

Memorandum

MIAMI-DADE
COUNTY

Date: July 17, 2012

To: Honorable Joe A. Martinez and Members
Board of County Commissioners

From: Carlos A. Gimenez
Mayor

Agenda Item No. 8(O)(2)

Subject: Resolution approving Amendment Number One to Contract DB10-WASD-01ESP with Ric-Man Construction, Inc. increasing total compensation by \$22,543,550.26, from \$54,892,728.57 to \$ 77,436,278.83; granting a time extension of 210 days to August 15, 2013; approving a Temporary Easement from the City of Miami Beach for construction, staging and ingress and egress; providing conditions to effective date of documents; and authorizing the County Mayor or Mayor's Designee to revise Amendment Number One and the Temporary Easement as necessary; and to execute same following review and approval by County Attorney's Office and to exercise the provisions contained therein

RECOMMENDATION

It is recommended that the Board of County Commissioners (Board) approve Amendment Number One to Miami-Dade Water & Sewer Department's (WASD) Contract No. DB10-WASD-01 ESP, a non-exclusive design-build contract with Ric-Man Construction, Inc. The amendment increases total compensation by \$22,543,550.26, from \$54,892,728.57 to \$77,436,278.83, and extends the contract term by 210 days, from January 17, 2013 to August 15, 2013. This amendment is for the replacement of the existing 54-inch sewer force main with a 60-inch sewer force main from Fisher Island to the point of interconnection to the City of Miami Beach's sewer force main. It adds approximately 1,280 linear feet of pipe and provides for an interconnection point at Fisher Island.

Amendment Number One for Contract No. DB10-WASD-01 ESP is related to another item on this agenda, Amendment Number Two for Contract No. E07-WASD-09 with AECOM Technical Services, Inc. Amendment Number Two also increases the total compensation by \$1,100,000 from \$7,150,000 to \$8,250,000 for additional engineering services to replace defective segments of the 54-inch sewer pipe installed across Norris Cut from Virginia Key to Fisher Island. The commonality between both agenda items is the existing condition of various segments of the force main which are in imminent danger of failure.

The terms of Amendment Number One are subject to further revision and negotiation pending the finalization of the Temporary Easement with the City of Miami Beach, and agreement of the terms by the County, the City of Miami Beach and Ric-Man Construction, Inc. The amendment requires Ric-Man to comply with the terms of the Temporary Easement relating to construction work at the easement site, South Pointe Park. A draft of the Temporary Easement is attached. The terms being negotiated at this time include the hours of operation at South Pointe Park, the restoration costs of the site, the scope of risk assumed by the County and the terms of indemnification to the City of Miami Beach which includes possible hazardous substances encountered at the site. In addition, the City of Miami Beach is requiring that Ric-Man Construction, Inc. indemnify the City of Miami Beach for any claims and damages, and add the City to Ric-Man Construction's insurance policy and as a co-obligee on its Performance Bond for work performed at South Pointe Park.

After negotiations regarding the Temporary Easement are completed, the Mayor or Mayor's Designee will revise Amendment Number One and the draft Temporary Easement as necessary to give full effect to the intent of this resolution after review and approval by the County Attorney's Office.

SCOPE OF AGENDA ITEM

The item has county-wide significance although the sewer facilities to be constructed are located in Districts 5.

FISCAL IMPACT/FUNDING SOURCE

Amendment Number One will increase total compensation by \$22,543,550.26 funded by a combination of Revenue Bond Funds, the Wastewater Plant Expansion Fund, and the Wastewater Renewal and Replacement Fund. The term of Amendment Number One will expire on August 15, 2013.

TRACK RECORD/MONITOR

WASD's Government Cut Project Manager, Eduardo A. Vega, P.E., will monitor the contract.

BACKGROUND

On April 15, 2011, the Board approved Resolution R-246-11 awarding Design-Build Contract DB10-WASD-01ESP to Ric-Man Construction, Inc. for total compensation of \$54,892,728.57. The scope of work provided for the replacement of the existing 20-inch water main from Port Island to Fisher Island under Fisherman's Channel, and for the replacement of the existing 54-inch sewer force main from Fisher Island to south of the City of Miami Beach under Government Cut Channel. Both pipelines were in conflict with the proposed dredging route for the Miami Harbor Federal Navigation Project which will allow large container vessels to access the Port of Miami in 2014. The initial deadline to complete the replacement of both pipelines was December 2012.

According to the requirements of the original contract, the 20-inch water main from Port Island to Fisher Island under Fisherman's Channel was completed and placed into service in April 2012. In addition, the construction of the two shafts on Fisher Island and the marine shaft located south of Miami Beach were completed for the replacement of the existing 54-inch sewer force main.

The green line on Exhibit A (as attached) shows the marine shaft (Retrieval Shaft) south of Miami Beach which would have served to connect to the existing 54-inch sewer force main that runs landward to the interconnection of Miami Beach's sewer system.

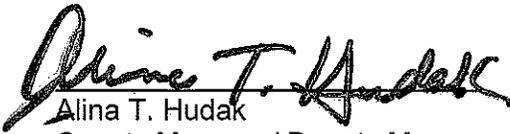
In December of 2011, when specialized testing equipment became available, WASD had the existing 54-inch sewer force main inspected from the Central District Wastewater Treatment Plant at Virginia Key to the point of interconnection to the City of Miami Beach's sewer force main. The inspection revealed that several segments of the existing pipeline between the marine shaft (Retrieval Shaft) and the interconnection to Miami Beach's sewer system are in a severely distressed condition and in imminent danger of failure. Based on the inspection results, WASD revised the original scope of work issued under Design-Build Contract No. DB10-WASD-01 ESP by adding approximately 1,280 linear feet of sewer pipe and providing for an interconnection point at Fisher Island.

As shown on Exhibit A, the purple line illustrates those sections of the sewer pipeline to be installed by Ric-Man Construction, Inc., while the blue line illustrates those sections of pipe to be installed under a separate emergency contract that has already been awarded.

Honorable Chairman Joe A. Martinez and Members
Board of County Commissioners
Page 3

The Community Business Enterprise goal of 17% and a Community Small Business Enterprise goal of 10.38% were established as a part of the original contract. To date, Ric-Man Construction, Inc. is on target to comply with all the threshold requirements and participation goals. The goals of 17% Community Business Enterprise and the 10.38% Community Small Business Enterprise will also be applied to the additional compensation in Amendment Number One.

Approval of this item will allow WASD to move forward to address the very real risk of a critical pipeline failure on a project schedule to accommodate the Miami Harbor Federal Navigation Project. Every day that can be saved in completing this work is important to reducing risk of pipe failure.



Alina T. Hudak
County Manager/ Deputy Mayor

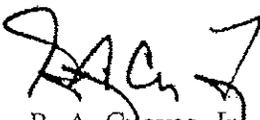


MEMORANDUM

(Revised)

TO: Honorable Chairman Joe A. Martinez
and Members, Board of County Commissioners

DATE: July 17, 2012

FROM: 
R. A. Cuevas, Jr.
County Attorney

SUBJECT: Agenda Item No. 8(0)(2)

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
- Ordinance creating a new board requires detailed County Manager'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. 8(0)(2)
7-17-12

RESOLUTION NO. _____

RESOLUTION AUTHORIZING THE COUNTY MAYOR OR THE MAYOR'S DESIGNEE, SUBJECT TO CERTAIN CONDITIONS, TO AMEND, APPROVE, AND RECORD A TEMPORARY CONSTRUCTION EASEMENT TO BE GRANTED FROM THE CITY OF MIAMI BEACH TO THE COUNTY, AND TO AMEND AND APPROVE A NON-EXCLUSIVE DESIGN-BUILD CONTRACT BETWEEN THE COUNTY AND RIC-MAN CONSTRUCTION, INC., TO ALLOW FOR A CONNECTION POINT OF A SEWER MAIN IN THE CITY OF MIAMI BEACH; INCREASING TOTAL COMPENSATION TO RIC-MAN FROM \$54,892,728.57 TO \$77,436,278.83 AND EXTENDING SUCH CONTRACT FOR 210 DAYS; AUTHORIZING THE COUNTY MAYOR OR THE MAYOR'S DESIGNEE TO EXECUTE SUCH DOCUMENTS FOLLOWING REVIEW AND APPROVAL BY THE COUNTY ATTORNEY'S OFFICE AND TO EXERCISE THE PROVISIONS CONTAINED THEREIN; AND WAIVING RESOLUTION R-130-06

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference; and

WHEREAS, the County has requested the City of Miami Beach to grant the County a Temporary Construction Easement at certain property located at South Pointe Park in the City of Miami Beach in order to replace a 54-inch sewer pipe to allow for a connection point of a sewer main; and

WHEREAS, the County and the City of Miami Beach have agreed to certain terms in connection with the granting of the Temporary Construction Easement; and

WHEREAS, an Amendment to the design-build contract with Ric-Man Construction, Inc. ("Ricman") is necessary in order to accomplish the replacement of the pipe, which is time sensitive as the pipe is in a severely distressed condition; and

WHEREAS, Amendment Number One shall be effective only upon the date of recordation of the Temporary Construction Easement from the City of Miami Beach to the County relating to construction work at South Pointe Park; and

WHEREAS, although the County and Ric-Man have agreed to certain terms in Amendment Number One, and the County and the City of Miami Beach have agreed to certain terms in the Temporary Construction Easement, such terms may need to be revised pending final negotiation and approval by the City of Miami Beach City Commission and Ric-Man,

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

Section 1. The above recitals are hereby incorporated herein and made a part hereof.

Section 2. This Board authorizes the Mayor or the Mayor's designee, subject to the express conditions of this Resolution, to execute Amendment Number One to a non-exclusive design-build contract with Ric-Man Construction, Inc., for Miami-Dade County Water and Sewer Department Contract No. DB10-WASD-01 ESP ("Amendment No. 1"), increasing total compensation from \$54,892,728.57 to \$77,436,278.83, to provide additional design-build services for the design and construction of the replacement of the 54-inch sanitary sewer force main from Fisher Island to a connection point at the City of Miami Beach and to provide a time extension of two hundred and ten (210) days, in substantially the form attached hereto and made a part hereof as Exhibit "A."

Section 3. This Board approves and accepts the grant of the Temporary Construction Easement from the City of Miami Beach to the County, in substantially the form attached hereto and made a part hereof as Exhibit "B."

Section 4. This Board authorizes the County Mayor or the Mayor's designee to negotiate, revise and amend the terms and conditions of Amendment No. 1 and the terms of the Temporary Construction Easement, and to execute any and all documents necessary to give

effect to the intent of this Resolution after review and approval by the County Attorney's Office, and to exercise the provisions contained therein, for and on behalf of Miami-Dade County, Florida.

Section 5. The authorization set forth in this Resolution shall be subject to the fulfillment of each and every one of the following conditions in the sole discretion of the Mayor or Mayor's designee: (a) approval by the City of Miami Beach Commission upon terms acceptable to the Mayor or the Mayor's designee after approval by the County Attorney's Office of a Temporary Construction Easement, (b) execution by Ric-Man of Amendment No. 1, as revised or approved by the Mayor or the Mayor's designee and the County Attorney's Office, whereby Ric-Man agrees to be bound to the County for fulfillment of all applicable conditions of the Temporary Construction Easement approved by the City of Miami Beach, and (c) recordation of the Temporary Construction Easement in the public records. In the event such conditions are not satisfied by August 15, 2012, the Temporary Construction Easement, Amendment No. 1, and all authorizations set forth in this Resolution shall be null and void and of no further force or effect.

Section 6. This Board directs the County Mayor or the Mayor's designee to record the instruments of conveyance, to the extent that such instruments are accepted, in the Public Records of Miami-Dade County, and to provide a recorded copy of said instruments to the Clerk of the Board within thirty (30) days of execution of said instruments; and directs the Clerk of the Board to attach and permanently store a recorded copy of said instruments together with this Resolution.

Section 7. To the extent applicable, this Board waives the provisions of Resolution R-130-06 with respect to the prospective Temporary Construction Easement and Amendment No. 1.

The foregoing resolution was offered by Commissioner
who moved its adoption. The motion was seconded by Commissioner
and upon being put to a vote, the vote was as follows:

- | | |
|-------------------------------------|----------------------|
| Joe A. Martinez, Chairman | |
| Audrey M. Edmonson, Vice Chairwoman | |
| Bruno A. Barreiro | Lynda Bell |
| Esteban L. Bovo, Jr. | Jose "Pepe" Diaz |
| Sally A. Heyman | Barbara J. Jordan |
| Jean Monestime | Dennis C. Moss |
| Rebeca Sosa | Sen. Javier D. Souto |
| Xavier L. Suarez | |

The Chairperson thereupon declared the resolution duly passed and adopted this 17th day of July, 2012. This resolution shall become effective upon the earlier of (1) ten (10) days after the date of its adoption unless vetoed by the 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

By: _____
Deputy Clerk

Approved by County Attorney as HNG/SGD
to form and legal sufficiency.

Henry N. Gillman

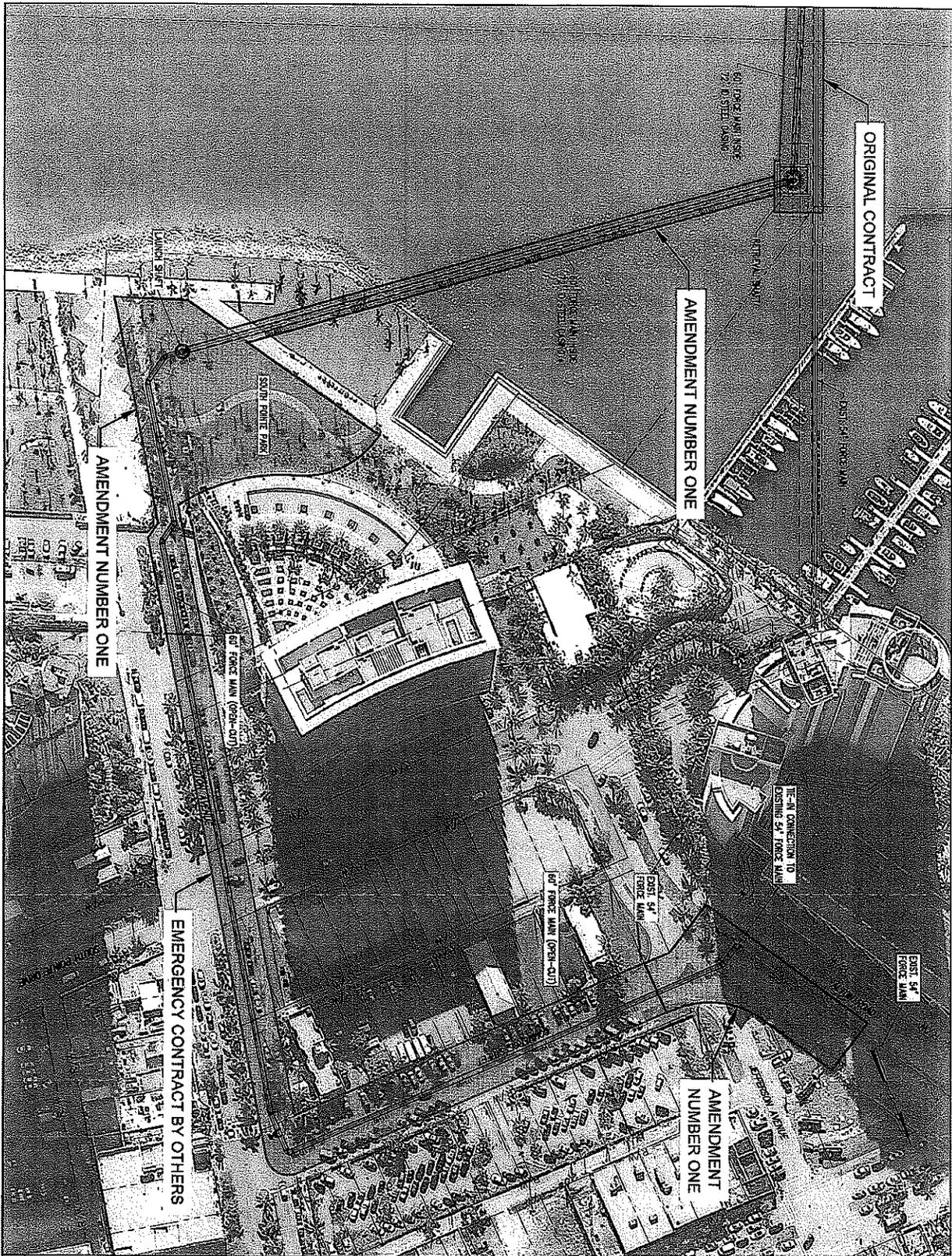


EXHIBIT 'A'
AMENDMENT NUMBER ONE

**EMERGENCY 60' FORCE MAIN INSTALLATION
 FISHER ISLAND TO MIAMI BEACH**

MAY 28 2012

**MIAMI-DADE
 COUNTY**
 WATER & SEWER
 DEPARTMENT



Scale: 1"=100'



Miami-Dade Water and Sewer Department
 2012 - 2018 CAPITAL BUDGET / MULTI - YEAR PLAN
 WASTEWATER PROJECTS
 1009. CENTRAL MIAMI-DADE WASTEWATER TRANSMISSION MAINS AND
 PUMP STATION IMPROVEMENTS
 Commission District(s) Systemwide
 OSBM No. 9650241

VERSION 3

Budget/ Estimate Cost	Prior										Projections					Total	Bond Issue
	Prior to 2011 - 2012	FY 2011 - 2012	Total Prior	FY 2012 - 2013	FY 2013 - 2014	FY 2014 - 2015	FY 2015 - 2016	FY 2016 - 2017	FY 2017 - 2018	Future	Total						
379,272,092																	
45,408,467	4,137,717	49,546,184	0	0	0	0	0	0	0	0	0	0	0	0	49,546,184	Construction - 2010 Bonds	
0	0	0	0	0	0	0	0	0	0	0	0	0	113,217,000	113,217,000	113,217,000	Future Funding	
0	0	0	0	960,000	1,000,000	0	0	0	0	2,987,600	177,000,000	181,947,600	181,947,600	181,947,600	Future W.A.S.D Revenue Bonds		
360,372	15,389,452	15,749,824	0	0	0	0	0	0	0	0	0	0	0	0	15,749,824	Plant Expansion Fund - Wastewater	
14,940,936	0	14,940,936	0	0	0	0	0	0	0	0	0	0	0	0	14,940,936	W.A.S.D Wastewater Commercial Paper	
0	3,870,548	3,870,548	0	0	0	0	0	0	0	0	0	0	0	0	3,870,548	Wastewater Renewal & Replacement Fund	
60,709,775	23,397,717	84,107,492	0	960,000	1,000,000	0	0	0	0	2,987,600	290,217,000	379,272,092	379,272,092	379,272,092			

TOTAL

Miami-Dade Water and Sewer Department
 2012 - 2018 CAPITAL BUDGET / MULTI - YEAR PLAN

WASTEWATER PROJECTS

1009. CENTRAL MIAMI-DADE WASTEWATER TRANSMISSION MAINS AND
 PUMP STATION IMPROVEMENTS

Commission District(s) Systemwide

OSBM No. 9650241

VERSION 3

Budget/ Estimate Cost	Prior				Projections							Total	Bond Issue	
	Prior to 2011 - 2012	FY 2011 - 2012	Total Prior	FY 2012 - 2013	FY 2013 - 2014	FY 2014 - 2015	FY 2015 - 2016	FY 2016 - 2017	FY 2017 - 2018	Future				
0	32,069,517	32,069,517	32,069,517	17,476,667	0	0	0	0	0	0	0	0	49,546,184	Construction - 2010 Bonds
0	0	0	0	0	0	0	0	0	0	113,217,000	0	0	113,217,000	Future Funding
0	0	0	0	0	960,000	1,000,000	0	0	0	2,987,600	177,000,000	0	181,947,600	Future WAST Revenue Bonds
360,372	0	360,372	360,372	15,389,452	0	0	0	0	0	0	0	0	15,749,824	Plant Expansion Fund - Wastewater
14,940,936	0	14,940,936	14,940,936	0	0	0	0	0	0	0	0	0	14,940,936	WAST Wastewater Commercial Paper
0	0	0	0	3,870,548	0	0	0	0	0	0	0	0	3,870,548	Wastewater Renewal & Replacement Fund
15,301,308	32,069,517	47,370,825	47,370,825	36,736,667	960,000	1,000,000	0	0	0	2,987,600	290,217,000	0	379,272,092	
TOTAL														

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Memorandum



Date: June 13, 2012

To: John Renfrow, Director
Water and Sewer Department

From: Jack Osterholt, Deputy Mayor/Director
Department of Regulatory and Economic Resources

Subject: Project No. DB10-WASD-01, Government Cut Utility Relocation

The subject project was reviewed by Small Business Development, a division of the Department of Regulatory and Economic Resources, for compliance with the Community Small Business Enterprise, Responsible Wages and Benefits and Community Business Enterprise Programs, §10-33.02, 2-11.16 and 2-10.4.01 respectively of the Code of Miami-Dade County. This project was awarded to RIC-MAN Construction, Inc. on January 17, 2011 with a 17% Community Business Enterprise goal for design services valued at \$1,215,500 and a 10.38% Community Small Business Enterprise goal for construction valued at \$4,292,591.97.

To date, Community Business Enterprise firms have been awarded contracts valued at 17% of the design costs and have been paid \$664,265.36 or 12% of the design dollars paid to the prime. Community Small Business Enterprise firms have been awarded contracts valued at 10.38% of the construction costs and have been paid \$2,247,300.52 or 10.14% of the construction dollars paid.

The prime contractor and its subcontractors and sub-consultants are in compliance with the applicable small business and wage requirements.

c: Veronica Clark, Assistant to Director, SBD, RER
Alice Hidalgo-Gato, CMC Director, SBD, RER
Patrice Hill, AO2, SBD, RER

GENERAL PURPOSE RIDER

To be attached to and form part of Bond Number 929522892 effective April 5, 2011 issued by Western Surety Company on behalf of Ric-Man Construction, Inc. as Principal and in favor of Miami Dade County as Obligee:

Now, therefore, it is agreed that:

The bond amount has increased from Fifty-four Million Eight Hundred Ninety-two Thousand Seven Hundred Twenty-eight & 57/100-----(\$54,892,728.57 to Seventy-seven Million Four Hundred Thirty-six Thousand Two Hundred Seventy-eight & 83/100-----(\$77,436,278.83)

It is further understood and agreed that all other terms and conditions of this bond shall remain unchanged.

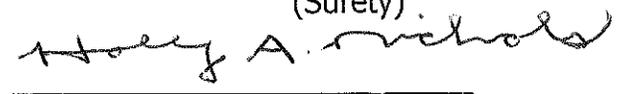
This rider is to be effective the 15th day of June, 2012.

Signed and Sealed this 15th day of June, 2012.

Ric-Man Construction, Inc.
(Principal)

 V.P.

Western Surety Company
(Surety)



Holly A. Nichols, Attorney-in-fact

Accepted By:

Form F5340

**BOND APPROVED AS TO
INSURANCE REQUIREMENTS**

RISK MANagements DIVISION
DATE: 06/30/12

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

James R Gargaro, Gus E Zervos, Steve M Zervos, Angelo G Zervos, Donald W Burden, Holly A Nichols, Individually

of Southfield, MI, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the By-Law printed on the reverse hereof, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Senior Vice President and its corporate seal to be hereto affixed on this 2nd day of May, 2012.



WESTERN SURETY COMPANY

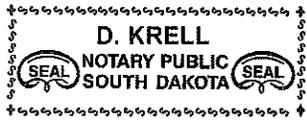
Paul T. Bruflat

Paul T. Bruflat, Senior Vice President

State of South Dakota }
County of Minnehaha } ss

On this 2nd day of May, 2012, before me personally came Paul T. Bruflat, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is the Senior Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires
November 30, 2012



D. Krell

D. Krell, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law of the corporation printed on the reverse hereof is still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 15th day of June, 2012.



WESTERN SURETY COMPANY

L. Nelson

L. Nelson, Assistant Secretary

AMENDMENT NUMBER ONE
TO
DESIGN-BUILD CONTRACT
BETWEEN MIAMI-DADE COUNTY
AND
RIC-MAN CONSTRUCTION, INC.
CONTRACT NUMBER 10RMCI001

THIS AMENDMENT NUMBER ONE, is made and entered into this _____ day of _____, 2012 by and between Miami-Dade County, a political Subdivision of the State of Florida, hereinafter referred to as the "COUNTY", and RIC-MAN CONSTRUCTION, INC., a Michigan corporation authorized to do business in the State of Florida and with offices in Miami-Dade County, hereinafter referred to as "RIC-MAN CONSTRUCTION, INC.", "RIC-MAN" or "DESIGN-BUILDER".

WITNESSETH

WHEREAS, on April 15, 2011, the COUNTY and RIC-MAN CONSTRUCTION, INC., entered into a Design-Build Contract ("Contract") for the replacement of an existing 20-inch water main from Port Island to Fisher Island under the Fisherman's Channel and for the replacement of an existing 54-inch sewer force main from Fisher Island to south of the City of Miami Beach under Government Cut Channel, hereinafter referred to as the "Contract", and

WHEREAS, RIC-MAN completed the work relating to the replacement of the existing 20-inch water main; and

WHEREAS, the COUNTY through the Miami-Dade Water and Sewer Department, hereinafter referred to as the "Department"; evaluated the entire 54-inch sewer force main and concluded that the entire 54-inch sewer force main is in a severely distressed condition and in danger of failure; and

WHEREAS, based on the condition of the sewer pipe, the Department proposes to replace the entire 54-inch force main from Fisher Island to the interconnection of the City of Miami Beach's sanitary sewer system located on the mainland; and

WHEREAS, the Department proposes to increase the diameter of the entire replacement pipeline between Fisher Island and Miami Beach from 54-inch to 60-inch to maintain the same hydraulic characteristics for the proposed longer route and provide additional flow capacity; and

WHEREAS, the Department also proposes to include a new 60-inch outlet with plug valve at Fisher Island for future interconnection; and

WHEREAS, the Department has requested and RIC-MAN CONSTRUCTION, INC. has agreed to provide additional design-build services for the additional work described above; and

WHEREAS, Amendment Number One will extend the Contract for an additional 210 calendar days until August 15, 2013 and increase total compensation by \$22,543,550.26; and

WHEREAS, a Temporary Easement for Construction, Staging and Ingress and Egress ("Temporary Easement") for the Project is required to be obtained from the City of Miami Beach; and

WHEREAS, the terms of this Amendment are subject to further revision and negotiation pending the finalization of the Temporary Easement.

NOW, THEREFORE, in consideration of the mutual covenants hereinafter contained, the COUNTY and RIC-MAN CONSTRUCTION, INC., hereby agree to the following:

1. The first paragraph of Article 5.1 of the Contract ("Project - Location") is hereby modified to state as follows:

LOCATION: The Project is located on and between Port Island (PI) and Fisher Island (FI), under Fisherman's Channel for replacement of the 20-inch water main, and located on and between Fisher Island and mainland City of Miami Beach for replacement of the existing 54-inch sewer force main with a 60-inch sewer force main.

2. The first paragraph of Article 5.2 of the Contract ("Project - Term of the Contract") is hereby modified to state as follows:

TERM OF THE CONTRACT: The DESIGN-BUILDER must design, build, test, commission and bring the Work to Substantial Completion within 801 days of the Notice to Proceed (NTP) (the "Substantial Completion Date") and into Final Completion within 853 days from the NTP (the "Final Completion Date"), which includes 21 contingency days authorized as of the effective date of the Amendment. Based on the NTP being issued by the COUNTY on April 15, 2011, the Substantial Completion Date is June 24, 2013 and the Final Completion Date is August 15, 2013 as defined and indicated in the Contract. The change in the Final Completion Date is based on an extension of the contract term by 210 calendar days. The COUNTY shall issue a Notice to Proceed to DESIGN-BUILDER for the additional work set forth in this Amendment No. 1 effective on the date the Temporary Easement for Construction, Staging and Ingress and Egress from the City of Miami Beach is recorded in the public records. The COUNTY'S REPRESENTATIVE may authorize a contingency period of time of not more than 83 Calendar Days from the NTP, of which 21 days have been authorized up to the effective date of Amendment Number One. It will be the responsibility of the DESIGN-BUILDER to secure all permits not provided by the COUNTY, and to provide signed and sealed architectural and engineering construction documents which comply with all regulatory requirements as well as meeting the needs of the COUNTY. Upon failure of the DESIGN-BUILDER to comply with the Substantial Completion Date of June 24, 2013, (plus approved extensions, if any), the

DESIGN-BUILDER shall pay to the COUNTY the sum of Five Thousand Dollars (\$5,000.00) for each calendar day after June 24, 2013 (plus approved extensions). This amount is not a penalty but liquidated damages to the COUNTY. Liquidated damages are hereby fixed and agreed upon between the parties, recognizing the impossibility of precisely ascertaining the amount of damages that will be sustained by the COUNTY as a consequence of such delay, and both parties desiring to obviate any question of dispute concerning the amount of said damages and the cost and effect of the failure of the DESIGN-BUILDER to complete the Contract on time.

3. The third paragraph of Article 5.2.1.1 of the Contract ("Project - Schedule Completion Dates") is hereby modified to state as follows:

Design, permit, construct, install, test, connect and place into service the new 60-inch sewer force main pipe as required in the Design Criteria Package.

4. Article 6.4 of the Contract ("Subconsultants – Contract Measures") is hereby modified to state as follows:

CONTRACT MEASURES: The DESIGN-BUILDER is required under this Contract to achieve the following Contract Measures applied to this project as shown in the attached Letters of Agreement as presented in the DESIGN-BUILDER's proposal for the project: The total Contract Measures, including contingency, is one million, eight hundred seventeen thousand one hundred fifteen dollars thirty-eight cents (\$1,817,115.38).

17.00% Community Business Enterprise (CBE) Goal of the Engineering, Design and related Professional services portion of the Project.

5. Article 7.2 of the Contract ("Subcontractors – "List of Firms") is hereby modified to add the following firm:

Firm Name: Mears Group, Inc.
Contracting Services: Horizontal Directional Drill

6. Article 7.4 of the Contract ("Subcontractors - Contract Measures") is hereby modified to state as follows:

CONTRACT MEASURES: The DESIGN-BUILDER is required under this Contract to achieve the following Contract Measures applied to this project as shown in the attached Schedules of Participation and letter of Intent as presented in the DESIGN-BUILDER's proposal for the project. The total Contract Measure, including contingency, is six million, one thousand, three hundred fifteen dollars and ninety-four cents (\$6,001,315.94).

10.38% Community Small Business Enterprise (CSBE) Goal of the construction portion of the Contract.

7. Article 10.1.1.2 of the Contract ("Basis of Compensation - Agreed Fixed Lump Sum") is hereby modified to state as follows:

A. Replacement of Existing 20-Inch Water Main from Port Island to Fisher Island Under Fisherman's Channel

Engineering, Design and Permitting:	\$ 2,214,000.00
Construction, Testing and Commissioning	<u>\$11,211,300.22</u>
Total Water Main:	\$13,425,300.22

B. Replacement of Existing 54-Inch Force Main with a new 60-inch force main between Fisher Island and mainland Miami Beach

Engineering, Design and Permitting:	\$ 7,503,195.00
Construction, Testing and Commissioning	
Force Main:	<u>\$43,851,695.85</u>
Total:	\$51,354,890.85

C. Total Engineering, Design and Permitting:	\$ 9,717,195.00
Total Construction, Testing and Commissioning:	\$55,062,996.07

DESIGN-BUILD CONTRACT LUMP SUM PRICE: \$64,780,191.07

8. Article 10.2.1 of the Contract ("Basis of Compensation - Contingency Allowance Account") is hereby modified to state as follows:

This project is under a design-build contract for the design and construction of a facility on public property; therefore a Contingency Allowance Account is permissible, per Ordinance No. 00-65. This Contingency Allowance Account, computed as 10% of the design-related portion of the Contract value plus 5% of the construction-related portion of the Contract value, will be used by MDWASD, at its sole option, for unforeseen conditions necessitating additional design and construction, resulting in additions to the Design-Build Contract Price. In this regard, the total of the Contingency Allowance Account is three million, seven hundred twenty-four thousand, eight hundred sixty-eight dollars and eighty cents (\$3,724,868.80).

9. Article 10.3.1 of the Contract ("Basis of Compensation - Dedicated Allowance Account") is hereby modified to state as follows:

At the discretion of the COUNTY'S REPRESENTATIVE, the DESIGN-BUILDER may be authorized to perform services outside the basic services described in Article 12 below, under a Dedicated Allowance Account specifically established for said purpose. Compensation to the DESIGN-BUILDER for any of these services will be subject to the Design-Build contract terms and conditions and shall not exceed the individual amount authorized by the COUNTY'S REPRESENTATIVE through direct negotiation with the DESIGN-BUILDER prior to the performance of the Work. Amounts provided in the aforementioned allowance are as follows:

others. The scope of work also includes a new 60-inch outlet with plug valve in Fisher Island for future connection.

12. This Amendment includes not only all direct costs of RIC-MAN 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, disruption, extended direct overhead or general overhead, acceleration, material or other escalation which include wages and other impact costs.
13. RIC-MAN hereby waives, fully releases, discharges and acquits the COUNTY of any and all liability for claims, additional costs, and any requests for additional time including, but not limited to, Notices of Potential Claims submitted by RIC-MAN arising out of the fulfillment of the Contract and this Amendment from the date of the contract award to and including execution of this Amendment.

Notwithstanding the foregoing, RIC-MAN does not waive its ability to collect on any earned but unpaid payment applications and retainage withheld, nor does RIC-MAN waive its ability to present and be awarded compensation for the pass-through claim of its subcontractor Mears Group Inc. dated August 19, 2011 (the "Mears Claim"). However, RIC-MAN specifically waives any markup or claim for incidental costs related to the Mears Claim and acknowledges that the Mears Claim is subject to the Contract's indemnification provisions in favor of the County. Moreover, the County reserves all defenses to the Mears Claim.

Furthermore, notwithstanding the foregoing, RIC-MAN does not waive its right to rely upon its earlier notice of a differing site condition dated September 14, 2011 but the reservation is limited only to a claim for any damages that occur after execution of this Amendment specifically resulting from said differing site condition, if any. The County further reserves all defenses to any such claim.

14. RIC-MAN agrees to comply with the terms of the Temporary Easement from the City of Miami Beach to the County relating to construction work at South Point Park ("Temporary Easement") and all such rights and obligations therein and incorporated herein in by reference survive the termination of the Temporary Easement. Ric-Man's indemnification of the County shall be commensurate with the indemnification provisions included in the Temporary Easement. The draft of the Temporary Easement is attached hereto and incorporated herein by reference as Attachment "A". The terms include, without limitation, the requirement that RIC-MAN indemnify the City of Miami Beach as provided in the Easement, add the City of Miami Beach as an additional insured on RIC-MAN's insurance and as a co-obligee on RIC-MAN's performance bond for the work performed at South Pointe Park. The specific terms, commitments and obligations of RIC-MAN shall be delineated in the final version of this Amendment after approval of the Temporary Easement by the City of Miami Beach and such terms shall be set forth in an attached Exhibit which is made a part hereof and incorporated herein by reference.

10.3.1.1)	Permit Fees:	\$1,651,889.88
10.3.1.2)	Change in Geotechnical Conditions:	\$2,907,326.19
10.3.1.3)	Unknown Existing Pipeline Conditions:	\$1,255,436.11
10.3.1.4)	Environmental Mitigation	\$ 869,995.34
10.3.1.5)	Undefined Interfering Utilities	\$ 187,214.19
10.3.1.6)	Disposal of Hazardous Material	\$ 969,109.73
10.3.1.7)	Unforeseen Work Restrictions (Navigational Fisher Island, Pipeline Operations	\$1,090,247.32

Total amount of Dedicated Allowance Account items above is eight million, nine hundred, thirty-one thousand, two hundred eighteen dollars and ninety-six cents (\$8,931,218.96)

10. Article 10.3.4 of the Contract is hereby modified to state as follows:

The sum of the Contingency Account and the Dedicated Allowance Account is twelve million, six hundred fifty-six thousand, eighty-seven dollars and seventy-six cents (\$12,656,087.76) for all payments to the DESIGN-BUILDER for any Additional Services authorized on this Project.

Therefore, the total payments for this Contract shall be limited to seventy-seven million, four hundred thirty-six thousand, two hundred seventy-eight dollars and eight-three cents (\$77,436,278.83). Any further amounts required for this Contract must be submitted to the County Commission to authorize a change order or amendment to the Contract.

11. Paragraph 5 of Article 12.1 of the Contract ("Scope of Services") is hereby modified to state as follows:

Replacement of the existing 54-inch sewer force main under Government Cut Channel includes providing a deep shaft on land at Fisher Island and a second deep shaft in the water, south of the City of Miami Beach, and a third shaft on land of City of Miami Beach, within South Pointe Park; micro-tunneling below Government Cut Channel to install casing amongst these three shafts; installing a new 60-inch diameter pipeline within the casing in micro-tunnels, and installing a 60-inch pipeline in South Pointe Park through open cut method; connecting to the existing 60-inch pipeline to be constructed by others at the south end of Washington Avenue and the west end of Commerce Street; tying the new 60-inch pipeline into the existing 54-inch force main in Fisher Island, and at the intersection of Alton Road and Commerce Street, City of Miami Beach; testing the pipeline and all connections; grouting the new pipeline within the casing and shafts; disinfecting, cutting and decommissioning the existing section of 54-inch force main under the Government Cut Channel for removal by

15. All provisions of the Contract not otherwise modified herein shall remain in full force and effect.

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IN WITNESS WHEREOF, the parties hereto have executed this Contract by their duly authorized officers on the date first written above.

ATTEST:

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

By: _____
Harvey Ruvlin
Clerk of the Board

By: _____
Carlos A. Gimenez
County Mayor

WITNESSETH:

By: _____

Typed or print name

RIC-MAN CONSTRUCTION INC..
Firm Name (Place Corporate Seal)

By: _____
President

By: _____

Typed or print name

Print name

ACKNOWLEDGED AND ACCEPTED BY:
WESTERN SURETY COMPANY
(SURETY)

By: _____

Approved as to form
and legal sufficiency.

Assistant County Attorney

TEMPORARY EASEMENT

THIS GRANT OF A TEMPORARY EASEMENT FOR INGRESS-EGRESS, CONSTRUCTION STAGING, AND CONSTRUCTION WORK RELATED TO THE CONSTRUCTION AND INSTALLATION OF A NEW 60-INCH (60") FORCE MAIN (the Easement), is entered into this ___ day of _____, 2012 ("Execution Date"), between the CITY OF MIAMI BEACH, a municipal corporation of the State of Florida, and its successors and assigns (hereinafter called GRANTOR), and MIAMI-DADE COUNTY, a political subdivision of the State of Florida, whose mailing address is c/o Miami-Dade Water and Sewer Department, P.O. Box 330316, Miami, FL 33233-0316, and its successors and assigns (hereinafter called GRANTEE);

1. **Grant of Easement.** The GRANTOR, for and in consideration of the sum of TEN DOLLARS (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby grants to the GRANTEE, an exclusive temporary easement (the "EASEMENT") solely for purposes of ingress-egress, construction staging, and construction work related to GRANTEE'S construction and installation of an emergency 60-inch (60") sanitary sewer force main ("GRANTEE'S PROJECT" or the "PROJECT"), on, over, and under certain property of the GRANTOR in South Pointe Park, 1 Washington Avenue, Miami Beach, FL, as such property is more specifically described and delineated in EXHIBIT "A," attached hereto and made a part hereof (the "EASEMENT AREA").

GRANTOR MAKES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER TO GRANTEE WITH RESPECT TO THE CONDITION OF THE EASEMENT AREA. GRANTEE IS ACCEPTING THE EASEMENT AREA ON AN "AS IS" "WHERE IS" BASIS AND ASSUMES ALL RISK WITH RESPECT TO THE CONDITION THEREOF INCLUDING, WITHOUT LIMITATION, THEREUNDER OR APPURTENANT THERETO, WHETHER KNOWN OR UNKNOWN TO GRANTOR.

2. **Uses.**

2.1 The GRANTEE shall use the EASEMENT and the EASEMENT AREA during the Term provided herein solely for the express purposes provided in Section 1 hereof, and more specifically described in this Section 2. GRANTEE shall at all times utilize the EASEMENT AREA so as not to unreasonably conflict with the GRANTOR'S operation and maintenance of

those areas, including portions of South Pointe Park, which are not included within the Easement Area. The GRANTOR shall have full right to enter upon the EASEMENT AREA, upon twenty-four (24) hours written notice to the GRANTEE'S Project Manager for non-emergency purposes; and upon a telephone call to said Project Manager, in the event of an emergency. Nothing contained herein shall be construed as prohibiting GRANTOR, at its discretion, from assisting or acting in an emergency affecting safety of persons or property.

2.2 The GRANTEE may use the EASEMENT and the EASEMENT AREA solely for the following purposes:

- (a) ingress and egress (i.e. for ingress and egress to and from that portion of the EASEMENT AREA utilized by GRANTEE for construction staging, and to perform that portion of construction work on GRANTEE'S PROJECT within the EASEMENT AREA). GRANTEE shall only be permitted to enter and exit the EASEMENT AREA from the west half of Washington Avenue, and shall not be permitted to enter, stage, store any materials and/or utilize the South Pointe Park municipal parking lot adjacent to Washington Avenue for any work related to or arising out of the PROJECT work to be performed within the EASEMENT AREA;
- (b) temporary construction staging purposes in connection with the PROJECT including, without limitation, storage of materials and equipment related only to the portion of the PROJECT work to be performed within the EASEMENT AREA; and
- (c) to perform such portion of the PROJECT construction work (including installation) within the EASEMENT AREA.

Prior to its use of the EASEMENT AREA in connection with subsections 2(b) and (c) above, GRANTEE, at its sole cost and expense, shall install a temporary fence, which shall be an eight foot (8') high chain link fence with top rail and privacy screen, around the complete area of that portion of the EASEMENT AREA (as delineated in the sketch attached to Exhibit "A" hereto) to be used for staging (including storage) and construction activities. The exact location of this fence, as well as its design and function, shall be subject to the prior written consent of GRANTOR, which consent shall not be unreasonably withheld, conditioned or delayed. GRANTEE shall, at its sole cost and expense, maintain this fence in good repair and condition because the fence will be viewed by users of South Pointe Park and (in some cases) by

residents and visitors by/to the surrounding South of Fifth Street neighborhood. Damaged or broken sections, regardless of circumstance or cause, shall be repaired by GRANTEE within a reasonable timeframe, but not later than five (5) business days after written notice from GRANTOR.

2.3 The GRANTEE shall take reasonable precautions within the Easement Area for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to persons or property including, without limitation, employees, visitors to and residents of the surrounding site and those portions of the site and buildings adjacent to the EASEMENT AREA.

2.4 The GRANTEE shall not cut, disconnect, or disturb any existing utility and/or service lines of any nature without the prior written consent of the GRANTOR, which consent shall not be unreasonably withheld. Prior to the work being performed, the GRANTEE shall attempt to identify the existing lines and notify the GRANTOR, in writing, as to any required and/or anticipated relocation of utility and/or service lines to perform the PROJECT work.

2.5 The GRANTEE, shall not encroach upon any other of GRANTOR'S property, beyond the boundaries of the EASEMENT AREA including, without limitation, the remainder of South Pointe Park.

3. **Term.** The term of this Easement and the easements granted herein (Term) shall commence on the date of recordation of this Easement by the County in the public records ("Commencement Date"), and shall automatically terminate (and, accordingly, the EASEMENT will automatically cease and the EASEMENT AREA will be automatically surrendered by GRANTEE) on December 31, 2013 ("Termination Date"), without the necessity of any further action by GRANTOR. Upon termination, GRANTEE and GRANTOR will no longer have any rights in conjunction with the Easement granted herein, other than terms that survive the termination of this Easement. Notwithstanding the preceding, should the PROJECT be completed, or should the EASEMENT be abandoned or discontinued by the GRANTEE, before the Termination Date, this Easement will automatically terminate on such date, without the necessity of any further action by GRANTOR (and the parties hereto will no longer have any rights in conjunction with this Easement granted herein other than those rights that survive the termination of this Easement). Such termination prior to the Termination Date shall be evidence by written notice of such Termination recorded by Grantee in the public records.

In the event that GRANTEE'S PROJECT is not completed by the Termination Date, and provided further that GRANTEE is not in default under the provisions of this EASEMENT, the

Term may be extended upon mutual agreement of the parties and, as to GRANTOR, by agreement of the County Mayor or the Mayor's designee, and as to Grantee, subject further to approval by the Mayor and City Commission of the City of Miami Beach. The Easement shall also be extended upon an event arising from causes beyond the control of the GRANTEE or the GRANTEE's contractor that delays the performance or obligations of this Easement or the Project. Such extension shall be commensurate with the delay caused by the force majeure event.

The GRANTEE'S and Grantor's obligations under this Easement shall remain in full force and effect following expiration of the Term, any extension of the term or any termination of the Easement as provided herein.

3.1 **Construction Schedule.** It is understood that GRANTEE will construct and install (or cause to be constructed and installed) GRANTEE'S PROJECT in substantial accordance with the construction schedule which has been approved by the parties, and which is attached and incorporated as Exhibit "B" hereto (the "PROJECT Construction Schedule") [NOTE: SCHEDULE SHOULD IDENTIFY DURATION OF CONSTRUCTION AND HOURS, AS SPECIFICALLY AS POSSIBLE, FROM COMMENCEMENT THROUGH TERMINATION DATE.]. While the PROJECT Construction Schedule indicates the scope and sequence of such construction, GRANTEE reserves the right to modify the PROJECT Construction Schedule; provided, however that GRANTEE (i) shall promptly notify GRANTOR of any changes to the PROJECT Construction Schedule; (ii) shall coordinate any substantial changes with GRANTOR (because any substantial changes may impact GRANTOR'S operation of South Pointe Park, and/or the surrounding South of Fifth Street neighborhood); and (iii) shall obtain GRANTOR'S prior written consent if any such modification of the PROJECT Construction Schedule involves an extension of either the (A) boundaries of the EASEMENT AREA; (B) the Term; and/or (C) the permitted hours of operation (as set forth below). The GRANTEE shall furnish to the GRANTOR periodic progress reports on the PROJECT including, without limitation, any significant and/or anticipated delays in the performance of the work. These progress reports shall be provided no later than two (2) months after the Commencement Date, and every two (2) months thereafter or earlier (as appropriate).

3.2 **Hours of Operation.** GRANTEE may utilize the EASEMENT AREA during the Term without GRANTOR'S prior written approval, during the following permitted days and hours of operation:

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- (a) for storage of equipment and materials including those components needed for construction staging at any time or times;
- (b) for ingress-egress at any time or times, provided GRANTEE complies with the GRANTOR'S Noise Ordinance (as same may be amended from time to time);
- (c) for construction and installation work related to the micro-tunneling phase of the PROJECT in accordance with the permitted hours of construction for the zoning district within which the EASEMENT AREA is located, as such hours are set forth in Section 46-156 of the City of Miami Beach ("City Code") (as same may be amended from time to time; and
- (d) for construction and installation work related to all other phases of the PROJECT in accordance with the permitted hours of construction for the zoning district within which the EASEMENT AREA is located, as such hours are set forth in Section 46-156 of the City Code (as same may be amended from time to time).

If GRANTEE needs to utilize the EASEMENT AREA on any day(s) or time(s) other than as expressly permitted above, then GRANTEE must obtain GRANTOR'S prior written approval, which approval will not be unreasonably withheld, conditioned, or delayed. Notwithstanding anything contained in this subsection 3.2 including, without limitation, subsections (c) and (d) above, the GRANTOR'S City Manager may authorize any necessary construction activities to occur earlier and/or later than as otherwise provided in Section 46-156 of the City Code, based upon a finding that (a) there are no reasonable alternatives; (b) there are no prior City Code violation cases against GRANTOR, GRANTOR'S contractor, or the construction site; and (c) there is a significant community need, public purpose or benefit.

4. No excavated material shall be stacked higher than 25 feet above the finished grade of the EASEMENT AREA.

5. **Maintenance.** At all times during the Term, the GRANTEE, at its sole cost and expense, shall properly and adequately maintain the EASEMENT AREA in a safe clean and neat condition, and shall make all repairs necessary to keep the EASEMENT AREA in such condition. The GRANTEE, at its sole cost and expense, shall maintain the EASEMENT AREA in a neat and clean condition, free from any and all garbage, waste materials, or rubbish caused by operations of the PROJECT. If all or any portion of the EASEMENT AREA is not kept in a condition reasonably acceptable to GRANTOR, GRANTOR shall notify the GRANTEE, in writing, of any deficiency(ies), and GRANTEE shall correct such deficiency(ies) within 48 hours

of said notice. In the event GRANTEE fails to timely comply with the foregoing obligation, GRANTOR shall have the right (but not the duty), at GRANTOR'S sole option and discretion, to correct the deficiency(ies), in which event GRANTEE shall promptly reimburse GRANTOR for the reasonable costs incurred by GRANTOR in connection therewith, but in no event later than thirty (30) days following receipt of an invoice therefor.

6. GRANTEE will promptly repair (or cause to be repaired) any damages to the subsurface portion (or portions) of the EASEMENT AREA, AND/OR to any and all portion(s) of the remainder of South Pointe Park, outside of the EASEMENT AREA caused by, through, under, arising out of and/or resulting from the work performed by GRANTEE, GRANTEE'S General Contractor for the PROJECT, or any of their respective employees, subcontractors, laborers, or material suppliers. Upon receipt of written notice from GRANTOR, GRANTEE shall perform such repairs within a reasonable timeframe, but commencing not later than five (5) business days after written notice thereof. However, in the event of an emergency, affecting the safety of persons or property, GRANTEE shall immediately commence repairs to mitigate the damages caused therefrom at its sole cost and expense.

If GRANTEE fails to perform any of its obligations under this Paragraph 6, GRANTOR shall have the right (but not the duty), to correct any condition and/or to make repairs, and the reasonable costs thereof shall be paid by GRANTEE promptly after written notice of the same, but no later than thirty (30) days after receipt of written notice thereof. Notwithstanding the foregoing provisions of this paragraph, GRANTEE shall not be responsible for repairing any damage to the subsurface portion (or portions) of the EASEMENT AREA and/or to the remainder of South Pointe Park which, as to the EASEMENT AREA, is caused by the negligence or willful misconduct of GRANTOR, and/or its officers, employees, or contractors; and, as to the remainder of South Pointe Park, which is caused by the negligence or willful misconduct of GRANTOR, its officers, employees, contractors, agents, licensees, invitees, and guests as a result of their (respective) use of the Park.

7. **Restoration.** Notwithstanding anything to the contrary contained herein, immediately following the Termination Date (or immediately upon earlier termination of this Easement, as the case may be), GRANTEE shall promptly restore the EASEMENT AREA to the condition of its existence prior to GRANTEE'S use and utilization thereof.

8. **Indemnification.**

8.1. To the fullest extent permitted by law, and subject to the limitations provided for tort claims under Section 768.28, Florida Statutes, GRANTEE, and/or its officials, employees, contractors, and agents (including, without limitation, GRANTEE'S PROJECT General Contractor, Ric-Man Construction, Inc.), shall indemnify and hold harmless GRANTOR, its officers and employees, from any costs, liabilities, claims, losses, and damages (including, without limitation, reasonable attorneys' fees and disbursements at the trial level and all levels of appeal), whether suit is instituted or not, relating to death of or injury to persons, or loss of or damage to property, resulting from, arising out of, or incurred in connection with the existence and use of the EASEMENT and the EASEMENT AREA by GRANTEE, and/or its officials, employees, contractors, and agents; and including, but not limited to, any violation by the GRANTEE, and/or its officials, employees, contractors, and agents (including, without limitation, Ric-Man Construction), of any laws, rules, regulations or ordinances regarding hazardous materials, hazardous wastes, hazardous substances, solid waste, or pollution, whether now existing or hereafter enacted or promulgated, as they may be amended from time to time ("Environmental Laws"); any presence, release, or threat of release of hazardous materials, hazardous wastes, hazardous substances, solid waste or pollution at, upon, under, from or within the EASEMENT AREA by GRANTEE, and/or its officials, employees, contractors, and agents; the failure of GRANTEE, and/or its officials, employees, contractors, and agents, to duly perform any obligations or actions required to be taken under any Environmental Laws (including, without limitation, the imposition by any governmental authority of any lien or so-called "super priority lien" upon the EASEMENT AREA); any clean-up costs; liability for personal injury or property damage or damage to the environment; and any fines, penalties, and punitive damages, or any fines or assessments incurred by or claimed against GRANTOR and arising out of the failure of GRANTEE, and/or its officials, employees, contractors, and agents, to comply with Environmental Laws in connection with the use of the EASEMENT and the EASEMENT AREA by GRANTEE, and/or its officials, employees, contractors, and agents.

8.2 GRANTEE, and/or its officials, employees, contractors, and agents, shall also, as part of the indemnification provided to GRANTOR pursuant to this Paragraph 8,

defend any and all claims asserted against GRANTOR resulting from, arising out of, or incurred in connection with the existence and/or use of the EASEMENT and the EASEMENT AREA by GRANTEE, and/or its officials, employees, contractors, and agents. GRANTEE shall be entitled to select counsel of GRANTEE'S choice to defend the claim. GRANTOR shall be permitted, at its cost and expense, to retain independent counsel to monitor the claim proceeding. The duty to defend set forth in this subsection 8.2 shall be severable and independent from the indemnity obligations otherwise set forth in this Paragraph 8, to the extent that if any other provisions of this Paragraph 8 are deemed invalid and/or unenforceable, this provision shall remain in full force and effect.

8.3 Notwithstanding anything contained in Paragraph 8 to the contrary, GRANTEE, shall not be obligated or liable to GRANTOR, or any third parties, for any costs, liabilities, expenses, losses, claims or damages, with respect to third party claims, for amounts in excess of those limitations on the statutory sovereign immunity provided to GRANTEE under Florida Statute § 768.28 (or any successor statute thereto); or with respect to claims resulting solely from the negligence or willful misconduct of GRANTOR.

8.4. The indemnity and defense obligations set forth in this Paragraph 8, as well as the provisions of Section 8.3, shall survive the expiration of the Term or any termination of this Easement.

9. **Notices.** All notices, requests, consents and other communications required or permitted under this Easement shall be in writing (including telex and telegraphic communications) and shall be (as elected by the person giving such notice) hand-delivered by messenger or courier service; telecommunicated; or mailed (airmail, if international) by registered or certified mail (postage prepaid), return receipt requested; or sent by any form of overnight mail, addressed to:

TO GRANTOR:
City of Miami Beach
Attn: City Manager
1700 Convention Center Drive
Miami Beach, FL 33139

WITH COPIES TO:
City of Miami Beach
Attn: City Attorney
1700 Convention Center Drive
Miami Beach, FL 33139

TO GRANTEE:
Miami-Dade Water and Sewer Department
Attn: Director
3071 SW 38th Avenue, 5th Floor
Miami, Florida 33146

WITH COPIES TO:
Miami-Dade County
County Attorney
111 N.W. 1st Street, Suite 2810
Miami, FL 33128

Or to such other address as any party may designate by notice complying with the terms of this paragraph. Each such notice shall be deemed delivered: (1) on the date delivered if by personal delivery; (2) on the date telecommunicated if by telegraph; (3) on the date of transmission with confirmed receipt if by telex, telefax or other telegraphic method; (4) on the date upon which the return receipt is signed or delivery is refused or the notice is designated by the postal authorities as not deliverable, as the case may be, if mailed; and (5) on the day after mailing by any form of overnight mail service.

10. **Construction Mitigation Program.** GRANTEE shall implement and maintain, at its sole cost and expense, and for the duration of the Term, a Construction Mitigation Program (the "Program") which, at a minimum, shall include, but not necessarily be limited to the following:

- (a) GRANTEE (and/or GRANTEE'S Contractor's) plan to minimize and mitigate the effect of dust, debris and noise impacts, caused by its use of the EASEMENT, the EASEMENT AREA, and/or by the PROJECT, upon users of South Pointe Park, and upon the surrounding South of Fifth Street neighborhood; which plan, at a minimum, shall address (i) minimization of noise disruptive to Park users and the surrounding neighborhood (and the prohibition of amplified music within the EASEMENT AREA), (ii) reasonable control of dust, trash, and debris, and (iii) prohibition of vehicle "idling" to minimize exhaust fumes and noise;
- (b) installation of safety/security fencing and screening around the EASEMENT AREA, and any other measures intended to safeguard and secure the EASEMENT AREA;
- (c) identification of any trees and/or other landscaping within the EASEMENT AREA or the Park that is intended to be relocated to such locations within the City of Miami Beach as may be specified by the City's Parks and Recreation Department;
- (d) modification of the existing South Pointe Park irrigation system to ensure that, notwithstanding the EASEMENT and any other activities within the EASEMENT AREA, the irrigation system continues to function properly in the remaining areas of the Park outside the EASEMENT AREA;

- (e) no construction trailer or concrete batch plant will be allowed within the EASEMENT AREA, but a truck-mounted concrete mixer will be permitted;
- (f) GRANTEE must provide a technical report, detailing the measures to be taken by GRANTEE to protect that certain work of art situated in the Park (created by Tobias Rehberger and named "Obstinate Lighthouse"); and
- (g) GRANTEE'S plan for protecting any other significant facilities, structures, and/or features in South Pointe Park (including, without limitation turf, lawns, paved walkways/paths, the "water feature,")

GRANTEE shall submit a written plan detailing the Program, for GRANTOR'S prior review and written approval (which approval shall not be unreasonably, withheld, conditioned or delayed) prior to the Commencement Date of this Agreement. The final approved Program plan shall be attached hereto and made a part hereof as **Exhibit "C"** to this Easement.

11. **Security and Lighting.** GRANTEE shall, at its sole cost and expense, at the end of each day, secure the gate(s) providing access unto that portion of the EASEMENT AREA which is being utilized for construction activities and staging (including storage, to the extent permitted herein). If GRANTEE fails at any time to so secure the gates, then GRANTOR shall have the right, without notice, of securing the gate(s), and GRANTEE shall, upon demand, immediately reimburse GRANTOR for any reasonable expenses, if any, which GRANTOR incurs in effecting GRANTEE'S compliance with this paragraph and, further, GRANTOR shall in no way be liable to GRANTEE for any damages with respect to GRANTEE'S failure to secure the EASEMENT AREA.

Prior to the Commencement Date, GRANTEE shall provide GRANTOR, for its review and written approval prior to installation (which approval shall not be unreasonably withheld, conditioned or delayed), with its lighting plan for the EASEMENT AREA, which shall include the specifics for lighting during the permitted hours of operation, as well as for adequate security lighting when the EASEMENT is not being utilized. All lighting must comply with any Florida Department of Environmental Protection requirements relating to same.

12. **Miscellaneous Terms and Conditions.** Nothing contained herein shall be construed as a waiver of GRANTEE or GRANTOR's rights of sovereign immunity.

12.1 **Construction.** For purposes of construction by a Court, the parties hereto acknowledge that both parties hereto participated in the drafting of this document.

12.2 **Time.** Time is of the essence in this Easement.

12.3 **No Assignment.** No assignment of all or any part of this Easement and no sub-easement(s) for any purpose shall be made or granted by GRANTEE without the prior written consent of GRANTOR.

12.4 **City's Governmental Capacity/No Waiver of City/County Police Powers.** GRANTOR confirms that it has full power and authority to grant this Easement. Nothing in this Easement or in the parties' acts or omissions in connection herewith shall be deemed in any manner to waive, impair, limit, or otherwise affect the authority of the GRANTOR/ City of Miami Beach or the GRANTEE/ Miami-Dade County in the discharge of its police or governmental powers.

12.5 **Remedies Cumulative.** Each right and remedy of either party provided for in this Easement shall be cumulative and shall be in addition to every other right or remedy provided for in this Easement, or now or hereafter existing at law or in equity or by statute or otherwise, and the exercise or beginning of the exercise by a party of any one or more of the rights or remedies provided for in this Easement, or now or hereafter existing at law or in equity or by statute or otherwise, shall not preclude the simultaneous or later exercise by such party of any or all other rights or remedies provided for under this Easement, or now or hereafter existing at law or in equity or by statute or otherwise.

12.6 **Counterparts.** This Easement may be executed in counterparts, each of which shall be deemed an original but all of which together represent one instrument.

12.7 **Successors and Assigns.** The Easement, terms, covenants, and conditions herein shall be binding upon, and inure to the benefit of, GRANTOR AND GRANTEE and, except as otherwise expressly provided herein, their respective successors and assigns.

12.8 **No Waiver.** If GRANTOR excuses or condones any breach or default by GRANTEE of any obligation under this Easement, this shall not be a waiver of such obligation with respect to any continuing obligation or subsequent breach or default and no such waiver shall be implied.

12.9 **Severability.** If any provision of this Easement is held or rendered illegal or unenforceable, it shall be considered separate and severable from this Easement and the remaining provisions of this Easement shall remain in full force and bind the parties as though the illegal or unenforceable provision had never been included in this Easement.

12.10 **Entire Easement; Modifications.** This Easement sets forth the entire Easement between the parties specifically relating to the subject matter of the temporary easements granted hereby and there are no other agreements or understandings between them relating to GRANTEE'S use of the EASEMENT AREA. This Easement may not be modified except by agreement in writing executed by the parties and, in the case of GRANTOR, approved by the Mayor and City Commission of the City of Miami Beach.

12.11 **Captions; References.** The captions of this Easement are for the purpose of convenience of reference only, and in no way define, limit or describe the scope or intent of this Easement or in any way affect this Easement. All references in this Easement to the terms "herein", "hereunder," "hereof," and words of similar import shall refer to this Easement, as distinguished from the paragraph or Section within which such term is located.

12.12 **Third Parties.** Nothing express or implied in this Easement is intended, or shall be construed to confer upon or give any person or entity, other than GRANTOR AND GRANTEE, any rights or remedies under or by reason of this Easement.

12.13 **Governing Law.** This Easement shall be governed by, and construed in accordance with, the laws of the State of Florida, both substantive and remedial, without regard to principles of conflict of laws. The exclusive venue for any litigation arising out of this Easement shall be Miami-Dade County, Florida, if in state court, and the U.S. District Court, Southern District of Florida, if in federal court.

12.14 **Laws and Permits.** The GRANTEE shall comply with Federal, State and Local Laws, Statutes, Ordinances, Rules, Codes, Regulations, Directives and Lawful Orders of public authorities including, without limitation, all environmental, safety and health laws, insofar as applicable to the performance of its work for the PROJECT (the "Laws"). All work, labor, services and materials to be furnished, supplied or performed by the GRANTEE, its General Contractor, Engineer-of-Record, or any of their employees, agents, representatives, subcontractors, laborers, or material suppliers must strictly comply with the applicable Laws. The GRANTEE shall bear the risk and sole responsibility for all permitting and other costs necessary to insure the PROJECT is in full compliance with the Laws, unless expressly provided otherwise herein.

12.15 As additional consideration for the Easement, and as an additional inducement for GRANTOR'S grant of the Easement, GRANTEE shall amend the Design-Build Contract

between GRANTEE and GRANTEE'S Contractor, Ric-Man Construction, Inc, dated April 15, 2011 (the "PROJECT Contract"), to name the GRANTOR (a) as a co-indemnatee (along with GRANTEE) under the indemnification provisions of the PROJECT Contract) including, without limitation, those provisions in subsection 13.1 of the PROJECT Contract); and (b) as an additional named insured (along with GRANTEE) under the insurance requirements of the PROJECT Contract (including, without limitation, those provisions in subsection 13.1 of the PROJECT Contract). The parties hereto further agree that the Easement shall be attached and incorporated as an exhibit to the amended PROJECT Contract.

IN WITNESS WHEREOF, the GRANTOR herein has caused these presents to be executed in its name on the day and year first above written. Attestation of this EASEMENT by the City Clerk shall constitute evidence of approval by the City of Miami Beach.

CITY OF MIAMI BEACH, a Municipal Corporation of the State of Florida

By: _____
Mayor

ATTEST:

City Clerk

SEAL

APPROVED AS TO FORM AND
CORRECTNESS:

City Attorney

36

ACCEPTED BY:

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

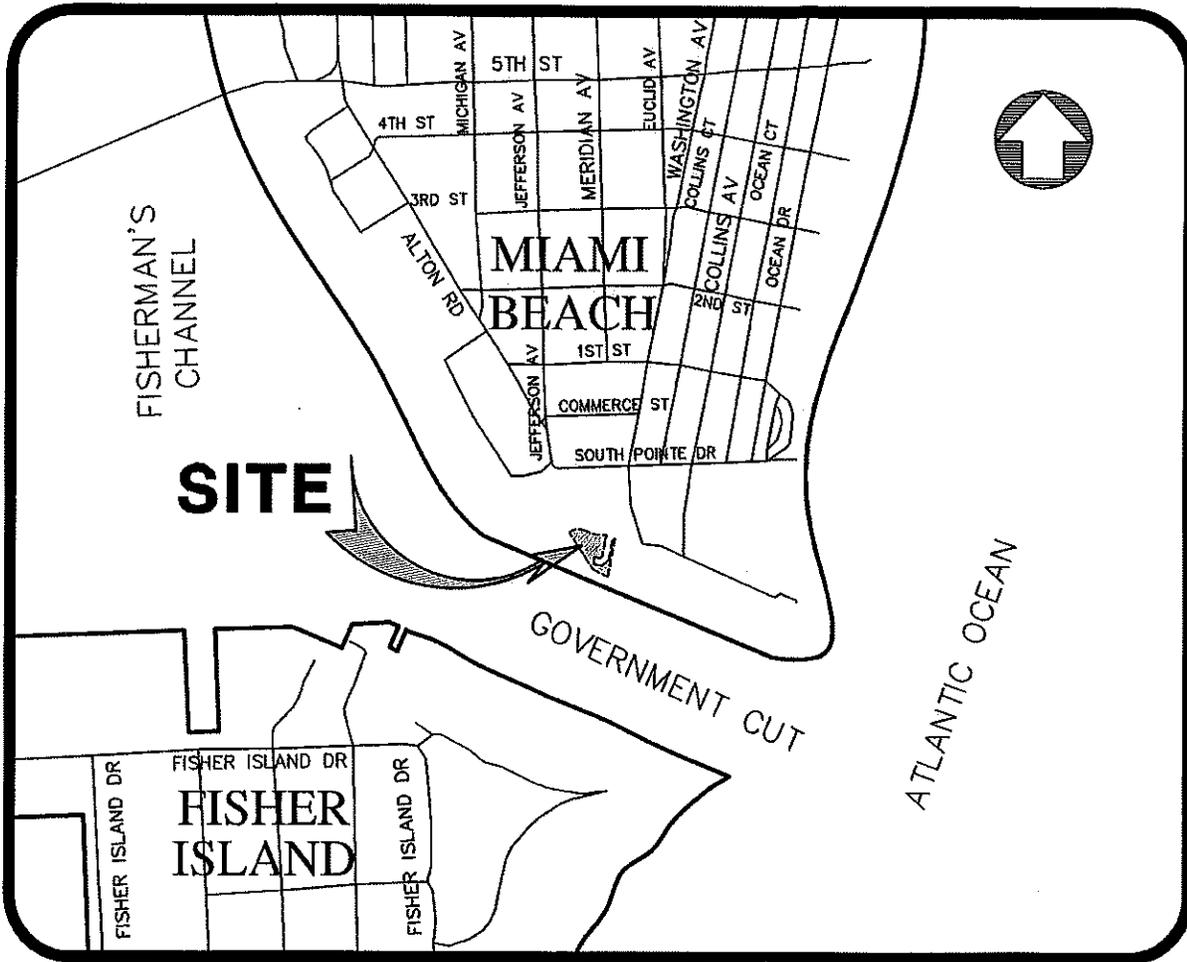
By: _____
Harvey Ruvin
Clerk of the Board

By: _____
Carlos A. Gimenez
County Mayor

Approved as to form
and legal sufficiency.

Assistant County Attorney

EXHIBIT "A"



VICINITY MAP

NOT TO SCALE

A PORTION OF THE NORTHWEST 1/4 OF
SECTION 10, TOWNSHIP 54 SOUTH, RANGE 42 EAST
MIAMI-DADE COUNTY, FLORIDA

NOTES:
1. THIS IS NOT A FIELD SURVEY.

Aviño
& ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

1350 S.W. 57TH AVENUE
SUITE 207
WEST MIAMI, FLORIDA 33144
TEL: (305) 265-5030 - FAX: (305) 265-5033
CERTIFICATE OF AUTHORIZATION: EB # 509B
CERTIFICATE OF AUTHORIZATION: LB # 509B
E-MAIL: J.RAVINO@AVINOANDASSOCIATES.COM

**ALTERNATE 3 - C.M.B.
TEMPORARY CONSTRUCTION EASEMENT
VICINITY MAP**

SEAL

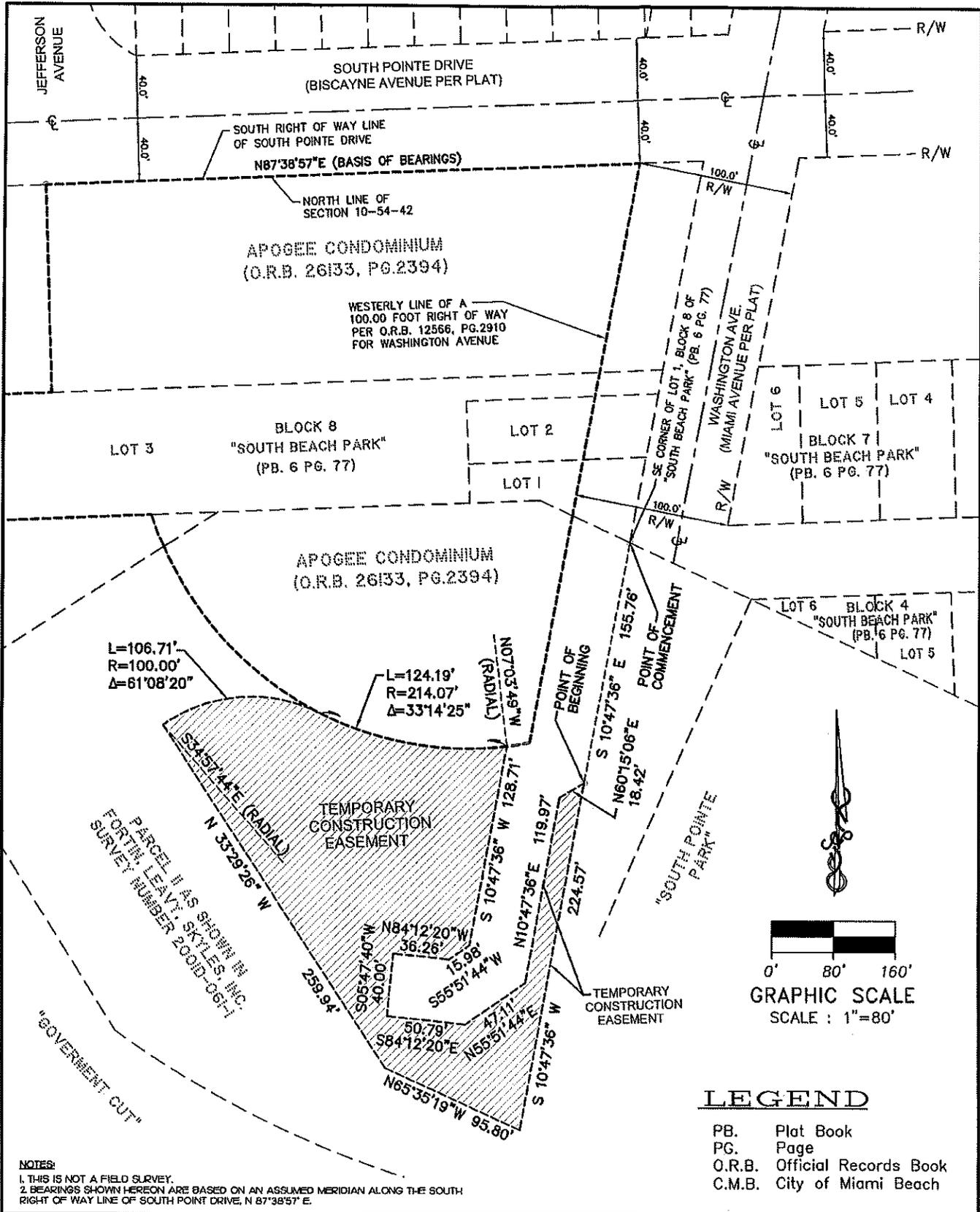
JORGE R. AVINO, PE, PS# 4990

DRAWN BY: B.J.S.
CHECKED BY: J.R.A.
DATE: 05/07/2012
SCALE: AS SHOWN

SHEET

1

OF 3 SHEETS



Aviño & ASSOCIATES
ENGINEERS • PLANNERS • SURVEYORS

1350 SW. 57TH AVENUE
SUITE 207
WEST MIAMI, FLORIDA 33144
TEL: (305) 265-5030 - FAX: (305) 265-5033
CERTIFICATE OF AUTHORIZATION EB # 5098
CERTIFICATE OF AUTHORIZATION LB # 5098
E-MAIL: J.RAVINO@AVINOANDASSOCIATES.COM

ALTERNATE 3 - C.M.B.
TEMPORARY CONSTRUCTION EASEMENT
SKETCH TO ACCOMPANY LEGAL DESCRIPTION

SEAL	DRAWN BY: B.J.S.	SHEET
JORGE R. AVIÑO, P.E., PS&J 4008	CHECKED BY: J.R.A.	2
	DATE: 03/07/2012	
	SCALE: AS SHOWN	
	JOB No.: 10116.00	OF 3 SHEETS

LEGAL DESCRIPTION :

A Parcel of land located In Section 10, Township 54 South, Range 42 East, City of Miami Beach, Miami-Dade County, Florida, and being more particularly described as follows:

Commence at the Southeast corner of Lot 1, Block 8, "SOUTH BEACH PARK" as recorded in Plat Book 6 at Page 77 of the Public Records of Miami-Dade County, Florida; thence run South 10°47'36" West for a distance of 155.76 feet to the POINT OF BEGINNING of the hereinafter described parcel of land; thence continue South 10°47'36" West for a distance of 224.57 feet to a point; thence run North 65°35'19" West for a distance of 95.80 feet to a point; thence run North 33°29'26" West for a distance of 259.94 feet to a non-tangent point on a circular curve concave to the Southwest and whose radius point bears South 34°57'44" East from this point; thence run Easterly along a 100.00 foot radius curve through a central angle of 61°08'20" for an arc distance of 106.71 feet to a point of reverse curvature of a circular curve concave to the Northeast; thence run Southeasterly along said circular curve a 214.07 foot radius through a central angle of 33°14'25" for an arc distance 124.19 feet to a non-tangent point whose radius point bears North 07°03'49" West from this point; thence run South 10°47'36" West for a distance of 128.71 feet to a point; thence run South 55°51'44" West for a distance of 15.98 feet to a point; thence run North 84°12'20" West for a distance of 36.26 feet to a point; thence run South 05°57'40" West for a distance of 40.00 feet to a point; thence run South 84°12'20" East for a distance of 50.79 feet to a point; thence run North 55°51'44" East for a distance of 47.11 feet to a point; thence run North 10°47'36" East for a distance of 119.97 feet to a point; thence run North 60°15'06" East for a distance of 18.42 feet to the POINT OF BEGINNING, containing an area of 33,045 square feet or 0.76 acres, more or less.

NOTES:

1. THIS IS NOT A FIELD SURVEY.

	1350 S.W. 57TH AVENUE SUITE 207 WEST MIAMI, FLORIDA 33144 TEL: (305) 265-5030 - FAX: (305) 265-5033 CERTIFICATE OF AUTHORIZATION: EB # 5098 CERTIFICATE OF AUTHORIZATION: LB # 5098 E-MAIL: JRAVINO@AVINOANDASSOCIATES.COM
	ENGINEERS • PLANNERS • SURVEYORS

**ALTERNATE 3 - C.M.B.
 TEMPORARY CONSTRUCTION EASEMENT
 LEGAL DESCRIPTION**

SEAL JORGE R. AVINO, PE, PSM # 4995	DRAWN BY: B.J.S. CHECKED BY: J.R.A. DATE: 05/07/2012 SCALE: AS SHOWN JOB No.: 10118.00	SHEET 3 OF 3 SHEETS
--	--	--------------------------------------

Exhibit "B"
Construction Schedule
For
Design-Build Contract
Between Miami-Dade County
And
Ric-Man Construction, Inc.
Contract Number 10RMCI001

Activity ID	Col ID	Activity Description	Orig Plan Dwg	Rev	%	Early Start	Early Finish	Total Float	RESP
C40558	3	Finalize Shaft Complete	0	0	0	28MAY12	10EJUL12	10EJUL12	0
C40560	3	Extract Shrapnel	4	4	0	28MAY13	06JUN13	28	RCI
C40570	3	Remove Platform	15	15	0	05JUN13	27JUN13	28	RCI
C40580	3	Remove Turbidity Curtain	1	1	0	01JUL13	01JUL13	28	RCI
ALTERNATE SA									
MILESTONES									
C40525	1	IHP ALTS (EST 5-6-2012 Subject to Comm Approval)	1	1	0	06JUN12	06JUN12	0	OWNER
ENVIRONMENTAL PERMITS									
D0000	1	SFA Class 1 Permit Application	1	0	100	09APR12A	09APR12A		HAS
D0010	1	SFA ERP Permit Application	1	0	100	09APR12A	09APR12A		HAS
D0020	1	SFA ACOE Permit Application	1	0	100	09APR12A	09APR12A		HAS
D0110	1	RIA ERP Permit Application	45	30	33	10APR12A	25MAY12	11	OWNER
D0210	1	RIA ACOE Permit Application	51	35	31	10APR12A	30MAY12	6	OWNER
D0310	1	RIA Class 1 Permit Application	55	40	29	10APR12A	04JUN12	1	OWNER
SOIL BORINGS									
D0010	2	Perform Borings/ Prepare Report (Land Side)	22	22	0	06JUN12	06JUL12	0	HAS
D0020	2	Perform Borings/ Prepare Report (Water Borings)	22	22	0	06JUN12	06JUL12	0	HAS
D1000	2	Choose Alignment & Depth	5	5	0	08JUL12	12JUL12	0	HAS
DESIGN SUBMITTALS									
WORK PACKAGE 10: MIAMI BEACH LAUNCH SHAFT									
D1000	2	SFA Dewatering Permit (PERA)	6	5	0	06JUN12	12JUN12	28	HAS
D1070	2	SFA Tree Removal Permit (PERA)	10	10	0	06JUN12	19JUN12	35	HAS
D1080	2	SFA PERA Permit for Spoils Removal	10	10	0	08JUN12	19JUN12	35	HAS
D1090	2	SFA Fence Permit (MDC)	12	12	0	06JUN12	21JUN12	5	HAS
D1000	2	SFA 100% Design - Work Package 10 (7/6/2012)	22	22	0	06JUN12	06JUL12	0	HAS
D1010	1	RIA Dewatering Permit (PERA)	30	30	0	13JUN12	12JUL12	41	OWNER
D1020	1	RIA Tree Removal Permit (PERA)	14	14	0	20JUN12	03JUL12	50	OWNER
D1030	1	RIA PERA Permit for Spoils Removal	14	14	0	20JUN12	03JUL12	50	OWNER
D1040	1	RIA Fence Permit (MDC)	14	14	0	22JUN12	05JUL12	7	OWNER
D1050	1	RIA 100% Design - Work Package 10	14	14	0	07JUL12	20JUL12	2	OWNER
D1060	2	SFA Miami Beach ROW/ Building Permit	1	1	1	23JUL12	23JUL12	0	HAS
D1070	1	RIA Miami Beach ROW/ Building Permit	30	30	0	24JUL12	20AUG12	0	OWNER
D1080	2	Issued For Construction - Package 10 (8/27/2012)	0	0	0	23AUG12	27AUG12	0	HAS
WORK PACKAGE 13A: MECHANICAL FITTING									
D13A000	2	SFA 10% Design - Work Package 13A (7/13/2012)	22	22	0	13JUN12	13JUL12	11	HAS
D13A010	1	RIA 70% Design - Work Package 13A	14	14	0	14JUL12	27JUL12	17	OWNER
D13A020	2	SFA 100% Work Package 13A (8/14/12)	12	12	0	20JUL12	14AUG12	11	HAS
D13A030	1	RIA 100% Work Package 13A	14	14	0	15AUG12	28AUG12	15	OWNER
D13A040	2	Issued For Procurement - Package 13A (8/27/12)	4	4	0	29AUG12	04SEP12	10	HAS
D13A050	2	Order Materials (28 weeks Lead Time)	130	130	0	08SEP12	15MAR13	10	RCI

Start Date: 14JUN12
 Finish Date: 20APR12
 Run Date: 31MAY12:15:51

Project: RIC-MAN CONSTRUCTION, INC.
 MIAMI DADE GOVERNMENT CUT TUNNEL
 April 25, 2012 Schedule Update + Alternate 3 - All Activities
 This Schedule Based on Unrestricted Works Hours

Sheet 13 of 18

Revision: 0
 Date: 08MAY13
 Checked: Approved

Activity ID	Activity Description	Orig. Dur.	Rev. Dur.	%	Early Start	Early Finish	Total Float	Resp
WORK PACKAGE 17 - ALTON RD CONNECTION								
D17000	2 SFA 70% Design - Work Package 17 (7/17/12)	25	25	0	12JUN12	17JUL12	0	HAS
D17010	1 RIA 70% Design - Work Package 17	14	14	0	18JUL12	31JUL12	0	OWNER
D17020	2 SFA 100% Design - Work Package 17 (8/15/12)	10	10	0	01AUG12	10AUG12	0	HAS
D17040	2 SFA ROW Permit	4	4	0	15AUG12	20AUG12	0	HAS
D17060	2 SFA Dewatering Permit (PERA)	4	4	0	15AUG12	20AUG12	0	HAS
D17080	2 SFA PERA Sewer Extension Permit	4	4	0	15AUG12	20AUG12	0	HAS
D17100	1 RIA 100% Design - Work Package 17	14	14	0	15AUG12	29AUG12	22	OWNER
D17060	1 RIA ROW Permit	7	7	0	21AUG12	27AUG12	21	OWNER
D17070	1 RIA Dewatering Permit (PERA)	30	30	0	21AUG12	19SEP12	0	OWNER
D17110	1 RIA PERA Sewer Extension Permit	30	30	0	21AUG12	19SEP12	0	OWNER
D17120	2 Issued For Construction - Package 17 (8/28/12)	5	5	0	20SEP12	25SEP12	0	HAS
WORK PACKAGE 11 - RETRIEVAL SHAFT MOOS								
D11000	2 SFA 70% Design - Work Package 11 (1/17/12)	30	30	0	27SEP12	06NOV12	0	HAS
D11010	1 RIA 70% Design - Work Package 11	14	14	0	09NOV12	22NOV12	0	OWNER
D11020	2 SFA 100% Design - Work Package 11 (1/25/12)	22	22	0	05NOV12	26DEC12	64	HAS
D11030	1 RIA 100% Design - Work Package 11	14	14	0	27DEC12	09JAN13	85	OWNER
D11060	2 Issued For Construction - Package 11 (1/16/13)	5	5	0	10JAN13	16JAN13	65	HAS
WORK PACKAGE 12 - MICRO TUNNEL								
D12000	2 SFA 70% Design - Work Package 12 (12/19/12)	28	28	0	09NOV12	16DEC12	0	HAS
D12010	1 RIA 70% Design - Work Package 12	14	14	0	20DEC12	02JAN13	0	OWNER
D12020	2 SFA 100% Design - Work Package 12 (1/17/13)	11	11	0	03JAN13	17JAN13	0	HAS
D12030	1 RIA 100% Design - Work Package 12	14	14	0	18JAN13	31JAN13	0	OWNER
D12060	2 Issued For Construction - Package 12 (2/8/13)	6	6	0	01FEB13	06FEB13	0	HAS
WORK PACKAGE 13 - MECHANICAL PIPING								
D13000	2 SFA 70% Design - Work Package 13 (7/8/12)	22	22	0	06JUN12	10JUL12	4	HAS
D13010	1 RIA 70% Design - Work Package 13	14	14	0	07JUL12	20JUL12	8	OWNER
D13020	2 SFA 100% Design - Work Package 13 (8/6/12)	11	11	0	23JUL12	03AUG12	4	HAS
D13040	2 SFA ROW Permitting - Work Package 13	5	5	0	07AUG12	13AUG12	20	HAS
D13060	2 SFA Dewatering Permit (PERA)	5	5	0	07AUG12	13AUG12	4	HAS
D13100	2 SFA PERA Sewer Extension Permit	5	5	0	07AUG12	13AUG12	4	HAS
D13090	1 RIA 100% Design - Work Package 13	14	14	0	07AUG12	20AUG12	29	OWNER
D13050	1 RIA ROW Permitting - Work Package 13	7	7	0	14AUG12	20AUG12	29	OWNER
D13070	1 RIA Dewatering Permit (PERA)	30	30	0	14AUG12	13SEP12	6	OWNER
D13110	1 RIA PERA Sewer Extension Permit	30	30	0	14AUG12	12SEP12	6	OWNER
D13099	2 Issued For Construction - Package 13 (9/20/12)	6	6	0	13SEP12	20SEP12	4	HAS
WORK PACKAGE 15 - SITE RESTORATION								
D15000	2 SFA 70% Design - Work Package 15 (3/13/13)	22	22	0	11FEB12	13MAR13	0	HAS
D15010	1 RIA 70% Design - Work Package 15	14	14	0	14MAR13	27MAR13	0	OWNER
D15020	2 SFA 100% Design - Work Package 15 (4/16/13)	18	18	0	26MAR13	10APR13	0	HAS
D15030	1 RIA 100% Design - Work Package 15	14	14	0	19APR13	02MAY13	0	OWNER
D15040	2 SFA Miami Beach ROW Permit	6	6	0	03MAY13	10MAY13	0	HAS
D15050	1 RIA Miami Beach ROW Permit	7	7	0	11MAY13	17MAY13	2	OWNER
D15060	2 Issued For Construction - Package 15 (5/24/13)	5	5	0	20MAY13	24MAY13	0	HAS
FORCE MAIN - MIAMI BEACH LAUNCH SHAFT								
CONSTRUCTION								
SHAFT								
C300000	3 Acceleration to Miami Beach Launch Shaft	5	5	0	13JUL12	20JUL12	0	FCI
C300010	3 Locate Existing Utilities	5	5	0	23JUL12	30JUL12	0	FCI

Start Date	13OCT10	Early On	AT3
Post Date	14AUG13	Project On	
Close Date	20APR12	Project Off	
Run Date	31MAY13(14:51)	Critical Activity	
R/C/M/M CONSTRUCTION, INC. MIAMI DADE GOVERNMENT CUT TUNNEL April 25, 2012 Schedule Update + Atlanta 3 - All Activities This Schedule Based on Unrevised Works Hours			
Sheet 14 of 18	044	05MAY13	Approved

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Activity ID	Col ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Risk	RESP
C900030	3	Rock Drilling at Miami Beach Launch Shaft	14	14	0	31JUL12	21AUG12	0	RCI
C900040	3	Rock Grouting at Miami Beach Launch Shaft	13	13	0	09AUG12	27AUG12	0	RCI
C900050	3	Start Miami Beach Launch Shaft	0	0	0	29AUG12		0	RCI
C900060	3	Guide-Wall and Secant Pile Wall Installation	40	40	0	29AUG12	10NOV12	0	RCI
C900070	1	Curing of Secant Shafts	7	7	0	09NOV12	15NOV12	0	RCI
C900080	3	Pre-Cast Miami Beach Launch Shaft	15	15	0	16NOV12	10DEC12	0	RCI
C900090	3	Excavate Miami Beach Launch Shaft	28	28	0	11DEC12	11JAN13	0	RCI
C900100	3	Pile Casing and Bottom Tremie Seal Miami	15	15	0	24DEC12	16JAN13	0	RCI
C900110	3	Grout Casing Annulus Miami Beach Launch Shaft	10	10	0	18JAN13	04FEB13	0	RCI
C900120	3	Miami Launch Shaft Dewatering	3	3	0	05FEB13	07FEB13	0	RCI
C900130	3	Construct Launching Window Miami	5	5	0	08FEB13	13FEB13	0	RCI
C900140	3	Miami Beach Launch Shaft Complete	0	0	0	15FEB13		0	RCI
ALTERNATE 2A TUNNEL									
CONSTRUCTION									
TUNNEL									
C900150	3	Mobile, Prepare and Setup	10	10	0	06FEB13	26FEB13	0	RCI
C900160	3	Jack and Bore 700 Linear Feet with 72" Casing	21	21	0	27FEB13	25APR13	0	RCI
C900170	3	Retrieve Micro TBM	2	2	0	01APR13	02APR13	0	RCI
C900180	3	External Contact Great Annular Space around 72"	4	4	0	03APR13	09APR13	0	RCI
C900190	3	Clean-up and Demobilize	4	4	0	09APR13	15APR13	0	RCI
C900200	3	Cast Invert Slab inside 72" Casing	4	4	0	15APR13	19APR13	0	RCI
C900210	3	Install and Test 60" Pipe FM	8	8	0	22APR13	03MAY13	0	RCI
C900220	3	Great 60" FM	5	5	0	10MAY13	09MAY13	0	RCI
C900230	3	Install and Test Connection	5	5	0	10MAY13	17MAY13	0	RCI
C900240	2	Submit Prelim FM Record DWGS for Review	6	6	0	20MAY13	09MAY13	20	HSS
C900250	3	Backfill Launch Shaft	3	3	0	21MAY13	24MAY13	0	RCI
C900260	3	Site Restoration	12	12	0	28MAY13	17JUN13	0	RCI
C900270	1	Review Prelim FM Record DWGS	14	14	0	31MAY13	13JUN13	41	OWNER
C900280	3	Submit Final FM Record DWGS	5	5	0	14JUN13	26JUN13	20	HSS
C900290	3	Walk Through	1	1	0	18JUN13	18JUN13	0	RCI
C900300	1	Generate Punch List	1	1	0	18JUN13	18JUN13	0	OWNER
C900310	3	Correct Punch List	4	4	0	18JUN13	25JUN13	0	RCI
C900320	3	Review Final FM Record DWGS	14	14	0	23JUN13	04JUL13	41	OWNER
C900330	3	Demobilization	3	3	0	24JUN13	26JUN13	0	RCI
C900340	3	Final Approval	1	1	0	26JUN13	26JUN13	0	OWNER
C900350	3	Post Construction Condition Survey	2	2	0	26JUN13	27JUN13	0	RCI
FISHER ISLAND CONNECTION									
CONSTRUCTION									
C900000	3	FUTURE 60" CONNECTION	21	21	0	18MAR13	17APR13	16	
CONNECTION AT ALTON RD AND COMMERCE STREET									
CONSTRUCTION									
C915000	3	Mobilization (Start 9/27/2012)	4	4	0	27SEP12	03OCT12	0	RCI
C915010	3	Establish Maintenance of Traffic	2	2	0	14OCT12	15OCT12	0	RCI
C915020	3	Locate Existing Utilities	2	2	0	16OCT12	17OCT12	0	RCI
C915030	3	Initial Dewatering	5	5	0	19OCT12	19OCT12	0	RCI
C915120	3	Remove Plug Compact to 60" PCJP @ Sta171+48.27	2	2	0	22OCT12	23OCT12	0	RCI

Start Date: 14AUG12
 Finish Date: 20APR13
 Data Date: 31MAY12(14:5)

Project: RIC-MAN CONSTRUCTION, INC.
 Program: MIAMI DADE GOVERNMENT CUT TUNNEL
 Run Date: 31MAY12(14:5)

Sheet 6 of 18

Approved: _____
 Checked: _____
 Date: 05MAY13

APR 25, 2012 Schedule Update + Alternate 3 - All Activities
 This Schedule Based on Unrestricted Works Hours

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Activity ID	Cal ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	RESP
CS15130	3	Install 4'-136 LF of 60" PCOP (Finish by 11/16)	14	14	0	2NOV12	16NOV12	0 RCI	
CS15132	1	Demobilize from Intersection Request by CMB	135	135	0	17NOV12	31MAR13	0 COWNER	
CS15131	3	Re-Mobilize Tie-In Connection (Start 4/1/2013)	3	3	0	01APR13	03APR13	0 RCI	
CS15050	3	Install Cofferdam for Bypass	10	10	0	04APR13	17APR13	0 RCI	
CS15070	3	Excavate for Bypass	8	8	0	04APR13	01MAY13	0 RCI	
CS15090	3	Install Anchors, Tapping Saddle & Cone Encasement	5	5	0	02MAY13	06MAY13	0 RCI	
CS15090	3	Hot Tap Exist 54" FM Alton RD	2	2	0	02MAY13	03MAY13	0 RCI	
CS15140	3	Connect to Existing 54" PCOP	5	5	0	02MAY13	07MAY13	0 RCI	
CS15150	3	Remove Sheet Piling and Backfill Cell	3	3	0	02MAY13	04MAY13	0 RCI	
CS15160	3	Restoration of Affected Area	16	16	0	03JUN13	27JUN13	0 RCI	
CONNECT AT WASHINGTON AVE ADJACENT TO THE APOGEE CONSTRUCTION									
CS10000	3	Locate Existing Utilities	2	2	0	18FEB13	20FEB13	2 RCI	
CS10010	3	Install Dewatering	5	5	0	21FEB13	26FEB13	2 RCI	
CS10020	3	Remove 60" Plug Connect to 60" PCOP @ Sta 52+90	2	2	0	01MAR13	03MAR13	2 RCI	
CS10030	3	Install 4'-320 LF of 60" PCOP	45	45	0	05MAR13	19MAY13	2 RCI	
CS10040	3	Install ARV and Manhole	2	2	0	13MAY13	14MAY13	2 RCI	
CS10050	3	Connect 60" Force Main to 60" FM at Shaft	4	4	0	20MAY13	24MAY13	0 RCI	
CS10060	3	Remove Dewatering	3	3	0	28MAY13	30MAY13	0 RCI	
CS10070	3	Restoration of Affected Area	16	16	0	03JUN13	27JUN13	0 RCI	

Start Date	10/22/12	Early Start	AL13
Finish Date	14/03/13	Early Finish	
Days	20 APR12	Days	
Run Date	31MAY12 14:51	Run Date	
Project Name	RIC-MAR CONSTRUCTION, INC.		
Activity	MIAMI DADE GOVERNMENT CUT TUNNEL		
	Apr 25, 2012 Schedule Update + Activities 3 - At Activities		
	This Schedule Based on Unmodified Work Hours		
Sheet	18 of 10	Number	Approved

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Exhibit "C"
Construction Mitigation Program
For
Design-Build Contract
Between Miami-Dade County
And
Ric-Man Construction, Inc.
Contract Number 10RMCI001

Appendix E

Construction Environmental Protection Plan (CEPP)

This Construction Environmental Protection Plan (CEPP) has been developed to provide the required protection measures for the activities associated with the construction of the Government Cut Utility Relocation Projects to limit potential impacts to the environment, protected resources, and communities within and abutting the Project area. The CEPP identifies how Ric-Man will implement and maintain an environmental quality control program as part of construction operations including, but not limited to, daily environmental quality control inspections and monitoring to confirm compliance with environmental regulations and permit requirements. The objectives of the CEPP are to:

- Identify environmental requirements within the Project that require compliance to Federal, State, and local regulatory permit conditions and the procedures defined to meet them;
- Define the responsibilities and actions required to maintain compliance with environmental requirements during construction and to effectively respond to problem situations or agency/public concerns; and
- Establish the necessary procedures for communication, documentation, and review of environmental compliance activities for construction activities.

The CEPP is meant to be a living document that will be updated as design and construction progresses and when further environmental issues are identified. Periodic reviews of the plan and procedures will be performed to ensure continual improvement of the plan's adequacy, and may be expanded and updated during the project duration.

The CEPP includes the following plans:

- Hazardous and Non-hazardous Material Management Plan, including the Spoils Material Plan, Contaminated Soil management Plan and Spill Prevention, Control and Countermeasure Plan (SPCC) – **Appendix E-1**;
- Traffic Control Plan, including Vehicular and Marine Traffic Control Plans – **Appendix E-2**;
- Noise and Vibration Control Plan – **Appendix E-3**;
- Structure Monitoring Plan – **Appendix E-4**;

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- Diesel Emissions Mitigation Plan – **Appendix E-5**;
- USLD Fueling Plan – **Appendix E-6**;
- Dust Control Plan (DCP) – **Appendix E-7**;
- Emergency Spill Plan – **Appendix E-8**;
- Waste Management Plan – **Appendix E-9**; and
- Recycle Plan – **Appendix E-10**

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Hazardous and Non-Hazardous Material Management Plan

The Micro-tunneling and HDD operations typically do not use materials that would be classified as hazardous by the US Environmental Protection Agency. Drilling operations will utilize bentonite clay, a soda ash water mixture, and benign polymers which are not classified as toxic or hazardous substances. Preliminarily, it is estimated that approximately 10,000 cubic yards of spoil material will be generated from the tunneling operations; none of which is anticipated to be hazardous. However, for any work conducted in an area within the Project boundaries where hazardous materials or hydrocarbons have been encountered or is suspected by Ric-Man or the Construction Management/Inspection Team, Ric-Man will comply with all applicable requirements of OSHA, EPA, FDEP and Miami-Dade County DERM.

The Hazardous and Non-hazardous Material Management Plan includes the following plans:

- Spoil Material Management Plan
- Contaminated Soil Management Plan
- Spill Prevention, Control, and Countermeasure Plan (SPCC)

1.0 Spoil Material Management Plan

This section includes the requirements for the design and construction of the muck and spoils handling and disposal system, including transport and disposal of all suitable excavated material. Ric-Man is responsible for the collection, transport and disposal of the excavated material required for the construction of the tunnels and access shafts at accepted recycling (i.e., beneficial use) or disposal facilities. Spoils shall become the property of Ric-Man; however, the Department has a first right of refusal in the event the material is to be reused.

Spoil material will be reused wherever possible, and will not be limited to the site where the spoil was extracted. Evaluation of spoil reuse options will be in accordance with the "Soil Reuse Guidance for Miami-Dade County" published by DERM's Pollution Control Division. Test results will be submitted to the FDEP and DERM within one week of commencing drilling at each upland location.

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If analytical testing results indicate that the spoil material meets County reuse standards, then the spoil will be sent to a proper location for temporary staging prior to transport to its final reuse destination. Spoils will be removed frequently from the staging areas so that significant stockpiling will not occur. If the spoil material does not meet reuse standards, it will be transported to an approved upland landfill facility. A receipt of deposit to the landfill will be submitted to FDEP and DERM within 30 days of deposit.

The project will generate spoil from four (4) different sources during the construction process: micro-tunneling, cofferdam construction, shaft excavation, and horizontal directional drilling. The attached site plan in **Exhibit 7** depicts the locations of each upland spoils staging area and the transportation path toward the reuse destination or disposal facility.

During the tunnel boring process all return water, drilling fluids, and severed spoil materials will be temporarily stored in impermeable containment areas and/or fully-lined containers located on uplands and barges until spoil testing is completed. Care will be taken to ensure that the containers and staging areas are located away from any stormwater system, Fisherman's Channel, Government Cut, or other surface waters. The temporary storage areas will be contained around the perimeter with barriers and erosion control devices. These areas will be set back at least 100 feet from the seawall.

Spoil materials resulting from the shaft excavations are a candidate for reuse and will be contained separately from the spoil generated from the tunnel boring process, thus no mixing of the spoil materials is expected. While stockpiled, the spoil material shall be tested, pursuant to state analytical testing methodology, to determine whether the material is suitable for refilling the shafts upon completion of the tunnel boring process. Test results will be submitted to FDEP and DERM within one week of receipt.

For the force main project, the spoil will be temporarily stockpiled in a 40 x 40 foot area in the northwest corner of the temporary construction area on Fisher Island. Excavated material from the force main off-shore receiving shaft will be temporarily stored by stockpiling on the deck of a barge with a watertight deck and containment wall around the perimeter to prevent any discharge into the Bay until transported to the designated staging area where the material will be placed directly on sealed trucks for disposal.

The spoils from the water main micro-tunneling project at the Port of Miami will be placed in the east end of the construction easement. From Fisher Island, water main micro-tunnel spoils will be placed on the deck of a barge with a watertight deck and containment wall around the perimeter to prevent any discharge into the Bay until transported to the designated staging area where the material will be placed directly on sealed trucks for disposal.

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The HDD process will be conducted from staging areas at two upland locations; the ingress point at the Port of Miami and the egress point at Fisher Island. For the upland area located in Fisher Island, separated spoil materials will be temporarily stored in a 30 x 30 foot area in the northwest corner of the temporary construction easement in fully lined containers and placed on an impermeable concrete surface. The spoils generated on Fisher Island will be transported from Fisher Island on water tight truck bodies to prevent the spoil from entering Fisherman's channel or other navigable waterways on the barge's path to the mainland offloading area. At the Port of Miami HDD spoils will be temporarily stored in 30x30 foot area in the northeast corner of the longshoreman's lot. It is anticipated that the material generated from the HDD activities will go to an approved landfill.

Ric-Man will initiate the following procedures for handling spoil materials:

- Immediately after excavation, the material will be securely placed in on-site or off-site containment structures to prevent escape of sediments or water to adjacent wetlands, aquatic preserves, or surface waters. These temporary containment sites will be approved by MDWASD prior to use.
- Based on the consistency of the excavated material, the material will be removed and placed in sealed trucks or barges for transport and hauled from the construction area.
- All necessary analytical testing will be conducted on the excavated sediments by Ric-Man to determine the reuse potential or acceptability for landfill disposal.
- Any spoil material stockpiled for periods of 24-hours or greater will be protected with appropriate erosion control devices to prevent discharges to adjacent waterbodies.
- Spoil material to be reused will be transported to a designated stock pile area and further dried until it can be utilized.
- The spoil material that cannot be reused, once free from dripping water, will be transported to an appropriate landfill for disposal. Ric-Man will identify, obtain approval, and pay fees to dispose of non-reusable spoil materials, including any entrained water, at the approved landfill.
- All trucks, buckets, and other vehicles used for the removal of material will be leak proof, arranged and loaded so as not to spill. Canvas covers will be used to contain the materials in the trucks. Whenever a truck, bucket, or other vehicle so used is observed to be leaky or not outfitted as required to prevent spills, even if no spills have yet occurred, it will be immediately withdrawn from the Project. Any spills will be cleaned up immediately.

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- Conveyors and hauling systems will be designed to minimize dust, spillage, and noise in accordance with the requirements of the Port and Fisher Island together with other permitting agency requirements, and other relevant sections of the Contract Documents.
- A disposal ticket/manifest will accompany each truckload of spoil material to the ultimate disposal site. The ticket will identify the truck, time and date, and state the quantity and type of material in the truck.
- Plastic sheeting (minimum of 4 ml) will be used for spoil stockpile liners and covers.
- Containment berms made up of either straw bales or silt-fences will be placed around spoil stockpiles.
- Mr. Bill Parker, Site Safety Manager, (586-739-5210) and Mr. Brian DeSynder General Superintendent, (810-459-0527) will be responsible for the management of the hazardous and non-hazardous materials during the construction activities. Resumes are included in **Exhibit 8**.
- A list of proposed Treatment, Storage, and Disposal (TSD) facilities along with their permit and licenses are included in **Exhibit 9**.
- Additional shop drawing information will be submitted for approval prior to the off-site removal of spoil material as required.

Within 30 days following completion of the work, Ric-Man will issue the following:

- Summary of sampling efforts and results of laboratory analysis for all spoils sampled.
- Documentation related to on-site activities including recycling, re-use and treatment.
- Executed waste manifests or bills of lading for each load of respective spoils removed and transported from the work site.
- Executed waste manifest form or bill of lading signed by a responsible party of the solid waste management facility.
- Certificate of final disposition for each manifest.
- Any other documentation to the CM/IT to conform or comply with all applicable laws, codes, ordinances, and regulations.

Ric-Man will immediately notify the CM/IT under the following conditions:

- 60 days prior to commencement of any excavation.
- Upon receipt of muck/spoil analytical results.
- Issue regarding an approved facility or transporter that would require the return of materials to Ric-Man or if a facility or transporter violates any regulation which would result in any regulatory enforcement action. Provisions will be made for the lawful storage of the spoils, at no additional cost to the Owner, until an alternate facility or transporter can be proposed by Ric-Man and reviewed by the CM/IT.
- Any conflict that arises regarding an approved treatment method. Ric-Man will make provisions for the lawful storage of the material until an alternate method, facility, and/or transporter can be arranged by Ric-Man and reviewed by the CM/IT.
- Any excavation material is deemed to be contaminated and/or hazardous.

2.0 Contaminated Soil Management Plan

The Owner has formerly conducted a Phase I site assessment along the GCURP corridor to determine any potential contamination impacts and no suspect areas have been identified. If contaminated soils are suspected during construction (e.g., unusual odor, soil discoloration, etc.), soil excavation activities will be directed using an appropriate investigative means to identify contaminated soils at the site, in accordance with Chapter 62-770, FAC and the Contract Documents.

Before construction activities, Ric-Man will identify areas that may be disturbed by construction. If Ric-Man deems any material to be contaminated and/or hazardous other than what has been identified in the Contract Documents, they will notify the CM/IT. The CM/IT will then take the appropriate action to identify the material as contaminated or hazardous, either by field examination for possible contamination (e.g., discoloration, odors, etc.), or by taking a representative composite sample for laboratory analysis. Upon determination by the CM/IT that the suspect material is contaminated, Ric-Man will dispose of the material as specified in Section DB 02212 "Excavation, Staging, Handling, Transportation, and Disposal of Hazardous Materials." If the soil is determined to be non-hazardous and/or non-contaminated, the material shall be disposed of in accordance with Section DB 02120 "Disposal of Excavated Materials".

Ric-Man will sample excavated materials to determine if contaminants have been introduced during the course of the Work. Any material found to be contaminated and unsuitable for onsite disposal shall be disposed of offsite. Ric-Man will perform soil sampling for the purposes of waste characterization and proper disposal. Sampling and testing of excavated materials will be in accordance with Section 02212 – Excavation, Staging, Handling, Transportation and Disposal of Hazardous Materials.

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All contaminated soil and materials will be removed from the work site to an approved facility following the CM/IT's receipt and review of sampling, analysis, and characterization. No excavated materials will be removed from the work site unless authorized by the CM/IT. Disposal of any contaminated soils and/or groundwater will comply with all applicable federal, state and local requirements.

Within 90 days of completion of the removal of contaminated soils, Ric-Man will provide a final report and documentation of waste removal activities including the following:

- Photo documentation
- A summary of sampling efforts and results of laboratory analysis for material disposal and end point sampling results
- Executed hazardous waste manifests for each load of respective material removed and transported from the Work Site, and manifests for material associated with decontamination
- An executed hazardous waste manifest form signed by a responsible party of the TSD Facility
- A Certificate of Final Disposal (or destruction) for each manifest.

As a generator, Ric-Man will keep a copy of each manifest on the job site and forward the original to the CM/IT on the day of receipt. In addition, Ric-Man will call the CM/IT the day of the waste shipment and notify him/her of all shipment details. Ric-Man's Hazardous Material Coordinator will contact the CM/IT if the manifest denoting final disposal is not received within the allotted shipping cycle timeframe.

2.1 Employee Requirements

Specialized construction areas are defined as areas where contaminants are discovered and require handling, treatment, and disposal by personnel qualified by training and equipped for such work. Personnel working in these areas will possess the licensing and certification as specialists in this type of work who have taken and been certified as having passed the required training course(s). Licensing and certifications will be submitted to the CM/IT for verification prior to working in these areas and will comply with the requirements of authorities with jurisdiction. The field Health and Safety Technician designated by the Project's Certified Industrial Hygienist (CIH) will be present on the site during all activities in specialized construction areas unless the nature of the work is non-hazardous and either the Site Specific Health and Safety Plan or the CIH authorizes his or her absence.

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Work in Specialized Construction Areas will be carried out by personnel that meet the following requirements:

- All Ric-Man employees and subcontractors involved in the subject work will possess all permit and/or licenses required under the Toxic Substance Control Act (TSCA), the Resource Conservation and Recovery Act (RCRA) as well as any State or local permits or licenses required, for the removal, transportation and disposal of hazardous wastes.
- Ric Man employees handling hazardous waste, including subcontractors, will be qualified and experienced in the work of sampling, preparing, removing, handling and disposing of the hazardous waste material. All employees will be properly trained, certified in the pertinent environmental regulations, in appropriate personal protection equipment (PPE), and follow other safety procedures.
- Worker exposures will be in accordance with the requirements of 29 CFR 1910 and 29 CFR 1926.
- If OSHA permissible exposure limits (PELs) are exceeded either engineering controls will be implemented to reduce the contaminant levels or Personal Protection Equipment (PPE) will be worn. If monitoring reveals elevated levels of airborne contaminants, work will be stopped until safe working conditions are established in accordance with OSHA requirements.

2.2 Procedures

Upon determination by the CM/IT that the suspect material is contaminated and/or hazardous, Ric-Man will dispose of the material in accordance with Section DB 02212, "Excavation, Staging, Handling, Transportation and Disposal of Hazardous Materials". The following procedures shall apply:

- Potentially contaminated and/or hazardous material will be stored separate from all other materials for sampling and characterization before disposal. Storage location(s) will be secured with access restricted to authorized personnel only.
- Contaminated and/or hazardous material areas will be a manageable size and will be protected from precipitation, erosion and stormwater runoff using plastic sheeting to line and cover the pile and containment berms, sumps or ditches. A partial containment berm typically made up of hay bales, silt fences or timbers will be utilized around stockpiled soils to direct runoff and minimize erosion. A drainage system to collect accumulated liquids from all stockpiled areas and to divert the liquids to an appropriate water collection, storage, and /or treatment system will be provided.

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- Spoil samples from the stockpiles for waste characterization purposes will be collected. Ric-Man will propose analytical parameters and appropriate analysis methods to the CM/IT for approval. Laboratory analysis will be performed by a NELAP approved laboratory using analytical procedures that are consistent with applicable regulatory requirements specified herein and in compliance with standards and regulations, including 40 CFR 261, 40 CFR 761, 6 and RCRA, and CERCLA and FDEP sampling guidelines and protocols and the selected/approved TSD facility permit requirements.
- Stockpiled soil and materials classified as hazardous shall be disposed as hazardous waste as specified in 40 CFR 260.
- A RCRA hazardous waste generator number will be obtained from the CM/IT to be provided on the waste manifest. On the day of the offsite shipment, the CM/IT shall sign the hazardous waste manifest.
- Applicable USDOT and FDOT, hazardous materials transporter regulations will be followed during the transportation and handling of all hazardous material. Containers used to transport hazardous material removed from the work site will be labeled "HAZARDOUS WASTE".
- All contaminated soil and other hazardous waste will be removed from the Work Site and delivered to an approved waste Treatment, Storage, and Disposal (TSD) facility within 90 days of the generation start date.
- All hazardous wastes removed hereunder shall be lawfully treated and disposed of at an Environmental Protection Agency (USEPA) approved Treatment, Storage and Disposal Facility (TSD), in accordance with all applicable Federal, State and local laws and regulations including the Florida Department of Environmental Protection (FDEP) regulation 40 CFR 273.
- All TSD Facilities and transporters which Ric-Man intends to use to treat and/or dispose and transport contaminated soils and other hazardous wastes shall be reviewed by the CM/I Team and the Design Criteria Professional before any removal.
- Should any problem arise regarding a TSD Facility selected to accept the contaminated soils or other hazardous wastes that would require the return of contaminated or hazardous wastes or should such TSD Facility have violated any environmental regulation which would result in any regulatory enforcement action, Ric-Man will immediately notify the CM/IT in writing of such situations and make provisions for the lawful storage of the contaminated soils and other hazardous wastes, until an alternate TSD Facility can be identified and reviewed by the CM/IT.

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- Upon removal of the waste material to the TSD Facility, Ric-Man will provide the CM/IT with copies of all paperwork (shipping documents) that accompanied the waste shipment, including a description of the material and the onsite source within two days of shipment.
- Upon delivery of the waste material to the TSD Facility, Ric-Man will provide the CM/IT with:
 - Final weight tickets and waste/shipping documents for contaminated or hazardous waste from the receiving facility and transporter within ten days of shipment from the Work Site.
 - A copy of the manifest signed and dated by the operator of the TSD Facility within 45 days of the date the contaminated or hazardous material was shipped from the Work Site.
 - Executed waste manifests and final Certificates of Destruction or Disposal for each load of contaminated or hazardous material removed from the Work Site.

3.0 Spill Prevention Control and Countermeasure (SPCC) Plan

This Spill Prevention, Control, and Countermeasure (SPCC) plan is prepared and implemented as required by U.S. Environmental Protection Agency (U.S. EPA) regulations contained in Title 40, Code of Federal Regulations, Part 112 (40 CFR 112). A non-transportation related facility is subject to SPCC regulations if:

- Due to its location, the facility could reasonably be expected to discharge oil into or upon the navigable waters of the United States;
- The total aboveground storage capacity exceeds 1,320 gallons (calculated total of containers with capacity of 55 gallons or more); or
- The completely buried storage capacity exceeds 42,000 gallons.

Discharge information must be reported to U.S. EPA Region IV and FDEP within 60 days if either of the following thresholds is reached.

1. The facility discharges more than 1,000 gallons of oil into or upon navigable water of the United States or adjoining shorelines in a single event; or
2. The facility discharges more than 42 gallons of oil in each of two discharge events within any 12-month period.

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The report is to contain the following information:

- Name of facility;
- Name(s) of the owner or operator of the facility;
- Location of the facility;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- Corrective actions and/or countermeasures taken, including a description of equipment repairs and/or replacements;
- An adequate description of the facility, including maps, flow diagrams, topographical maps as necessary, and diagrams which show the location of exempted tanks;
- The cause of the discharge, including a failure analysis of the system or subsystem that failed;
- Additional preventative measures taken or contemplated to minimize the possibility of recurrence; and
- Such other information the Regional Administrator may require pertinent to the Plan or discharge.

3.1 Storage Containers

There will be no fixed storage of hazardous materials or fuel on site. Fuel will be provided on a daily basis to the equipment and a 500 gallon temporary day tank. Ric-Man will not store any environmentally hazardous materials such as solvents, greases, lubricants or any other type of chemical substances at the Project sites. Ric-Man will only keep quantities of such materials at the site where they are to be used for immediate use. Copies of Material Safety Data Sheets and other documentation containing hazardous substance and spill prevention will be maintained at the job site.

The material used on site will be stored and handled in a proper and safe manner and upon its use, immediately dispose of the containers, cans, rags and remnants of the material in a manner approved by the Miami-Dade County DERM and FDEP. No empty containers will be stored at the site.

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3.2 Spill Prevention and Control

Aboveground storage tanks, loading/unloading areas, pile lines, flanges, pumps, and valves will be examined on a daily basis by Ric-Man personnel for indications of leaks, drips, sweating, etc. The fill gauges for storage tanks will be inspected for proper functioning prior to filling. Records and results from each inspection will be kept on site.

To prevent fuel discharges the following filling procedure is employed: The tanks will be examined prior to filling. If the fluid limit gauge reads below capacity, the tank will be filled to capacity. If the gauge reads full, the tank will not be fueled. If the gauge is malfunctioning, no fueling will be conducted and the gauge will be replaced.

All aboveground tanks will have secondary containment systems capable of holding 110 percent of the total volume of the tank as required. Ric-Man will have strategically placed spill kits at all construction areas which are readily available for deployment in the unlikely event of a discharge. The kits will contain absorbent materials and containment booms. The kits will be inspected quarterly and restocked as necessary. All spills to the ground would be cleaned up with absorbent material and residual material would be collected into drums and removed for off-site disposal. Spills of hazardous materials, including petroleum products, will be reported to the authority having jurisdiction and the CM/IT.

3.3 Training

Personnel will be trained to be thoroughly familiar with spills, waste handling and emergency procedures to ensure that employees handling wastes are thoroughly familiar with the proper handling and emergency procedures related to their responsibilities. Personnel handling hazardous wastes will be HAZWOPER certified in accordance with 29 CFR 1910 (OSHA 40 hour course).

In accordance with the requirements of 40 CFR 112.7(f), a record of discharge prevention briefings for hazardous material handling personnel will be completed prior to beginning of duties and at least once every year. The briefings will highlight and describe known discharges or failures, malfunctioning components, and any recently developed precautionary measures. Each person who participates in the briefing will be listed with printed name, signature, and the date of participation in the briefing.

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Traffic Control Plan

1.0 Vehicular Traffic Control Plan

Traffic Management for the Project includes public roadways and sidewalks and the maintenance of access to residences, businesses and public services throughout the Project area. Ric-Man will be responsible for the maintenance of public streets and traffic control when working in the public right-of-way. They will be fully responsible for the Maintenance of Traffic (MOT) on public streets, detour of traffic (including furnishing and maintaining regulatory and informative signs along the detour route), traffic control, and other provisions, throughout the Project, as required by the Miami-Dade County Department of Public Works, Traffic Engineering Division (Traffic Division), Florida Department of Transportation (FDOT) or any other jurisdictional Municipality/Local Authority and the above noted standards. Traffic shall be maintained according to corresponding typical traffic control details as outlined in the Miami-Dade County Public Works Manual and the above noted standards. No street shall be completely blocked, nor blocked more than one-half at any time, keeping the other one-half open for traffic, without specific approval.

Closure of at least one lane of traffic at the Fisher Island Exit (located adjacent to the Ferry Terminal) is anticipated. Ric-Man will coordinate with FICA as applicable, to establish a mutually acceptable MOT plan for routing traffic around the construction zone. Ric-Man will sequence work such that perpetual egress from Fisher Island via the main Ferry Terminal is maintained for the Fisher Island population and visitors.

Ric-Man will employ the following methods to minimize adverse impacts to pedestrians and traffic including all requirements and specifications identified in Section DB 01750 Maintenance of Traffic and Public Streets:

- Advance public notice to motorists of the nature, extent, and duration of lane closings and detours. When applicable, Ric-Man will notify the Traffic Division 24 hours in advance of the construction date, and 48 hours in advance of construction within any signalized intersection.
- Place detour signage in strategic locations, and use appropriate warning signs. Ric-Man will provide all barricades with warning lights, necessary arrow boards and signs, to warn motorists of the work throughout the Project. Adequate approved devices will be erected and maintained by Ric-Man to detour traffic.
- Perform construction activities that impact traffic during off-peak hours, whenever feasible.

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- Minimize disruption of access to residences and businesses; maintain at least one entrance to a property where multiple entrances exist.
- Coordinate with other projects in the area that have potential to impact roadways and create cumulative effects.
- Select truck routes to limit roadway and traffic impacts.
- Adopt a parking policy for construction works that will minimize impacts to residents and businesses.
- Install signage and barriers to protect and guide pedestrians.

Ric-Man will provide the Construction Management/Inspection Team with MOT plans for lane closures and/or detours for approval. These plans (sketches) will be produced by an individual employed by Ric-Man or a Subcontractor and certified as "Work Zone Traffic Safety Supervisor" by the International Municipal Signal Association.

If required by the Traffic Division, Ric-Man will employ the required number of uniformed off-duty policemen to maintain and regulate the flow of traffic through the construction area. The number of men required and the number of hours on duty necessary for the maintenance and regulation of the traffic flow will be subject to requirements by the Traffic Division. If required for traffic control permits or agencies, Ric-Man may work odd or night hours as necessary for traffic control reasons.

Ric-Man will be responsible for the provision, installation and maintenance of all traffic control and safety devices, in accordance with specifications outlined in the Miami-Dade County Public Works Manual. In addition, they will provide for the resetting of all traffic control and information signing removed during the construction period. Pavement markings damaged during construction will be remarked, as required by the Traffic Division.

Where excavations are to be made in the vicinity of signalized intersections, Ric-Man will verify vehicle loop detector locations by inspecting the site of the work and by contacting the Sunshine State One-Call Center at 1-800-432-4770. Any loop detector which is damaged will be repaired or replaced to the satisfaction of the Traffic Division.

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

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

If any raw sewage bypassing is required, Ric-man will take appropriate steps to ensure that all pumps, piping and hoses that carry raw sewage are protected from vehicular and pedestrian traffic.

1.1 Transportation of Excavated Materials

Truck transport of excavated materials is subject to Miami-Dade County and FDOT approval, stringent environmental requirements and community restrictions, as detailed herein and elsewhere in the Contract specifications (Section DB 02120 – Disposal of Excavated Material), and in accordance with applicable laws, regulations, and permits. Trucking of excavated material will follow pre-determined designated routes to the disposal destinations. In locations of increased truck traffic, such as trucks entering and leaving the construction areas, signage meeting FDOT design standards for Traffic Control Through Work Zones (Index 600) and flagmen may be employed to alert motorists of potential slow downs and detours. Trucks will not be allowed to line up on public roadways and disrupt the normal flow of traffic. Hauling of materials will include the following considerations:

- The hours of operation for off-site transport and disposal of excavated material using trucks may be limited by local community restrictions. The movement of excavated material will occur during non-peak hours as much as practical.
- Haul trucks will follow the truck haul routes as established by Ric-Man included as **Exhibit 7**, subject to review by the CM/IT,
- Empty haul trucks returning to the work site will use the same designated truck routes.

Pedestrian traffic will be monitored at all times. A physical separation will be provided between the construction zone and the sidewalks. Separations will consist of concrete barriers, wood fencing or protective mesh fencing. All equipment operators will be made aware of the possibility that pedestrians may get in the way of their equipment. Also, all equipment will have lights for night operation and back-up alarms for all operations.

2.0 Marine Traffic Control Plan

Most of the Ric-Man work should not impact marine traffic; however, some work activities will take place in marine traffic areas. These include:

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- Transporting materials, equipment and personnel to and from the Fisher Island work sites and the Force Main Retrieval Shaft location.
- Construction and demolition of the Force Main Retrieval Shaft in Government Gut.
- Cutting and capping the existing water main in Fisherman's Channel and the existing force main in Government Cut.

During the Construction Period, Ric-Man will coordinate with the Port of Miami (POM) to ensure that access to POM operations is maintained at all times. Ric-Man will ensure that there are no interruptions of scheduled vessel movements, unless approved in advance by the POM, and/or other authorities (including but not limited to the US Coast Guard and the Biscayne Bay Pilot Association) having jurisdiction over navigational channels and turning basins. Peak cargo vessel traffic typically occurs on Thursdays through Monday of each week. Semi-peak days for cargo are typically on Tuesday and Wednesday. Peak cruise days are Friday through Monday on the north side of the Port. However, traffic patterns are unpredictable and Ric-Man will coordinate with authorities and make provisions to maintain maritime traffic.

Ric-Man will coordinate directly with the Biscayne Bay Pilots Association (BBPA) on matters related to maintaining maritime traffic within the channel, coordinating communications between incoming and outgoing ships with the dispatch unit, and shall comply with all criteria that the BBPA's or another authority mandates as applicable to vessel movement within the Government Cut channel.

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Noise and Vibration Control Plan

Reasonable steps will be taken to minimize noise and vibration impacts from operations at the project sites and will follow generally accepted construction practice.

1.0 Noise Control

Persistent sources of noise from operations include drilling equipment, vehicle movement, and vehicle backup alarms. Ric-Man will be responsible for the abatement of construction noise and vibration control to levels as defined in the regulatory requirements, local ordinances and the bylaws of the Fisher Island Community Association Rules and Regulations. The levels will be as measured at each shaft and at nearby residential noise-sensitive receptor locations. Noise control and mitigation measures will focus primarily on those receptors located on Fisher Island and Miami Beach. Construction noise inquires related to the Port of Miami will be coordinated with the Port (305-347-4845).

Ric-Man will use equipment with efficient noise-suppression devices and employ other noise abatement measures such as enclosures and barriers as necessary for the protection of the public. In addition, Ric-Man will schedule and conduct operations in a manner that will minimize, to the greatest extent practical, the disturbance to the public in areas adjacent to the work and to occupants of buildings in the vicinity of the work. All construction equipment will be subject to periodic compliance testing whenever evidence of non-compliance is apparent.

Traffic noise levels must comply with FHWA criteria contained in 23 CFR Part 772 for Category B receptors. Construction noise levels must comply with the new FHWA guidelines (RCNM) and local ordinances which establish Project-specific noise criteria limits for each piece of construction equipment for each noise-sensitive receptor location.

Ric-Man will implement mitigation measures to limit noise levels and control nuisance noise during construction operations. Noise reduction methods to be used by Ric-Man may include, but not be limited to:

- Project layout approaches including placing construction equipment farther from noise-sensitive receptors.
- Alternative construction methods, using special low noise emission level equipment, and selecting and specifying quieter demolition or deconstruction methods.
- Attaching intake and exhaust mufflers, shields, or shrouds;

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- Restrict hours of operation of construction activities potentially impacting residential areas whenever possible so work does not occur between 6 pm and 8 am the following day on weekdays, or at any time on Sundays or holidays; and
- Fit jackhammers, air compressors, generators, light plant and cranes with silencer, and use noise tents around workers using jackhammers.

2.0 Vibration Control

During construction, Ric-Man will use industry standard Best Management Practices to limit vibration impacts (particularly nuisance vibration). The project will implement a proactive approach to reduce vibration levels and the possibility of community complaints during construction activities. Ric-Man will keep residents and businesses abutting the work sites informed of the period of potential impact and the mitigation methods to be used. Vibration reduction methods to be used by Ric-Man may include, but not be limited to:

- Identify all potential fragile buildings within the influence area of the project;
- Any historical buildings within the influence area of the project will be inspected and construction mitigation established for each structure;
- Pre-construction surveys of any structure likely to be affected adversely by construction activities will be performed and threshold or limiting values will be established to withstand the loads and displacements due to construction vibrations;
- During construction, vibration level measurements will be taken at vibration-sensitive locations during ongoing construction activities at applicable daytime, evening, and nighttime periods. Background and construction vibration data will be recorded. A sketch or diagram for the exact location of the vibration measurement, construction equipment operating during the monitoring period, and other activities occurring at the same time will be provided.
- Heightened attention to vibration control will occur when working within 50 feet of historic structures or residences;
- Use of deep saw-cuts to minimize the transmission of vibrations from pavement-breaking operations to foundations of nearby structures;
- Use of concrete cutters on pavement surfaces instead of pavement breakers, where practical;
- Routing of truck traffic and heavy equipment to avoid impacts to sensitive receptors;

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- Properly securing street decking over cut-and-cover excavations;
- Scheduling of work to limit night time impacts in residential areas; and
- Minimization of the duration of vibration impacts.

If a complaint regarding construction noise or vibration is received, Ric-Man will promptly perform measurements at the complainant's location during activities representative of the offending operation. The complaint response measurement will be immediately submitted to the CM/IT. In the event that the measured level exceeds allowable limits or results in nuisance conditions, Ric-Man will immediately implement feasible and appropriate mitigation measures.

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Structure Monitoring Plan

The purpose of this Geotechnical and Structure Monitoring Program includes but is not limited to providing:

- Pre-construction baseline data for comparison with construction and post construction data.
- Monitoring of movements of select ground, and facilities during and after construction, to determine whether they have been affected by construction activities.
- Providing a forewarning of unforeseen conditions and trigger actions required when unacceptable levels of settlement are observed.

Ric-Man Construction will perform pre-construction and post-construction condition surveys of all buildings, utilities and structures within the monitoring zone of the HDD and micro-tunnel installations which will be indicated on the geotechnical instrumentation drawings presented with each design package. A visual inspection of the bulkheads, seawalls, pavements, and other relevant structures will be conducted. The pre-construction survey will include video surveying to serve as documentation of the pre-construction conditions of the structure in order to provide a baseline for establishing damage resulting from construction. Ric-Man Construction will be responsible for all damage caused by construction.

A post-construction survey will be performed by Ric-Man Construction for each item for which the pre-construction survey was performed. The post-construction survey will also include video surveying of all buildings, utilities, bulkheads, and structures within the monitoring zone and shall highlight all existing damage noted during the pre-construction survey and new damage.

Before commencement of construction work, Ric-Man will perform a thorough examination of existing buildings, structures, and other improvements in the vicinity of the work which might be damaged by its operations. This includes:

- Notifying in writing the authority having jurisdiction over the street or owner of the structure where such defects exists prior to proceeding with any work in the vicinity. A copy of all such notices shall be forwarded to the Construction Management/Inspection Team.

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- Examinations of existing structures, buildings, and other improvements in the vicinity of the work shall be done by Ric-Man Construction.
- Records in triplicate of all observations shall be prepared by Ric-Man Construction. Photographs shall be taken, signed and dated with descriptive information and in the manner specified above. One signed copy of every document and photograph will be kept on file in the office of the Construction Management/Inspection Team. Video recordings will be included.
- The above records are intended to be used as indisputable evidence in ascertaining the extent of any damage which may occur as a result of Ric-Man Construction operations and are for the protection of the Owner, Ric-Man and MDWASD, and will be a means of determining whether and to what extent damage, resulting from Ric-Man's operations, occurred during the Contract work.

Ric-Man Construction will maintain vertical and horizontal survey control points on all structures and improvements, located in the vicinity of the work prior to beginning construction work, and will periodically check the points for movements with copies provided to the Construction Management/Inspection Team, of the survey notes for each survey and a copy of the layout of the survey control points.

Structures

Ric-Man Construction will take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. Ric-Man Construction is solely responsible for field verification of all locations.

Settlement of any above ground structure beyond allowable values shall not be permitted and Ric-Man Construction will take whatever measures are necessary to ensure that all above grade structures remain at or close to their pre-construction elevations.

Instrumentation Monitoring Program

Ric-Man Construction will provide a proposed breakdown of monitoring equipment by type and location, for each design work package.

Ric-Man Construction will install and monitor instrumentation along the alignment as indicated on the approved Drawings. Instrumentation shall be read on a daily basis during excavation and continue until the stage of construction in the area has been completed and no deformation has been recorded for three (3) consecutive days. In cases where the deformation rate is increasing the monitoring frequency shall be increased until the deformations have ceased.

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Ric-Man Construction shall carry out geotechnical monitoring for the HDD and micro-tunneling operation during all stages of the shaft and pipe-jacking construction to ensure the safety of the workers, control of ground movements, and integrity of the overlying or adjacent structures or utilities. At a minimum, Ric-Man Construction shall meet the following criteria:

- Include horizontal and vertical monitoring points on the bulkheads, seawalls, and other structures immediately above and adjacent to the construction alignment.
- Install and initialize instrumentation with a stable base line reading prior to the HDD and micro-tunnel approaching within 100 ft of the instrumentation.
- Daily instrument readings when the HDD and MTBM is within 100 ft after for a period of at least 15 days and until deformations end, whichever is last.

Ric-Man Construction will also provide a weekly monitoring report to the Design Criteria Professional and the CM/IT with a summary interpretation of all geotechnical measurements taken and the conclusions drawn for each monitoring location.

Responsibilities of Ric-Man Construction include:

Furnishing components of instrumentation that are to be installed during construction as specified herein and on the Plans to be developed by Ric-Man in conformance with the Contract Documents. Ric-Man Construction will be responsible for furnishing, installing, and baselining, reading and evaluating instrumentation.

- Numbering scheme to be used for identifying instruments will be as follows:

SSP-1 = Surface Settlement Point

STSP-1 = Structure Settlement Point

- Ric-Man Construction will be responsible for obtaining permission, permits, and insurance required for access to install and maintain instruments on or in adjacent or nearby existing infrastructure and other facilities.
- Installation of instruments and verification of location of satisfactory operation. Collect baseline readings and confirmation of readings with CM/IT. Coordinating installation of the instruments with property owners and the CM/IT, as required.
- Obtaining baseline readings for all installed instruments and confirm such readings with the CM/IT.

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- Protecting from damage and maintaining instruments installed by Ric-Man, and existing instruments installed by others. Repairing or replacing damaged or inoperative instruments.
- Provide baseline readings comprising a minimum of three consistent readings taken at least one day apart before subject to any effects from construction.
- Providing notifications to the CM/IT if established criteria in each design package is exceeded and implement changes in accordance with the approved plan.

Ric-Man's geotechnical Engineer will:

- Prepare detailed step-by-step procedures and schedule for the installation of all instruments specified herein.
- Be on-site, supervise, and conduct the pre-installation and post-installation acceptance tests of each type of instrument.
- Be on-site and supervise installations of each type of instrument.
- Supervise interpretations of geotechnical instrumentation data.
- Perform the readings.
- Develop an Action Level Plan and conduct meetings with the CM/IT to discuss response action(s).

For surveying work, the survey instrument manufacturer's stated accuracy and field procedures shall be such that the resulting accuracies meet the specified accuracies at a 95-percent level of confidence.

Submittals

At least 30 days before beginning construction, Ric-Man will submit a Geotechnical and Structural Instrumentation Plan that includes the following:

- Layout plans and details of installation of all instrumentation on the conceptual layout in Plans and actual field verification of same.
- Detailed step-by-step procedure for installation of all instruments, together with a sample installation record sheet. The installation procedures shall include:

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- Pre-installation and installation procedures.
- Method for conducting post-installation acceptance test.
- Method for protecting instruments from damage.
- Detailed step-by-step procedures for conducting all survey measurements to the specified accuracies. Types of surveying instruments and data reduction procedures will be defined.
- Contingency plans to be implemented in case any limits in movement defined in each design package are reached. The contingency plans shall be positive measures by Ric-Man Construction to do any or all of the following, as applicable.
- Submittals for design elements specified herein in accordance with Section DB 01113.

Action Level Plan

A detailed plan for corrective measures will be implemented should the defined ranges be reached.

Within (10) ten working days of installing each instrument, Ric-Man Construction will provide the following:

- A copy of factory calibration, manufacturer's test equipment certification, completed copy of quality assurance checklist, and warranty for each portable readout unit.
- Completed pre-installation acceptance test record form for that instrument.
- The installation record sheet for that instrument, including as-built coordinates as specified.

Instrument Monitoring Data

Ric-Man Construction will provide instrument monitoring data to the CM/IT in electronic form of files. Each set of data shall clearly indicate the instrument identification numbers and locations, reference elevations and depths for readings as appropriate, the date and time that the readings were taken, and the names of individuals who performed the monitoring.

Surface protection for vertically installed instruments shall be flush with the ground surface in paved or other areas. Roadway boxes shall either have a diameter adequate to allow

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attachment of cable support assembly. Instrumentation will be extended as necessary as grade changes occur.

An off-site benchmark will be used for all instrument surveys.

Surveying Instruments for Monitoring Prisms and Structure/Movement Monitoring Points

Vertical Movement Monitoring: Instruments used for vertical movement monitoring will have a minimum accuracy of plus or minus 0.06-inch (standard deviation for one kilometer of double run leveling) and a minimum setting accuracy of plus or minus 1.0-arc seconds.

Horizontal Movement Monitoring

Instruments used for horizontal movement monitoring will have a minimum accuracy of plus or minus 3.0-arc seconds (standard deviation according to DIN 18723), and a minimum display reading less than or equal to the accuracy. Distances less than 30-feet shall be measured with a standardized steel tape used in conjunction with a tension handle. Electronic pointing shall be used to minimize error due to possible misalignment of the EDM axis and telescope. Centering shall be accomplished using high precision optical plummets or mechanical centering devices.

EDM equipment used for horizontal movement monitoring shall, after calibration, have a minimum accuracy of plus or minus 0.2-inch plus 5-parts per million.

Movement monitoring points will be used to monitor vertical and horizontal deformation of various facilities at selected locations shall be shown on the Plans with each design work package.

Scheduling of Work

Ric-Man Construction will install instruments, obtain and agree with CM/IT on baseline readings in accordance with the following schedule:

Install and obtain baseline readings from instruments before any shaft excavation begins (including excavation for diaphragm wall panels), or before tunnel excavation is within 200 feet of the instrument.

Before commencement of any tunnel construction activity, Ric-Man Construction will submit a detailed instrumentation location plan and proposed method of reading of monitoring instruments including details of installation procedures and timing.

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Storage and Servicing of Instruments: All instrumentation materials, after receipt at the Work Zone and before installation will be stored, in an indoor, clean, dry, and secure storage space. Instruments will not be exposed to temperatures outside the manufacturer's stated working temperature range.

Pre-Installation Acceptance Tests

When instruments are received at the installation site Ric-Man Construction will perform pre-installation acceptance tests to ensure that the instruments and readout units are functioning correctly before installation. Pre-installation acceptance tests shall include relevant items from the following list:

- Examination of factory calibration curve and tabulated data, to verify completeness.
- Examination of manufacturer's final quality assurance inspection checklist, to verify completeness.

Instruments will be installed in accordance with Ric-Man Construction's detailed step-by-step procedures that will be submitted with each work package and reviewed by the CM/IT.

All instruments will be labeled with their reference number at the location where readings or measurements are taken. The labeling shall be permanent using a method or material as reviewed by the CM/IT.

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Diesel Emissions Mitigation Plan

Diesel exhaust contains tiny particles known as fine particles that have been associated with lung damage and can also aggravate respiratory conditions such as asthma and bronchitis. EPA has concluded that diesel exhaust is a likely human carcinogen and ranks high with other substances that pose a risk to human health. People with existing heart or lung disease and respiratory problems are most sensitive to the health effects of fine particles, as are children and the elderly. Diesel emissions also contain black carbon and carbon dioxide which are believed to contribute to climate change and can damage plants, animals, crops, and water resources.

Ric-Man's Diesel Emissions Mitigation (DEM) Plan addresses the control of emissions from all diesel-powered equipment and vehicles including on-road vehicles (i.e., diesel-powered trucks) and non-road equipment not retrofitted with devices to be utilized in the performance of work under this contract. The DEM Plan includes the following measures to reduce public exposure to diesel exhaust emissions downwind of the construction sites:

- Diesel powered construction equipment planned for use onsite with engine horsepower ratings of 50 HP and above will use ULSD fuel (maximum 15 parts per million) in order to reduce diesel emissions. **Appendix E-6** includes the USLD Fueling Plan which is part of the DEM Plan.
- The reduction of emissions of carbon monoxide (CO), HC, NOx, and PM will be accomplished utilizing the best available technology or other measures of equivalent removal efficiency wherever the implementation of such device is feasible for all on-road and non-road diesel-powered equipment with a rated horsepower of 50 HP or greater.
- In cases where pollution control devices are not feasible, Ric-Man will submit a request for a waiver for the Construction Management/Inspection Team for review and approval prior to the use of the equipment. If the Construction Management/Inspection Team grants the waiver, Diesel Oxidation Catalysts (DOC) will be used where commercially available.
- In order to facilitate the application of verified emission control devices, as well as provide lower baseline emissions, all equipment used for the performance of work under this contract will use post-1995 fuel injection engines which meet Tier II engine emissions standards, as defined in 40 CFR Section 89.112. Exceptions will be made only for specific engines that are not yet commercially available for Tier II, and where

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the task cannot be reasonably accomplished using alternative engines or means that comply with these demands. In such cases, Ric-Man will submit a request for a waiver to the Construction Management /Inspection Team for review and approval prior to the use of such equipment.

- Locate diesel powered exhausts away from fresh air intakes.
- Use of low-emissions multi-passenger employee transport vehicles to job-site when possible.

Equipment will prominently display a clean exhaust message such as: "Machine is equipped with an air pollution control device and uses ULSD fuel".

Included as **Exhibit 10**, is a list of non-road diesel powered construction equipment proposed by Ric-Man to be used during construction including approximate fuel utilization and hours of usage. Ric-Man will submit a monthly report for review that will include the following:

- Updated list of non-road diesel equipment being used.
- Engine hour meter readings of the non-road diesel equipment.
- Certified copies of fuel deliveries for the report time period identifying the source of supply, quantity and quality of fuel.

Proposed designated truck routes to minimize impacts on adjacent community and sensitive receptors are included in the **Exhibit 7**. Sensitive receptors include but are not limited to hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.

1.0 Work Zone Creation

Ric-Man will establish on-road vehicle staging zones for the off-loading and loading of materials to and from the construction site. Such zones will be located to minimize the impact of pollutants from diesel engines and vehicles on sensitive receptors and the general public. Parking and staging areas will not occur within 500 feet of schools, hospitals, daycare facilities, elderly housing, convalescent facilities, residential communities, or public spaces with outdoor activities as much as practical. In addition, Ric-Man will ensure that diesel powered engines and vehicles are located away from fresh air intakes as determined by the CM/IT.

The CM/IT will identify and notify Ric-Man of any "Limited Work Zones" where the modeled concentration of PM is 2.5 over a 24-hour period that could exceed the National Ambient Air

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Quality Standards. To ensure that such potential exceedances are mitigated, Ric-Man will not operate non-road diesel-powered equipment in this "Limited Work Zone" during periods of extreme meteorological conditions without the approval of the CM/IT.

2.0 Diesel Engine Idling Time

Where required by governing ordinances or regulations, or in populated areas, the unnecessary idling times on diesel powered engines will be limited to five (5) minutes except as follows:

- When an on-road vehicle is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control.
- When it is necessary to operate heating, cooling or auxiliary equipment installed on the vehicle and when such equipment is necessary to accomplish the intended use of the vehicle.
- To bring the vehicle to the manufacturer's recommended operating temperature.
- When the "mobile source" is being inspected or repaired.
- For the health, safety and comfort of the driver and passenger(s) when there are no auxiliary power sources available to provide heating, ventilation or air conditioning.

3.0 Electrification

Ric-Man will develop and implement a plan to distribute temporary electrical power throughout the construction site. The plan will identify all diesel-powered equipment intended to be used for the performance of construction, and indicate the availability of alternate electrically powered versions. In cases where electrically powered versions are available, the electrically powered version will be used if feasible.

Non-compliance with these DEM specifications will be corrected within a 24-hour period. After the 24-hour period, if the non-complying equipment has not been corrected it will be removed from the work site.

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ULSD Fueling Plan

All diesel-powered heavy equipment used on the site during the execution of this contract will use Ultra Low Sulfur Diesel (ULSD) fuels. Additionally, all diesel powered on-road vehicles traveling to the job site, as well as stationary equipment used in the performance of contract work at the job site, will use ULSD fuel and demonstrate compliance by providing the CM/IT with fuel receipts identifying source of supply, quantity of fuel and quality of the fuel. All subcontractors and suppliers are required to conform to the requirements noted herein.

All diesel-powered non-road equipment to be used in the performance of the work under this Contract will use ULSD fuel that is certified to contain an average sulfur content of no more than 15 parts per million (ppm) as determined over a six month period. If ULSD fuel with an average sulfur content of not more than 15 ppm is not available, a written waiver will be requested by Ric-Man for approval by the CM/IT until such time that the ULSD fuel becomes available, or an approved equal is determined by the CM/IT to satisfy the intent of this Section. The CM/IT may collect monthly samples of the ULSD fuel used during the period directly from the fuel tanks of the non-road diesel-powered equipment used on the construction site.

The testing standards will include but are not limited to: ASTM D6920-03 "Total Sulfur in Naphthas, Distillates, Reformulated Gasolines, Diesels, Biodiesels, and Motor Fuels by Oxidative Combustion and Electrochemical Detection", or ASTM D6428-99 "Test Method for Total Sulfur in Liquid Aromatic Hydrocarbons and their Derivatives by Oxidative Combustion and Electrochemical Detection".

The ULSD fuel will be obtained from any distributor capable of meeting the requirements of this section. All ULSD fuel will be dispensed directly on the construction site from either a dedicated on-site fuel storage tank or segregated truck delivery. In the case of on-site storage, all such tanks will comply with **Appendix E-1** of this CEPP and with all applicable jurisdictional codes pertaining to the storage and dispensing of fuel, which requires approval by the CM/IT prior to implementation.

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Dust Control Plan

Proper dust control measures will be maintained throughout this Project. The inherent water content of the excavated materials will significantly limit the total amount of dust associated with this project. Ric-Man will provide daily visual monitoring of work site conditions and implement mitigation measures where needed if the cumulative effect of construction produces unacceptable conditions. Mr. Brian DeSnyder, General Site Superintendent, will have complete authority to implement all controls and mitigation measures identified in the DC Plan. Mr. DeSnyder (810-459-0527) will be available 24/7 for this Project.

The DC Plan details all dust control procedures for all such controls and measures to address all anticipated work activities that may generate fugitive dust dispersions. Dust control methods include, but are not limited to the following:

Wet Suppression

- Used to provide temporary control of dust. Several applications per day may be necessary to control dust depending upon meteorological conditions and work activity. Wet suppression will be applied on a routine basis as necessary to control dust.
- Consists of the application of water or a wetting agent in solution with water. Wetting agent will not be used on plantable soils.
- Equipment will consist of sprinkler pipelines, tanks, tank trucks, or other devices capable of providing regulated flow, uniform spray, and positive shut-off.
- Dust suppression wetting agents will be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming.

Public Roadways

- Trucks hauling soil, muck, or rock will have a truck bed that is completely covered with a tarp or similar protective cover before the truck leaves the site. The truck bed shall remain covered until the truck reaches the disposal site.

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- Before vehicles leave the work site, the vehicle body and/or wheels will be cleaned of mud and dirt to control tracking. A gravel cover will be applied to unpaved surfaces where they will be regularly traveled as egress and ingress routes from/to work sites.
- Vehicle mud and dirt carryout, material spills, and soil washout onto public roadways and walkways and other paved areas will be cleaned up immediately.
- Ric-Man is responsible for daily clean up of public roadways and walkways affected by work of this contract. A wet spray power vacuum sweeper or similar equipment will be used on paved roadways. Dry power sweeping is prohibited and will not be used.

Active and Inactive Stockpiles

- Wet suppression without wetting agent will be used during active stockpile load-in, load-out, and maintenance activities.
- Soil stabilizers will be applied to the surface of inactive stockpiles.
- Plastic tarps will be placed over stockpiles, secured with sandbags or an equivalent method to prevent the cover from being dislodged by the wind. Covers will be repaired or replaced whenever damaged or dislodged.

Earthwork Activities

- During batch drop operations (i.e., earthwork with front-end loader, clamshell bucket, or backhoe) the free drop height of excavated or aggregate material will be minimized as much as practical to reduce the generation of dust.
- To prevent spills during transport, free board space shall be maintained between the material load and the top of the truck cargo bed rail.
- Reduce the amount/frequency of material handling operations (i.e., avoid multiple handling of materials).

A copy of the DC Plan will be provided to each subcontractor who shall be obliged to comply with this plan in the provisions of his subcontract with Ric-Man.

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Appendix E-8 Contingency Spill Plan

Currently wastewater generated in the City of Miami Beach service area is collected and pumped to the MDWASD Central District Wastewater Plant (CDWWTP) located at Virginia Key. Raw wastewater is pumped through the existing 54-inch diameter Prestressed Concrete Cylinder Pipe (PCCP). Construction of the 3rd lock of the Panama Canal is underway. Once the 3rd lock is completed it is anticipated that vessels with a deeper draft will be entering the Port of Miami. The existing 54-inch PCCP located under Government Cut will be replaced by a new 54-inch pipe crossing at a lower elevation which will be installed by microtunnelling means and methods. The new 54-inch force main at a lower depth will allow dredging of the Port waterways and Government Cut channel to accommodate deeper draft vessels. The existing 54-inch PCCP and the new pipe crossing will be interconnected at two locations.

- South of Miami Beach in the waters of Government Cut
- On Fisher Island

The major environmental and social concern is that during the installation of the piping connections that the integrity of the existing 54-inch PCCP may be compromised resulting in a raw wastewater leak or discharge. This Emergency Spill Plan evaluates each step in the construction sequence and develops a response plan to mitigate any potential leakage or raw wastewater discharge.

54-inch PCCP Force Main – Existing Pipe

Shop drawings of the existing PCCP were made available to Ric-Man Construction, Inc. The existing 54-inch Prestressed Concrete Cylinder Pipe (PCCP) was designed and fabricated in 1978 and early 1979 by the Lock Joint Products Division of Interpace Corporation in accordance with AWWA C301-72 for Prestressed Concrete Pressure Pipe, Steel Cylinder Type. Interpace Corporation is now out of business.

Prestressed Concrete Cylinder Pipe (PCCP) consists of a concrete core, a thin steel cylinder, high tensile prestressing wires and a mortar coating. The concrete core is the main external structural load-bearing component with the steel cylinder acting as a water barrier between concrete layers. The prestressing wires produce a uniform compressive pressure in the core that offset tensile stresses in the pipe caused by internal pressure, and the external mortar coating protects the prestressing wires from physical damage and external corrosion. PCCP is a composite design which depends upon the four structural or protective elements for its integrity. Deficiencies in one or more of these elements overtime can contribute to progressive pipe failure.

Failure has been defined for PCCP "as the loss of the use of a pipe section or reduction in confidence in that pipe section to remain in service, after discovery of a pipe section deficiency. This includes repair, replacement, or reduction in operating pressure."¹

The most common failure scenario of PCCP in a backfilled trench has been associated with broken prestressing wires. The mode failure sequence overtime is reported as follows:

- Over pressure due to physical loading, bending or internal pressure.
- Exterior mortar coating cracks.
- Prestressing wires exposed to water.
- Prestressing wires corrode and break.
- Pressure is transferred to the steel cylinder.
- Concrete core cracks.
- Steel cylinder is exposed to water.
- Steel cylinder corrodes and fails in tension. Failure mode is sudden.

This is a progressive failure sequence overtime. Many utilities monitor the integrity of the prestressing wires to assess the condition of the PCCP pipe segments and estimate remaining service life.

The design criteria and physical features of the 54-inch PCCP force main fabricated by Interpace Corporation are listed below. Data was obtained from shop drawing submittals.

¹ "Failure of Prestressed Concrete Cylinder Pipe" issued by EPA and AWWA Research Foundation, 2008.

**Table No. 1
Design Criteria and Physical Dimensions of Existing 54-Inch PCCP Force Main**

Pipe Fabricator	Interpace Corporation
Pipe Fabricated	1978-1979
Type	SP-12
Inside Diameter	54-inch
Barrel O.D.	63-5/8 inch
Exterior Protective Mortar Coating Thickness	13/16 inch
Prestressing Wire (Class IV)	
- Gauge	6 ga.
- Diameter	0.192 inch
- As	0.374 sq. inch / L.F.
- Wraps/Foot	12.92
Concrete Core	
- Thickness	4 inches
- Strength at 28 days	6000 psi
Cylinder	
- Gauge	17
- Thickness	0.0538 inches
- As (Calculated)	0.646 sq. inch / L.F.
- Outside Diameter	56-7/8 inches
Interior Concrete Core Thickness (Calculated)	1.38 inches
Joints (Bell & Spigot)	Steel
Joint Depth	6-1/4 inch
Spigot Depth	6-3/4 inch

A high number of reported PCCP failures of pipe installed from 1972-1978 were fabricated by Interpace Corporation. Most of the fabricated PCCP during this period met minimum criteria established by AWWA C-301-72. The 54-inch PCCP force main from the City of Miami Beach to Virginia Key was fabricated based upon a more conservative design as noted below.

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**Table No. 2
Comparison of 54-Inch PCCP Force Main
Components with AWWA C-301-72 Standard**

	Existing 54-inch PCCP Force Main	AWWA C-301-72	Increased Capacity of 54-inch PCCP Above AWWA C-301-72
Mortar Coating Thickness (inches)	13/16"	10/16"	30%
Prestressed Wire			
- Gauge	6	8	-
- Diameter (inch)	0.192"	0.162"	18%
Concrete Core 28-Day Strength (psi)	6,000	4,500	33%
Steel Cylinder			
- Gauge	17	18	-
- Thickness (inch)	0.0538"	0.0478"	12.5%

The 54-inch PCCP has a low internal operating pressure due to the hydraulics to the Central District WWTP. The PCCP has a thick 4-inch concrete core to protect the steel cylinder and to provide dead weight to overcome buoyancy forces in the subaqueous installation. The PCCP is designed as a rigid pipe and the concrete core can support in compression the dead loads associated with backfill material.

The most common mode of failure for PCCP is associated with prestressing wires breaking. The location and amount of prestressing wire breakage can be confirmed by testing. A test program is planned for the existing 54-inch PCCP force main. The results should identify any potential or future problem locations with excessive prestressing wire breakage in the vicinity of the planned 54 PCCP pipe connections.

1.0 Construction Sequence

Two deep shafts will be installed adjacent to the existing 54-inch PCCP force main at the following locations.

- A 22 foot I.D. launch shaft on Fisher Island.
- A 13 foot I.D. retrieval shaft south of the City of Miami Beach in the waters of Government Cut.

Once both deep shafts are dewatered then a 72-inch steel casing pipe will be installed connecting the shafts using microtunnelling means and methods. Any minor leakage of groundwater during the installation of the 72-inch steel casing will be collected in the Fisher Island shaft and pumped to the infiltration disposal system. Next a 54-inch I.D. fiberglass carrier pipe will be installed within the 72-inch steel casing pipe.

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Construction activities at both shaft sites will involve exposing the existing 54-inch PCCP and make the necessary piping connections to the new 54-inch I.D. fiberglass pipe in the respective shafts. Activities at both shaft sites will be coordinated to minimize a potential wastewater leakage or spill.

During these activities pipe repair materials and emergency equipment will be available for a repair of a failure in the existing 54-inch PCCP force main.

The construction sequence is described for both the Fisher Island and the Government Cut sites. However, the Fisher Island site connection will be performed first to facilitate wastewater being pumped to the Virginia Key Facility in the event of a pipe failure at Government Cut.

1. A. Fisher Island Site

1. A.1. Locate Existing 54-inch PCCP Force Main

The 54-inch PCCP force main is located within an existing 50 foot wide access and utility easement. As-Built drawings of the 54-inch PCCP indicate that the pipe centerline is offset about 15 foot and runs parallel to the S.E. easement boundary. Top of pipe elevations were also recorded on the As-Built drawing. The pipe easement and boundaries have been located and marked in the field. The 54-inch PCCP has a slight slope towards Virginia Key WWTP. The approximate centerline elevation is El. (-) 18.25 +/- . Grade is about El. 7.0 +/- . The goal of uncovering the 54-inch PCCP is to locate pipe joints, confirm its location and top-of-pipe elevations. Location of pipe joints is critical as this determines the launch shaft positioning.

A 26 to 28 foot deep excavation will be required to expose the pipe. Water depth is about 21 foot above the top of pipe. The soil is described as loose silty sand fill to a depth of 21 to 22 feet. Temporary sheeting or trench boxes may be used if required to maintain excavated soil slopes and hold the loose material. The Miami Limestone Formation commences at El. (-) 13.5 +/- several feet above the top of pipe.

Depending upon soil characteristics the excavation will be shored. Within 5 to 6 feet of top of pipe the Contractor will use jetting (liquid or air) methods to probe ahead of the excavation to confirm the top of pipe.

Upon confirming the top of pipe (within 1 or 2 feet) manual excavation and/or air lifts will be used to excavate the remaining soil. The top of the pipe will be exposed to the divers. Sump pumps will be lowered into the excavation. Pumped out muddy water will be transferred to silt basins. Clarified liquid from the silt basin will be discharged to the infiltration trench.

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Divers will confirm the 54-inch PCCP joint locations. If and when water visibility allows, the Contractor will observe the physical condition of the joints and top of pipe. In the event water visibility does not permit this, then divers will physically gage joint condition.

PCCP pipe is designed as a rigid pipe to handle internal operating pressures and external dead loads. Since the trench is not dewatered the internal operating pressure will remain unchanged. Removal of the soil above the pipe will reduce the dead load up to 4 tons per linear foot on the 54-inch PCCP. Reduced dead load associated with soil removal for locating joints will lower hoop compression and bending stresses in the pipe should not impair pipe integrity.

Upon obtaining all pertinent information on the location, joints and top elevations of the PCCP, the Contractor will install and extend temporary markers (PVC pipe or other markers) to the surface. The pipe location will be tied into surface survey monuments. The open trench will be backfilled to existing grade.

Three Utility Settlement Points will be installed to the top of the pipe after the 54 PCCP open trench is backfilled with soil. The Utility Settlement device consists of a 1-inch diameter epoxy fiberglass bar located inside a 3-inch PVC pipe both of which sit on top of the pipe.

The 54-inch PCCP pipe will be monitored for horizontal and vertical movement during the subsequent launch shaft and pipe cofferdam construction activities.

1. A.2. Shaft Construction

Pregrouting Program – Prior to installation of the launch shaft secant piles, a grouting program will be conducted to fill any large voids and open features in the pervious limestone formation. This will minimize the loss of drilling mud and tremie concrete during the installation of the secant piles. A total of six primary grout holes will be drilled and cased (28' – 4" diameter concentric circle around the launch shaft) to the bottom of the secant piles at El. (-) 100 +/- . Once the casing is set, a 2-inch plastic sleeve pipe is installed in the cased hole. The casing is then removed. Grouting of the formation commences and is performed from the bottom up in stages. The formation is injected with a weak, regular cement based suspension grout which cures slowly. The injected grout acts as a casing grout, void fill and consolidation grout. It slowly cures into a chalk like consistency. The grouting process continues upward in 10 foot vertical sections until the entire grout hole has been grouted to the surface.

Two grout holes are located within 5 to 6 feet of the existing 54-inch PCCP outside barrel wall. As the grouting process rises and approaches El. (-) 25 foot all three Utility Settlement Points on the 54-inch PCCP will be closely monitored for horizontal and vertical movement. It is anticipated that the weak grout slurry will penetrate and

consolidate the loose backfill placed in the wet over the 54-inch PCCP. The grout slurry may also penetrate potential voids and sandy soils under and around the existing 54-inch PCCP pipe trench. The cured grout will consolidate and stabilize the pipe foundation and trench.

During the grouting process from El. (-) 25 foot to El. (-) 15 foot the pumped grout flow rate through the 2-inch diameter feed pipe will be controlled and the three Utility Settlement Points will be closely monitored for any movement in the vicinity of the 54-inch PCCP. The 4 ton / L.F. of earth dead load over the 54-inch PCCP helps secure the pipe in the backfilled trench cut into the limestone formation against lateral and buoyant forces imposed by grouting process.

Secant Piles – After completion of the pregrouting program the next step in the launch shaft construction is the installation of 42-inch secant piles. The piles will be located in a 28' – 6" diameter concentric circle around the launch shaft. The outside barrel of the 54-inch PCCP is located with 2 to 3 feet of the 42-inch secant pile perimeter.

In the vicinity of the 54-inch PCCP the contractor may case the 42-inch secant pile into the Miami Limestone Formation to protect against soil collapse. The pregrouting program will have consolidated the existing soil. However, the casing is extra protection for the integrity of the 54-inch PCCP. The secant pile sequence of construction is as follows:

- Install casing and remove soil within the casing.
- Continue removing soil by the augering process in the Miami Limestone Formation. The augered hole may be filled with bentonite slurry to prevent collapse.
- Place tremie concrete into the bottom of the augered hole. Displace and recover the bentonite slurry with tremie concrete.
- Fill the 42-inch secant pile with tremie concrete to the surface.
- Remove the casing pipe.

The Contractor's means and methods may vary slightly from the above description.

The three Utility Settlement Points on the 54-inch PCCP will be monitored for horizontal and vertical movement during each sequence of the secant pile installation.

The combination of the pregrouting program, the use of steel casings during the secant pile augering process and the tremie concrete placement replacing bentonite slurry

minimize potential disturbance or creation of lateral forces that could impact the 54-inch PCCP integrity.

All subsequent construction activities associated with the launch shaft installation and 72 inch carrier pipe tunneling operation take place in the shaft and have no impact on the 54-inch PCCP pipe.

1. A.3. Install Steel Shaft

At the location of the 15 foot diameter steel shaft, temporary shoring will be used to facilitate excavation to the top of the limestone formation. In the vicinity of the 54-inch PCCP pipeline air or water jetting will be used to locate the top of pipe. The top of the limestone rock will be excavated and leveled. Backfill on top of the pipe will be removed. The 15 foot ID steel can shaft will be lowered in place. The shaft has two 24-inch diameter emergency spill suction fittings. When shaft is set in place, connect emergency spill suction piping to the two emergency spill pumps.

1. A.4. Excavate and Support Pipe in Steel Shaft

Existing backfill soil within shaft limits has been excavated in the wet to the top of the 54-inch PCCP. The top of the pipe is exposed.

Backfill material within the original pipe trench will be removed at selected locations along and outside of the pipe for sling connections. Where access is limited additional material will be removed to the shaft perimeter. At each location in sequence, bedding material under the pipe will be removed by jetting or other means and a sling passed under the pipe. The sling will then be connected to structural members at the top of the shaft. The sling will then be tightened to carry a predetermined load and support the 54-inch PCCP. The sling installation process will continue at the predetermined locations along the pipe. The 54-inch PCCP is now supported by slings and pipe bedding.

Bedding material under the pipe will be removed. The pipe Utility Settlement Points will be monitored for horizontal and vertical movement. Slings will be adjusted as necessary to distribute load and prevent settlement. The 54-inch PCCP consisting of one 20 foot pipe section is supported by slings underwater.

Removal of the soil above the pipe will reduce the dead load up to 4 tons per linear foot on the 54-inch PCCP. Reduced dead load will lower hoop compression stresses in the prestressed wire. The original pipe was installed in a trench underwater. The common practice at the time was to prepare the pipe bedding with crushed stone. Hence the pipe bedding should be fairly uniform with the occasional exception of a large rock or stone. Once the bedding material is removed the pipe will be supported on slings at predetermined locations. The pipe will act as a beam between the sling supports. The

weight of the submerged 54-inch PCCP is about 600 lb / L.F. Tension and compression bending stresses will be induced in the pipe.

Due to the reduced dead load, the combined loading with lower hoop compression and redistributed bending stresses in the pipe should not impair pipe integrity when under water.

1. A.5. Prepare Foundation System

With the pipe supported by slings excavation will continue around and under the pipe to a depth of 4 feet +/- . The pipe profile slopes at the Fisher Island location. Rock anchors will be installed parallel to the 54-inch PCCP in the wet within the shaft.

The openings under and around the pipe section at either end of the shaft will be grouted and sealed in place with concrete tremie plugs.

Pipe horizontal and vertical movement will be monitored during this operation.

The Contractor may modify the sequence of activities and the means and methods depending upon field conditions and the approved final design package.

1. A.6. Dewatering and Supporting Pipe in the Shaft

After placement of the rock anchors the following procedure will be followed:

- Divers clean 54-inch PCCP pipe surface and install two exterior tapping sleeves. Pump grout between saddle inner neck wall and the PCCP pipe surface.
- Place and secure covers over the two tapping sleeve neck and flange connections on top of 54-inch PCCP.
- Secure the pipe to resist flotation forces during the tremie concrete installation. Place concrete tremie inside the shaft and cover the 54-inch PCCP. Place concrete tremie / grout outside the 15 foot steel can as required to seal bottom of can.
- Slowly dewater the 15 foot steel can. Plug any leakage.

The dewatered PCCP pipe in the shaft is concrete encased. The possibility of a 54-inch PCCP pipe structural failure of the encased 20 foot pipe segment in the shaft due to redistributed hoop tension stress, wire breakage or bending moments is reduced to almost zero probability.

1. A.7. Tapping the 54-inch PCCP

After the shaft has been dewatered and internal leakage is stabilized, then the tapping subcontractor will enter the shaft. The tapping steps are as follows:

- Remove covers over two tapping saddles. Chip and remove any excess tremie concrete around saddles.
- The 8-inch tap will be made first. This will allow the Contractor to inspect and observe the condition of the exposed steel cylinder. If the cylinder is observed to be in poor condition then an 8-inch blind flange will be immediately installed on the tapping sleeve to prevent a potential sewage spill. The 8-inch tap is a low risk operation.
- Chip existing pipe concrete surfaces inside the 8-inch and 36-inch tapping sleeves outer neck fitting. Cut and remove exposed prestressed wires. Remove concrete layer and expose steel cylinder. Prepare steel cylinder surface and the strapped outer saddle neck.
- Add grout within the outer and inner saddle necks to seal tapping sleeve (2nd grout operation).
- Test each tapping saddle for watertightness.
- Make 8-inch and 36-inch taps.
- Install 54-inch line stop valve. The valve is open allowing flow in the 54-inch PCCP to the Virginia Key WWTP.

1. A.8. Piping Connection

The 54-inch DIP piping in the Launch Shaft connecting to the 54-inch fiberglass force main will be installed. Fittings to be installed are as follows:

- 54-inch connection coupling to fiberglass force main
- 54-inch DIP 90 degree bend and vertical piping in shaft
- 54-inch Tee
- 54-inch knife valve (closed) with a cap
- 54 x 36 DIP reducer

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- 36-inch gate valve
- 36-inch DIP (or steel) by-pass piping, valves and fittings between the shaft 36-inch line and the 36-inch tapping sleeve.

The piping connections at Fisher Island will be tested and accepted. All work will now proceed at the Government Cut site. The two emergency spill pumps will be relocated to the Government Cut site. The piping connection valving is in place to divert flow from the Fisher Island Launch Shaft force main connection into the 54-inch PCCP pipeline when required. On site pumps left in place at Fisher Island can pump up to 2 mgd sewage leakage in the 15 foot shaft into the 54-inch PCCP pipe through the 8-inch tap connection any clear groundwater leakage in either shaft can be pumped to the infiltration disposal system.

1. B. Force Main Retrieval Shaft Site in the Waters of Government Cut

1. B.1. Locate Existing 54-inch PCCP Force Main

The Force Main Retrieval Shaft site is located south of Miami Beach in the waters of Government Cut. Water depth is about 18 feet. The 54-inch PCCP force main is located within an existing 50 foot wide access and utility easement. As-Built drawings of the 54-inch PCCP locate the approximate pipe center line. The 54-inch PCCP centerline is about El. (-) 30.0 foot or lower. The goal of uncovering the 54-inch PCCP is to locate the pipe joints, confirm its location and top-of-pipe elevations. Location of pipe joints is critical as this determines the retrieval shaft positioning. Turbidity curtains will be installed around the perimeter of the excavation area. A spud barge with a crane will be mobilized. The mud line is about El. (-) 15 foot. Top of pipe is estimated at El. (-) 27.3 foot based upon As-Built Drawings. Approximately 12 foot of mud and backfill material must be removed to expose the top of the 54-inch PCCP pipe. Shoring may be used as required to maintain an open trench and hold the loose mud material. Within 5 to 6 feet of top of pipe the Contractor will use jetting (liquid or air) methods to probe ahead of the excavation to confirm the top of pipe. Upon confirming the top of pipe (within 1 or 2 feet) manual excavation and/or air lifts will be used to excavate the remaining soil. The top of the pipe will be exposed to the divers.

Divers will confirm pipe joint locations. If water visibility allows, the Contractor will observe the physical condition of the joints and top of pipe. In the event water visibility does not permit this, then divers will physically gage joint condition.

The PCCP is designed as a rigid pipe to handle internal operating pressures and external dead loads. Since the trench is not dewatered the internal operating pressure will remain unchanged. Removal of the soil above the pipe will reduce the dead load up to 2 tons per linear foot on the 54-inch PCCP. Reduced dead load associated with soil

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removal for locating joints will lower hoop compression and bending stresses in the pipe. It should not impair pipe integrity. Upon obtaining all pertinent information on the location, joints and top elevations of the PCCP, the Contractor will install and extend temporary markers (PVC pipe or other markers) to the surface. The pipe location will be tied into surface survey monuments. The open trench will be backfilled to existing grade.

Utility Settlement Points will be installed to the top of the pipe after the 54-inch PCCP is backfilled with soil. The Utility Settlement device consists of a 1-inch diameter epoxy fiberglass bar located inside a 3-inch PVC pipe both of which sit on top of the pipe.

The 54-inch PCCP pipe will be monitored for horizontal and vertical movement during the subsequent retrieval shaft and pipe shaft construction activities.

1. B.2. Retrieval Shaft Construction

The general sequence of construction for the working platform is as follows. The Contractors methods and means may vary in response to site condition, material availability and equipment limitations.

- A. Install platform piles.
- B. Install east of wall of sheeting to top of limestone.
- C. Install remaining portion of sheeting around shaft and steel framing for work platform.
- D. Backfill shaft construction area with flowable fill.
- E. Construct concrete deck for platform.
- F. Move crane to platform.

Pregrouting Program – Prior to installation of the retrieval shaft secant piles a grouting program will be conducted to fill any large voids and open features in the pervious limestone formation. This will minimize the loss of drilling mud and tremie concrete during the installation of the secant piles. The closest grout are located 11 to 12 feet from the existing 54-inch PCCP outside barrel wall. It is not anticipated that the injected grout slurry will reach or impact the 54-inch PCCP trench section.

During the grouting process the pumped grout flow rate through the 2-inch diameter feed pipes adjacent to the 54-inch pipe will be controlled. The Utility Settlement Points will be closely monitored for any movement in the vicinity of the 54-inch PCCP. The 2 ton / L.F. of earth dead load over the 54-inch PCCP helps secure the pipe position in the backfilled

trench cut into the limestone formation against lateral and buoyant forces imposed by grouting process.

Secant Piles – After completion of the pregrouting program the next step in the retrieval shaft construction is the installation of 42- inch secant piles. The outside barrel of the 54- inch PCCP is located with 10 to 11 feet of the 42-inch secant pile perimeter.

In the water the contractor will case the 42-inch secant pile into the Miami Limestone Formation to protect against loss of tremie concrete. The pregrouting program will have consolidated the existing soil. However, the casing is extra protection for the integrity of the 54-inch PCCP. The secant pile sequence of construction is as follows:

- Install casing into the upper Miami Limestone Formation.
- Continue removing soil by the augering process in the Miami Limestone Formation. The augered hole may be filled with bentonite slurry to prevent collapse.
- Place tremie concrete into the bottom of the augered hole. Displace and recover the bentonite slurry with tremie concrete.
- Fill the 42-inch secant pile with tremie concrete to the surface.
- Remove the casing pipe.

The Contractor's means and methods may vary slightly from the above description.

The Utility Settlement Points on the 54-inch PCCP will be monitored for horizontal and vertical movement during each sequence of the secant pile installation.

The distance between the 54-inch PCCP from the grouting and secant pile installations, the use of steel casings during the secant pile augering process and the tremie concrete placement minimizes potential disturbance or creation of lateral forces that could impact the 54-inch PCCP integrity.

All subsequent construction activities associated with the retrieval shaft installation and 72-inch casing pipe tunneling operation take place in the shaft and have no impact on the 54-inch PCCP pipe. Once the retrieval shaft and 72-inch casing pipe are installed, then the Contractor will install the 54-inch DIP connection piping, valves, couplings and fittings. The emergency spill pumps will be connected to the retrieval shaft piping.

1. B.3. Install 15 foot Diameter Steel Shaft

At the location of the 15 foot diameter steel shaft, temporary shoring will be used to facilitate excavation to the top of the limestone formation. In the vicinity of the 54-inch PCCP pipeline air or water jetting will be used to locate the top of pipe. The top of the limestone rock will be excavated and leveled. Backfill on top of the pipe will be removed. The 15 foot ID steel can shaft will be lowered in place. The shaft has two 24-inch diameter emergency spill suction fittings. When the shaft is set in place, connect the emergency suction piping to the two emergency spill pumps located on an adjacent working platform or barge.

The Utility Settlement Points will be monitored for horizontal and vertical pipe movement during the steel shaft placement process.

1. B.4. Excavate and Support Pipe in Steel Shaft

Backfill material within the original pipe trench will be removed at selected locations along the pipe perimeter for sling connections. Where diver access is limited additional material will be removed to the shaft perimeter. At each location in sequence, bedding material under the pipe will be removed by jetting or other means and a sling passed under the pipe. The sling will then be connected to structural members at the top of the shaft. The sling will then be tightened to carry a predetermined load and support the 54-inch PCCP. The sling installation process will continue at the predetermined locations along the pipe. The 54-inch PCCP is now supported by slings and pipe bedding.

Removal of the soil above the pipe will reduce the dead load up to 2 tons per linear foot on the 54-inch PCCP. Reduced dead load will lower hoop compression stresses in the prestressed wire. The original pipe was installed in a trench underwater. The common practice at the time was to prepare the pipe bedding with crushed stone. Hence the pipe bedding should be fairly uniform with the occasional exception of a large rock or stone. Once the bedding material is removed the pipe will be supported on slings at predetermined locations. The pipe will act as a beam between the sling supports. The weight of the submerged 54-inch PCCP is about 600 lb / L.F. Tension and compression bending stresses will be induced in the pipe.

Due to the reduced dead load, the combined loading with lower hoop compression and redistributed bending stresses in the pipe cylinder should not impair pipe integrity when under water. During this operation the two emergency spill pumps are connected to the 15 foot diameter shaft. If a spill occurs then the pumps can be activated and flow pumped to the Fisher Island 36-inch connection to the 54-inch PCCP pipe.

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1. B.5. Prepare Foundation System

With the pipe supported by slings excavation will continue around and under the pipe to a depth of 4 feet +/- . The pipe profile slopes at the Government Cut location. Rock anchors will be installed parallel to the 54-inch PCCP in the wet within the shaft.

The openings under and around the pipe section at either end of the shaft will be grouted and sealed in place with concrete tremie plugs.

Pipe horizontal and vertical movement will be monitored during this operation.

The Contractor may modify the sequence of activities and the means and methods depending upon field conditions and the approved final design package.

1. B.6. Dewatering and Supporting Pipe in the Shaft

After placement of the rock anchors the following procedure will be followed:

- Divers clean 54-inch PCCP pipe surface and install two exterior tapping sleeves. Pump grout between saddle inner neck wall and the PCCP pipe surface.
- Place and secure covers over the two tapping sleeve neck and flange connections on top of 54-inch PCCP.
- Secure the pipe to resist flotation forces during the tremie concrete installation. Place concrete tremie inside the shaft and cover the 54-inch PCCP. Place concrete tremie / grout outside the 15 foot steel can as required to seal bottom of can.
- Slowly dewater the 15 foot steel can. Plug any leakage.

The dewatered PCCP pipe in the shaft is concrete encased. The possibility of a 54-inch PCCP pipe structural failure of the encased 20 foot pipe segment in the shaft due to redistributed hoop tension stress, wire breakage or bending moments is reduced to almost zero probability.

1. B.7. Tapping the 54-inch PCCP

After the shaft has been dewatered and internal leakage is stabilized, then the tapping subcontractor will enter the shaft. The tapping steps are as follows:

- Remove covers over two tapping saddles. Chip and remove any excess tremie concrete around saddles.

- The 8-inch tap will be made first. This will allow the Contractor to inspect and observe the condition of the exposed steel cylinder. If the cylinder is observed to be in poor condition then an 8-inch blind flange will be immediately installed on the tapping sleeve to prevent a potential sewage spill. The 8-inch tap is a low risk operation.
- Chip existing pipe concrete surfaces inside the 8-inch and 36-inch tapping sleeves outer neck fitting. Cut and remove exposed prestressed wires. Remove concrete layer and expose steel cylinder. Prepare steel cylinder surface and the strapped outer saddle neck.
- Add grout within the outer and inner saddle necks to seal tapping sleeve (2nd grout operation).
- Test each tapping saddle for watertightness.
- Make 8-inch and 36-inch taps.
- Install 54-inch line stop valve. The valve is open allowing flow in the 54-inch PCCP to the Virginia Key WWTP.

1. B.8. By-Pass Operation

The 54-inch DIP piping in the Retrieval Shaft has been installed under step 1.B 2. The fittings are listed in 1.A.8. The vertical 54-inch DIP was connected to a 54 x 36 reducer fitting and a 36-inch gate valve. The emergency spill pumps are already connected to the 54-inch piping and 15 foot diameter shaft. In the event of a sewage spill in the 15 foot shaft, the emergency pumps can transfer up to 28 mgd of flow into the Retrieval Shaft piping, then through the 54-inch fiberglass carrier piping to the Government Cut 36-inch tap connection and on to the Virginia Key in the 54-inch PCCP pipe.

A 36-inch piping connection from the 36-inch tap to the Retrieval Shaft 36-inch/54-inch piping will be installed. Once this piping connection is tested, then by closing the 54-inch line stop valve in the 54-inch PCCP, wastewater flow from the City of Miami Beach service area can be diverted through the new 54 carrier pipe to Fisher Island and back into the 54-inch PCCP pipe to the Virginia Key WWTP.

1. B.9. Piping Connections

- At Government Cut and Fisher Island open the 36-inch diameter isolation valves at the respective 36-inch tapping connections.

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- Next close the 54-inch line stop valves in the 54-inch PCCP pipeline at both locations.
- Wastewater flow is now diverted through the new 54-inch fiberglass carrier pipe to Fisher Island. Flow has been shut off through the existing 54-inch PCCP under Government Cut.

1.B. 10. Government Cut 54-inch Piping Connection

At Government Cut flow is diverted around an isolated section of the 54-inch PCCP pipe. The isolated section will include one full pipe segment (20 foot laying length) and portions of the adjacent pipe segments. Total length of the isolated segment is between 25 to 30 feet. Wastewater will be pumped out of the segment through the 8-inch tapped connection and pumped into the active 36-inch by-pass line. Next chlorine solution will be pumped into the 54-inch PCCP isolated segment to disinfect the pipe interior.

The dry isolated PCCP pipe segment (20 foot laying length) will be removed. New 54-inch piping and fittings will tie into the existing 54-inch PCCP open joint, extend into the launch shaft, connect to the 54-inch DIP piping and 54-inch fiberglass carrier pipe in the tunnel.

During the pipe connection operation any leakage from the 54 line stop valves will be collected and sewage pumped into the 36-inch by-pass line and the active 54-inch PCCP line flowing to Virginia Beach WWTP.

In order to make the final piping connection between the 54-inch PCCP and the 54 DIP piping in the shaft, the shaft wall (secant piles, grout and steel inner liner) must be breached. This will allow the final 54-inch mechanical piping connection. It is possible that once the wall is breached that excessive water will fill and flood the shaft and cofferdam. If the leakage can not be controlled then the Contractor must be prepared to make the piping connection under water with divers.

1.B. 11. Fisher Island 54-inch Piping Connection

Once the Government Cut 54-inch piping connection is tested and accepted, then the two emergency spill pumps will be relocated to Fisher Island. The same 54-inch piping connection procedure as outlined in 1.B.10 will be followed at Fisher Island.

1.B. 12. Demobilization

Shafting will be removed and the sites backfilled.

2.0 Construction Risk Analysis

The integrity of the existing pipeline is at risk during each of the above operations and any damage to the existing pipeline could cause wastewater spills to occur. Although the pipeline was reported to be in good condition when last inspected in 2000, it may have deteriorated due to internal or external corrosion or contain damaged prestressed wires or steel cylinder. The construction sequence steps along with possible failure modes which could occur during execution of the work were reviewed.

The analysis indicated that the degree of risk can be mitigated by utilizing conservative construction procedures. However, no combination of construction activities will mitigate all risks involved and the condition of the existing pipeline is critical to a successful spill free operation.

The high risk operations include:

- Locating the force main
- Placing the 15 foot steel shaft on the top of limestone adjacent and over the pipe
- Supporting the pipe on slings within the 15 foot shaft
- Excavating under the pipe and installing rock anchors
- Tapping the pipeline

These operations must be performed carefully to reduce construction risks to an acceptable level.

3.0 Pipeline Failure Modes

Pipeline damage may result from a number of construction events. Table 3.1 presents the five potential pipe failure modes. The purpose of contingency planning is to identify the possible failure modes and to prepare effective methods of response.

Table 3.1
Potential Pipeline Failure Modes

Leaking Through Open Joints
Shearing at a Pipe Joint
Shear Occurring in the Pipe Barrel
Longitudinal Crack in the Pipe Wall
Hole Punched in Wall of the Pipe

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3.1 Leaking through Open Joints

The pipe joints are bell and spigot type with a gasket in the joint to provide a watertight seal. Over time, as the pipe settles, the joint could deflect and open. The pipeline joint could also leak due to internal and external corrosion. The rate of leakage from this type of failure would normally be minor having minimal impact on the operation of the force main.

3.2 Pipe Shearing at a Pipe Joint

The weakest point for a reinforced concrete pipe is at the joint. The wall thickness for each pipe segment at the joint is less than the thickness of the pipe barrel. Failure usually is caused by settling of the pipe due to loss of support under the pipe. Since the pipe support is not continuous across the unsupported segment, the joint deflects causing cracking and spalling of the groove. This could result in a rupture of the pipe wall. Under a worst case scenario, the adjacent pipe segments are displaced from each other with substantial leakage. The PCCP has steel joints which minimizes potential joint failure.

The loss of support under the pipe could occur during the following operations:

- Initial excavation to install slings under the pipe,
- Excavation under the pipe and the dead load of the pipe and fluid are transferred to the slings and pipe support system. The PCCP will be underwater.

3.3 Shear Occurring in the Pipe Barrel

A pipe failure as a result of the pipe shearing along the barrel would be due to a loss of support. Since the pipe barrel with the steel cylinder is the strongest structure element of the pipe segment, a catastrophic failure of the pipe due to loss of the support system would be the most likely cause of this type of failure. The pipe wall could be also sheared as a result of a heavy object falling, or being dropped, onto the pipe between the sling supports causing the pipe to shear. Only about a 15 to 20 foot pipe span (one pipe segment) will be supported on slings underwater.

3.4 Longitudinal Crack in the Pipe Wall

A longitudinal crack in the pipe wall would generally result from overstressing the pipe with either internal or external bending or movement loads. Differential settlement of the pipe could also cause bending loads and stress. Internal corrosion could also be a factor. The external loads consist of a combination of the dead load represented by the soil and water. The live loads are represented by traffic and construction activity above the pipe. These loads are carried by the pipe wall working in conjunction with the pipe bedding. The pipe wall and bedding could be overstressed resulting in the pipe section

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being forced out of round. Longitudinal stress cracks would develop as a result. The existing PCCP is subject to soil backfill and fluid dead loads.

3.5 Hole Punched in the Wall of the Pipe

This failure would be a result of a construction accident. There will be a number of operations being performed in close proximity of the pipe which could result in a hole punched in the pipe wall. A few of the more obvious activities would be the handling of the steel shafts, installing and removing the steel beams for the pipe support system and excavating the trench.

4.0 Repair Alternatives

Two types of pipe repairs are available; repair clamps and the replacement of pipe segments using a repair kit consisting of adapters, a short piece of pipe and a closure piece. A repair clamp is a commercially available product as shown in Figures 4-1A, 4-1B and 4-2 designated as Types I and II or a fabricated clamp as shown in Figure 4-3 designated as Type III. The repair clamp is placed around the pipe and drawn up tight to compress the gasket material around the pipe to stop the flow of water. It has an advantage since it does not require the pipeline to be taken out of operation to be installed. The Type I clamp does not add structural integrity to the pipe. All permanent repair clamp installations should be encased in concrete. However, they could be used as a temporary fix if the leakage can be managed and the defective pipe will be in the portion of the pipe to be abandoned after the completion of construction. A repair clamp can be used on defective pipe joints if the pipe is in alignment, for repairing longitudinal cracks or for repairing holes in the pipe wall as a temporary fix if the clamp can cover the entire defect.

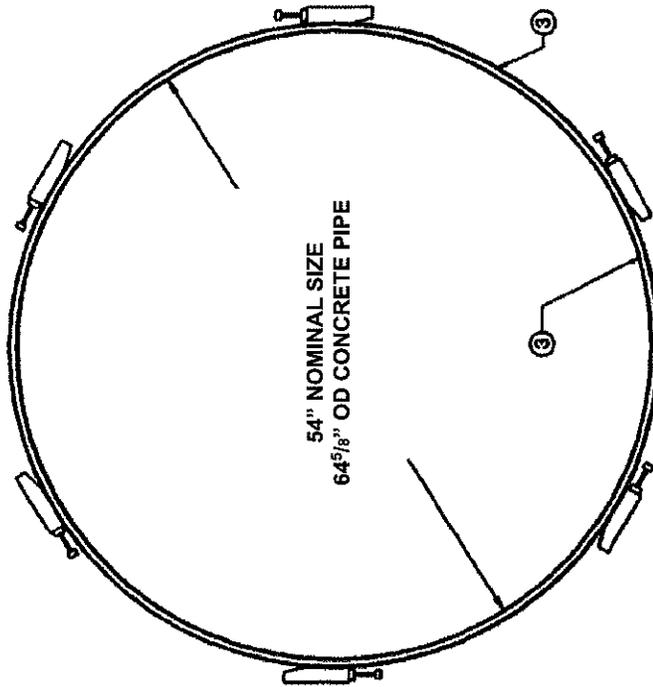
The replacement of pipe segments will require the shutdown of the force main. The defective pipe(s) will be removed and replaced by the new components. See Figure 4-4 for installation sequence. This repair alternative will be required when a joint or barrel is misaligned due to pipe shear forces, a hole is in the pipe or any other case where the pipe defect cannot effectively be mitigated with a pipe clamp.

5.0 Available Repair Resources

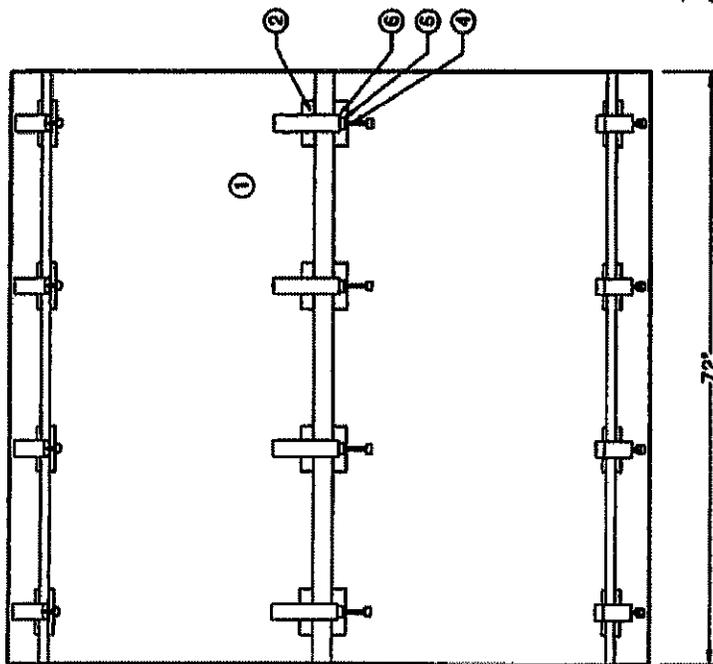
5.1 MDWASD Resources

MDWASD has taken steps to obtain and have an inventory of repair materials and equipment available for immediate use in the event of an emergency. The emphasis of the repair plan is to ensure that the damaged force main is repaired and placed back into reliable service as soon as possible. The following 54-inch diameter emergency pipe repair components, listed in Table 5.1, are available at the Department's Southwest Wellfield site.

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- 1 - SHELL
- 2 - ARMOR PLATE
- 3 - FULL CIRCLE GASKET
- 4 - STUD BOLT
- 5 - LUBRICATED NUT
- 6 - FRICTION WASHER



NOTES:
 1. SHELL THICKNESS = 20 GA (0.35)
 2. GASKET ENDS ARE TAPERED TO PROVIDE A 'SLIDE' JOINT

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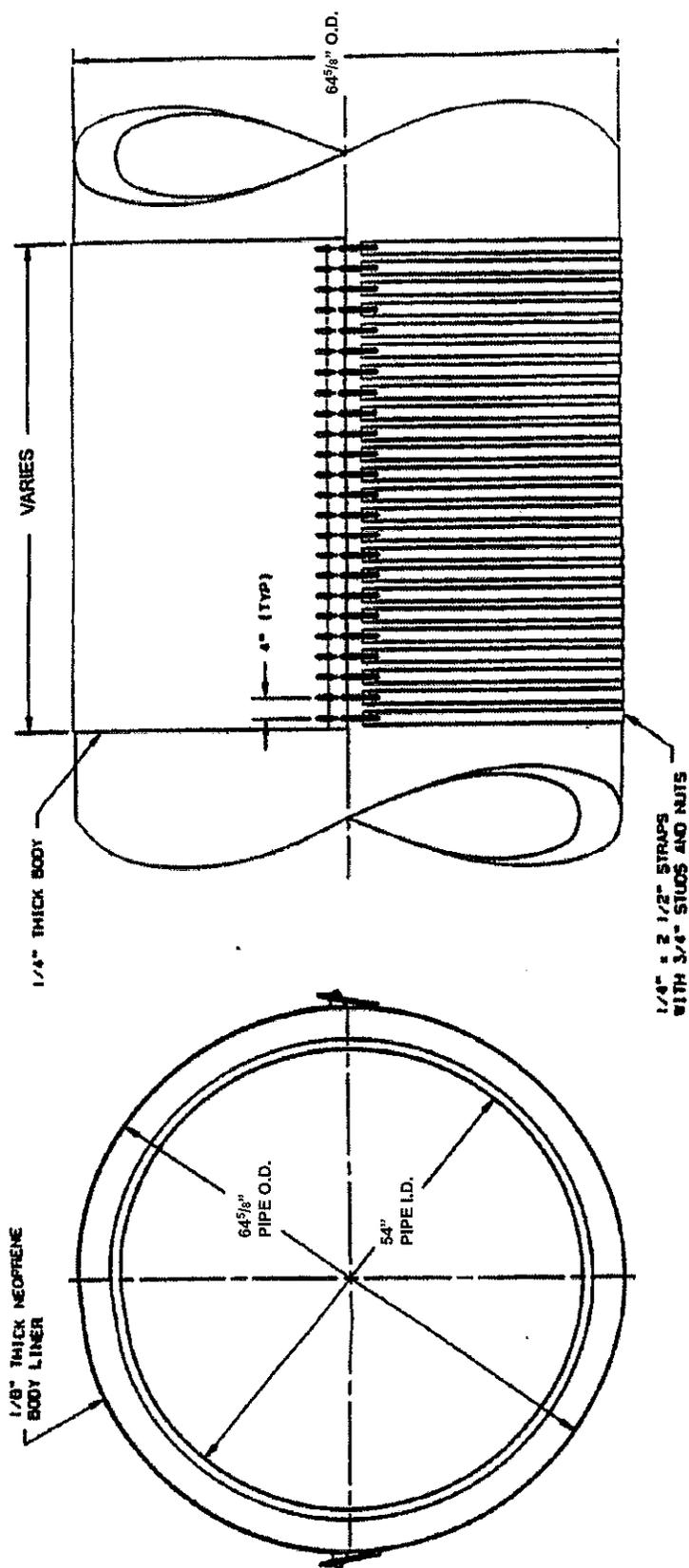
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Figure 4-1A
 Repair Clamp Type I CV

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48" WIDE AND 96" WIDE REPAIR CLAMPS
AVAILABLE AT MIAMI-DADE CENTRAL DISTRICT WWTP

- NOTES:
- 1) CONTRACTOR TO VERIFY PIPE OUTSIDE DIAMETER.
 - 2) SADDLE TO BE FABRICATED OF 316 STAINLESS STEEL.
 - 3) DESIGNED FOR 100 PSI WORKING PRESSURE.

Figure 4-1B
Repair Clamp Type I

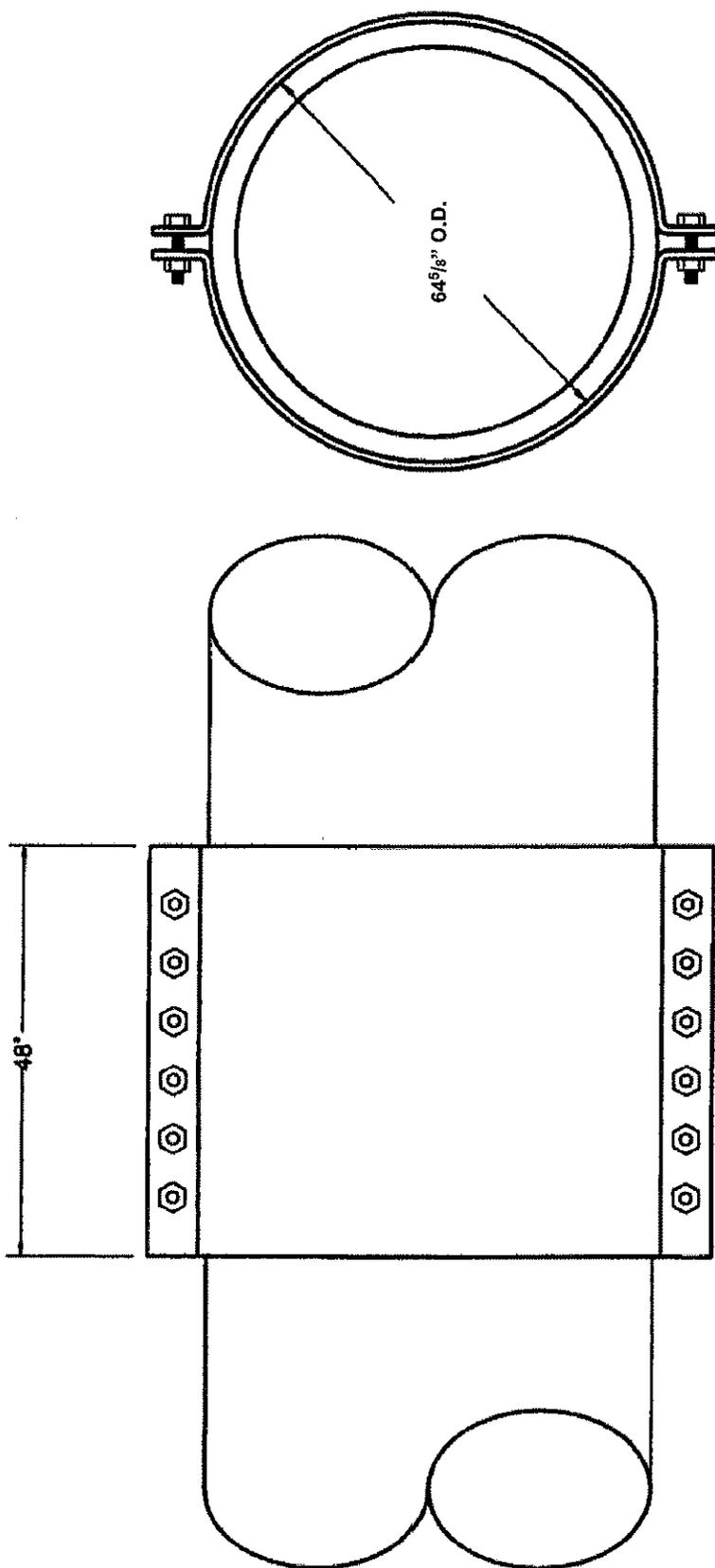
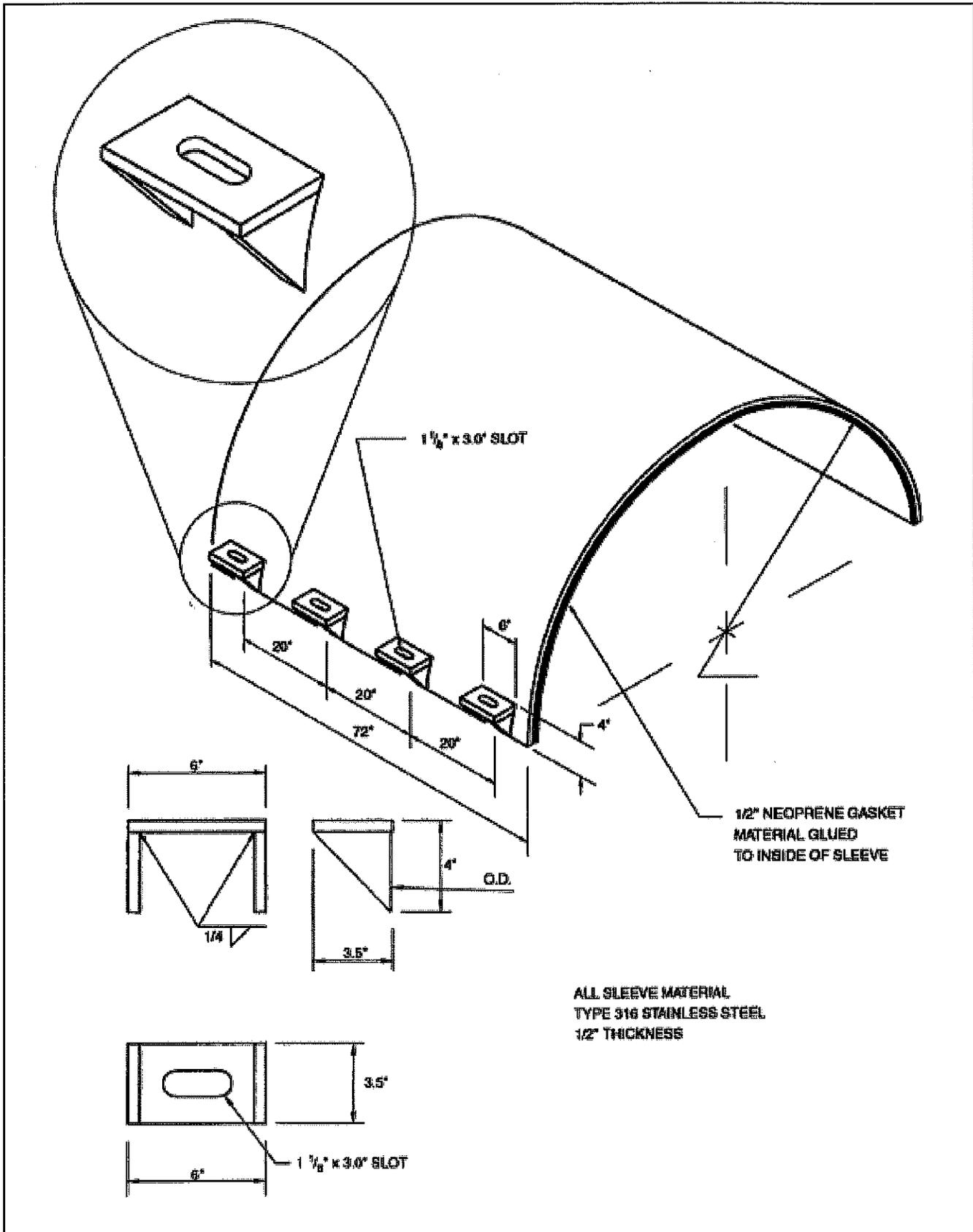


Figure 4-2
Repair Clamp Type II

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Figure 4-3
Repair Clamp Type III

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Seven steps to replacing pressure pipe sections

1. Excavate area around the damaged section of concrete pressure pipe to length.



2. Cut or break out a section from the damaged pipe and remove both the bell and spigot ends. The concrete can be broken by the backhoe teeth and the cylinder cut with an oxy-acetylene cutting torch — or cutting can be done by using a carbide-tipped circular saw or pneumatic spade. Remove the damaged section carefully to avoid harming the adjoining sections.



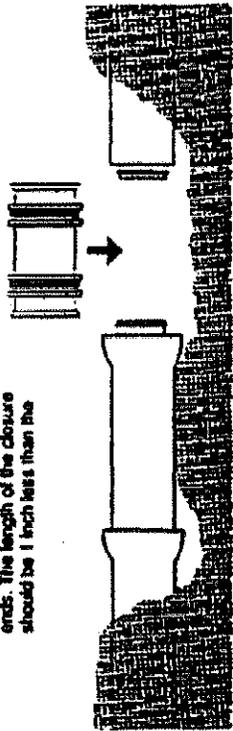
3. Pre assemble a double-spigot adapter into the bell end of the short. If the damaged pipe section was a bevel, install a tub- or half-bevel adapter on the spigot end of the short.



4. Clean off the bell and spigot joint areas of the adjoining pipe sections. Install the double-spigot adapter in the short. Lubricate and place a new gasket in the spigot groove of the short. Lay the short carefully to avoid damage to the existing joint surfaces.



5. Pressslide the follower rings, gaskets, and bell rings on the closure barrel, and measure the clear distance between the spigot ends. The length of the closure should be 1 inch less than the



clear distance. Cut the closure, if necessary, using a carbide blade saw.

6. Lower the closure carefully and align it with the double-spigot adapter and the spigot of the adjoining pipe section. Install the closure as shown using a come along to pull the bell rings over the spigots. Roll the



15/16-inch closure gaskets into position and compress them with the follower rings by tightening the bolts (for a welded closure, see the detail drawing on Page 10)

7. Place a minimum of two struts between the follower rings. When the struts are in place, turn the water back on and pressurize the line while checking for leaks. Tighten the bolts further, if required. When the line is back in service, encase the closure area in concrete to provide corrosion protection. Then disassemble and grade the other joint.

STRUT



Figure 4-4
Price Brothers Pressure Pipe Repair Section

Repair materials for all but a more catastrophic rupture, such as several simultaneous breaks, are available.

Table 5.1
Inventory of MDWASD Emergency Repair Equipment

Closures	
Quantity	Length
8	54" x 6'
7	54" x 8'
1	54" x 38"
(Glands use 5/8" hot dipped galvanized bolts)	

Pipe	Length	Material
31	54" x 20'	PCCP
4	54" x 20'	DI
4	54" x 13'	PCCP (one with MH)
1	54" x 11'	PCCP
1	54" x 10'	PCCP
7	54" x 5'-6"	PCCP
2	54" x 5-1/2'	DI

Sleeves	
Quantity	Description
5	MJ Solid

Adapters	
Quantity	Description
2	PCCP Bell x PE DI
2	PCCP Spigot x PE DI
8	PCCP Spigot x PCCP Spigot
1	PCCP Bell x PCCP Bell
1	PCCP Spigot x Flange

Repair Clamps	
Quantity	Description
5	Stainless Steel (Need Straps)

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In addition to providing materials and equipment, MDWASD will have underwater inspectors who may be used to inspect and assess the extent of the damage to the force main at the direction of the Response Manager.

5.2 Contractor Supplied Resources

Ric-Man Construction will provide two 54-inch emergency repair clamps to facilitate pipeline repairs.

The equipment which the contractor has mobilized should be sufficient to address probable failures previously discussed. The Contractor will be mobilized on-site to perform the work. Ric-Man Construction will have a number of major and minor pieces of equipment on site which may be used to make repairs. A list of equipment which may be required to do the various repair tasks is presented in Table 5.2.

**Table 5.2
Contractor Supplied Equipment**

Lifting Crane	Diving Gear	Air Compressor
Payloader	Work Lights	Generator
Bulldozer	Warning Lights	Air Lift

6.0 Contingency Mobilization During Spill Event

The above sequence provides for any spillage to be contained in the shafts and pumped to the CDWWTP through the by-pass pump-out connection. If the existing force main is damaged during the exposing, supporting, or tapping operations, and the leakage is significant, Ric-Man will immediately stop all work, notify the CM/IT, all regulatory agencies, and the City of Miami Beach and immediately address the pipeline repair.

If, through water sampling, the regulatory agencies determine that the leakage is substantial and cannot be contained in the shafts and handled by the emergency pump system operation, the Unpermitted Discharges Contingency Plan – 2011 Update (Exhibit 11) will be implemented by Department Forces and City of Miami Beach personnel. Under the Plan, the Miami Beach Outfall would be activated and the existing Government Cut force main will be isolated for repairs. Ric-Man will then mobilize and monitor the ocean outfall discharge water until the PCCP pipeline repairs are completed. Rerouting of any wastewater flows to the ocean outfall will only be permitted in the event of an unforeseen catastrophic failure of the pipeline integrity to carry the required flow.

Any collected sewage by Ric-Man will be transmitted or hauled to the CDWWTP for treatment.

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Appendix E-9

Waste Management Plan

Solid waste, if not properly controlled and disposed of, can be unsightly and cause human safety and health concerns. Ric-Man will adopt processes that generate the least amount of waste and will minimize the impact to the environment due to waste production from construction activities. It is Ric-Man's intention to dispose of all waste products in an environmentally safe and lawful manner, consistent with the provisions set forth by the US EPA, FDEP and DERM. This Plan includes proposed methods for waste salvage, reuse, and disposal, including the name of applicable salvage, reuse and disposal subcontractors and/or facilities.

Waste materials that are generated shall be salvaged for reuse and/or recycled to the greatest extent practicable. **Appendix E-10** includes the Project Recycle Plan which is an element of the Waste Management Plan.

Recycling and waste bin areas will be kept neat and clearly marked to avoid comingling of materials. Household solid waste includes paper cups, paper plates, paper towels, used office paper, cardboard boxes, cardboard container, etc. Such waste is placed in receptacles leased from an approved waste recycler.

Domestic waste from temporary office quarters will be gathered on a regular basis and stored in closed containers until recycled or disposed. Food waste will be stored in a manner that ensures wildlife will not be attracted and will be removed from the site on a daily basis.

Industrial solid waste, such as scrap steel, metals, lumber, rubber, etc. will be handled by an FDEP approved scrap dealer to haul the scrap materials. Any used lead oxide batteries will be taken to an FDEP approved battery recycler. Nickel cadmium batteries will not be used. On-site temporary disposal areas for surplus material will be designated and will be located a minimum of 50 feet from a wetland or watercourse. All surplus materials, rubbish, waste materials, and construction debris will be removed from the site upon completion of construction of the Project.

The following companies will handle waste management services for the project:

Waste Management, Inc. <i>Medley Landfill</i> <i>9350 NW 89th Ave., Miami</i> <i>(305) 883- 7670</i>	Domestic and Solid Waste Disposal, Salvaging
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Miami Waste Paper 2120 NW 14th Ave, Miami (305) 325-0860	Paper/Cardboard Recycling
River Recycling 2610 NW 32nd Ave., Miami (305) 633-1050	Scrap Recycling

Waste material will not be dumped on-site. If waste materials are inadvertently dumped, Ric-Man will immediately act to have the dumped material cleaned up and removed.

Material purchase agreements will include a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable materials, that they reduce the amount of packaging, and that packaging be taken back for reuse or recycling. Subcontractors will require the same provisions in their purchase agreements.

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Appendix E-10

Recycle Plan

An important goal of the Ric-Man Team is to recycle used construction materials for beneficial reuse. Ric-Man's recycling plan outlines the materials chosen to be recycled on or off-site and includes methods employed to recycle those materials, identification of off-site receivers of those materials, details the ultimate use of these materials by the receiver, and includes methods that will be used for separating recyclable waste, if any.

Domestic solid waste includes paper cups, paper plates, paper towels, used office paper, cardboard boxes, cardboard container, etc. Such waste will be placed in receptacles leased from an approved waste recycler. Aluminum, tin, and plastic will be accumulated and stored in separate leased approved waste recycler receptacles.

Industrial solid waste, such as scrap steel, metals, lumber, rubber, etc. will be hauled off by an FDEP approved scrap dealer. Any used lead oxide batteries will be taken to an FDEP approved battery recycler. Nickel cadmium batteries will not be used.

The following companies will provide waste recycling for the project:

Waste Management, Inc. <i>Medley Landfill</i> 9350 NW 89th Ave., Miami (305) 883- 7670	Waste Recycling and Salvaging
Miami Waste Paper 2120 NW 14th Ave, Miami (305) 325-0860	Paper/Cardboard Recycling
River Recycling 2610 NW 32nd Ave., Miami (305) 633-1050	Scrap Recycling
World Petroleum 4687 Orange Dr, Davie (954) 327-0724	Oil and Oily Rags Recycling

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1.0 Waste Oil

Once used, crankcase oil will be pumped from the engines to a waste oil holding tank or pumped to 55 gal. drums and sealed. Drums of waste oil awaiting disposal will be stored until transferred to an approved recycler. Ric-Man exclusively uses recyclers registered with the FDEP and EPA. All approved recyclers carry the necessary DOT permits for transporting and hauling waste oil. The recyclers are also members of various spill response associations throughout the United States.

Used drums will be returned to the oil distributor through a buy back program. Appropriate oil transfer procedures will be followed when pumping out the waste oil holding tanks to the approved recycler. Lubricants and rags will also be stored in a labeled drum and recycled at an approved facility.

2.0 Spoils

This project will generate an excess amount of suitable spoil material. Beneficial re-use of spoil is to be given priority. Where silica content and organic content are high and deleterious materials are prevalent, spoil re-use as aggregate will not be permitted and the material will be sent to a landfill as cover material.

Where practicable, the stockpiling and re-use of non-contaminated, non-hazardous on-site suitable excavated materials will be employed. Ric-Man will use off-site clean fill material only when suitable on-site sources are exhausted.

On-site spoil material will be maximized by:

- Preventing loss of soil during construction through stormwater run-off and/or wind erosion.
- Preventing sedimentation in stormwater and receiving water bodies.
- Preventing air pollution by dust and particulate matter by making provisions to control.
- Using only environmentally-acceptable soil conditioners

3.0 Concrete

The use of fly ash in concrete shall meet product specifications, as available, listed in the EPA's Comprehensive Procurement Guideline for Procurement of Products containing Recovered Materials 65 Fed. Reg. 3,070 (final January 19, 2000 codified at 40 CFR 247.1). Fly ash from facilities where hazardous waste materials are included in the fuel mix used to create the ash will not be used. Ric-Man will record Pulverized Fly Ash and Ground Blast

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ENVIRONMENTAL COMPLIANCE PLAN

Furnace Slag contents in concrete and grouts in the Environmental Performance Records. The use of recycled scrap steel content in reinforcing bars will also be maximized.

4.0 Metals

Structural Steel Framing will maximize the use of recycled steel. Likewise, steel studs, runners, and channels for framing will maximize recycled steel content.

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