left to coincide with the vertical side of the frame.

16749-2-2 TERMINAL BLOCKS: All blocks shall be connectorized on the house/tie cable side and punch-down for solid and stranded wire on the drop side.

16749-2-3 DATABASE SOFTWARE (APPLIES TO BOTH OPTICAL AND NON-OPTICAL CABLES)

- A. Database and supporting database applications software shall:
1. Document all cable distribution systems' metallic and non-metallic cable plant.
 2. Facilitate the sorting, tracing, printing, and manipulation of records for engineering and maintenance use.
- B. Database: Database shall consist of a collection of records.
- Record: Document each connection to terminal block documented with one record.
- 1 Fields: Field information shall agree with other documentation submitted under this contract.
 - 2 Station: This two-character alpha field shall designate the particular station where the terminal block is located.
 - 3 Room: This three-digit numeric field shall designate the room where the terminal block is located.
 - 4 Terminal Block Bay: This two-digit numeric field shall specify the bay in which the terminal block is located. A blank entry shall indicate "not applicable."
 - 5 Terminal Block Rack: This two-digit numeric field shall specify the rack in which the terminal block is located. A blank entry shall indicate "not applicable."
 - 6 Terminal Block Number: This two-digit numeric field shall specify the vertical position of a MDF terminal block in the rack. For non-MDF terminal blocks, a number shall be assigned to identify a



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- specific terminal block.
- 7 Pin Number(s): This six-digit numeric field shall designate the pin numbers on the terminal block of particular connections. This field shall be used to specify a maximum of two terminal block connections, using three digits per conductor. Entries with "0" in the second field indicate a one-conductor circuit.
 - 8 Description: This 16-character alphanumeric field shall define the service and equipment functions of the connections.
 - 9 Cable Number: A unique three-digit numeric field shall be assigned to each cable within a station.
 - 10 Wire Numbers: This six-digit field shall designate the specific cable wires with the connections on the terminal block. This field shall be used to specify a maximum of two conductors using three digits per conductor.
 - 11 Entries showing a "0" in the second field shall indicate a one conductor circuit.
 - 12 Cable Binder: This two-character alpha field shall designate the cable binder. A null entry in this field means "not applicable." A null entry shall be permitted for connectorized cables.
 - 13 Cable Color Code: This eight-character alpha field shall designate the color code of the wires in the binder group. A null entry in this field shall designate "not applicable." A null entry shall be permitted for connectorized cables.
 - 14 Circuit Number: A six-digit number shall be assigned to each complete circuit within a given station. This number shall be used consistently in each record used to document the complete circuit.
- C. Applications Programs: Provide two applications programs that operate on an MS Windows -compatible machine.
1. User Application Program:
 - I. Preclude the ability to create or modify database records.
 - II. Provide the capability of displaying and printing reports. Reports shall consist of all records sorted by specific station, room, terminal block number, description, cable, wire number, and circuit number fields.
 2. System Manager Application Program:
 - I. Provide for the entry of new records or the modification of existing records.
 - II. Include a facility to provide a time-stamped backup of the database.
- D. Operations Manuals:
1. User Operations Manual: Describes the application of user software; it shall provide detailed step-by-step examples of typical software use.
 2. System Manager's Manual: Describes the use and application of the system manager's software, and provides examples of the features and functionality of the software.

16749-1 PART 3: EXECUTION

16749-1-1 MDF INSTALLATION – TRAIN CONTROL EQUIPMENT ROOM

- A Install the equipment room frame in the space designated by submittal drawings. Frame and all shields shall be grounded.
- B Install connectorized and non-connectorized blocks.
- C Connect connectorized and non-connectorized cables to terminal blocks and install jumpers as individual systems are installed. Tie all shields together on MDF and ground.



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D Prepare database records for the equipment room MDFs.

END OF SECTION 16749



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SECTION 16780
CONTROL SYSTEM - EQUIPMENT

16780-1 PART 1: GENERAL

16780-1-1 DESCRIPTION

This section describes the required characteristics of the equipment to be supplied to meet the functional requirements in these Technical Provisions. Characteristics within this section shall comply with the requirements specified in APPENDIX B, SECTION 16025, System Assurance. Provide hardware that has sufficient capability and flexibility to meet the requirements of this section, as well as the present and future functional requirements specified.

16780-1-2 GENERAL EQUIPMENT REQUIREMENTS

All hardware delivered as part of the control system shall include all engineering and field changes since the time it was manufactured. All engineering and field changes shall be implemented prior to the factory functional performance test. All equipment shall be new and of the finest production quality. Do not provide major equipment requiring a substantial amount of new submittal and development. No modified (physically altered) modules or printed circuit boards shall be supplied as part of the control system, as spare parts, or as replacement parts under warranty.

16780-1-3 EQUIPMENT PERFORMANCE AND CAPACITY

All performance and capacity data (such as processor loading and main memory sizing) supplied for the control system shall be based on the following conditions:

- A. The control system configuration as described in APPENDIX B, SECTIONS 011000 and 16025.
- B. The total database size and total number of LNPs for the Fire Alarm System as applied to the line
- C. The peak level of system activity
- D. The amount of online/historical data as required by agency, federal and local regulations.

16780-1-4 PEAK LOAD CONDITIONS

- A. The peak load conditions listed herein shall delineate the loading parameters for sizing the equipment, and are to be used in the factory and field tests. Simulation methodology to determine the effect of equipment not connected during the tests shall be submitted for DTPW's review. During the peak load test, the processor utilization may increase to a maximum of 40 percent, provided there are no pram stalls or abort results and no processor restarts or failovers occur due to the control system performance and capacity problems.
- B. During the peak load condition, a train service equal to the ultimate submittal capacity of the train control system shall be operating.



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16780-1-5 SUBMITTALS (CDRL)

- A. System functional block diagrams showing the functions of each system element and the types of connections between elements
- B. Detailed equipment specifications, descriptions, and drawings for the following items as applicable:
 - I. Fire Alarm System Digital Paging and Signage equipment
 - I. Detailed interconnection diagrams shall be submitted showing individual connections to all items of equipment, including interface connections to other systems or equipment.
 - II. Installation drawings shall be submitted as necessary for detailing equipment mounting, securing, and grounding, cable diagrams, and connection diagrams.

16780-2 PART 2: PRODUCTS

16780-2-1 PROCESSORS

The main groups of processors for the control system shall be the Front End Processors, Application and Database Servers and the workstation/overview diagram processors. The following articles apply to all groups of processors.

A. Processor Features

The following features shall be provided for each type of processor, as appropriate to the particular functions of each:

- 1. In addition to the security of supply provided by the UPS, power failure facilities providing the means for an orderly shutdown of the processor upon loss of input power, and automatic restoration of operation when power is restored.
- 2. Facilities to monitor and detect anomalous operation of processor and I/O instructions, and a watch-dog timer.
- 3. Detection and reporting to the processor of memory errors, I/O errors, attempts to access nonexistent main memory, and attempts to execute non-implemented or illegal commands, the processor shall then cease indicating that it is available and, whenever possible, the error shall be reported as an alarm.
- 4. A real-time clock with at least 1.0 micro-second resolution and an interval timer with at least 8.0 micro-second resolution, this clock shall be maintained in synchronization with the master clock described in APPENDIX B, SECTION 16782.
- 5. The LNPs shall be capable of having a reload initiated from any authorized management computer that is a client on the same network as the processors, whatever the state of the software in the processor.

B. Processor Loading

- 1. The control system shall have the ability to support all functions described in this Technical Provisions - Systems section, utilizing no more than 40 percent of the processing capability of the processor required for peak service conditions, and without utilizing any memory designated as spare while executing under the conditions listed in articles 16780-1-3 and 16780-1-4 above.
- 2. Demonstrate the control system's processing capability and spare capacity during factory and field acceptance tests. The performance monitoring function (APPENDIX B, SECTION 16782) shall be available to verify system performance during these tests.

C. Main Memory-Motherboard Memory

- 1. When the systems are delivered, main memory shall have sufficient capacity to satisfy the requirements of all system functions specified herein. Seventy-five percent of each delivered memory shall be spare capacity that is completely free, contiguous, and available for future use.



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- Where memory is shared by two or more processors, this memory shall be required to conform to all the requirements of main memory, both separately and in combination with private memory.
2. Processor and any auxiliary memory shall be maximum that can be supported by the current hardware at the time of installation.
 3. Parity-checking or error-correcting hardware shall be provided for all memory, including any cache memory provided. Memory errors shall be reported to the processor. Violations of write-protected areas shall likewise be prevented. Meaningful error codes shall be displayed where appropriate to complement diagnostic software and lead to isolation of faults at a board level.

16780-2-2 DEVICE ACCESS

Except for the CPU I/O devices that shall be dedicated to each CPU, the control system shall be constructed so that any device or any group of devices communicating with the processors can be connected to and access, or be accessed by, either of the on-line or hot-standby processors without adversely affecting any other devices' access to, or access by, the other processor. All shared devices shall have redundant access. Failure of the redundant access logic shall not disable the control system. The failure of a single processor shall not prevent the proper transfer of any shared device from the failed processor to the functioning processor, and shall not prevent proper operation of the device when connected to the functioning processor.

16780-2-3 PROCESSOR INTERCONNECTIONS

An interconnection shall be provided between the on-line and hot-standby processors to support the communication necessary for mutual monitoring of the states of the processors, performing message exchanges and performing database upgrades.

16780-2-4 REMOVABLE MEDIA UNITS

Each central processor shall be provided with removable media, each with a minimum capacity to hold two versions of the entire system, including data, plus 25 percent residual capacity. A minimum of two versions are required to be held during system upgrades. Reloading the central processors shall be achievable from the drive. Until a specific version is deleted, it shall be possible to restore that version as the active version at any time, and reboot the processor. If the processor automatically reboots because of a handling failure, it shall reboot the most recent version activated.

16780-2-5 LOCAL AREA NETWORK

- A. Fiber shall be provided for the SCADA network as required for all connectivity between the new equipment installed in the Train Control rooms.

16780-3 PART 3: EXECUTION

16780-3-1 ENVIRONMENTAL REQUIREMENTS

- A. The equipment shall function normally under the environmental requirements contained in DTPW's environmental submittal criteria unless otherwise modified by DTPW.
- B. **Temperature/Humidity/Heat Load**
 1. Under normal conditions, a controlled environment will exist in Train Control rooms and equipment rooms for computing, communication, and man/machine interface equipment.
 2. Provide details of the individual and total heat load of the equipment at each location, and the maximum operating temperature for all equipment, no later than with the preliminary submittal submittal.

C. Acoustic Noise Level

The acoustic noise generated by the systems equipment shall not exceed 65 dB.

16780-3-2 GENERAL NOTES



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All control equipment shall conform with the following requirements:

- A. Assembly Identification: Each assembly in the installed systems, to the level of printed circuit cards and EPROMs, shall be clearly marked with the manufacturer's part number, serial number, and the revision level of the assembly. Changes to assemblies shall be indicated by an unambiguous change to the marked revision level. All slots within printed circuit card cages shall be clearly labeled.
- B. **Interconnections**
 - 1. All cabling between component units of the systems shall be supplied and shown on system drawings. Plug-type connectors with captive fasteners shall be used for all interconnections. The connectors shall be polarized to prevent improper assembly. Terminations shall be entirely within the enclosures.
 - 2. Wiring of components within enclosures shall be neatly arranged and fastened securely to the enclosure with flame-retardant fasteners. Metal clamps shall have insulating inserts between the clamps and the wiring. Wiring between all stationary and moveable components, such as wiring across door hinges or to components mounted on extension slides, shall allow for full movement of the component without binding or chafing of the wire.

16780-3-3 CONTRACTOR'S FUTURE HARDWARE CHANGES

DTPW shall be informed of all future alterations or improvements to the hardware and the associated software supplied. DTPW shall be placed on the suppliers' mailing lists to receive announcements of the discovery, documentation, and solution of hardware and software problems, and other improvements that could be made to hardware that is provided with the systems. This service shall be initiated at the time of system acceptance and shall continue for as long as the equipment is being supported by the Contractor.

END OF SECTION 16780



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SECTION 16782
Fire Alarm System SOFTWARE

16782-1 PART 1: GENERAL

16782-1-1 DESCRIPTION: This section describes the required characteristics of the Fire Alarm System, Network (Wired and Wireless) and database(s), and software utilities. It is neither intended nor possible to list all software or all characteristics of the software required in the system submittal. The Contractor is responsible, however, for including all the necessary software to satisfy the system functional requirements described in the applicable sections of this volume. Upon final acceptance by DTPW, all software licenses shall revert to DTPW's ownership.

16782-1-2 PROVISION OF SOFTWARE: Commercial software incorporated and forming an integral part of the furnished software shall only be provided as "executable code."

16782-1-3 CUSTOM DEVELOPED SOFTWARE

All Software that is written or created by the Contractor, shall become the property of and relinquished to DTPW at the closure of the contract. The Software shall be written using approved programming languages as defined in APPENDIX B, SECTION 16782-1-6. All custom developed Source Code, Software Libraries and all Custom Developed applications shall become the property of DTPW upon Contract Closure.

Any third Part Software required for use to ensure functionality of any Custom Developed Software shall also be included with the Custom Developed Applications and Software. Such third Part Software shall be delivered in it's native form (Binary, script, etc.) to DTPW at the Contract Closure.

16782-1-4 CPU MANUFACTURER'S SOFTWARE CHANGES: Any alterations or improvements made by the CPU manufacturer(s), before the warranty period ends, to software initially supplied with the Fire Alarm System that are directly applicable to the Fire Alarm System, shall be made available by the Contractor free of charge to DTPW. DTPW shall be placed on the suppliers' regular mailing lists (if such exist) to receive announcements of the discovery, documentation, and solution of software problems, new software releases, and other improvements that could be made to the software furnished with the control system. The Contractor shall also ensure that the service includes announcements pertaining to CPU manufacturer-produced software and announcements pertaining to software produced by third-party suppliers for the life of the Fire Alarm System.

16782-1-5 SUBMITTAL CHARACTERISTICS

- A. Provide standard software wherever possible. DTPW shall consider changes in the Software requirements and characteristics if it can be shown that the proposed approach will meet the functional needs of the Fire Alarm System in a reliable and cost-effective manner. New software, or software modified to satisfy this contract, will be considered specially designed for this project. DTPW shall review the submittal of such special software without relieving the Contractor of the responsibility to meet the functional requirements of this contract.
- B. Produce all software and software documentation in accordance with DTPW-reviewed software submittal and software documentation standards. Should any custom developed Software be required, such development shall use a "structured programming" submittal approach—that is, a top-down approach where the system is defined at a functional level and subsequently each function is broken down into lower level tasks—this being recursively defined throughout the submittal process. Make use of CASE tools and formal submittal methodologies wherever this is possible. Upon request from DTPW, demonstrate that for any software being developed, the software submittal and documentation standards are being complied with. Inform DTPW when software integration tests are being conducted so that DTPW can witness these tests.
- C. All software shall be capable of accommodating the specified ultimate capacity of the Fire Alarm



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System. Programs shall obtain the size and configuration of the **Fire Alarm** System from easily modified parameters contained in the database.

- D. All software shall be designed with sufficient modularity to minimize the time and complexity involved in making a change to any program. The modularity shall include the separation of hardware interface modules from other software modules. Logic and data shall be separated into distinct modules.
- E. Operating system software shall be supplied in a form suitable for incorporation into Fire Alarm System software in system generations.
- F. The software shall be completely maintained by members of the operations staff following training using the software facilities provided. No Contractor support shall be essential to modify logic or data within the parameters defined for the ultimate Fire Alarm System, or the maximum capabilities of the software.
- G. All software contracted under this contract shall be installed, operating, and completely documented, in final form, including all standard software changes and field changes, prior to acceptance of the Fire Alarm System by DTPW.
- H. If standard commercial software is to be used, then the latest version of that software shall be used.

16782-1-6 PROGRAMMING LANGUAGES

- A. N/A

16782-1-7 SUBMITTALS (CDRL)

In accordance with volume I, Technical Provisions - Systems, APPENDIX B, SECTION 013300, Submittals.

- A. Software Documentation Standard: Consistent for all software applications shall be submitted to DTPW for review not later than 180 calendar days after NTP.
- B. Details of any formal submittal methodologies intended to be used: Submit to DTPW for review not later than 180 calendar days after NTP.
- C. Application Software Listings: Submit detailed listings of all application software written specifically for this project or adapted for the project.
- D. Control System Software Description: Submit descriptions of the proposed software to be utilized in the Fire Alarm System, comprising all operating systems, application software, development software, and utilities, including those for the simulator and for the development system. Submit to DTPW for review not later than 60 calendar days after NTP.
- E. Explanation of Modifications to Commercial Software: Submit the reason for the change and the detailed listing of the change for all modifications to commercial software made specifically for this project, whether carried out by the original supplier or the Contractor. Submit to DTPW 90 days prior to commencement of Fire Alarm System testing.
- F. Software Documentation: Two copies of the full documentation for every software package and module. Submit to DTPW 90 days prior to the start of system testing.
- G. Two copies of the full documentation for every software package and module. Submit to DTPW 30 days after completion and acceptance of system testing.

16821-1-1 PART 2: PRODUCTS
16782-2-1 SYSTEM DATABASE

- A. N/A

16782-2-2 SYSTEM SOFTWARE

Operating system software used in systems supplied by the CPU manufacturers shall not be modified



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without written authorization from DTPW. The capabilities of the software shall include at least the requirements presented in this contract.

A. Programs shall be provided that accomplish the following:

1. Are event-driven and respond to demands for service resulting from an event in the Fire Alarm System or other user request
2. Assign resources according to user priority levels
3. Are able to address the fully expanded main and auxiliary memories
4. Are able to allocate any part of main memory to either programs or data
5. Control transfers between main and auxiliary memory of all blocks of logic and data
6. Support on-line software testing and diagnostic activities under controlled conditions
7. Support the following:
 - I. Time and calendar maintenance: The operating system shall recognize leap years and make orderly adjustments for the time changeovers between standard and daylight savings time on system reports and other time-oriented functions. The system shall allow for system clock and time changes for the beginning and end of daylight savings. Time changes shall occur as follows. On the appointed day for changeover from Standard Time to Daylight Saving Time, 0200 will become 0300. On the appointed day for changeover from Daylight Saving Time to Standard Time, 0200 will become 0100. Data that are being integrated shall be flagged if a time correction occurred during the integration period. The Fire Alarm System shall have the ability to synchronize its clock with either a master clock system or by use of the NTP protocol with configurable time servers.
 - II. Operating system program efficiency: Allocation schemes shall make efficient use of main memory, as well as minimizing transfers between main and auxiliary memory. Since the real-time operating system will operate more frequently than other programs, it shall be designed so that its operation minimizes the use of processor resources.

B. Input/output programs

Software shall be provided to process all I/O requests between any program and all devices included in the Fire Alarm System.

1. Input/output processing: Device-oriented I/O programs shall be provided to control the sending and receiving of data between main memory and the I/O devices. I/O processing shall prepare information for output and process input data. These I/O programs shall be designed to facilitate adding devices in the future, and shall provide the facility for dynamic device assignments, modifications, and deletions.
2. I/O service requests: There shall be suitable commands and statements provided in each of the programming languages for making I/O requests to any I/O device. The capability shall be included to return to the requesting program when the I/O request is buffered, the I/O is complete, or an error or device malfunction has been encountered.
3. I/O software efficiency: The I/O software shall be designed to take advantage of the rated speed, error checking, and other features of all I/O devices. The I/O software shall contain sufficient buffers and re-entrant routines so that I/O devices are driven as close to rated speed as possible at all times (within the constraints of the hardware and software priority structures).
4. I/O service retries: I/O service software shall support a definable number of retries in the event of the failure of an I/O service request.

16782-2-3 PROCESSOR CONFIGURATION SOFTWARE

Provide software to control and monitor the state of each processor in the control system.

A. Processor and CPU Communications: Software shall be provided to control and monitor

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communications between the primary and backup processors and any auxiliary processors, and between each processor CPU. The software shall be structured to permit periodic and on-demand transfers of data over each link. It shall allow DTPW to add other processor data intercommunication functions in the future.

B. Processor Restart and Initialization

1. Software shall be provided to restart or initialize the execution of the control system functions. Restart shall be initiated manually from the software technician's desk, the maintenance partition, and the central processor control terminal, and automatically under certain predefined conditions. Initialization shall only be initiated manually from those locations stated above. Restarts shall be completed in less than 60 seconds from initiation, this being defined as full capability of running all functions the system is designed to perform. The restart and initialization functions that shall be provided are defined as follows:

I. Restart

- a. A restart is the resumption of control system functions following a reload of all logic and data in main memory from auxiliary memory. The restart software shall support reloading the memory-resident database from either the primary or backup snapshot database on auxiliary memory.
- b. A restart of the central processor shall automatically initiate resumption of all functions and a full scan of all LNPs and RTUs. This full scan shall retrieve the current status of all the data, not just items that have changed since the last scan. Following a restart, the alarm and event summary displays shall display all the alarms and events that are present in the system. Any alarms and events that were not annunciated before the last database snapshot, or recording prior to the restart, shall be annunciated following the restart. Following a restart, the user shall not be required to reenter data that was entered and recorded on disk prior to the restart.
- c. A restart of an LNP or RTU shall automatically initiate resumption of all functions and a full scan of all equipment states. This full scan shall retrieve the current status of all the data, not just those items that have been changed since the last scan.

II. Initialization

Differs from restart in that the database shall be obtained from an initialized copy of the database stored on a protected area of auxiliary memory, rather than from a periodic snapshot or an event-driven record. Initialization shall not require manual entries such as operating limits, time, date, and the description of the currently available configuration, but shall allow the entry of such data if non-default values are required. Use of this database shall not cause any commands to be issued to field devices. Device status differing from this database on initialization shall be considered "OUT OF CORRESPONDENCE" until updated by scanning of the RTUs.

2. A copy of selected portions of main memory shall be automatically written to a save area on auxiliary memory prior to initialization of main memory by the restart or initialization software. A partial or full record of the save area shall be available, along with sufficient information for a software technician to analyze the state of the system at the time of failure and to determine the direct cause of failure. All restarts and initializations shall be recorded by system alarm messages. Provisions shall be included to add data to the save areas from future application programs written by the Fire Alarm System technical staff. Both system restart and initialization shall be supported in the backup processor as well as the primary processor. Restart or initialization of the backup processor shall not change its backup state.
3. A failover shall be the preferred course of action in the event of a system failure. Failovers shall be transparent to the user. An on-line system restart shall only be necessary where a failover is not possible.



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4. Whenever an on-line system restart is initiated, the system shall notify the users that a restart is in progress by means of a distinct audible annunciation and by clearing all the HMI screens and then displaying a message to this effect on all HMI displays. The audible annunciation shall occur upon initiation of the restart (or failover). Both the display clearing and the restart notification message shall be issued as early in the restart process as possible. The HMI display clearing shall occur no later than 10 seconds after the restart is initiated. The restart notification message shall occur no later than 10 seconds after the restart is initiated.

C. Processor Failover

1. The Contractor shall provide software that will enable both automatic and manually initiated processor failovers. Processor failover shall either transfer the execution of the Fire Alarm System functions from the primary processor to the backup processor—which shall become the new primary processor—or shall use another method of fault tolerance that shall be proposed by the Contractor and reviewed by DTPW. Manual processor failovers shall be possible from the software technician's console and the maintenance partition, from the local control consoles for the central processors, and from the equipment cubicle housing changeover equipment. Indications of which system is on line and the availability of the backup processor shall be provided in these equipment cubicles. In addition, this information shall be available upon the execution of diagnostic software. The response to the failure of a processor shall depend on the nature of the detected failure.
2. The failover logic shall suspend the operation of both the primary and backup processors in an orderly manner, and then restore the operation of the backup processor as the new primary processor. Processor failover logic shall determine the computer system status as a prelude to switching peripheral devices with suitable delays, restarting the system software and the application software, and saving computer system parameters and information useful for analysis of the failure.
3. Neither processor shall be favored as the primary processor, but one processor shall always be assigned as the primary processor. Subsequent to the repair of a failure that resulted in a failover, it shall not be necessary to return to the previous configuration to restore full functional capability. All processor failures and failovers shall be recorded via alarm messages. The time interval for processor failover shall not exceed 2 seconds. The processor failover time interval shall be measured beginning with the detection of a command to failover or a fatal hardware or software error in the primary processor and ending with the former backup processor commencing its data acquisition and man/machine interface functions as the primary processor.

- D. Device Failover:** Programs shall be provided that direct an orderly transition to a new mode of operation in the event of device failure. The new mode may consist of using an identical backup unit, using a backup device that is different from the normal device, or modifying the execution of programs such that the failed device can be bypassed without loss of data, without noticeable effect on the system and without the loss of system functions. In addition to automatic device failover facilities, there shall be manual device failover capability through HMI displays. The Fire Alarm System software shall output a message indicating the result of both automatic and manually initiated device failover. Reinstatement of failed devices shall be by manual command only. All device failures shall be recorded via alarm messages. All device failovers shall be completed in less than 2 seconds from initiation. This time interval shall be measured beginning with the detection of the device failure and ending when all the functions previously performed by the failed device have been restored.



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- E. Scheduled Failover: Provision shall be made for scheduled failovers to occur on a regular basis to equalize operating times for redundant processors and hard drives. Software shall provide this as a continually adjustable timed function, adjustable to occur at any time of day, from every 24 hours up to every 7 days. Once set, the time period shall remain in effect until changed by software maintenance action.

16782-2-4 SYSTEM PERFORMANCE MONITORING SOFTWARE

Software shall be provided to continuously monitor hardware and software performance in real time, with a minimum of interference with the normal functions of the Fire Alarm System. The time periods over which statistics are gathered shall be adjustable by the software technician, and the accumulated statistics shall be reset at the start of each time period. All statistics shall be available for logging and display on demand during each time period, and after each time period.

- A. Processor Resources Usage Monitoring: The Fire Alarm System shall calculate values for resource usage monitoring in each of the on-line CPUs (CPU idle time during main/auxiliary memory transfers, total number of transfers to/from auxiliary memory, and total transfer time). The statistics gathered by this function shall be sufficient to determine that the Fire Alarm System is meeting the processing capacity requirements described in this contract. For virtual memory systems, the statistics shall also include the page fault rate, average number of pages in use in main memory, and average number of pages in use in the modified page file. The collection of application program statistics shall not interfere with the gathering of processor CPU resource statistics.
- B. Recoverable Error Monitoring: Software shall be provided to update, identify, display, and log error counters for all transient hardware and software errors that are recoverable without Fire Alarm System failover or restart. Recoverable errors are those that clear within a defined number of retries. The number of error retries shall initially be set by the Contractor. Non-recoverable errors are those that do not clear after a defined number of retries.
- C. Error Rate Monitoring: Error rate monitoring software shall be provided or any device that permits error checking and that requires a high communications rate with a processor. The error rate monitoring function shall determine the rate of errors of a device over a specified unit of time. The error rate shall be calculated based on the number of data transfers that had errors compared with the number of data transfers that were initiated. The time period shall be adjustable. For each device included under error rate monitoring, it shall be possible to specify an error rate limit which, when reached, shall cause an alarm to be generated. The system shall be able to print all error rate statistics on demand. Each error rate statistic shall be printed with the appropriate description. Each error rate statistic shall be individually reset. As a minimum, all LNP, RTU, and central processor communications channels, and all processor-to-processor data links, shall have their error rates monitored and reported.



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16782-2-5 DIAGNOSTIC, TEST AND DEBUG SOFTWARE

Diagnostics and debuggers shall be provided to allow suitable licensed members of the operations staff to monitor the states of the processes, test selected processes, and carry out on-line or off-line interactive debugging of processes under controlled conditions on any of the processors forming the Fire Alarm System. Debugging commands for full and selective tracing, altering of words of the main and auxiliary memory, dumping the contents of memory to a printer, and inserting debugging snapshots at strategic points in the programs are required.

16782-3 PART 3: EXECUTION

16782-3-1 TIMING TEST

To evaluate the capacity of the Fire Alarm System and prove that it meets the loading criteria as specified in APPENDIX B, SECTION 16780, Control System Equipment, the Contractor shall demonstrate the system performance utilization by performing a timing test for the peak load conditions during factory and field testing. Updated estimates (detailed to the subprogram level) of CPU loading shall be provided bimonthly with the Contractor's progress report. The periodic reports shall identify all measurements, assumptions, and calculations used for the timing analysis update.

END OF SECTION 16782



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SECTION 16821

Fire Alarm System

16821-1 PART 1 GENERAL

16821-1-1 SUMMARY

- A. Section includes amplifier and control equipment, input equipment, and reproducer equipment.
- B. Related Sections:
 - 1. APPENDIX B, SECTION 16810 - Cable and wire.

16821-1-2 SYSTEM DESCRIPTION

- C. Audible component of passenger communications system is designed to provide audible messages to Metromover station customers. The Fire Alarm system for voice shall be modified to have the capability of providing passenger information using zoned and joint (all-call) paging. The low-level audio signals shall use a Digital Paging protocol for communications between Central Control and the Metromover stations.
- D. Input Components:
 - 1. Real-time audio announcements from station Fire Management and Emergency Panels.
 - 2. Real-time audio messages and announcements from remote Central Control operator. (Refer to APPENDIX B, SECTION 16820).
 - 3. Real-time messages from local station (onsite) Operator via microphone system.
 - 4. Real-time announcements from Fire Panel and other Station emergency equipment as defined.
 - 5. Pre-recorded and/or automated messages from remote Central Control source.
 - 6. Pre-recorded, automated warning messages activated by local track signals.

16821-1-3 REFERENCES

- A. Building Industry Consulting Service International:
 - 1. TDMM-2003 - Telecommunications Distribution Methods Manual, 10th Edition.
 - 2. TCIM-2001 - Telecommunications Cabling Installation Manual, 3rd Edition.
- B. Federal Architectural and Transportation Barriers Compliance Board:
36CFR1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.
- C. Federal Communications Commission:
47CFR68 - Connection of Terminal Equipment to the Telephone Network.
- D. Institute of Electrical and Electronics Engineers:
 - 1. ANSI/IEEE C2 - National Electrical Safety Code.
 - 2. ANSI/IEEE C62.41 - Guide for Surge Voltages in Low-Voltage AC Power Circuits.
 - 3. ANSI/IEEE C62.45 - Guide on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits.
- E. International Electrical Testing Association:
NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- F. International Electro-technical Commission:
 - 1. IEC 268-5 - Sound System Equipment - Part 5: Loudspeakers.



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2. IEC 529 - Degrees of Protection Provided By Enclosures.
- G. Speech Intelligibility measurement standards:
 - ISO 7240 Fire detection and alarm systems, section 16 & 19
 - NFPA 72 National Fire Alarm Code 2010, Annex D Speech Intelligibility
 - BS 5839-8 Fire detection and alarm systems for buildings. Code of practice for the submittal, installation, and servicing of voice alarm systems
 - DIN 60849 System regulation with application regulation DIN VDE 0833-4
 - VDE 0828-1 Electro-acoustic Emergency Systems
 - IEC 60268-16 - Objective Rating of Speech Intelligibility by Speech Transmission Index.
- H. Telecommunications Industry Association/Electronic Industries Alliance:
 1. ANSI/EIA 310-D - Cabinets, Racks, Panels and Associated Equipment.
 2. TIA/EIA 568 - Commercial Building Telecommunications Cabling Standard.
 3. TIA/EIA 607 - Commercial Building Grounding and Bonding Requirements for Telecommunications.
- I. Underwriter's Laboratories:
 1. UL 94 - Flammability of Plastic Materials for Parts in Devices and Appliances.
 2. UL 1449 - Transient Voltage Surge Suppression.
 3. UL 1480 Speakers for Fire Alarm, Emergency, and Commercial and Professional Use
- J. United States Department of Defense:
MIL-STD-810 - Environmental Engineering Considerations and Laboratory Tests.

16821-1-4 SUBMITTALS

- A. Submit in accordance with General Provisions.
- B. Product Data: Submit catalog data showing electrical characteristics and connection requirements for each component.
- C. Software simulation results of the proposed system shall be submitted to the Engineer for approval. The Sound Pressure Level produced by the simulation shall provide even sound distribution such that the maximum deviation shall be no more than 3 db at any station level. A sample of a simulation as was generated for the Airport Station is attached in **ATTACHMENT X**.
- D. Test Reports: Indicate procedures and results for specified field testing and inspection.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- F. Manufacturer's Field Reports: Indicate activities on site, adverse findings, and recommendations.

16821-1-5 CLOSEOUT SUBMITTALS

- A. Submit in accordance with General Provisions for Construction.
- B. Operation and Maintenance Data: Submit instructions for adjusting, operating, and extending system, and repair procedures and spare parts documentation.

16821-1-6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience, and with service facilities within 100 miles of project.
- B. Supplier: Authorized distributor of specified manufacturer.



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- C. Installer: Authorized installer of specified manufacturer with minimum ten years documented experience.

16821-1-7 MAINTENANCE SERVICE

Furnish service and maintenance of Fire Alarm equipment for one year from Date of Substantial Completion.

16821-2 PART 2 PRODUCTS

16821-2-1 Digital Paging

- A. The Digital Paging system shall allow paging announcements from Central Control to all Metromover stations, and shall support individual or group paging. Either system shall use the Ethernet Network for connectivity between Central Control and the Metromover stations. The Paging system shall be managed with the appropriate application software, either locally or remotely with manufacturer's application.
- B. The system shall also support the following requirements:
1. Ethernet connectivity and full IP compatibility with Network equipment specified in this contract.
 2. Utilize DHCP protocol for automatic IP address assignment.
 3. Support Static IP Address Assignment.
 4. All network parameters should be easily assignable including Default Gateway, Subnet Mask, and other network configurable parameters to allow easy integration into LAN network.
 5. Individual Station or Multiple Station paging.
 6. Efficiently communicate system wide emergency alerts or general announcements.
 7. Utilize the H.323 or SIP protocols to provide complete interoperability with other VoIP telephony solutions.



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16821-3 PART 3 EXECUTION

16821-3-1 EXISTING WORK

- a. Replace existing Fire Alarm equipment with a Digital Fire Alarm / Paging system. The existing system is defined as the existing power amplifiers, mixers, audio control equipment as applicable, speakers / horns and associated wiring. The existing pre-recorded and microphone / low level source inputs and pre-mixer or mixer at Central Control also comprises the existing system.
- b. Integrate Fire Alarm system equipment with VoIP interface at stations and Central Control.

16821-3-2 INSTALLATION

- A. Install equipment in accordance with safety requirements of ANSI C2 and DT regulations; and ADAAG (36CFR1191) requirements.
- B. Integrate Fire Alarm system with related systems, such as pre-recorded announcements from, Emergency Notification Systems, Telephone System and appropriate Signaling Systems as required.
- C. Install equipment racks in accordance with ANSI/EIA 310.
- D. Ground and bond Fire Alarm system equipment in accordance with Section 16060 and TIA/EIA 607.

16821-3-3 TESTING

- A. All testing shall conform to APPENDIX B, SECTION 16950 Testing.
- B. Verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
- C. Perform operational system tests to verify that system complies with specified requirements. Test equipment for proper operation in all functional modes of system operation:
 1. Broadcast message representative of a normal voice page over Fire Alarm system.
 2. Ensure that announcements do not conflict with each other, and that proper prioritization of the inputs has been implemented using message-stacking device. Message prioritization will be established by DTPW and programmed prior to final acceptance and testing.
 3. Perform Intelligibility Test.
 - a. Speech Transmission Index Rating: 0.65 STI or better.
 - b. Common Intelligibility Scale Rating: 0.81 CIS or better
 4. Document test results and submit to Engineer for approval.



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16821-3-4 DEMONSTRATION AND TRAINING

Instruct DTPW staff on how to adjust, operate, and maintain Fire Alarm system equipment:

1. Review procedures and schedules for troubleshooting, servicing, and maintaining equipment.
2. Demonstrate methods of determining optimum alignment and adjustment of components and settings for system controls.
3. Review data in maintenance manuals.

END OF SECTION 16821



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SECTION 16950
TESTING

16950-1 PART 1: GENERAL

16950-1-1 DESCRIPTION

This section includes requirements for tests and inspections to be performed at points of assembly and on the job site, and is intended to provide minimum requirements for tests. Organize and implement an Integrated Systems Test Plan as an integral part of the total project Test Plan described in APPENDIX B, SECTION 16950. The test must verify the adequacy of the system to meet all technical and performance requirements in an orderly and logical sequence.

16950-1-2 DEFINITION

The Metromover Fire Alarm System is defined as the system comprised of existing control, command and indications systems, interfaces, and equipment, including all hardware and software that comprise the existing Fire Alarm System, and its integration with the new hardware and associated software and subsystems, configuration and programming that will be installed by the Contractor, to form an integrated Fire Alarm System. The new subsystems shall include but not be limited to the following components:

- A. Programmable Logic Controllers
- B. Ethernet Network equipment and Software that will comprise the Wide Area Network that shall be used as the transport mechanism for all communications
- C. Fiber Optic Cable that shall be used as the infrastructure for communications between distributed controller nodes
- D. Interfaces with existing ATO equipment in the Metromover stations
- E. Interfaces with existing communications equipment and computers at Central Control

16950-1-3 GENERAL

- A. Tests and inspections shall be for the purpose of verifying submittal and nameplate ratings; ensuring proper performance, safety, reliability, and maintainability; and demonstrating compliance with these Technical Provisions Systems requirements.
- B. Tests and inspections shall be conducted in accordance with the manufacturer's standards unless otherwise specified.
- C. DTPW shall be granted free access to inspect any item of equipment selected by DTPW at any time, at any of the Contractor's or suppliers manufacturing and assembly plants. The Contractor shall grant access for inspection within 48 hours of the request being received.
- D. DTPW will witness such and any tests as selected by DTPW, and shall be granted free access to any facilities where installation or tests are in progress and to all inspection and test records.
- E. The installation and testing of equipment by the Contractor shall allow for close monitoring of the Contractor's staff by DTPW.
- F. Ample time shall be allowed within all testing programs for alterations to equipment, systems, and designs to be carried out, together with all necessary retesting prior to final commissioning.
- G. If required, trains and train operators required for site dynamic testing shall be provided by DTPW.
- H. Conduct all tests in accordance with DTPW-reviewed test procedure. Furnish all labor, materials, and equipment necessary to perform tests, record data, and prepare reports. Tests shall demonstrate compliance with the requirements of these Technical Provisions - Systems. Any changes required to bring any system into compliance shall be carried out by the Contractor at no additional cost to DTPW, including the costs for repeat testing. After completion of each test, remove all test equipment and temporary facilities, and restore the equipment to full operational status.
- I. Organize and conduct each test. Record all test results required, quoting actual measured values where



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necessary. Test result data sheets shall be signed by an authorized and qualified member of the Contractor's staff, and shall be complete in every respect.

- J. If, during the course of any test, it is found necessary to revise, expand, or reduce the scope or detail of the test procedure, these revisions shall be recorded and the test data sheets modified accordingly. Any such changes in the test procedures shall be reviewed and approved by DTPW within 24 hours of completion of the test.

16950-1-4 TEST CATEGORIES

The work required by this section is divided into six main categories:

- A. Prototype and type testing (at factory) as applicable
- B. Factory testing (at factory) as applicable
- C. Post-installation testing and inspection (on site)
- D. Acceptance testing (on site)
- E. System integration testing (on site)
- F. System demonstration testing (on site)

16950-1-5 EMI

Contractor shall include in the submittal review materials, the tests to be conducted to demonstrate compliance with the specified requirements for electromagnetic compatibility and environmental conditions.

16950-1-6 SUBMITTALS

- A. Unless otherwise specified, all submissions shall be in accordance with the requirements of APPENDIX B, SECTION 16950 - Systems General.
- B. Submit a Test Plan covering all required factory and site tests for review within 45 days of NTP. This plan shall demonstrate that all of the testing requirements contained in this and other sections of the Technical Provisions - Systems have been considered, including the full testing of all materials, and that adequate provisions have been made for testing in the overall program; and to achieve an early mutual understanding between the Contractor and DTPW on the range, depth, and other aspects of tests to be conducted. Integrate the Test Plan with that for the signaling and communications systems as necessary, and coordinate testing of all systems throughout all stages of testing. The Test Plan shall demonstrate that the Contractor has supplied complete, safe, and operable Fire Alarm System and ancillary systems.
- C. After initial review, the Test Plan shall be amended as required to reflect changes in system submittal or the identification of additional testing requirements.
- D. Submit installation inspection records no later than 15 days after completion of the initial inspections, and resubmit no later than 15 days after correction of the last discrepancy item.
- E. Submit test procedures as described in volume I, APPENDIX B, SECTION 16950, of the Technical Provisions - Systems document for review and DTPW approval for each test identified in the Test Plan, no later than 30 days prior to implementation. No test will be performed without an approved test procedure.
- F. Submit test reports containing the results of all tests conducted at any factory or field location, even when results are recorded on a test data plate affixed to the component or unit. The tests are to be submitted no later than 15 days after the performance of the test.
- G. Type test certificates shall be submitted, where applicable, to demonstrate that equipment or components meet the performance requirements of these Technical Provisions - Systems specifications.

16950-2 PART 2: PRODUCTS

Products are not required for this section.



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16950-3 PART 3: EXECUTION

16950-3-1 PROTOTYPE AND TYPE APPROVAL TESTING

- 1 Thoroughly test pre-production units and system and sample units and materials for type approval. Individual units and complete assemblies shall be tested and approved before any series production of that unit is commenced. Undertake such comprehensive and conjunctive testing to prove to the satisfaction of DTPW that all units forming a complete system meet the performance requirements and are fully compatible, not only in respect of other equipment specified herein but also in respect of associated equipment with which the programmable logic control and communications systems interface. Corrections shown to be necessary as a result of these pre- production tests shall be incorporated in all production units.
- 2 The above tests need not be carried out if previously accepted test data, and records of proven service history in a similar environment, for that equipment type are submitted for and receive the specific review of DTPW.

16950-3-2 FACTORY TESTING

16120-2-1 Factory Subsystem Test: The factory subsystem test shall include the inspection, hardware test, and software test of any clearly identifiable system or subsystem prior to its use as a component in the Metromover Fire Alarm System as a whole. The tests shall prove that the system or subsystem meets its particular physical, functional, and performance specification. These tests shall take place when the specified control system hardware—including all peripherals, and I/O subsystems have been installed and completely tested in the Contractor's facility, or a complete communications system has been assembled.

16120-2-2 System Functional Performance Tests

1. The system functional performance tests shall be fully integrated tests of each system as a whole, conducted at the Contractor's facility. In addition to diagnostic software required by this Technical Provisions - Systems document, provide all testing hardware, software, and special test and calibration equipment required to demonstrate the acceptable operation of all hardware units and subsystems. During factory testing, the Contractor may only substitute or interchange modules, equipment, or cables if a failed component is diagnosed.
2. All applicable engineering changes shall be incorporated into each system before starting the system functional performance tests. If any engineering changes have been omitted that are deemed necessary by DTPW, the Contractor shall perform the necessary modifications at no additional cost to DTPW.
3. Factory tests shall not proceed without the prior review and delivery of the specified hardware and software documentation, including drawings, program descriptions, flow charts, and actual main and auxiliary memory maps where appropriate. In addition, upon their review by DTPW, operator's manuals and software manuals shall be used during the tests as guides to system operation, and as a check of the accuracy and completeness of the manuals.
4. All tests shall include the reasonable exercises which the integrated hardware and software can be expected to perform. The testing shall include at least the following:
 - I. Physical inspection
 - II. Correct standards of workmanship and quality
 - III. Correct identification labels, cabling, tagging, housing, and mounting, etc.
 - IV. Adequate accessibility
 - V. Compliance with the Technical Provisions - Systems and reviewed drawings (including compliance with fire safety and materials requirements)
 - VI. Verification of model numbers, quantities of items, etc.
 - VII. Demonstration that all hardware functions properly by a thorough exercising of devices, both individually and collectively
 - VIII. Demonstration of proper functioning of all software, including software integration tests



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- between other software and hardware, and test cases with normal and exception data
- IX. Data and voice channel integrity shall be verified under the simulation of communication failure and failover.
 - X. Simulation of system alarm and status change conditions through each input device. Alarm and status changes for each subsystem shall be tested.
 - XI. Demonstration of all man/machine interface functions
 - XII. Demonstration that spare capacity requirements have been met
 - XIII. Demonstration of the use of on-line diagnostics and test programs
 - XIV. Full Operational Recovery from AC power failures
 - XV. Random tests to verify the accuracy of hardware and software documentation
 - XVI. Demonstration that all identified safety-related concerns and potential hazards have been satisfactorily resolved or corrected
 - XVII. Demonstration of the compliance with the EMC requirements of this Technical Provisions - Systems document
- 16120-2-3** Integrated System Tests
- A. These integrated tests shall be conducted after the system functional performance tests have been successfully completed on each system and reviewed by DTPW. These tests shall ensure that each system is free of problems caused by interactions between software and hardware while the system is operating as an integrated whole. They shall ensure that all functions can be performed concurrently while all non-redundant equipment operates for a continuous 100-hour period.
 - B. If more than two restarts or failovers (of a processor, CPU, or device) have occurred in the 100-hour period, or if any hardware device, redundant or otherwise, has been inoperable for more than a total of 10 hours during the test, the test shall be extended by 24-hour increments until these requirements are satisfied .
 - C. The integrated system test shall fully exercise all system hardware and software.
- 16120-2-1** In view of the expected environmental conditions and to ensure the efficient operation of equipment supplied under this Technical Provisions - Systems requirement, all equipment shall be subject to environmental testing. A proportion of all equipment shall also be subject to severe environmental testing under continuous and cyclic extremes of, for example, power supply and signal levels. Where units are required to have high reliability characteristics they shall be subject to a soak or burn-in period with a subsequent retest.
- 16950-3-3** POST INSTALLATION TESTING AND INSPECTION
- A. Installation inspection and testing shall be performed to determine that the equipment for each system has not been damaged or the performance in any way impaired in any manner subsequent to shipment from the Contractor's factory; has been installed and connected correctly; and that all equipment is in conformance with the Technical Provisions - Systems requirements and DTPW-reviewed submittal, as a system.
 - B. Inspect the quality and adequacy of installation of each item of equipment immediately following completion of installation. The inspection shall verify that the equipment has been installed in accordance with the Contractor's procedures and with the requirements of this Technical Provisions - Systems document.
 - C. Prepare inspection records to demonstrate that each item of equipment has been inspected and attach to it a detailed list of any discrepancies found. As the discrepancies are rectified, the discrepancy sheets shall be amended to record the corrections.
 - D. Installation inspections shall be carried out by a member of the Contractor's Quality Control Organization.
 - E. Perform all tests required to ensure the proper and safe operation of all control and communications equipment and to prove the adequacy and acceptability of the total installation. Testing to be performed shall duplicate the general functional areas covered by the factory integrated tests but need not repeat the



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operation of every single function. Testing shall be sufficient to provide confidence that the Acceptance Tests will proceed without major difficulties:

1. Test all wire and fiber optic cable after installation to the cabinet termination points to ensure continuity, insulation resistance from conductor to conductor, and resistance from each conductor to ground. The minimum insulation resistance to earth for circuits operating below 600 volts shall be 50 megohms, Actual ohm readings shall be recorded on test result forms. The equipment shall be suitably protected from damage during these tests.
2. All grounding shall be tested to verify proper and adequate connections. The resistance from equipment to ground buses shall be less than one ohm measured between the equipment case or name and the ground bus.
3. All wiring shall be tested after installation to ensure proper connection according to the circuit plans.
4. The tests to be performed shall cause each system and subsystem to be sequenced through key functional areas, and shall include simulated conditions where necessary to prove that the installation is in compliance with all requirements.
5. Prior to the start of each series of testing, two copies of the test documentation shall be placed in each appropriate equipment room. These prints shall be retained in the equipment rooms and marked up to show any modifications made during testing at the time the modifications are carried out. At the completion of the test sequence, one set of test prints shall be left in the equipment room and the other shall be returned to the Contractor's facility to update the originals. The originals shall be revised and two new sets of test prints placed in each equipment room within 72 hours of completion of the test sequence in readiness for the next sequence of tests, and the second copy of the previous test prints shall be submitted for DTPW's record.

16950-3-2 ACCEPTANCE TESTING

- A. Before the commencement of the post installation testing of the new systems, the installation of each system shall be completed and it shall be functioning according to the requirements of the Technical Provisions - Systems documents. The interfaces to other systems shall be verified. The operation of the communications systems shall have been verified, and the interface requirements established between the various systems. Provide a list of all hardware or components replaced or changed after the completion of the factory tests.
- B. The tests shall repeat the system functional performance tests that were performed at the factory. Any additional tests or deletion of tests shall be reviewed by DTPW.

16950-3-3 SYSTEM INTEGRATION TESTING: In accordance with Technical Provisions - Systems, APPENDIX B, SECTION 16950.

- A. Develop interface test procedures for interfaces with the following systems:
 - i. Interfaces with the existing ATO system
 - ii. Interfaces with Metromover communications systems at Central Control
- B. Interface tests shall thoroughly demonstrate the correct operation of each functional operation that passes across the interface, and the capacity of the interface to handle the maximum amount of simultaneous data.
- C. Tests related to the Metromover Fire Alarm System:
 1. All databases and reports shall be tested for accuracy and completeness. The correspondence between a data entry name and its field input function name shall be verified to be functionally the same.



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2. Areas of system operation that were simulated or only partially tested in the factory shall be tested at this time. The validity of factory test results determined by calculation or extrapolation shall be reexamined, retested, and corrected as required.
3. Verify the accuracy of all inputs from the field equipment and all outputs to the field equipment.

16950-3-4 SYSTEM DEMONSTRATION TESTING: System integration shall be conducted in accordance with the technical provisions, APPENDIX B, SECTION 16950.

- A. System demonstration tests shall be conducted after all other testing has been completed and the systems are ready to place into service. Systems assurance demonstrations, as defined in APPENDIX B, SECTION 16025, shall be conducted during revenue service and other hours dictated by DTPW.
- B. Intentional disruption of the train service shall be included in the test procedures to demonstrate operational stability and the safety of the systems under adverse conditions.
- C. Utilize the control system to test for the determination of the actual headway achieved at each station, for all relevant routes, and for reversing movements, including those through sidings, to and from yards, and otherwise. During this test, check for the proper timing of automatic route setting, the tracking of trains, and event logging.
- D. Perform availability and reliability demonstration tests as described in APPENDIX B, SECTION 16025.

END OF SECTION 16950



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SECTION 17401
CONFIGURATION MANAGEMENT

17401-1 DESCRIPTION

This section specifies requirements for the Contractor's configuration management program, which includes planning, identification, definition, implementation, control, and accountability for the proposed systems.

17401-2 CONFIGURATION MANAGEMENT PROGRAM

- A. Maintain and make available to DTPW accurate and current configuration records throughout the period of performance of the contract, and for a three-year period after final contract payment.
- B. Do not procure nor produce any hardware or software until such items have been approved by DTPW.
- C. All items, beginning with the lowest level of repair or replacement, that are identified by the same part number shall have the same physical and functional characteristics, be equivalent in performance and durability, and be interchangeable without alteration to themselves or associated items, other than normal field adjustments. An item shall not be considered interchangeable if it requires modification for fit or performance. Old and new configuration items that require segregation shall be identified either by a new drawing number or with a dash number added to the original drawing.
- D. Hardware Identification: Mark all hardware components to the lowest level of repair and replacement, with part number identification. The hardware identification marking shall coincide with officially released engineering data. Nameplates on major equipment items shall provide space for DTPW numbers to be added by the Contractor at the direction of DTPW. Serialization is required on each item of equipment delivered unless otherwise directed by DTPW. Assign an individual serial number in a numerical sequence established for the type or model series equipment being supplied. Do not use duplicate serial numbers within a type or model series.
- E. Change Control: These specifications identify the procurement baseline for this proposed system. Changes to the procurement baseline—including any new work item or equipment desired by DTPW during DTPW input process, after the contract award—shall be controlled by the processing of Engineering Change Proposals (ECPs) in accordance with the procedures described herein. All ECPs shall be reviewed by the Contractor's organization responsible for configuration control for total impact evaluation prior to recommendation and submittal to DTPW for review and approval.

F. Classification of Changes

1. A proposed engineering change to any part, assembly, or equipment item for the supplier's product shall be designated as a Class I change when one or more of the following is affected:
 - I. Form, fit, and functional interchangeability
 - II. Reliability and maintainability
 - III. Weight or balance (where it is a factor)
 - IV. DTPW furnished equipment
 - V. Safety
 - VI. Electromagnetic interference characteristics
 - VII. Delivered product (retrofit)
 - VIII. Delivered training, operation, or maintenance manuals (where additional contract funds are required to revise manuals)
 - IX. Sources of repairable items (source control drawings)
 - X. Schedules or deliverables
 - XI. Initial provisioning
 - XII. Performance of equipment
 - XIII. Training
2. A proposed change to system software shall be designated as a Class I change when one or more of the following factors are affected:
 1. Function, performance (including reliability), maintainability, correctness, efficiency, flexibility, testability, usability, and outside tolerance
 2. Interface characteristics
 3. Cost
 4. Schedules
 5. DTPW furnished equipment
 6. Safety
 7. Skill levels, training, or engineering submittal
3. Any engineering change not affecting form, fit, function, or interchangeability, nor falling within the preceding definition of a Class I change, shall be designated as a Class II change. Some examples of Class II changes are corrections and clarifications of documents and drawings, substituting alternative materials or hardware, and those changes that do not affect the preceding listed Class I factors.

- G. Accountability: Maintain records such that the configuration of any item being delivered shall be definable in terms of its component part numbers. Account for differences between the as-built configuration and engineering released documentation. Record status of change approvals and incorporation at each point in product development, test, production, or operational usage. Maintain a serialization and configuration record. Maintain the status of interface specifications, control documents, and plans. Maintain status of software once a baseline has been defined.



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- H. Engineering Change Proposal (ECP)
1. Process each Class I change as an ECP and submit to DTPW for approval prior to initiating any implementation action. Any action or cost necessary to correct problems in the product or documentation arising from the Contractor's misclassification shall be borne by the contractor. The contractor shall also classify and control changes originating from subcontractors. Submit six copies of the ECP to DTPW, accompanied by technical documentation and the cost information necessary to fully evaluate the change.
 2. Report all Class I changes that affect safety immediately. Identify the change by ECP number if reported verbally and confirm the change in writing to DTPW within 24 hours. Class II ECPs shall be submitted to DTPW for information.
- I. Submittal Reviews and Audits
1. Submittal reviews and audits shall be conducted jointly by DTPW and the Contractor. In all cases, approval by DTPW shall not constitute relief from contractual obligations. Submit all documentation, plans, and submittal data for the reviews and audits at least 10 working days prior to the date of the review. The individual subsystems' software submittal, programs, and hardware will not necessarily progress at the same rate. The likelihood of multiple submittal reviews and final review must be considered in planning for reviews and audit. Software reviews as applicable and audit shall be in accordance with ANSI/IEEE Standard 730 (latest revision).
 2. Preliminary Submittal Review: Evaluate the submittal progress and technical adequacy of the selected submittal and hardware approach and determine their compatibility with the performance requirements and interfaces of the contract and the schedule to complete all tasks. The review shall be held on a mutually agreeable date consistent with the Contractor's submittal schedule at DTPW's facility.
 3. Final Submittal Review (FDR): Conduct the review(s) when detail submittal of an item is essentially complete and the production drawings are ready for release. Determine that detail submittal of the system element under review will satisfy the submittal requirements established in the contract specifications, and establish the exact interface relationships between the item and other items of equipment and facilities. The reviews shall be held on mutually agreeable dates consistent with the Contractor's submittal schedule at DTPW's facility unless another location is approved by.
 4. First Article Inspection (FAI)
 - I. Evaluate the assembled, in-place system by formal examination against the production drawings, specifications, and factory testing. Verify the system meets all requirements, and that documentation is internally consistent. This will occur at the Contractor's facility prior to installation at DTPW facilities.
 - II. Prior to FAI, provide DTPW with factory test procedures and a list of all drawings to the lowest levels of repair and replacement, identified by revision or issue. The list shall be as complete as necessary to identify the baseline. Upon satisfactory completion of the audit, the data package shall be corrected within two weeks to incorporate any changes found during the audit.
 - III. Schedule FAIs for all subsystems as applicable prior to first shipment from the subsystem supplier's plant.

17401-3 SUBMITTALS

Unless otherwise specified, all submittals shall be in accordance with APPENDIX B, SECTION 013300, and article 2.3 herein:

- A. Configuration Management Plan (CDRL)



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- B. Complete set of final (as-built) drawings, as specified in other sections specifying the various equipment, with all changes incorporated thereon (CDRL)
- C. FAI audit results (CDRL)
- D. Submittal review and audit documentation (CDRL)
- E. Contract data requirements list (CDRL)
- F. Shipping Plan (CDRL)
- G. Staging Plan (CDRL)

17401-4 CONFIGURATION MANAGEMENT PLAN (CDRL)

Prepare and submit to DTPW a Configuration Management Plan that covers hardware and software. Contractor's standard plan may be submitted for approval if it meets the stated criteria.

17401-5 DRAWINGS AND SUBMITTAL EVALUATION DATA

- A. Subsystem Plans: Plans including all subsystems are required in order to track drawings and submittal evaluation data for the entire system within the contract limits.
 - 1. Subsystem plans: All subsystems plans shall include all subsystem components details. All equipment shall be shown using standard DTPW symbols and nomenclatures.
 - 2. System cable plans: Showing all cable routings (local, power, express, and fiber) between communications locations, including subsystems covered under this contract. All cables shall be identified with numbers of conductors and size and nomenclature of the equipment to which the cable is connected.
- B. The above plans shall be used to replace the current plans due to changes under this contract. Existing plans (if any) shall be available upon request from DTPW for Contractor's reference. Submit five half-size prints and two half-size reproducible of each plan at least 15 working days prior to the scheduled start of the review.
- C. To support the submittal reviews for the project, provide five half-size prints and two half-size reproducible drawings of sufficient quality to make legible prints of those engineering drawings and documents that provide all essential data necessary to permit a meaningful evaluation and feasibility study of the proposed submittal. All engineering drawings and documents required to support submittal reviews shall be delivered to DTPW at least 15 working days prior to the scheduled start of the review. All drawings shall be dimensioned in English units.
- D. In addition to the other drawing requirements of these specifications, five full-size prints and two full-size reproducible drawings of sufficient quality to make legible prints of the following shall be submitted:
 - 1. Installation drawings for all equipment provided under this contract.
 - 2. Single line, control schematic, functional block diagrams, and wiring diagrams.
 - 3. System block drawings for all equipment components showing the following:
 - I. Overall dimensions, orientation, points of normal support, and method of mounting and removal
 - II. Location of access doors and covers showing the relation to equipment inside the enclosure
 - III. Required draw out space and space for opening of access doors
- E. Manufacturing Drawings
 - 1. Throughout the submittal and manufacturing process, submit a continually updated list of



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- manufacturing interconnect and assembly drawings and engineering change orders. Detail drawings shall be submitted at DTPW's request. Five full-size prints and two full-size reproducible versions of sufficient quality to make legible prints of manufacturing drawings shall be submitted to DTPW within 15 calendar days of their release or revision.
2. Prior to completion of the contract, Contractor shall submit to DTPW a complete set of the final (as-built) manufacturing drawings with all changes incorporated thereon. Two reproducible versions and eight copies of the above drawings shall be submitted.
- F. Drawing Quality and Updating: Drawings shall be of a quality where every line, number, letter, and symbol is clearly legible. Reproducible drawings shall be capable of reproducing drawings to this level of quality. Contractor shall update each drawing, incorporating all outstanding approved changes, at least once every 30 days. In no event shall more than five approved changes be accumulated against a drawing without incorporation, irrespective of its scheduled update. Changes to drawings shall be incorporated sequentially. Copies of all updated drawings that were submitted to DTPW in earlier revision shall be resubmitted in the original quantity and format.
- G. Calculations: Furnish calculations and other required data on standard 8.5 by 11-inch sheets, printed on one side only. Each sheet shall bear the following:
Contract name and number; title and number of pages; and data and revision status.
- H. Drawing Approvals: If approved by DTPW, a reproducible copy of each drawing will be identified as having received such approval by being so stamped and dated. Drawings stamped "not approved" or "approved subject to . . . ," and with required corrections shown, will be returned to Contractor for correction and re-submittal. Re-submittals shall be handled in the same manner as first submittals.
- I. Electronic Drawing Files: Prior to completion of the contract, the Contractor shall submit electronic files for all the subsystem plans, installation drawings, manufacturing/shop drawings, and as-built drawings. All drawings shall conform to DTPW's drawings and CADD standards.

17401-6 SHIPPING PLAN

Prepare and submit a Shipping Plan at least 90 days prior to the first shipment of equipment. The Shipping Plan shall include details on how Contractor plans to ship equipment from the factories to the site for installation.

17401-7 STAGING PLAN

Prepare and submit a Staging Plan at least 90 days prior to the first shipment of equipment. The Staging Plan shall include details on how Contractor plans to ship equipment from the factories to the site for installation.

17401-8 PROGRAM PLANS

Implement and maintain the plans during all phases of the contract.

17401-9 CONTRACT DATA REQUIREMENTS LIST

Implement and maintain the list to plan, schedule and track status of all submittals required by the Contract.

17401-10 REVIEW AND AUDITS

Conduct reviews and audits in accordance with specified requirements and procedures.

END OF SECTION 17401



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SECTION 17801
SYSTEM INTEGRATION

17801-1 PART 1: GENERAL

DESCRIPTION: This section describes system integration services and work requirements necessary to successfully integrate all systems, subsystems, and devices contained within the scope of this contract into a fully unified, operational, tested, and certified system. A description of the various interfaces between all subsystems is also provided herein. They include but not

17801-1-1 SUBSYSTEM INTERFACES

- A. The Contractor shall provide integration services for the all subsystems defined in this solicitation.
- B. The Contractor shall provide integration services for other subsystems not mentioned in the contract documents, but required to interface to, or to be integrated with, the subsystems supplied under this contract to achieve successful system integration.

17801-1-2 SYSTEM INTEGRATION

The Contractor shall designate a person or group of people as the system integrator(s). This individual or group shall be the responsible party for ensuring successful system integration.

- A. The system integrator shall attend and participate in all meetings, along with the Engineer.
- B. Reserved
- C. Locations and Facilities: The Contractor shall provide system integration work, services, and support for all locations, rooms, and facilities. Other locations and facilities not listed herein, but required to interface to or to be integrated with the system supplied under this contract to achieve a successful integration.
- D. Required System Integration Services: The Contractor shall provide the following services:
- E. Inter-subsystem interface control
- F. Staging, Migration Planning, cut-over planning, and support
- G. Project management/coordination of subcontractors
- H. Coordination of training
- I. Test planning and execution
- J. Test auditing
- K. System and subsystem commissioning
- L. Discrepancy resolution
- M. Executive-level presentations
- N. Internal arbitration
- O. All other services not mentioned here, but necessary to achieve a successful integration.

17801-1-3 INTER-SUBSYSTEM INTERFACE CONTROL

- A. The Contractor shall identify and manage all physical and logical interfacing among all the subsystems and subsystem devices provided under this contract to ensure that all communications, processes, and interactions among devices, subsystems, and that the system project provides optimum performance.



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- B. Any existing device, subsystem, or system that interfaces with any of the equipment provided under this contract shall be identified prior to performing any integration work.
- C. Interfacing with old, fragile, or obsolete equipment shall require written approval from DTPW.
- D. All device, subsystem, and system interfaces shall adhere to the approved interface requirements. Changes and deviations from the interface requirements shall require the interface matrix to be submitted for review and approval at least 15 days prior to implementation.



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17801-1-4 STAGING, MIGRATION PLANNING, CUTOVERS, AND SUPPORT

- A. The Contractor shall provide staging and migration process for all devices, subsystems, and systems in a coordinated and phased manner so as to ensure a smooth transition from the existing devices, subsystems, and system to the new devices, subsystems, and system.
- B. The migration process shall be executed in accordance with the conformed and approved Migration Plan.
- C. The Migration Plan shall ensure continuity of revenue service for the Metro system. Under no circumstances shall the work of this project impede ability of DTPW to operate its regular revenue service. Work restrictions and availability of DTPW resources shall be considered in the Migration Plan.
- D. The Contractor shall provide system integration services for all cutover stages throughout the life of this contract.
- E. Planning for all cutovers shall be responsibility of the system integrator.
- F. F. The Contractor (system integrator) shall be present at all cutovers, and shall provide support during the migrating period.
- G. At any time, simultaneous work on the stations shall be limited to a maximum of two stations (including corresponding ancillary facilities). This is intended to constrain the use of DTPW personnel at any given time.
- H. The cutover and Migration Plan shall be presented and finalized during the submittal phase. However, cutover plans for individual subsystems/stations shall be available at least 30 days prior to the actual cutover.
- I. The Contractor shall provide on-site technical support for the peak operational hours during migration and cutover for all systems. On-call support shall be provided on off-peak hours, 7 days a week, while all systems are being migrated. Such a support period shall at a minimum extend from the two weeks prior to the deployment of the CSCS hardware until the final acceptance test is completed, plus two weeks of on-call service post-acceptance.
- J. Migration restrictions:
 - 1. No downtime to revenue operations shall be allowed.
 - 2. Temporary facilities and configurations shall be removed after they are no longer needed.
 - 3. Restricted downtime will be allowed for safety or critical equipment.
 - 4. Construction and installation of the new subsystems shall be done in parallel to avoid interfacing to old, fragile equipment. The submitted Migration Plan shall comply with the requirements and restrictions listed herein and elsewhere in the contract specifications, and with any requirements produced by DTPW during the submittal phase.
- K. Cutover requirements:
 - 1. Before a cutover can occur, the subsystem, station, or device shall be fully tested and approved in accordance with its system acceptance Test Plan.
 - 2. Subsystems/stations containing more than an individual subsystem (as defined in this section) shall require that every individual component subsystem be fully tested and approved before testing the (larger) composed subsystem/station.
 - 3. Cutover plans shall be provided at least 30 days in advance of the corresponding cutover.
 - 4. All plans submitted shall conform to the requirements listed herein, elsewhere in the specifications and those requirements generated by DTPW during the submittal phase.



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17801-1-5 COORDINATION OF TRAINING

- A. The Contractor shall propose appropriate times for offering the training courses, as required.
- B. DTPW will review and approve (as appropriate) the final Training Plan and schedule. After DTPW approval, any changes to the schedule shall be negotiated with DTPW.
- C. Requirements for training
 - 1. Training shall be provided at different hours of the day (as appropriate) so that all DTPW shifts will be able to participate.
 - 2. For every system configuration change, temporary or permanent, the Contractor shall provide training prior to implementation. For temporary changes the Contractor may use informal on-site training.
 - 3. Training courses and material shall cover the operational concept, maintenance, troubleshooting, and operations of all subsystems provided under this contract.
 - 4. All training examples, exercises, and examples shall be based on the actual DTPW Metromover system. Generic examples and exercises shall not be allowed.

17801-1-6 TESTING PLANNING AND EXECUTION

- A. The Contractor is responsible for all Test Planning and procedures. See APPENDIX B, SECTION 16950 for detailed Test Planning and execution requirements.
- B. The Contractor designated system integrator shall plan and execute planning for the following tests:
 - 1. First Article Inspection Tests (FAITs) as may be required.
 - 2. Subsystem FATs
 - 3. Integrated FAT.
 - 4. Subsystem availability tests
 - 5. System acceptance test
 - 6. Integrated System Availability Test
 - 7. Final acceptance test



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17801-1-9 TEST AUDITING

- A. The Contractor shall provide a test auditor for all tests conducted by the system integrator to certify that all tests performed on all the devices, subsystems, and system are accurate, and that testing complied with the procedures.
- B. DTPW will provide a representative to witness all tests. However, the witness signature shall not relieve the Contractor (test auditor) of its responsibilities and liability.

D. SYSTEM AND SUBSYSTEM COMMISSIONING

- 1. The Contractor shall plan and coordinate all subsystem and the system commissioning.
- 2. Commissioning of any subsystem and the system shall be coordinated with DTPW, and shall adhere to the respective Test Plan presented by the Contractor and approved by DTPW.
- 3. Requirements for Commissioning
 - I. No discrepancies in classification Priority 1 (as referenced in section, DISCREPANCY RESOLUTION, below) shall be left open.
 - II. Availability test completed and approved.
- 4. All work under this contract requires all new subsystems to be constructed in parallel to the existing system components. Commissioning of devices or subsystems to work under the existing system shall only be implemented per DTPW request. For such occasions the Contractor shall provide all training and manuals, perform a complete set of tests (including subsystem availability test as applicable), and resolve all discrepancies prior to commissioning.
- 5. All commissioned devices or subsystems become property and responsibility of DTPW upon commissioning. Warranty shall still be applicable.
- 6. The Contractor shall provide cutover services for commissioned devices or subsystem. Cutover plans shall be submitted prior to cutover, as normally specified.
- 7. System availability test: A test to confirm the overall system availability shall be performed after all cutovers have been performed.

E. DISCREPANCY RESOLUTION

The Contractor's system integrator shall keep track and pursue resolution of all discrepancies, including software bugs, in a timely manner, as required below:

- 1. Discrepancies/bugs shall be classified in three categories and assigned a priority for resolution. The priority shall be assigned by DTPW-designated test engineer to all discrepancies after testing any subsystem, station, device, or system. The list below relates the discrepancy categories to the appropriate resolution priority and time for resolution:
 - I. Critical, Priority 1 - One natural month after initial testing will be allowed for resolution: These discrepancies may cause instability, improper operation, or may provide insufficient or confusing information that could cause an accident or damage to a device, subsystem, or system.
 - II. Major, Priority 2 - Two natural months will be allowed for resolution: These discrepancies do not cause instability or incorrect operation; however, they may provide erroneous non-critical information or annoyance.
 - III. Minor, Priority 3 - Three natural months allowed for resolution: These discrepancies are of a cosmetic nature, and do not interfere with operations.
- 2. Time for discrepancy resolution shall start counting from the date the discrepancy was noted in the discrepancy log.
- 3. Closing of discrepancies on the discrepancy log, regardless of whether the bug was generated internally by the Contractor or by DTPW, shall be witnessed by DTPW.



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4. Discrepancy log reports shall be periodically submitted at least once monthly. However the Contractor shall submit discrepancy logs within two business days upon request at any time during construction.
5. Testing for problem resolution shall be conducted monthly, after the initial FAT for the first subsystem for which discrepancies are generated.
6. During construction, hardware/interface incompatibilities among devices, subsystems, and systems shall be tracked and resolved by the system integrator.
7. Unless otherwise specified, no device, subsystem, software build, or system can enter live operation with unresolved Priority 1 discrepancies.
8. Reserved.

F. EXECUTIVE PRESENTATIONS

- A. The system integrator shall provide, at a minimum, quarterly presentations to DTPW to report on integration issues and progress.
- B. These presentations shall be detailed and technical enough as to provide a good understanding of the issues being discussed to a technically informed person (not an expert in the subject matter).

17801-1-9 INTERNAL ARBITRATION

The system integrator shall resolve any and all technical disputes among subcontractors.

17801-1-10 DEFINITIONS

The list of definitions hereunder shall only apply within the context of this section. The purpose of this list is to define the work, systems, services, and goals requested from the Contractor under this section, as viewed from the point of view of the overall integrated system.

- A. Device: Shall refer to the individual components of a subsystem. Physically a device may be composed of smaller components or modules.
- B. Subsystem: Shall refer to a particular conglomerate of devices operating to achieve a particular functional goal provided or interfaced with under this contract. Some examples of subsystems are as follows:
 1. Central Control System (Sub) System: Specified elsewhere in these specifications.
 2. Fire Management (Sub) System: Specified elsewhere in this contract.
- C. System: Shall refer to the integrated conglomeration of subsystems and devices provided or interfaced with under this contract, working in harmony and cooperating to achieve successful operation as specified by the contract documents. The system shall include every component, process, and hierarchy between the discrete field instrumentation devices throughout Metro and the Central Control MMI interface.
- D. Successful Integration: Shall refer to achieving the overall system integrated functionality required by the contract documents and by any negotiations between the Contractor and DTPW.
- E. System Integration: Shall refer to the work of harmonizing and fine-tuning (by coordinating, testing, etc.) the physical and logical interfaces among devices and subsystems, as specified in the contract documentation, to achieve a fully operational unified system as required by the contract documents.
- F. Physical Interface: Shall refer to those interfaces where a direct interaction or connection is present.
- G. Logical Interface: Shall refer to the communications of two or more devices on the highest communication layer (e.g., application layer for the OSI model). In other words, it refers to the data exchange interface among data terminating equipment (as opposed to data communications equipment).
- H. Commissioning: Bringing a device or subsystem into operations using the existing subsystems or the system. This definition excludes bridging the new Central Control System with the existing



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subsystems/systems.

17801-1-11 QUALITY ASSURANCE

- A. Testing of devices and subsystems, and calibration of testing equipment, shall be performed per the requirements in this section, applicable codes and standards, and industry best practices (as specified elsewhere).
- B. Installation of new equipment shall be done as required herein, following the manufacturer's instructions and recommendations, industry best practices, and applicable codes and standards as specified elsewhere.

17801-1-12 SUBMITTALS

- A. All submittals listed under Part 2 of this section shall be done in accordance with APPENDIX B, SECTION 013300 and the requirements listed hereunder.
- B. DTPW reserves the right to review and approve/disapprove all submittals required under this section.

17801-1-13 GUIDANCE TO CONTRACTOR

Except where noted, equipment meeting the requirements of this specification may be considered for use. The specific models of equipment and accessories to be submitted under this specification must be approved by the Engineer, based on their degree of compliance with these requirements and their suitability for the needs of DTPW.



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17801-2 PART 2: PRODUCTS

17801-1 SUBMITTALS: CONTRACT DATA REQUIREMENTS LISTS (CDRLs)

- A. The Contractor, at a minimum, shall submit each one of the documents listed below. These shall be submitted on the time frame specified for each submittal.
- B. Submittal Phase Submittals
1. Migration Plan: This document shall describe in detail the strategies involved in migrating from the old subsystems and system to the new. It shall meet the contract requirements for both hardware and software, after analyzing the system survey findings and the information provided at DTPW input phase.

The Contractor, at a minimum, shall identify and describe the following items and processes necessary in the conversion process:

- I. Technologies to be implemented
 - II. Phases for all work
 - III. Risks involved in every alternative proposed
 - IV. Tasks required to achieve successful migration and integration
 - V. Training for every phase, every group of users, and for every subsystem to be deployed
 - VI. Human resources involved in the Migration and Cutover plan
 - VII. Equipment needed to accomplish migration
 - VIII. Processes that will help attain a successful migration
 - IX. Real estate involved for storing, installing, testing, and operating while migrating
 - X. Temporary facilities and temporary fixes performed to both new and existing equipment during the migration process
 - XI. Temporary configuration implemented during the migration process
 - a. The preliminary Migration Plan shall be submitted at least 15 days prior to the final submittal review (FDR) and presentation.
 - b. The conformed Migration Plan shall be submitted for review at least 20 days after the FDR presentation.
2. Test Plan: It shall contain all tests based on the requirements specified elsewhere in the contract documents. The Test Plan shall be submitted 15 days after NTP.
3. Master Training Plan
- I. The master Training Plan shall be based on the requirements described on the individual sections, DTPW input, and those approved during the submittal phase.
 - II. The Training Plan shall be submitted one week (five business days) after the Migration Plan has been reviewed and approved by DTPW.



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- C. Development and Factory Acceptance Phase Submittals
1. Master Interface Control Document (ICD): This CDRL shall clearly identify in both text and chart (matrix) format all the interfaces among devices, subsystems, and system, both old and new.
 - I. It shall clearly identify all logical interfaces for all devices and between subsystems.
 - II. All physical interfaces shall be identified and described.
 - III. All layers interfaces shall be defined and compared in relation with the OSI 7 layer model.
 - IV. Frames, packets, overhead, message format, expected inputs, expected outputs, and any relevant protocol information shall be included in the description of all interfaces.
 - V. All possible (data) messages needed for all interfaces shall also be provided in the ICD. The interface matrix shall be submitted for DTPW review no more than 35 days after the submittal phase is completed.
 2. Discrepancy Log and Reports for FAT
 - A. The log and reports are to be submitted monthly after the first FAT test with discrepancies.
 - B. Discrepancy Resolution Report: These reports shall contain the name of the person who identified the discrepancy, the date when the bug was noticed, a description of the problem in plain (nontechnical) English, the name of the person who identified the cause of the problem, a plain English explanation of the rationale for the problem, and the name and the signature of the person stating that the discrepancy has been fixed.
 - C. The discrepancy log shall be submitted no later than five days after a test is conducted. The log shall contain all the signatures of the tester, the auditor, and DTPW-designated test engineer.
 - D. Deployment Phase Submittals
 1. Integrated System Availability Test Plan: It shall contain the test procedure to exercise the fully integrated system for a period of 60 natural days.
 - I. The Test Plan shall identify all subsystems to be tested, with testing procedures and testing forms for each subsystem. It shall also provide a schedule for testing, identify the testers, and provide any other information relevant to the test.
 - II. The detailed Test Plan shall be submitted at least 30 days prior to the actual testing.
 2. Commissioning Plan: The Commissioning Plan (if applicable) shall be submitted at least 30 days prior to commissioning. The Commissioning Plan shall provide the following information:
 - I. A list of all tests to be performed on the device or subsystem to be commissioned (operating with the existing system)
 - II. Detailed installation steps and diagrams
 3. Discrepancy Log and Reports
 - I. The log and reports are to be submitted monthly after FAT.
 - II. Discrepancy Resolution Report: These reports shall contain the name of the person who identified the discrepancy, the date when the bug was noticed, a description of the problem in plain (nontechnical) English, the name of the person who identified the cause of the problem, a plain English explanation of the rationale for the problem, and the name and the signature of the person stating that the discrepancy has been fixed.
 4. System overview diagrams and system conceptual diagrams
 - I. These shall be provided at least 45 days prior any subsystem test.
 - II. Final submission shall be done after the system availability test has been completed.

17801-2 PART 3: EXECUTION



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17801-2-1 GENERAL

All system integration work shall be performed in accordance with the individual subsystem's section requirements and those requirements provided by DTPW during DTPW input and the submittal phase.

17801-2-2 SYSTEM INTEGRATION

- A. The integration process for the station subsystems shall flow from the bottom up. That is, simpler and single systems shall be fully tested and integrated prior to integrating a higher, larger, or more complex system.
- B. The Contractor shall install the new system independently and in parallel with the existing system.

17801-2-3 INTEGRATED SYSTEM AVAILABILITY TEST

- A. The purpose of the test is to determine system stability and to identify any discrepancy that may arise from conflicts that could be created by having a fully integrated system. The duration of the test shall not be less than 60 consecutive natural days.
- B. The test shall address all functional areas and shall execute more than one function at a time to identify any conflicts.
- C. During this test, unlikely but possible scenarios shall be produced.
- D. A Central System catastrophic system failure shall require restarting the test. If the cause for the failure cannot be identified, the Contractor may choose to restart testing right away. On the other hand, if the cause for failure is recreated, a critical discrepancy shall be generated, and no further testing shall be performed until fixed.

END OF SECTION 17801



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SECTION 207019
INDOOR CABINETS, RACKS, FRAMES, AND ENCLOSURES

207019-1 PART 1 - GENERAL

207019-1-1 WORK INCLUDED

Provide all labor, materials, tools, and equipment required for the complete installation of work called for in the Contract Documents.

207019-1-2 SCOPE OF WORK

- A. This document describes the products and execution requirements relating to furnishing and installing Telecommunications Cabling. Communication Equipment Room Fittings of cabinets, racks, frames, and enclosures which are covered under this document.
- B. This section includes minimum requirements for the following:
 - 1. Cabinets
 - 2. Racks and Rack Cable Management
 - 3. Frames
 - 4. Enclosures
- C. All cables and related terminations, support and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the Contractor as detailed in this document.

207019-1-3 SECTION INCLUDES

- A. Equipment cabinets
- B. Cable entrance cabinets
- C. Cabinet identification

207019-1-4 REFERENCES (The most recent revisions shall be used in this project)

- A. American National Standards Institute (ANSI):1. ANSI/EIA-310
- B. American Railway Engineering and Maintenance-of-Way Association (AREMA) 1. Signal Manual, Part 1.5.10
- C. TIA/EIA structured cabling system TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
 - 1. TIA/EIA-569-A Commercial Building Standard for Telecom Pathways and Spaces
 - 2. TIA/EIA-606 Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
 - 3. TIA/EIA-607 Commercial Building Grounding/Bonding Requirements
 - 4. EIA-310-D Rack systems
 - 5. NFPA-70 National Electric Code (NEC)-2008
 - 6. ISO/IEC 11801 Generic Cabling for Customer Premises

207019-1-5 SUBMITTALS

- A. General: Refer to APPENDIX B, SECTION 013300 - Submittal Procedures for submittal requirements and procedures.
- B. Submit the following:



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1. Product data for equipment cabinets.
2. Shop drawings.
3. Cabinet mounting details.
4. Cabinet paint types and colors.

207019-2 PRODUCTS

207019-2-1 MANUFACTURING REQUIREMENTS

- A. Equipment Cabinets. Equipment in communication rooms and train control rooms shall be housed in free standing cabinets conforming to the following requirements:
1. General. Cabinet frame shall be constructed of 14-gauge cold rolled steel. Cabinet construction shall be as shown in the Contract Drawings.
 2. Cabinet structures shall have uniform dimensions. Equipment cabinets shall not exceed 48 inches in width and 24 inches in depth. A cabinet complex shall not exceed 72 inches in width.
 3. Enclosures: Cabinet enclosures shall be furnished complete. The front and rear of the cabinets shall be enclosed with captive full-length doors opening at least 120 degrees, closed with hand-operated key-locked catches, and with louvered openings, if required. Doors shall be removable without unscrewing.
 - I. Cabinets shall be designed for side-by-side mounting with provisions for running interconnection wiring within a complex in closed wireway between cabinets.
 - II. All non-used front spaces of cabinets shall be covered with blank panels.
 - III. Self-ventilation of cabinet enclosures shall be used. If fans or filters are required shop drawings shall be submitted for approval before procurement.
 4. Cabinet Hardware: Cabinets and appurtenances shall be designed and constructed to comply with ANSI/EIA-310. The frame element shall be designed to accept universally adjustable panel-mounting hardware. The panel-mounting angles shall be constructed of 12-gauge cold rolled steel with standard EIA hole spacing and structured to comply with ANSI/EIA-310.
 5. Cable Entry: Cable entry shall be through the top of the cabinet. Cable entry shall have provisions for protecting the cable. All cables shall be routed so as to protect them from damage during and after installation.
 6. Terminal Block Mounting Board: Mounting boards for terminal blocks and other items as required shall be made from flame retardant non-metallic, non-wood, insulating sheet material approved by DTPW.
 7. Supports: Chassis supports, or guides shall be provided as required for auxiliary support of heavy equipment.
 8. Height: Overall cabinet height shall be uniform and shall not exceed 7 feet-2 inches, including mounting sill.
- B. Cable Entrance Cabinets. Cable entrance cabinets shall be equipped with front full-length removable doors with key-locked catches opening at least 120 degrees. The rear of the cabinet shall be accessible by a bolted removable panel or full-length removable door. The structure shall not exceed 60 inches in width or 24 inches in depth. Cable entrance cabinets shall meet the requirements specified for equipment cabinets, with the exception of cabinet dimensions and door construction. Cable entrance cabinets shall be installed as indicated on the Contract Drawings.
- C. Painting: Cabinets shall be painted in accordance with the following requirements:
1. Communications equipment cabinets and racks shall be painted Dark Blue/Black with color number 5B/1N as selected from the Munsel Color Chart. Exterior rack surfaces shall have a textured finish.



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2. Quality: Painting shall conform to the requirements specified in AREMA Signal Manual, Part 1.5.10, or equivalent. Paint types and colors shall be submitted for approval.
- D. Cabinet Identification: Each equipment cabinet/enclosure shall be provided with I.D. Nameplates. Free standing cabinets/enclosures shall be provided with two nameplates, one for the front and one for the rear. Wall mounted cabinets/enclosures shall be provided with one nameplate on the front. Nameplates shall be of 1/16 inch thick lamicon, with beveled edges, black background and white letters. Mounting hardware shall be stainless steel.
 1. Nameplate sizes:
 - I. Nameplates 1-9/16 inches high by 18 or 12 inches wide shall have lettering in block letters 1/2 inch high.
 - II. Nameplates 3/4 inch high by 12 inches wide shall have lettering in block letters 3/16 inch high
 2. Nameplate text shall consist of two lines, unless otherwise approved by DTPW. The first line shall denote the cabinet/enclosure number, and the second line shall denote the name of the cabinet/enclosure.
 3. Cabinet numbering format shall be submitted to DTPW for approval.
 4. Communications cabinet name and number shall correspond with the designations indicated on the Contract Drawings.

207019-3 EXECUTION

207019-3-1 INSTALLATION

- A. Cabinet Mounting: Cabinets shall be mounted in accordance the following requirements. Each sill structure shall be leveled to a maximum deviation not exceeding 1/8 inch over its total length and width.
 1. The equipment cabinets shall be mounted rigidly such that a 100-pound horizontal force applied to either side 6 feet from the floor shall cause less than 1/8-inch deflection of any part of the equipment cabinet. Cabinets shall be mounted plumb and level using captive shims as required.
 2. In addition to the cabinet deflection, a 1/16-inch deflection shall be allowed by the mounting channels after being rigidly mounted to the floor. Equipment cabinets shall be attached together but isolated one from the other and from the floor with insulating material. The equipment cabinet mounting details shall be submitted for approval.
 3. Cabinet fronts in adjacent rows shall face each other.
- B. Cabinet Grounding: Cabinet-grounding requirements including sill insulation and isolation between cabinets shall be as shown on the Contract Drawings.
- C. Racks: The Cable Management System shall be used to provide a neat and efficient means for routing and protecting fiber and copper cables and patch cords on telecommunication racks and enclosures. The system shall be a complete cable management system comprised of vertical cable managers, horizontal cable manager, and cable management accessories used throughout the cabling system. The system shall protect network investment by maintaining system performance, controlling cable bend radius, and providing cable strain relief.
- D. Each rack shall be UL listed for a load-carrying capacity of 1000 lbs. (454 kg.).
- E. Provide patch management ring runs in each rack. Provide (1) 2U high horizontal patch management between each panel of each rack.
- F. Provide side-mounted vertical cable management with covers on both sides of each rack. The cable management shall be with cover plates and bracket kits as needed to attach to adjacent racks.
- G. Provide strain relief and cable management at the rear of each rack to ensure uniform routing of all feeder and distribution cables.
- H. Each rack to have a minimum of eight power sockets mounted on a strip at the rear of the rack. The



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power outlets on the connector strip shall be NEMA 5-20R compatible. The plug shall be NEMA 5-20P compatible.

END OF SECTION 207019



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SECTION 260500
COMMON WORK RESULTS FOR ELECTRICAL

260500-1 SUMMARY

This section applies to electrical equipment coordination, sleeves, and sleeve seals for raceways and cables, and common electrical installation requirements.

260500-2 MATERIALS

- A. Sleeves for raceways and cables:
 - 1. Steel pipe sleeves
 - 2. Cast-iron pipe sleeves
 - 3. Sleeves for rectangular openings
- B. Sleeve seals: Modular sealing devices with sealing elements, plastic carbon-steel stainless-steel pressure plates, and carbon stainless-steel connecting bolts and nuts

END OF SECTION 206500



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SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

260526 -1 SUMMARY

A. Methods and materials for grounding electrical systems and equipment

260526 -2 QUALITY ASSURANCE

A. Quality standard for grounding materials and equipment: UL 467

260526 -3 PRODUCTS

A. Insulated conductors: Copper wire and cable

B. Bare copper conductors:

1. Solid conductors
2. Stranded conductors
3. Tinned conductors
4. Stranded bonding conductors
5. Copper tape braided bonding jumpers
6. Tinned-copper braided bonding jumpers

C. Connectors: Bolted and exothermic-welded type

D. Grounding electrodes: Ground rods: Copper-clad, steel, sectional type

260526 -4 GROUNDING APPLICATIONS

A. Conductors: Solid for No. 8 AWG and smaller; stranded for No. 6 AWG and larger

B. Underground grounding conductors: Bare copper conductor, No. 2/0 AWG minimum

C. Isolated grounding conductors

D. Grounding bus

E. Conductor terminations and connections: Bolted and welded

F. Insulated equipment grounding conductors with circuit conductors for the following:

1. Feeders and branch circuits
2. Lighting circuits
3. Receptacle circuits
4. Single-phase motor and appliance branch circuits
5. Three-phase motor and appliance branch circuits
6. Flexible raceway runs
7. Armored and metal-clad cable runs
8. Busway supply circuits
9. Computer- and rack-mounted electronic equipment circuits
10. Air-duct equipment circuits
11. Water heater, heat-tracing, and antifrost heating cables
12. Isolated grounding receptacle circuits
13. Isolated equipment enclosure circuits



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- G. Signal and communication equipment
- H. Service and central equipment locations and wiring closets
- I. Terminal cabinets

260526 -5 FIELD QUALITY CONTROL

- A. Ground resistance testing: By Contractor (engaged testing agency)

END OF SECTION 260526



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SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

260526 -1 PERFORMANCE REQUIREMENTS

Rated strength: Minimum structural safety factor of five times the applied force

260526 -2 PRODUCTS

- A. Support, anchorage, and attachment components
 - 1. Steel slotted support systems with metallic coatings
 - 2. Nonmetallic slotted support systems
 - 3. Raceway and cable supports
 - 4. Steel conduit and cable hangers, clamps, and associated accessories
 - 5. Support for non-armored conductors and cables in vertical conduit risers
 - 6. Structural steel for fabricated supports and restraints
 - 7. Mounting, anchoring, and attachment components:
 - I. Powder-actuated fasteners
 - II. Mechanical-expansion anchors
 - III. Concrete inserts
 - IV. Clamps for attachment to steel structural elements
 - V. All steel, springhead toggle bolts
 - VI. Threaded hanger rods
- B. Fabricated metal equipment support assemblies: Welded or bolted steel shapes
- C. Concrete bases: 3,000-psi (20.7-MPa), 28-day compressive-strength concrete

END OF SECTION 260526



DEPARTMENT OF TRANSPORTATION AND PUBLIC
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Metromover Fire Panel Upgrade
APPENDIX B - TECHNICAL DIVISIONS

SECTION 260536
CABLE TRAYS FOR ELECTRICAL SYSTEMS

260526 -1 QUALITY ASSURANCE

Quality standard: NEMA VE 1

260526 -2 MATERIALS

1. Cable trays, fittings, and accessories: Aluminum hardware
2. Cable tray accessories
 1. Cable tray supports and connectors
3. Warning signs

260526 -3 SOURCE QUALITY CONTROL

Tested according to NEMA FG 1 and NEMA VE 1

END OF SECTION 260526



DEPARTMENT OF TRANSPORTATION AND PUBLIC
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Metromover Fire Panel Upgrade
APPENDIX B - TECHNICAL DIVISIONS

**SECTION 262726
WIRING DEVICES**

262726 -1 PRODUCTS

- A. Receptacles: Duplex, 125 V, 20 A
 - 1. Straight blade
 - 2. GFCI: Non-feed through
- B. Pendant cord-connector devices with external cable grip
- C. Cord and plug sets
- D. Snap switches: 120/277 V, 20 A
 - 1. Key-operated switches
- E. Occupancy sensors
 - 1. Wall-switch sensors: Adaptive-technology type with adjustable time delay
 - 2. Long-range wall-switch sensors: Dual-technology type with adjustable time delay
 - 3. Wide-range wall-switch sensors: Passive-infrared type with adjustable time delay
- F. Communications outlets
 - 1. Telephone outlet: Single RJ-45
 - 2. Combination TV and telephone outlet: Single RJ-45 and coaxial cable connectors
- G. Wall plates
 - 1. Material for finished spaces: Thermoplastic
 - 2. Material for unfinished spaces: Thermoplastic
 - 3. Material for damp and wet locations: Thermoplastic
- H. Floor service fittings: Modular, dual service, with power receptacle and voice and data communication outlet
 - 1. Type: Flush
 - 2. Service plate: Round, brass
 - 3. Voice and data communication outlet: Blank cover with bushed cable opening or two modular, keyed, RJ-45
- I. Poke-through assemblies: Below-floor junction box with multi-channeled, through-floor raceway/firestop and detachable floor service outlet assembly
 - 1. Service outlet assembly: Flush type
 - 2. Size: 4 inches
- J. Multi-outlet assemblies: Metal raceways



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K. Finishes

1. Connected to normal power system: As selected by DTPW
2. Connected to emergency power system: Red
3. TVSS devices: Blue
4. Isolated-ground receptacles: Orange

END OF SECTION 262726

APPENDIX C

SECTION 13850 (28 31 00)

FIRE DETECTION AND ALARM SYSTEM

ENGINEERING SPECIFICATION INTELLIGENT REPORTING FIRE DETECTION SYSTEM

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Section 13800 - Building Automation and Control.
- B. Section 13900 (21 00 00) - Fire Suppression.
- C. Section (27 15 00) - (Fire Alarm Communications Horizontal Cabling).

1.2 DESCRIPTION:

- A. The fire alarm system shall comply with requirements of NFPA Standard 72 for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.
- B. The fire alarm system shall be manufactured by an ISO 9001:2008 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.
- C. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof). It's acceptable for peripheral devices to be manufactured outside of the U.S. by a division of the U.S. based parent company, except where prohibited by Section 5949 (a) of the National Defense Authorization Act.
- D. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.
- E. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final checkout and to ensure the systems integrity.

1.3 VOICE PANEL DESCRIPTION:

- A. The voice evacuation panel shall comply with NFPA 72, Chapter 24 requirements.
- B. The Voice Evacuation Control Panel shall be UL 864 listed (Fire Protective Signaling), UL 2572 listed (Mass Notification), ULC listed and Compliant with Unified Facilities Criteria UFC 4-021-01.
- C. The installing company shall employ factory-certified NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and to ensure the systems integrity.

1.4 GUARANTY:

- A. The fire alarm control panel, voice panels and any head-end equipment shall have a manufacturer's warranty of a minimum of 3 years.

1.5 POST CONTRACT MAINTENANCE:

- A. Complete maintenance and repair service for the fire detection system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.
- B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, required tests, and list pricing for any replacement products included on the bill of materials, along with the list pricing for products not on the bill of materials; if test and inspection rates are different than full service rates the bid/proposal shall include pricing for all levels for a minimum period of five (5) years. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.
- C. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

1.6 APPLICABLE STANDARDS AND SPECIFICATIONS:

- A. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.
- B. National Fire Protection Association (NFPA) - USA:

No. 12	Extinguishing Systems (low and high)
No. 12A	Halon 1301 Extinguishing Systems
No. 13	Sprinkler Systems
No. 15	Water Spray Systems
No. 16	Foam / Water Deluge and Spray Systems
No. 17	Dry Chemical Extinguishing Systems
No. 17A	Wet Chemical Extinguishing Systems
No. 2001	Clean Agent Extinguishing Systems
No. 72	National Fire Alarm Code
No. 70	National Electric Code
No. 90A	Air Conditioning Systems
No. 101	Life Safety Code

- C. Underwriters Laboratories Inc. (UL) - USA:

No. 268	Smoke Detectors for Fire Protective Signaling Systems
No. 864	Control Units for Fire Protective Signaling Systems
No. 2572	Mass Notification Systems
No. 217	Smoke Detectors, Single and Multiple Station
No. 228	Door Closers - Holders for Fire Protective Signaling Systems
No. 268A	Smoke Detectors for Duct Applications

No. 521	Heat Detectors for Fire Protective Signaling Systems
No. 464	Audible Signaling Appliances
No. 38	Manually Actuated Signaling Boxes
No. 1481	Power Supplies for Fire Protective Signaling Systems
No. 346	Waterflow Indicators for Fire Protective Signaling Systems
No. 1076	Control Units for Burglar Alarm Proprietary Protective Signaling Systems
No. 1971	Visual Notification Appliances
No. 2017	Standard for General-Purpose Signaling Devices and Systems
No. 60950	Safety of Information Technology Equipment

- D. Local and State Building Codes.
- E. All requirements of the Authority Having Jurisdiction (AHJ).

1.7 APPROVALS:

- A. The system shall have proper listing and / or approval from the following nationally recognized or regional agencies:

UL	Underwriters Laboratories, Inc
ULC	Underwriters Laboratories Canada
FM	Factory Mutual
NYFD	New York Fire Department
CSFM	California State Fire Marshal

- B. The system shall be approved for use in Marine applications by the following agencies.
 - 1. United States Coast Guard
 - 2. Lloyd's Register
 - 3. American Bureau of Shipping
- C. The system shall be certified for seismic applications in accordance with the International Building Code (IBC) or as defined by the Florida Building Code. The basis for qualification of seismic approval shall be via shake table testing.

PART 2.0 PRODUCTS

2.1 Main Fire Alarm Control Panel or Network Node

- A. Main FACP or network node shall be a NOTIFIER Model NFS-320 and shall contain a micro-processor based Central Processing Unit (CPU) and power supply in an economical space saving single board design. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices.

2.2 System Capacity and General Operation

Noti-Fire-Net over

- A. The FACP shall be capable of communicating on a Fiber Optic Network utilizing a peer-to-peer, inherently regenerative communication format and protocol. The network shall support communication speed up to 100 Mb and support up to 200 panels / nodes per network.

- B. Each network node shall provide, or be capable of 318 intelligent / addressable devices per SLC loop.
- C. The Notification Appliance Circuits shall be programmable to Synchronize with System Sensor, Gentex and Wheelock Notification Appliances.
- D. The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch rubber keys for the field programming and control of the fire and gas detection system.
- E. The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes.
- F. The system shall allow the programming of any input to activate any output or group of outputs. Systems that have limited programming (such as general alarm), have complicated programming (such as a diode matrix), or require a laptop personal computer are not considered suitable substitutes.
- G. The FACP shall support up to 20 logic equations, including "and," "or," and "not," or time delay equations to be used for advanced programming. Logic equations shall require the use of a PC with a software utility designed for programming.
- H. The FACP or each network node shall provide the following features:
 - 1. Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.
 - 2. Detector sensitivity test, meeting requirements of NFPA 72.
 - 3. Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.
 - 4. Up to nine sensitivity levels for alarm, selected by detector. The alarm level range shall be 0.5 to 2.35 percent per foot for photoelectric detectors, 0.5 to 2.5 percent per foot for ionization detectors, 0.5 to 4.0 percent per foot for acclimate detectors and 1.0 to 4.0 percent per foot for multi-criteria (IntelliQuad and IntelliQuad PLUS) detectors . The system shall also support sensitive advanced detection laser detectors with an alarm level range of .02 percent per foot to 2.0 percent per foot. The system shall also include up to nine levels of Prealarm, selected by detector, to indicate impending alarms to maintenance personnel.
 - 5. The ability to display or print system reports.
 - 6. Alarm verification, with counters and a trouble indication to alert maintenance personnel when a detector enters verification 20 times.
- I. PAS presignal, meeting NFPA 72 requirements.
 - 1. Self optimizing pre-alarm for advanced fire warning, which allows each detector to learn its particular environment and set its prealarm level to just above normal peaks.
 - 2. Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.
 - 3. Control-by-time for non-fire operations, with holiday schedules.
 - 4. Day / night automatic adjustment of detector sensitivity.

5. Device blink control for sleeping areas.

- J. The FACP shall be capable of coding main panel node notification circuits in March Time (120 PPM), Temporal (NFPA 72 A-2-2.2.2), and California Code. Panel notification circuits (NAC 1,2,3 and 4) shall also support Two-Stage operation, Canadian Dual Stage (3 minutes) and Canadian Dual Stage (5 minutes). Two stage operation shall allow 20 Pulses Per Minute (PPM) on alarm and 120 PPM after 5 minutes or when a second device activates. Canadian Dual stage is the same as Two-Stage except will only switch to second stage by activation of Drill Switch 3 or 5 minute timer. The panel shall also provide a coding option that will synchronize specific strobe lights designed to accept a specific "sync pulse."
- K. For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download, and have the ability to upgrade the manufacturers (FLASH) system code changes. This program shall also have a verification utility, which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA 72 requirements for testing after system modification.
 - 1. This utility shall provide the ability to create and print NFPA style Test and Inspection reports
 - 2. This utility shall provide the ability to create and print Device Maintenance information
- L. The 80-character display keypad shall be an easy to use QWERTY type keypad, similar to a PC keyboard. This shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
- M. Each FACP or FACP network node shall support one SLC. Each SLC interface shall provide power to and communicate with up to 159 intelligent detectors (ionization, photoelectric, multi-criteria, thermal, laser, fire/CO) and 159 intelligent modules (monitor, control, relay, releasing) for a loop capacity of 318 devices. SLC shall be capable of NFPA 72 Style 4, Style 6, or Style 7 (Class A or B) wiring.
- N. CPU shall receive analog information from all intelligent detectors to be processed to determine whether normal, alarm, pre-alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information shall also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.

2.3 Serial Interfaces

- A. The system shall include two serial EIA-232 interfaces. Each interface shall be a means of connecting UL Listed Information Technology Equipment (ITE) peripherals.
- B. EIA-232 interface shall be used to connect an UL-Listed 40 or 80 column printer. Printers that are not UL-Listed are not considered acceptable substitutes.
- C. The system shall include an EIA-485 port for the serial connection of optional annunciators and remote LCD displays.

- D. The EIA-485 interface may be used for network connection to a proprietary-receiving unit.

2.4 Specific System Operations

- A. Smoke Detector Sensitivity Adjust: A means shall be provided for adjusting the sensitivity of any or all addressable intelligent detectors in the system from the system keypad. Sensitivity range shall be within the allowed UL window and have a minimum of 9 levels.
- B. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification delay shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.
- C. Point Disable: Any addressable device may be enabled or disabled through the system keypad.
- D. Point Read: The system shall be able to display or print the following point status diagnostic functions:
 - 1. Device status
 - 2. Device type
 - 3. Custom device label
 - 4. View analog detector values
 - 5. Device zone assignments
- E. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 800 events. Up to 200 events shall be dedicated to alarm and the remaining events are general purpose. Systems that do not have dedicated alarm storage, where events are overridden by non-alarm type events, are not suitable substitutes. Each of these activations will be stored and time and date stamped with the actual time of the activation. The contents of the history buffer may be manually reviewed, one event at a time, or printed in its entirety. The history buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable substitutes.
- F. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent detector and shall analyze the detector responses over a period of time. If any intelligent detector in the system responds with a reading that is above or below normal limits, then the system will enter the trouble mode, and the particular detector will be annunciated on the system display, and printed on the optional printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.
- G. Pre-Alarm Function: The system shall provide two levels of pre-alarm warning to give advance notice of a possible fire situation. Both pre-alarm levels shall be fully field adjustable. The first level shall give an audible indication at the panel. The second level shall give an audible indication and may also activate control relays. The system shall also have the ability to activate local detector sounder bases at the pre-alarm level, to assist in avoiding nuisance alarms.
- H. Software Zones: The FACP shall support 142 independent programmable software zones.

- I. Multiple agent releasing zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.
- J. Mass Notification Override: The system shall be UL 2572 listed for Mass Notification and shall be capable, based on the Risk Analysis, of being programmed so that Mass Notification/Emergency Communications events take precedence over fire alarm events.
- K. The fire alarm control panel shall include a walk test feature. It shall include the ability to test initiating device circuits and notification appliance circuits from the field without returning to the panel to reset the system. Operation shall be as follows:
 - 1. Alarming an initiating device shall activate programmed outputs, which are selected to participate in walk test, for 3 seconds.
 - 2. Introducing a trouble into the initiating device shall activate the programmed outputs for 8 seconds.
 - 3. All devices tested in walk test shall be recorded in the history buffer.

2.5 Conventional Aspirating Detection

- A. An optional air aspiration detection system shall be available.
- B. The aspirating system shall support multiple sensitivity settings.
- C. The aspirating system shall operate from 24 VDC.
- D. The aspirating system shall provide alarm and trouble relays used to activate a fire alarm control panel.

2.6 Aspiration System Interface:

- A. The system shall be capable of supporting Interface Modules for integrating VESDA Aspiration detectors into SLC loop of the fire alarm control panel. The Interface Module shall support up to 19 aspiration detectors, each SLC loop shall support one interface module.

2.7 High Level Aspiration System Interface:

- A. The system shall be capable of supporting a High Level Interface for VESDA Aspirating Detection Systems. The interface shall support up to 100 detectors and allow the fire alarm network to monitor and control events on the aspiration system.

2.8 Communicators:

- A. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.
- B. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to three different telephone numbers.

- C. The UDACT shall be capable of transmitting events in 4+2, SIA, and Contact ID.
- D. Communication shall include vital system status such as:
 - 1. Independent Zone (Alarm, trouble, non-alarm, supervisory)
 - 2. Independent Addressable Device Status
 - 3. AC (Mains) Power Loss
 - 4. Low Battery and Earth Fault
 - 5. System Off Normal
 - 6. 12 and 24 Hour Test Signal
 - 7. Abnormal Test Signal (per UL requirements)
 - 8. EIA-485 Communications Failure
 - 9. Phone Line Failure
- E. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 3,064 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
- F. The UDACT shall be capable of being programmed with the same programming utility as the host FACP, and saved, edited and uploaded and downloaded using the utility. UDACT shall be capable of being programmed online or offline. The programming utility shall also support upgrading UDACT operating firmware.
- G. The UDACT shall be capable of generating Central Station reports providing detailed programming information for each point along with the central station point address.
- H. An IP or IP/GSM Communicator option shall be available to interface to the UDACT and be capable of transmitting signals over the internet/intranet or Cellular (GSM) network to a compatible receiver.
- I. Smoke Control Annunciator
 - 1. On/Auto/Off switches and status indicators (LEDS) shall be provided for monitoring and manual control of each fan, damper, HVAC control unit, stairwell pressurization fan, and smoke exhaust fan. To ensure compliance the units supplied shall meet the following UL categories: UUKL, PAZX, UDTZ, QVAX as well as the requirements of NFPA 90A, HVAC, and NFPA 92A & 92B, Smoke Control. The control System shall be field programmable for either 90A operation or 92A/B operation to allow for future use and system expansion.
 - 2. The OFF LED shall be Yellow, the ON LED shall be green, the Trouble/Fault LED shall be Amber/Orange for each switch. The Trouble/Fault indicator shall indicate a trouble in the control and/or monitor points associated with that switch. In addition, each group of eight switches shall have two LEDS and one momentary switch which allow the following functions: An Amber LED to indicate an OFF-NORMAL switch position, in the ON or OFF position; A Green LED to indicate ALL AUTO switch position; A Local Acknowledge/Lamp Test momentary switch.
 - 3. Each switch shall have the capability to monitor and control two addressable inputs and two addressable outputs. In all modes, the ON and OFF indicators shall continuously follow the device status not the switch position. Positive feedback shall be employed to verify correct operation of the device being controlled. Systems that indicate on/off/auto by physi-

- cal switch position only are not acceptable.
4. All HVAC switches (i.e., limit switches, vane switches, etc.) shall be provided and installed by the HVAC contractor.
 5. It shall be possible to meet the requirements mentioned above utilizing wall mounted custom graphic.

2.9 Gateway & Webserver Options

- A. Common Alerting Protocol (CAP) Gateway: The system shall support an optional CAP Gateway (Common Alerting Protocol). The CAP Gateway translates fire system messages to industry standard CAP messages for integration with CAP-compliant clients. A CAP gateway shall be available from the fire alarm control panel manufacturer.
- B. LEDSIGN Gateway: The system shall support an optional and proprietary LEDSIGN Gateway to interface to LED signs that will automatically display emergency messages. The signs shall be capable of storing up to 100 messages that can be activated via system programming with the ability to be manually overridden. The Sign Gateway shall support up to 10 independent signs, each sign capable of playing an independent message. Multiple LEDSIGN Gateways can be used in network applications. An LEDSIGN gateway shall be available from the fire alarm control panel manufacturer.
- C. BACnet Interface Gateway: The system shall be capable of being interfaced with BACnet compliant clients. A BACnet interface supporting BACnet/IP communication shall be available from the fire alarm control panel manufacturer.
- D. MODbus Interface Gateway: The system shall be capable of being interfaced with MODbus compliant clients. A MODbus interface supporting MODbus/TCP communication shall be available from the fire alarm control panel manufacturer.
- E. Noti-Fire-Net Gateway: The system shall support an IP based gateway to enable the panel or local Noti-Fire-Net to be connected to an ONYXWorks workstation via the Internet or Intranet. This gateway shall also support the ability to integrate the system to an interactive firefighter's display. The Noti-Fire-Net Gateway shall be available from the fire alarm control manufacturer.
- F. Webserver: The system shall support a webserver allowing remote connection via the Internet or Intranet. Authorized users will have the ability to view panel/network history, event status and device properties. The webserver shall also support sending event information via email or text to up to 50 registered users, the webserver shall be available from the fire alarm control panel manufacturer.
- G. Web Portal Interface: The system shall be capable of being interfaced with a web portal to integrate with Inspection and Service Manager utilities. The web portal and inspection and service manager utilities shall be available from the fire alarm control panel manufacturer.

2.10 System Components & Addressable Devices

- A. General
 1. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.
 2. Addressable devices, which use a binary-coded address setting method, such as a DIP-

- switch, are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.
3. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.
 4. Addressable smoke and thermal detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash green under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady red illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.
 5. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. The panel on a time-of-day basis shall automatically adjust sensitivity.
 6. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72.
 7. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a sounder base with a built-in (local) sounder rated at 85 DBA minimum, a relay base and an isolator base designed for Style 7 applications. The system shall also support an intelligent programmable sounder base, the programmable sounder base shall be capable of providing multiple tones based on programming and at a minimum be capable of providing a Temp-4 tone for CO (Carbon Monoxide) activation and a Temp-3 tone for fire activations and be capable of being synchronized with other programmable sounder bases and common area notification appliances; 85 DBA minimum.
 8. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
 9. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).
 10. Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.
 11. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.
 12. A magnetic test switch shall be provided to test detectors and modules. Detectors shall report an indication of an analog value reaching 100% of the alarm threshold.
 13. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.
 14. Addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status; NOTIFIER model # NBG-12LX They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key. The key used to reset the pull station must be the same as the key used to lock and unlock the FACP door(s).
 15. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.

16. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.
- B. Intelligent Photoelectric Smoke Detector: The intelligent photoelectric smoke detector shall be NOTIFIER model # FSP-851 and shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
- C. Intelligent VIEW[®] Laser Photo Smoke Detector: The intelligent laser photo smoke detector shall be a spot type detector, NOTIFIER model # FSL-751, that incorporates an extremely bright laser diode and an integral lens that focuses the light beam to a very small volume near a receiving photo sensor. The scattering of smoke particles shall activate the photo sensor.
 1. The laser detector shall have conductive plastic so that dust accumulation is reduced significantly.
 2. The intelligent laser photo detector shall have nine sensitivity levels and be sensitive to a minimum obscuration of 0.02 percent per foot.
 3. The laser detector shall not require expensive conduit, special fittings or PVC pipe.
 4. The intelligent laser photo detector shall support standard, relay, isolator and sounder detector bases.
 5. The laser photo detector shall not require other cleaning requirements than those listed in NFPA 72. Replacement, refurbishment or specialized cleaning of the detector head shall not be required.
 6. The laser photo detector shall include two bicolor LEDs that flash green in normal operation and turn on steady red in alarm.
- D. Intelligent Ionization Smoke Detector: The intelligent ionization smoke detector shall be NOTIFIER model # FSI-851 and shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.
- E. Intelligent Multi Criteria Acclimating Detector: The intelligent multi-criteria Acclimate[®] Plus[™] detector shall be an addressable device, NOTIFIER model # FAPT-851, that is designed to monitor a minimum of photoelectric and thermal technologies in a single sensing device. The design shall include the ability to adapt to its environment by utilizing a built-in microprocessor to determine its environment and choose the appropriate sensing settings. The detector design shall allow a wide sensitivity window, no less than 1 to 4% per foot obscuration. This detector shall utilize advanced electronics that react to slow smoldering fires and thermal properties all within a single sensing device.
 1. The microprocessor design shall be capable of selecting the appropriate sensitivity levels based on the environment type it is in (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes (as walls are moved or as the occupancy changes).
 2. The intelligent multi criteria detection device shall include the ability to combine the signal of the thermal sensor with the signal of the photoelectric signal in an effort to react hastily in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.

- F. Intelligent Thermal Detectors: The intelligent thermal detectors shall be NOTIFIER FST- series addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. A high heat thermal detector rated at 190 degrees Fahrenheit shall also be available. The thermal detectors shall connect via two wires to the fire alarm control panel signaling line circuit.
- G. Intelligent Duct Smoke Detector: The smoke detector housing shall accommodate an intelligent photoelectric detector that provides continuous analog monitoring and alarm verification from the panel. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system. The Intelligent Duct Smoke Detector shall support the installation of addressable Photoelectric detector capable or being tested remotely. The Intelligent Duct Detector housing shall be model # DNR(W) and the remote test capable photoelectric smoke detector shall be NOTIFIER model # FSP-851R.
- H. IntelliQuad™ Advanced Multi-Criteria Intelligent Detector
1. Intelligent multi-criteria fire detector shall be a NOTIFIER model number FSC-851. Smoke detector shall be an addressable intelligent multi-criteria smoke detector. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical carbon monoxide (CO) sensor, a daylight-filtered infrared sensor and solid state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.
 2. The intelligent multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in an effort to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The product design shall be capable of selecting the appropriate sensitivity levels based on the environment type chosen by user in which it is installed (office, manufacturing, kitchen etc.) and then have the ability to automatically change the setting as the environment changes.
 3. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20% of the drift range is remaining, when 100% of drift range is used, and when there is a chamber fault to show unit requires maintenance.
 4. The detector shall indicate CO trouble conditions including 6 months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following: low chamber trouble, thermistor trouble, CO self test failure, IR self test failure, and freeze warning.
 5. The detectors shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detectors shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 99 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.
 6. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself

- (by activating a switch) or initiated remotely on command from the control panel. There are three test methods: functional magnet, smoke entry aerosol, or direct heat method.
7. The detectors shall provide two LEDs to provide 360° visibility. The LEDs are placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED, sounder base, and / or relay base (optional accessories). The external remote alarm can be interconnected to other sounder or relay bases for activating all devices in a space via a single alarming unit.
 8. Two LEDs on the sensor are controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, can cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.
 9. The detectors shall be ceiling-mount and shall be plug-in mounted into a twist-lock base. These detectors shall be constructed of off-white UV resistant polymer and shall be detachable from the mounting base to simplify installation, service and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. Mounting base shall be mounted on junction box which is at least 1.5 inches (3.81 cm) deep. Mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
 - a. 4.0" (10.16 cm) square box with and without plaster ring.
 - b. 4.0" (10.16 cm) octagonal box.
 - c. 3.5" (8.89 cm) octagonal box.
 - d. Single-gang box.
 10. Meets Agency Standards
 - a. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
 - b. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
 - c. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling

I. IntelliQuad™ PLUS Advanced Multi-Criteria Intelligent Fire/CO Detector

1. Advanced Multi-Criteria Fire/CO detector shall be NOTIFIER model # FCO-851 and shall be an addressable advanced multi-criteria smoke detector with a separate signal for carbon monoxide (CO) detection per UL 2075 standards.
2. The detector shall be comprised of four sensing elements, including a photoelectric (light-scattering) particulate sensor, an electrochemical CO sensor, a daylight-filtered infrared (IR) sensor and solid state thermal sensor(s) rated at 135°F (57.2°C). The device shall be able to indicate distinct smoke and heat alarms.
3. The advanced multi-criteria detection device shall include the ability to combine the signal of the photoelectric signal with other sensing elements in order to react quickly in the event of a fire situation. It shall also include the inherent ability to distinguish between a fire condition and a nuisance alarm condition. The detector shall be capable of selecting the appropriate sensitivity levels based on the environment type (office, manufacturing, kitchen, etc.) in which it is installed, and then have the ability to automatically change the setting as the environment changes.
4. The CO detector component shall be capable of a functional gas test using a canned test agent to test the functionality of the CO sensing cell.
5. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The device shall provide unique signals to indicate when 20 percent of the drift range is remaining, when 100 percent of drift range is

- used, and when there is a chamber fault to show the unit requires maintenance.
6. The detector shall indicate CO trouble conditions, including six months of sensor life remaining and sensor life has expired. The detector shall indicate a combined signal for any of the following: low chamber trouble, thermistor trouble, CO self test failure, IR self test failure, and freeze warning.
 7. The detector shall provide address-setting means on the detector head using rotary switches. Because of the possibility of installation error, systems that use binary jumpers or DIP switches to set the detector address are not acceptable. The detector shall also store an internal identifying code that the control panel shall use to identify the type of detector. Systems that require a special programmer to set the detector address (including temporary connection at the panel) are labor intensive and not acceptable. Each detector occupies any one of at least 159 possible addresses on the signaling line circuit (SLC) loop. It responds to regular polls from the system and reports its type and status.
 8. The detector shall provide a test means whereby it will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel. There shall be four test methods: functional magnet, smoke entry aerosol, carbon monoxide aerosol or direct heat method.
 9. The detector shall provide two LEDs to provide 360° visibility. The LEDs shall be placed into steady red illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED. The detector must be capable of connecting to a sounder base that provides both temporal 3 and temporal 4 patterns for fire and CO alarm.
 10. Two LEDs on the sensor shall be controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, shall cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.
 11. The detector shall be plug-in mounted into a twist-lock base. The detector shall be constructed of off-white, UV-resistant polymer and shall be detachable from the mounting base to simplify installation, service and maintenance. Mounting base wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. The mounting base shall be mounted on a junction box that is at least 1.5 inches (3.81 cm) deep. The mounting base shall be available to mount to standard junction boxes. Suitable boxes include:
 - a. 4.0" (10.16 cm) square box with and without plaster ring.
 - b. 4.0" (10.16 cm) octagonal box.
 - c. 3.5" (8.89 cm) octagonal box.
 - d. Single-gang box.
 - e. Double-gang box
 12. Meets Agency Standards
 - a. ANSI/UL 268 -Smoke Detectors for Fire Alarm Signaling Systems
 - b. CAN/ULC-S529- Smoke Detectors for Fire Alarm Systems
 - c. FM 3230-3250- Smoke Actuated Detectors for Automatic Fire Alarm Signaling
 - d. UL 2075 – Gas and Vapor Detector and Sensors – Systems Connected

- J. Intelligent Addressable Aspiration Detector: The intelligent aspiration detector shall be NOTIFIER model # FSA-8000 an addressable aspiration detector that communicates directly with the fire alarm control panel via the SLC communication protocol, no modules or high level interfaces

shall be required. The fire alarm control panel shall support up to thirty one intelligent aspiration detectors per SLC loop. The aspiration detector shall have dual source (blue LED and infra-red laser) optical smoke detection for a wide range of fire detection with enhanced immunity to nuisance particulates. The FACP shall be capable of monitoring and annunciating up to five smoke event thresholds and eleven trouble conditions. Each event threshold shall be capable of being assigned a discrete type ID at the FACP.

- K. Intelligent Addressable Reflected Beam Detector: The intelligent single-ended reflected beam smoke detector shall connect with two wires to the fire alarm control panel signaling line circuit (SLC). The detectors shall consist of a transmitter/receiver unit and a reflector and shall send data to the panel representing the analog level of smoke density. The detector shall be capable of being tested remotely via a keyswitch; NOTIFIER model # FSB-200. Model # FSB-200S shall be equipped with an integral sensitivity test feature.
- L. Addressable Dry Contact Monitor Module
1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs. The addressable monitor module shall be NOTIFIER model # FMM-1 (Class A or B) or FMM-101 (Class B)
 2. The IDC zone shall be suitable for Style D/Class A or Style B/Class B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
 4. For multiple dry contact monitoring a module shall be available that provides 10 Style B or 5 Style D input circuits; NOTIFIER model # XP10-M.
- M. Two Wire Detector Monitor Module
1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device); NOTIFIER model # FZM-1.
 2. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 3. For multiple 2-wire smoke detector circuit monitoring a module shall be available that provides 6 Style B/Class A or 3 Style D/Class B input circuits; NOTIFIER model # XP6-MA.
- N. Addressable Control Module
1. Addressable control modules shall be provided to supervise and control the operation of one conventional circuit of compatible Notification Appliances, 24 VDC powered, polarized audio/visual notification appliances; NOTIFIER model # FCM-1
 2. The control module NAC may be wired for Style Z or Style Y (Class A/B) with a current rating of 2 Amps for Style Z and 3 Amps for Style Y;
 3. Audio/visual power shall be provided by a separate supervised circuit from the main fire alarm control panel or from a supervised UL listed remote supply.
 4. For multiple circuit control a module shall be available that provides 6 Style Y (Class B) or

3 Style Z (Class A) control circuits; NOTIFIER model # XP6-C.

O. Addressable Releasing Control Module

1. An addressable FlashScan releasing module shall be available to supervise and control compatible releasing agent solenoids; NOTIFIER model # FCM-1-REL.
2. The module shall operate on a redundant protocol for added protection.
3. The module shall be configurable for Style Z or Style Y (Class A/B) and support one 24 volt or two 12 volt solenoids.

P. Addressable Relay Module:

1. Addressable Relay Modules shall be available for HVAC control and other network building functions; NOTIFIER model # FRM-1.
2. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.
3. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.
4. For multiple relay control a module shall be available that provides 6 programmable Form-C relays; NOTIFIER model # XP6-R.

Q. Addressable Two-In / Two-Out Monitor/Relay Module:

1. An addressable Two-In / Two-Out module shall be available; NOTIFIER model # FDRM-1.
2. The two-in/two-out module shall provide two Class B/Style B dry-contact input circuits and two independent Form-C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

R. Isolator Module: Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building; NOTIFIER model # ISO-X.

1. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
2. The isolator module shall not require address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
3. The isolator module shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

S. Voice Evacuation Control Panel

1. The Voice Evacuation Control Panel shall be a NOTIFIER FirstCommand NFC-50/100 and shall contain a microprocessor-based Central Processing Unit (CPU). The CPU shall distribute and control emergency voice messages over the speaker circuits.

2. The Voice Evacuation Control Panel shall be UL 864 listed (Fire Protective Signaling), UL 2572 listed (Mass Notification), ULC listed and Compliant with Unified Facilities Criteria UFC 4-021-01.
3. The system shall provide the capability to interface to distributed voice evacuation control panels from the same manufacturer.
4. The Voice Evacuation Control Panel shall be activated by the Fire Alarm Control Panel via a direct serial connection allowing the Fire Alarm Control panel to control speaker circuit(s) and message activation.
5. Shall have as minimum requirements:
 - a. Integral 50 Watt, 25 Vrms audio amplifier with optional converter for 70.7-volt systems. The main system shall be capable of expansion to 100 watts total via the insertion of an additional 50 watt audio amplifier module into the same cabinet.
 - b. Speaker circuit that can be wired both Class A and / or B.
6. Integral Digital Message Generator with a memory capacity for up to fourteen messages, each message shall be up 60 seconds long. These messages shall field programmable without the use of additional equipment.
7. Built in alert tone generators with steady, slow whoop, high/low and chime tone field programmable.
8. The Voice Control Panel will be capable of detecting and annunciating the following conditions: Loss of Power (AC and DC), System Trouble, Ground Fault, Alarm, Microphone Trouble, Message Generator Trouble, Tone Generator Trouble, and Amplifier Fault.
9. The Voice Control Panel shall be fully supervised including microphone, amplifier output, message generator, speaker wiring, and tone generation.
10. Speaker outputs shall be fully power-limited.
11. Amplifiers will be supplied power independently to eliminate a short on one circuit from affecting other circuits.
12. The Voice Control Panel will provide full supervision on both active (alarm or music) and standby conditions.
13. Optional distributed amplifier units shall be available to increase total system capacity to up to 24 speaker circuits and up to 1,100 watts of power.

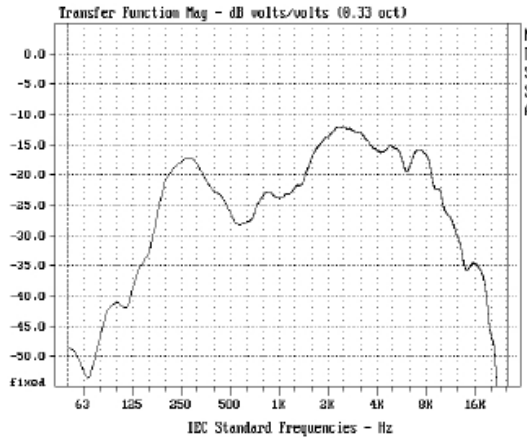
T. SpectrAlert Advance Speakers

1. The Speaker appliance shall be System Sensor SpectrAlert Advance model _____ Speaker. The speaker shall be listed to UL 1480 for Fire Protective Signaling Systems. It shall be a dual-voltage transformer speaker capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.
2. A universal mounting plate shall be used for mounting ceiling and wall speaker products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate.
3. Speakers shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker design shall isolate speaker components to reduce ground fault incidents.
4. The speaker shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and

- shall incorporate an open back construction.
5. All notification appliances shall be backward compatible.

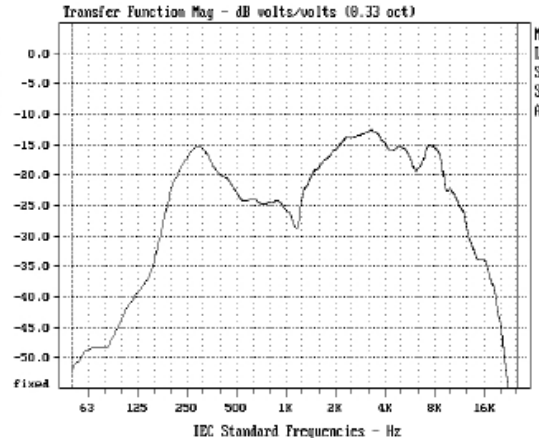
Ceiling Speaker

Wide Band Frequency Response



Wall Speaker

Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

U. SpectrAlert Advance Speaker Strobes

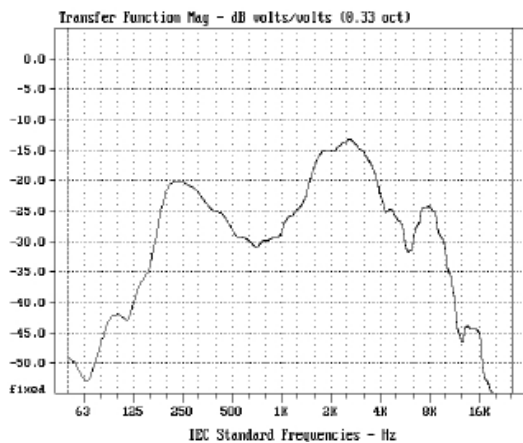
1. The Speaker Strobe appliance shall be System Sensor SpectrAlert Advance model _____ Speaker Strobe. The speaker strobe shall be listed to UL 1971 and UL 1480 and be approved for fire protective signaling systems. It shall be a dual-voltage transformer speaker strobe capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.
2. A universal mounting plate shall be used for mounting ceiling and wall speaker strobe products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance speaker strobes and the Sync•Circuit™ Module MDL3 accessory, if used, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts (includes fire alarm panels with built in sync). When used with the Sync•Circuit Module MDL3, 12-volt rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 16.5 to 33 volts. If the notification appliances are not UL 9th edition listed with the corresponding panel or power supply being used, then refer to the compatibility listing of the panel to determine maximum devices on a circuit.
3. Speaker strobes shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker strobe design shall isolate speaker components to reduce ground fault incidents.
4. The speaker strobe shall have power taps (from 1/4 watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 cande-

la when operating on 12V and 15, 15/75, 30, 75, 110, or 115 when operating on 24V. The strobe shall comply with NFPA 72 and the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range.

5. All notification appliances shall be backward compatible.

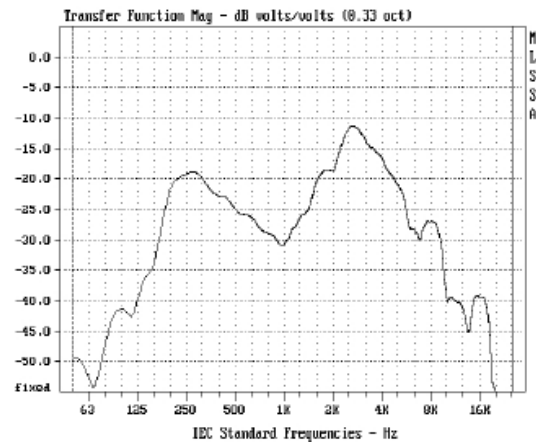
Ceiling Speaker Strobe

Wide Band Frequency Response



Wall Speaker Strobe

Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

6. Strobe lights shall meet the requirements of the ADA, UL Standard 1971 and be fully synchronized.

PART 3.0 – EXECUTION

3.1 INSTALLATION:

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Manual fire alarm boxes shall be suitable for surface mounting or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) above the finished floor.

3.2 TEST:

The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72.

- A. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
- B. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
- C. Verify activation of all waterflow switches.
- D. Open initiating device circuits and verify that the trouble signal actuates.
- E. Open and short signaling line circuits and verify that the trouble signal actuates.
- F. Open and short notification appliance circuits and verify that trouble signal actuates.
- G. Ground all circuits and verify response of trouble signals.
- H. Check presence and audibility of tone at all alarm notification devices.
- I. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
- J. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- K. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.
- L. When the system is equipped with a Voice Evacuation Control panel, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying voice messages.

3.3 FINAL INSPECTION:

- A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

3.4 INSTRUCTION:

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

END OF SECTION

NFS-320 Intelligent Addressable Fire Alarm Control Panel

General

The NFS-320 intelligent Fire Alarm Control Panel is part of the ONYX® Series of Fire Alarm Controls from NOTIFIER.

In stand-alone or network configurations, ONYX Series products meet virtually every application requirement.

The NFS-320's modular design makes system planning easier. The panel can be configured with just a few devices for small building applications, or networked with many devices to protect a large campus or a high-rise office block. Simply add additional peripheral equipment to suit the application. Wireless fire protection can be added with the SWIFT wireless gateway and devices.

For installations using NFS-320C, an optional ACM Series annunciator can be mounted in the same cabinet (up to 48 zones/points, order separately; see DN-60085).

NOTE: Unless called out with a version-specific "R", "C" or "E" at the end of the part number, "NFS-320" refers to models NFS-320, NFS-320R, NFS-320C, and NFS-320E.

ONYX® Series panels integrate with the Connected Life Safety Services (CLSS) platform through the CLSS Gateway, providing connectivity to central station, cloud, and mobile applications. (See HON-62034.) This cloud-based functionality provides reliable protection and remote monitoring of the system, reduced manual data entry, and reporting.

Features

- Certified for seismic applications when used with the appropriate seismic mounting kit.
- Approved for Marine applications when used with listed compatible equipment. See DN-60688.
- One isolated intelligent Signaling Line Circuit (SLC) Class A, B, or X.
- Wireless fire protection using SWIFT Smart Wireless Integrated Fire Technology. See DN-60820.
- Up to 159 detectors and 159 modules per SLC; 318 devices maximum.
 - Detectors can be any mix of photo, thermal, or multi-sensor; wireless detectors are available for use with the FWSG(A).
 - Modules include addressable pull stations, normally open contact devices, two-wire smoke detectors, notification, or relay; wireless modules are available for use with the FWSG(A).
- Standard 80-character display.
- Network options:
 - High-speed network for up to 200 nodes (N16e/x, NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCD, NCA-2, DVC-EM, ONYXWorks, NFS-3030, NFS-640, and NCA).
 - Standard network for up to 103 nodes (N16e/x, NFS2-3030, NFS2-640, NFS-320(C), NFS-320SYS, NCD, NCA-2, DVC-EM, ONYXWorks, NCS, NFS-3030, NFS-640, NCA, AFP-200, AFP-300/400, AFP-1010, and AM2020). Up to 54 nodes when DVC-EM is used in network paging.
- 6.0 A power supply with four Class A/B built-in Notification Appliance Circuits (NAC). Selectable System Sensor, Wheelock, or Gentex strobe synchronization.
- Built-in Alarm, Trouble, Security, and Supervisory relays.
- VeriFire® Tools online or offline programming utility. Upload/Download, save, store, check, compare, and simulate panel databases. Upgrade panel firmware.
- Autoprogramming and Walk Test reports.
- Multiple central station communication options:
 - Standard UDACT
 - Internet
 - Internet/GSM
- 80-character remote annunciators (up to 32).
- EIA-485 annunciators, including custom graphics.
- Printer interface (80-column and 40-column printers).
- History file with 800-event capacity in nonvolatile memory, plus separate 200-event alarm-only file.
- Alarm Verification selection per point, with automatic counter.
- Presignal/Positive Alarm Sequence (PAS).
- Silence inhibit and Auto Silence timer options.
- NAC coding functions:
 - March time.
 - Temporal.
 - California two-stage coding.
 - Canadian two-stage.
 - Strobe synchronization.
- Optional cloud connectivity for remote off site monitoring through CLSS (see HON-62034)
- Monitor multiple buildings through one off-campus central station, and report through the CLSS Gateway
- Optional remote programing through CLSS
- Field-programmable on panel or on PC with VeriFire® Tools program check, compare, simulate.
- Full QWERTY keypad.
- Battery charger supports 18 – 200 AH batteries.
- Non-alarm points for lower priority functions.
- Remote ACK/Signal Silence/System Reset/Drill via monitor modules.
- Automatic time control functions, with holiday exceptions.
- Extensive, built-in transient protection.
- Powerful Boolean logic equations.



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SWIFT WIRELESS

- Self-healing mesh wireless protocol.
- Each SWIFT Gateway supports up to 49 SWIFT devices.
- Up to 4 wireless gateways can be installed with overlapping network coverage.

RELEASING FEATURES

- Ten independent hazards.
- Sophisticated cross-zone (three options).
- Delay timer and Discharge timers (adjustable).
- Abort (four options).
- Low-pressure CO₂ listed.

VOICE FEATURES

- Integrates with FirstCommand Series. See DN-60772.
- Telephone applications require NFC-FFT.

HIGH-EFFICIENCY OFFLINE SWITCHING

3.0 A POWER SUPPLY (6.0 A IN ALARM)

- 120 VAC (NFS-320/NFS-320C); 240 VAC (NFS-320E).
- Displays battery current/voltage on panel (with display).

FLASHSCAN® INTELLIGENT FEATURES

- Polls up to 318 devices in less than two seconds.
- Activates up to 159 outputs in less than five seconds.
- Multicolor LEDs blink device address during Walk Test.
- Fully digital, high-precision protocol (U.S. Patent 5,539,389).
- Manual sensitivity adjustment — up to nine levels.
- Pre-alarm ONYX intelligent sensing — up to nine levels.
- Day/Night automatic sensitivity adjustment.
- Sensitivity levels:
 - **Photo** – 0.5 to 2.35%/foot obscuration.

– **High-Sensitivity Photoelectric (VIEW®)** – Open Air Protection (0.5% - 2.0%/ft. obscuration), Special Applications (0.02%-0.5%/ft. obscuration)

– **Multi-Criteria Detector** – Open Air Protection (2.52-3.89%/ft. obscuration), Special Applications (1.13-2.52%/ft. obscuration)

- Drift compensation (U.S. Patent 5,764,142).
- Degraded mode: In the unlikely event that the NFS-320's primary microprocessor fails, FlashScan detectors revert to degraded operation and can activate the control panel's NAC circuits and alarm relay. Each of the four built-in panel circuits includes a Disable/Enable switch for this feature.
- Multi-detector algorithm involves nearby detectors in alarm decision (U.S. Patent 5,627,515).
- Automatic detector sensitivity testing (NFPA-72 compliant).
- Maintenance alert (two levels).
- Self-optimizing pre-alarm.

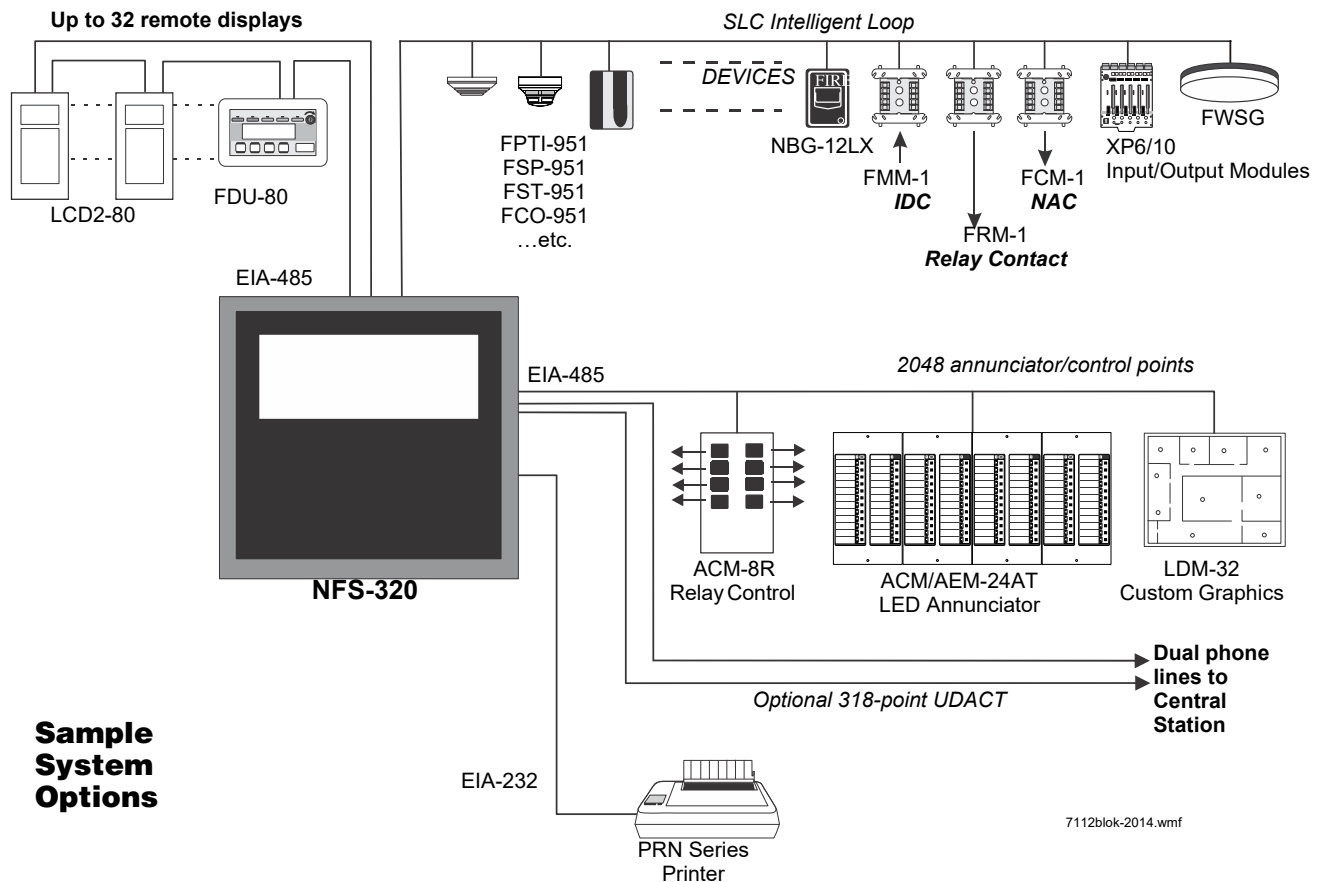
FSV-951 SERIES VIEW® (VERY INTELLIGENT EARLY WARNING)

HIGH-SENSITIVITY SMOKE DETECTOR

- Advanced ONYX intelligent sensing algorithms differentiate between smoke and non-smoke signals.
- Addressable operation pinpoints the fire location.
- Ivory models (-IV) support CLIP mode as well as FlashScan.
- ULC listed models available; "A" models are ULC Listed.
- -R is retrofit, backwards compatible for use with older panels.

FCO-951/-IV ADVANCED MULTI-CRITERIA FIRE/CO DETECTOR

- Detects all four major elements of a fire (smoke, heat, CO, and flame).
- 135°F (57.2°C) fixed-temperature heat detector.
- Transmits an alarm signal due to heat.
- Separate signal for life-safety CO detection.



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- Optional addressable sounder base for Temp-3 (fire) or Temp-4 (CO) tone.
- Automatic drift compensation of smoke sensor and CO cell.
- High nuisance-alarm immunity.
- ULC listed models available; -A models are ULC Listed.

FPTI-951(A) INTELLIGENT MULTI-CRITERIA DETECTOR

- Combined photoelectric, thermal, and infrared sensor
- UL 268 7th Edition and UL 521 Listed; Canadian models CAN/ULC S529 and CAN/ULC S530
- Microprocessor-based technology; combination photo, thermal, and infrared technology.

FPC-951(A) PHOTOELECTRIC/CO SENSOR

- Combined photoelectric and carbon monoxide sensor

FSCO-95(A) INTELLIGENT CO SENSOR

- Carbon monoxide sensor

FS-OSI-RI(A) ADDRESSABLE INTELLIGENT SINGLE-ENDED BEAM SMOKE DETECTOR

- Intelligent addressable reflector-type linear optical beam smoke detector
- Fast, easy, and intuitive beam alignment indicated by directional LED arrows
- Long range coverage of 16-328 ft (5-100 m) is standard; no separate long-range kit required

INTELLIGENT VESDA-E DETECTORS

- Intelligent aspiration smoke detectors connect directly to the SLC loop of compatible ONYX® Series panels:
 - VEA-040-A00-NTF, VEA-040-A10-NTF
 - VEP-A00-P-NTF, VEP-A10-P-NTF, VEP-A00-1P-NTF
 - VEU-A00-NTF, VEU-A10-NTF
 - VES-A00-P-NTF-UL, VES-A10-P-NTF-UL
- Models offer LED display, LCD display, or both
- Coverage options for spaces up to 69,965 square feet

FlashScan, Exclusive World-Leading Detector Protocol

At the heart of the NFS-320 is a set of detection devices and device protocol — FlashScan (U.S. Patent 5,539,389). FlashScan is an all-digital protocol that gives superior precision and high noise immunity.

In addition to providing quick identification of an active input device, this protocol can also activate many output devices in a fraction of the time required by competitive protocols. This high speed also allows the NFS-320 to have the largest device per loop capacity in the industry — 318 points — yet every input and output device is sampled in less than two seconds. The microprocessor-based FlashScan detectors have bicolor LEDs that can be coded to provide diagnostic information, such as device address during Walk Test.

ONYX Intelligent Sensing

Intelligent sensing is a set of software algorithms that provides the NFS-320 with industry-leading smoke detection capability. These complex algorithms require many calculations on each reading of each detector, and are made possible by the high-speed microcomputer used by the NFS-320.

Drift Compensation and Smoothing: Drift compensation allows the detector to retain its original ability to detect actual smoke, and resist false alarms, even as dirt accumulates. It reduces maintenance requirements by allowing the system to automatically perform the periodic sensitivity measurements required by NFPA 72.

Smoothing filters are also provided by software to remove transient noise signals, such as those caused by electrical interference.

Maintenance Warnings: When the drift compensation performed for a detector reaches a certain level, the performance of the detector may be compromised, and special warnings are given. There are three warning levels: (1) Low Chamber value; (2) Maintenance Alert, indicative of dust accumulation that is near but below the allowed limit; (3) Maintenance Urgent, indicative of dust accumulation above the allowed limit.

Sensitivity Adjust: Nine sensitivity levels are provided for alarm detection. These levels can be set manually, or can change automatically between day and night. Nine levels of pre-alarm sensitivity can also be selected, based on predetermined levels of alarm. Pre-alarm operation can be latching or self-restoring, and can be used to activate special control functions.

Self-Optimizing Pre-Alarm: Each detector may be set for “Self-Optimizing” pre-alarm. In this special mode, the detector “learns” its normal environment, measuring the peak analog readings over a long period of time, and setting the pre-alarm level just above these normal peaks.

Cooperating Multi-Detector Sensing: A patented feature of ONYX intelligent sensing is the ability of a smoke sensor to consider readings from nearby sensors in making alarm or pre-alarm decisions. Without statistical sacrifice in the ability to resist false alarms, it allows a sensor to increase its sensitivity to actual smoke by a factor of almost two to one.

Field Programming Options

Autoprogram is a timesaving feature. The FACP “learns” what devices are physically connected and automatically loads them in the program with default values for all parameters. Requiring less than one minute to run, this routine allows the user to have almost immediate fire protection in a new installation, even if only a portion of the detectors are installed.

Keypad Program Edit (with KDM-R2) The NFS-320, like all NOTIFIER intelligent panels, has the exclusive feature of program creation and editing capability from the front panel keypad, while continuing to provide fire protection. The architecture of the NFS-320 software is such that each point entry carries its own program, including control-by-event links to other points. This allows the program to be entered with independent per-point segments, while the NFS-320 simultaneously monitors other (already installed) points for alarm conditions.

VeriFire® Tools is an offline programming and test utility that can greatly reduce installation programming time, and increase confidence in the site-specific software. It is Windows®-based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the NFS-320 in the comfort of the office, test it, store a backup file, then bring it to the site and download from a laptop into the panel.

Placement of Equipment in Chassis and Cabinet

The following guidelines outline the NFS-320’s flexible system design.

Wiring: When designing the cabinet layout, consider separation of power-limited and non-power-limited wiring as discussed in the *NFS-320 Installation Manual*.

It is critical that all mounting holes of the NFS-320 are secured with a screw or standoff to ensure continuity of Earth Ground.

Networking: If networking two or more control panels, each unit requires a Network Communication Module or High-Speed Network Communication Module (HS-NCM can support two nodes; see “Networking Options” on page 4). These modules can be installed in any

option board position (see manual), and additional option boards can be mounted in front of them.

KDM-R2 Controls and Indicators

Program Keypad: QWERTY type (keyboard layout).

12 LED Indicators: Power; Fire Alarm; Pre-Alarm; Security; Supervisory; System Trouble; Signals Silenced; Points Disabled; Control Active; Abort; Pre-Discharge; Discharge.

Keypad Switch Controls: Acknowledge/Scroll Display; Signal Silence; Drill; System Reset; Lamp Test.

LCD Display: 80 characters (2 x 40) with long-life LED backlight.

Product Line Information

- “Configuration Guidelines” on page 4
- “Main System Components” on page 4
- “Networking Options” on page 4
- “Auxiliary Power Supplies and Batteries” on page 4
- “Audio Options” on page 4
- “Compatible Devices, EIA-232 Ports” on page 4
- “Compatible Devices, EIA-485 Ports” on page 4
- “Compatible Intelligent Devices” on page 5
- “Enclosures, Chassis, and Dress Plates” on page 6
- “Other Options” on page 6

CONFIGURATION GUIDELINES

The NFS-320 system ships assembled; description and some options follow. See “Enclosures, Chassis, and Dress Plates” on page 6 for information about mounting peripherals.

Stand-alone and network systems require a main display. On stand-alone systems, the panel's keypad provides the required display. On network systems (two or more networked fire panel nodes), at least one NCD, NCA-2/C, NCS, or ONYXWorks annunciation device is required. (For NCA-2, see DN-7047. For NCD, see DN-60974.)

MAIN SYSTEM COMPONENTS

NFS-320: The standard, factory-assembled NFS-320 system includes the following components: one control panel mounted on chassis (120 V operation — ships with grounding cable, battery interconnect cables, and document kit); includes integral power supply mounted to the main circuit board; one primary display KDM-R2 keypad/display; and one cabinet for surface or semi-flush mounting. Purchase batteries separately. One or two option boards may be mounted inside the NFS-320 cabinet; additional option boards can be used in remote cabinets. (Non-English versions also available. NFS-320-SP, NFS-320-PO.)

NFS-320R: Same as NFS-320, but in red enclosure.

NFS-320C: Based on NFS-320 above. NFS-320C supports installation of an optional ACM-series annunciator in the same cabinet. UL- and ULC-listed. (Non-English version also available: NFS-320C-FR.) For NFS-320C, see DN-60085.

NFS-320CR: Same as NFS-320C but in a red enclosure. For NFS-320C, see DN-60085.

NFS-320E: Same as NFS-320, but with 240 V operation. (Non-English versions also available. NFS-320E-SP, NFS-320E-PO.)

TR-320: Trim ring for the NFS-320 cabinet.

NETWORKING OPTIONS

NCM-W, NCM-F: Standard Network Communications Modules. Wire and multi-mode fiber versions available. See DN-6861.

HS-NCM-W(-2), HS-NCM-MF, HS-NCM-SF, HS-NCM-WMF(-2), HS-NCM-WSF(-2), HS-NCM-MFSF: High-speed Network Communications Modules. Wire, single-mode fiber, multi-mode fiber, and media conversion models are available. See DN-60454.

RPT-W, RPT-F, RPT-WF: Standard-network repeater board with wire connection (RPT-W), multi-mode fiber connection (RPT-F), or allowing a change in media type between wire and fiber (RPT-WF). Not used with high-speed networks. See DN-6971.

ONYXWorks: UL-listed graphics PC workstation, software, and computer hardware. See DN-7048 for specific part numbers.

NFN-GW-EM-3: NFN Gateway, embedded. See DN-60499.

NWS-3: NOTI•FIRE•NET™ Web Server. See DN-6928.

CAP-GW: Common Alerting Protocol Gateway. See DN-60756.

VESDA-HLI-GW: VESDAnet high-level interface gateway. See DN-60753.

LED SIGN-GW: UL-listed sign gateway. Interfaces with classic and high-speed NOTI•FIRE•NET networks through the NFN Gateway. See DN-60679.

OAX2-24V: UL-listed LED sign, used with LED SIGN-GW. See DN-60679.

AUXILIARY POWER SUPPLIES AND BATTERIES

ACPS-610: 6.0 A or 10.0 A addressable charging power supply. See DN-60244.

APS2-6R: Auxiliary Power Supply. Provides up to 6.0 amperes of power for peripheral devices. Includes battery input and transfer relay, and overcurrent protection. Mounts on two of four positions on a CHS-4L or CHS-4 chassis. See DN-5952.

FCPS-24S6/S8: Remote 6 A and 8 A power supplies with battery charger. See DN-6927.

BAT Series: Batteries. NFS-320 uses two 12 volt, 18 to 200 AH batteries. See DN-6933.

AUDIO OPTIONS

NFC-50/100: 25 watt, 25 VRMS, emergency Voice Evacuation Control Panel (VECP) with integral commercial microphone, digital message generator, and Class A or Class B speaker circuits. See DN-60772.

COMPATIBLE DEVICES, EIA-232 PORTS

PRN-7: 80-column printer. See DN-60897.

VS4095/5: Printer, 40-column, 24 V. Mounted in external backbox. See DN-3260.

DPI-232: Direct Panel Interface, specialized modem for extending serial data links to remotely located FACPs and/or peripherals; mount on NFS-320 chassis. See DN-6870.

COMPATIBLE DEVICES, EIA-485 PORTS

ACM-24AT: ONYX Series ACS annunciator — 24 points, expandable to 64 of annunciation with Alarm or Active LED, Trouble LED, and switch per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) by point to be red, green, or yellow; the Trouble LED is always yellow. See DN-6862.

AEM-24AT: Same LED and switch capabilities as ACM-24AT, expands the ACM-24AT to 48, 72, or 96 points. See DN-6862.

ACM-48A: ONYX Series ACS annunciator — 48 points, expandable to 64 of annunciation with Alarm or Active LED per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) in groups of 24 to be red, green, or yellow. See DN-6862.

AEM-48A: Same LED capabilities as ACM-48A, expands the ACM-48A to 96 points. See DN-6862.

ACM-8R: Remote Relay Module with eight Form-C contacts. Can be located up to 6,000 ft. (1828.8 m) from panel on four wires. See DN-3558.

FDU-80: Terminal mode. 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. See DN-6820.

LCD2-80: Terminal and ACS mode. 80-character, backlit LCD display. Mounts up to 6,000 ft. (1828.8 m) from panel. Up to 32 per FACP. *See DN-60548.*

LDM: Lamp Driver Modules LDM-32, LDM-E32, and LDM-R32; remote custom driver modules. *See DN-0551.*

SCS: Smoke control stations SCS-8, SCE-8, with lamp drivers SCS-8L, SCE-8L; eight (expandable to 16) circuits (HVAC only). *See DN-4818.*

TM-4: Transmitter Module. Includes three reverse-polarity circuits and one municipal box circuit; mount on NFS-320 chassis or remotely. *See DN-6860.*

UDACT-2: Universal Digital Alarm Communicator Transmitter, 636 channel. *See DN-60686.*

UZY-256: Programmable Universal Zone Coder provides positive non-interfering successive zone coding. Microprocessor-controlled, field-programmable from IBM®-compatible PCs (requires optional programming kit). Mounts in **BB-UZY**. *See DN-3404.*

COMPATIBLE INTELLIGENT DEVICES

NOTE: "A" suffix indicates ULC-Listed model:

FWSG(A) Wireless SWIFT Gateway: Addressable gateway supports wireless SLC devices. Order FWSGA for ULC applications. *See DN-60820.*

FCO-951/IV FlashScan, Addressable intelligent multi-criteria smoke sensors, photo, carbon monoxide, fixed temperature heat detector and infra-red (IR). ULC: FCO-951A/IV

FPC-951. FlashScan, Combined photoelectric and carbon monoxide sensor. ULC: FPC-951A.

FSCO-951. FlashScan, Addressable carbon monoxide sensor. ULC: FSCO-951A.

FPTI-951, FPTI-951-IV: Addressable intelligent multi-criteria photoelectric, thermal and IR sensors. ULC: FPTI-951A, FPTI-951A-IV.

FS-OSI-RI Addressable intelligent single-ended beam smoke detector. ULC: FS-OSI-RIA.

FSP-951: White, low-profile intelligent photoelectric sensor, FlashScan only. ULC: FSP-951A.

FSP-951-IV: Ivory, low-profile intelligent photoelectric sensor. ULC: FSP-951A-IV

FSP-951T: White, same as FSP-951 but includes a built-in 135°F (57°C) fixed-temperature thermal device. FlashScan only. ULC: FSP-951TA.

FSP-951T-IV: Ivory, same as FSP-951T but includes a built-in 135°F (57°C) fixed-temperature thermal device. ULC: FSP-951TA-IV.

FSP-951R: White, low-profile intelligent photoelectric sensor, remote test capable. For use with DNR/DNRW. FlashScan only. ULC: FSP-95RA

FSP-951R-IV: Ivory, low-profile intelligent photoelectric sensor, remote test capable. FlashScan only. ULC: FSP-95RA-IV, for use with DNRA.

FST-951: White, low-profile intelligent 135°F fixed thermal sensor, FlashScan only. Must be mounted to one of the bases listed below. ULC: FST-951A. *See DN-60975.*

FST-951-IV: Ivory, low-profile intelligent 135°F fixed thermal sensor, FlashScan and CLIP. Must be mounted to one of the bases listed below. ULC: FST-951A-IV.

FST-951R: White, low-profile intelligent rate-of-rise thermal sensor, FlashScan only. Must be mounted to one of the bases listed below. ULC: FST-951A

FSP-951R-IV: Ivory, low-profile intelligent photoelectric sensor, remote test capable. FlashScan only. ULC: FSP-95RA-IV, for use with DNRA.

FST-951H: White, low-profile intelligent 190°F fixed thermal sensor, FlashScan only. Must be mounted to one of the bases listed below. ULC: FST-951HA.

FST-951H-IV: Ivory, low-profile intelligent 190°F thermal sensor, FlashScan and CLIP. Must be mounted to one of the bases listed below. ULC: FST-951HA-IV.

FSV-951, FSV-951R: White, intelligent high-sensitivity photoelectric smoke detector. ULC: FSV-951A, FSV-951RA

FSV-951-IV, FSV-951R-IV: Ivory, intelligent high-sensitivity photoelectric smoke detector. ULC: FSV-951A-IV, FSV-951RA-IV.

VEP-A00-P-NTF: Intelligent aspiration smoke detector with LED display, 4 pipes, covers up to 21,520 square feet. *See DN-61029.* UL/ULC Listed.

VEP-A10-P-NTF: Intelligent aspiration smoke detector with LED and LCD display, 4 pipes, covers up to 21,520 square feet. *See DN-61029.* UL/ULC Listed.

VEP-A00-1P-NTF: Intelligent aspiration smoke detector with LED display, single pipe, covers up to 10,760 square feet. *See DN-61029.* UL/ULC Listed.

VEU-A00-NTF: Intelligent aspiration smoke detector with LED display, 4 pipes, covers up to 69,965 square feet. *See DN-61034.* UL/ULC Listed.

VEU-A10-NTF: Intelligent aspiration smoke detector with LED and LCD display, 4 pipes, covers up to 69,965 square feet. *See DN-61034.* UL/ULC Listed.

VEA-040-A00-NTF: Intelligent aspiration with LED display, 40 point-addressable detection points. Covers 36,000 square feet. *See DN-61036.* UL/ULC Listed.

VEA-040-A10-NTF: Intelligent aspiration with LED and LCD display, 40 point-addressable detection points. Covers 36,000 square feet. *See DN-61036.* UL/ULC Listed.

VES-A00-P-NTF-UL: Intelligent scanning aspiration detector with LEDs. *See DN-62040.* UL 268 7th edition.

VES-A10-P-NTF-UL: Intelligent scanning aspiration detector with 3.5" display. *See DN-62040.* UL 268 7th edition.

DNR: InnovairFlex low-flow non-relay duct-detector housing. ULC: DNRA. (Order FSP-951R(A) separately.) *See DN-60429.*

DNRW: Same as above with NEMA-4 rating, watertight. *See DN-60429.*

B224RB-WH: White, low-profile relay base. *See DN-60054.* ULC: B224RBA-WH.

B224RB-IV: Ivory, plug-in System Sensor relay base. ULC: B224RBA-IV.

B224BI-WH: White, isolator base for low-profile detectors. *See DN-60054.* ULC: B224BIA-WH.

B224BI-IV: Ivory isolator detector base. ULC: B224BIA-IV.

B300-6: White, standard flanged low-profile mounting base. (For 10-pack order B300-6-BP.) ULC: B300A-6.

B300-6-IV: Ivory, standard flanged low-profile mounting base. ULC: B300A-6-IV.

B501-WHITE: European-style, 4" (10.16 cm) base. *See DN-60054.* (For 10-pack order B501-WHITE-BP.) UL/ULC listed.

B501-BL: Black, 4" standard European flangeless mounting base. UL/ULC listed.

B501-IV: Ivory color, 4" standard European flangeless mounting base. UL/ULC listed.

B200S-WH: White, intelligent programmable sounder base, capable of producing a variety of tone patterns including ANSI Temporal 3. Compatible with synchronization protocol. *See DN-60054.* ULC: B200SA-WH.

B200S-IV: Ivory intelligent, programmable sounder base. ULC: B200SA-IV.

B200SCOA-WH: White intelligent, programmable sounder base in English/French (required in Canada for ULC applications with CO detectors. Based on B200SA. ULC listed.

B200SCOA-IV: Ivory intelligent, programmable sounder base in English/French (required in Canada for ULC applications with CO detectors. Based on B200SA. ULC listed.

B200S-LF-WH: White, low-frequency version of B200S. See DN-60054.

B200S-LF-IV: Ivory, low-frequency version of B200S.

B200SR-WH: White intelligent programmable sounder base, Temporal 3 or Continuous tone. For retrofit installations replacing B501BH series bases. See DN-60054. ULC: B200SRA-WH.

B200SR-IV: Ivory intelligent programmable sounder base, Temporal 3 or Continuous tone. For retrofit installations replacing B501BH series bases. ULC: B200SRA-IV.

B200SR-LF-WH: White, low-frequency version of B200SR. See DN-60054.

B200SR-LF-IV: Ivory, low-frequency version of B200SR.

FMM-1: FlashScan monitor module. See DN-6720.

FDM-1(A): FlashScan dual monitor module. See DN-6720.

FZM-1(A): FlashScan two-wire detector monitor module. See DN-6720.

FMM-101(A): FlashScan miniature monitor module. See DN-6720.

FCM-1(A): FlashScan control module. See DN-6724.

FCM-1-REL(A): FlashScan releasing control module. See DN-60390.

FRM-1(A): FlashScan relay module. See DN-6724.

FDRM-1(A): FlashScan dual monitor/dual relay module. See DN-60709.

NBG-12LX: Manual pull station, addressable. See DN-6726.

N-MPS series: Manual pull stations, addressable and conventional. For use in Canada only. See DN-5497 and DN-60629.

ISO-X(A): Isolator module. See DN-2243.

ISO-6(A): Six fault isolator module. See DN-60844.

XP6-C(A): FlashScan six-circuit supervised control module. See DN-6924.

XP6-MA(A): FlashScan six-zone interface module; connects intelligent alarm system to two-wire conventional detection zone. See DN-6925.

XP6-R(A): FlashScan six-relay (Form-C) control module. See DN-6926.

XP10-M(A): FlashScan ten-input monitor module. See DN-6923.

ENCLOSURES, CHASSIS, AND DRESS PLATES

CAB-BM Marine System: Protects equipment in shipboard and waterfront applications. Also order **BB-MB** for systems using 100 AH batteries. For a full list of required and optional equipment, see DN-60688.

NFS-LBB: Battery Box (required for batteries larger than 26 AH).

NFS-LBBR: Same as above, but red.

SEISKIT-320/B26: Seismic mounting kit. Required for seismic-certified applications with NFS-320 and BB-26. Includes battery bracket for two 26 AH batteries.

SEISKIT-BB25: Seismic mounting kit for the BB-25. Includes battery bracket for two 26 AH batteries.

SEISKIT-LBB: Seismic kit for the NFS-LBB. Includes battery bracket for two 55 AH batteries.

Backboxes

NOTE: "C" suffix indicates ULC-Listed mode.

ABF-1B Annunciator Flush Box.

ABF-1DB(C) Annunciator Flush Box with Door.

ABF-2B Annunciator Flush Box

ABF-2DB(C) Annunciator Flush Box with Door

ABF-4B Annunciator Flush Box

ABS-1TB(C) Annunciator Surface Box

ABS-1B(C) Annunciator Surface Box

ABS-2B Annunciator Surface Box

ABS-2D(C) Annunciator Surface Box

ABS-4D(C) Annunciator Surface Box

BB-UZC: Backbox for housing the UZC-256. Required for NFS-320 applications. Black. For red, order BB-UZC-R.

OTHER OPTIONS

CGW-MB: CLSS Gateway for Internet/cloud-based communication between the FACP and peripheral devices. See HON-62034.

HON-CGW-MBB: CLSS Gateway, pre-installed in a cabinet. See HON-62034.

411: Slave Digital Alarm Communicator. See DN-6619.

411UDAC: Digital Alarm Communicator. See DN-6746.

IPDACT-2/2UD, IPDACT Internet Monitoring Module: Connects to primary and secondary DACT telephone output ports for internet communications over customer-provided Ethernet connection. Requires compatible Teldat VisorALARM Central Station Receiver. Can use DHCP or static IP. See DN-60408.

IPSPLT: Y-adaptor option allow connection of both panel dialer outputs to one IPDACT-2/2UD cable input.

IPENC: External enclosure for IPDACT, includes IPBRKT mounting bracket; Red. For Black order **IPENC-B**.

HWF2V-COM: LTE Digital Cellular Fire Alarm Communicator and Internet Panel, Verizon LTE / IP. Provides selectable configurable paths: cellular only, IP only, or IP primary with cellular backup. Connects to the primary and secondary ports of a DACT. See DH-62010. (For Canadian applications order IPGSM-4GC. See DH-60771.)

HWF2A-COM: LTE Digital Cellular Fire Alarm Communicator and Internet Panel, AT&T LTE / IP. Provides selectable configurable paths: cellular only, IP only, or IP primary with cellular backup. Connects to the primary and secondary ports of a DACT. (For Canadian applications order IPGSM-4GC. See DH-60771.)

NFS-320-RB: Replacement board with central processing unit (CPU). NOTE: Keypad must be removed before shipping old unit out for repair.

- NFS-320-RBE: Replacement CPU, Export.
- NFS-320-RB-PO: Replacement CPU, Portuguese.
- NFS-320-RB-POE: Replacement CPU, Export, Portuguese.
- NFS-320-RBC-FR: Replacement CPU, Canadian French.
- NFS-320-RB-SP: Replacement CPU, Spanish.
- NFS-320-RB-SPE: Replacement CPU, Export, Spanish.

NOTE: For other options including compatibility with retrofit equipment, refer to the panel's installation manual, the SLC manual, and the Device Compatibility Document.

SYSTEM CAPACITY

- Intelligent Signaling Line Circuits 1
- Intelligent detectors 159
- Addressable monitor/control modules 159
- Programmable internal hardware and output circuits 4
- Programmable software zones 99
- Special programming zones 14
- LCD annunciators per NFS-320/-320E 32
- ACS annunciators
per NFS-320/-320E 32 addresses x 64 points

ELECTRICAL SPECIFICATIONS

- Primary input power:
 - NFS-320: 120 VAC, 50/60 Hz, 5.0 A.
 - NFS-320E: 220/240 VAC, 50/60 Hz, 2.5 A.
- Current draw (standby/alarm):
 - NFS-320(E) board: 0.250 A. Add 0.035 A for each NAC in use.
 - KDM-R2 (Backlight on): 0.100 A.
- Total output 24 V power: 6.0 A in alarm.

NOTE: The power supply has a total of 6.0 A of available power. This is shared by all internal circuits. See Installation Manual for a complete current draw calculation sheet.

- Standard notification circuits (4): 1.5 A each.
- Resettable regulated 24V power: 1.25 A.
- Two non-resettable regulated 24V power outputs:
 - 1.25 A.
 - 0.50 A.
- Non-resettable 5V power: 0.15 A.
- Battery charger range: 18 AH – 200 AH. Use separate cabinet for batteries over 26 AH.
- Float rate: 27.6 V.

CABINET SPECIFICATIONS

NFS-320 cabinet dimensions:

- Backbox: 18.12 in. (46.025 cm) width; 18.12 in. (46.025 cm) height; 5.81 in. (14.76 cm) depth.
- Door: 18.187 in. (46.195 cm) width; 18.40 in. (46.736 cm) height; 0.75 in. (1.905 cm) depth.
- Trim ring: Molding width is 0.905 in. (2.299 cm).
- Shipping weight (without batteries): 36.15 lb. (16.4 kg).

TEMPERATURE AND HUMIDITY RANGES

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

AGENCY LISTINGS AND APPROVALS

The listings and approvals below apply to the basic NFS-320 control panel. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL/ULC Listed:** S635.
- **FM Approved.**
- **CSFM:** 7165-0028:0243.
- **Fire Dept. of New York:** COA# 6212.
- **City of Chicago.**

NOTE: For additional information on NFS-320C, see DN-60085. For information on NFS-320SYS, see DN-60637.

Marine Applications: Marine approved systems must be configured using components itemized in this document. (See Main System Components, in "Product Line Information.") Specific connections and requirements for those components are described in the installation document, PN 54756. When these requirements are followed, systems are approved by the following agencies:

- **US Coast Guard** 161.002/50/0, 161.002/55/0 (Standard 46 CFR and 161.002).
- **Lloyd's Register** 11/600013 (ENV 3 category).
- **American Bureau of Shipping (ABS)** Type Approval.

NOTE: For information on marine applications, see DN-60688.

STANDARDS

The NFS-320 complies with the following UL Standards and NFPA 72, International Building Code (IBC), and California Building Code (CBC) Fire Alarm Systems requirements:

- **UL 864**, 10th edition (Control Units and Accessories for Fire Alarm Systems).
- **UL 2610** (Commercial Premises Security Alarm Units and Systems).
- **UL 2572** (Mass Notification Systems). (NFS-320 version 20 or higher).
- **ULC-S527-11** Standard for the Installation of Fire Alarm Systems.
- **LOCAL** (Automatic, Manual, Waterflow and Sprinkler Supervisory).
- **AUXILIARY** (Automatic, Manual and Waterflow) (requires TM-4).
- **REMOTE STATION** (Automatic, Manual, Waterflow and Sprinkler Supervisory) (requires TM-4).
- **PROPRIETARY** (Automatic, Manual, Waterflow and Sprinkler Supervisory). *Not applicable for FM.*
- **CENTRAL STATION** (Automatic, Manual, Waterflow and Sprinkler Supervisory) (requires DACT).
- **EMERGENCY VOICE/ALARM.**
- **OT, PSDN** (Other Technologies, Packet-switched Data Network).
- **IBC 2012, IBC 2009, IBC 2006, IBC 2003, IBC 2000** (Seismic).
- **CBC 2007** (Seismic).



This document is not intended to be used for installation purposes.
We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

NOTIFIER

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