Amici Engineering Contractors, LLC

Bid Contact **Christopher Lazzari**
chrisl@amiciec.com
Ph 954-895-0741

Address **10621 SW 139th Street**
Miami, FL 33176

Item #	Line Item	Notes	Unit Price	Qty/Unit		Attch.	Docs
12470-416--01-01	RE-BID Design Build Pump Station B-4 Redundant Force Main	**Supplier Product Code:**	**First Offer - $2,848,498.88**	1 / lot	**$2,848,498.88**	**Y**	**Y**

Supplier Total **$2,848,498.88**

Amici Engineering Contractors, LLC

Item: **RE-BID Design Build Pump Station B-4 Redundant Force Main**

Attachments

RFP 12470-416 Amici - 1 of 2 - Proposal Package.pdf

RFP 12470-416 Amici - 2 of 2 - Prelim Plans.pdf

RE-BID Design-Build Pump Station B-4 Redundant Force Main P12567 RFP# 12470-416

AMICI ENGINEERING CONTRACTORS

BidSync

Table of Contents

1. Proposal Contact Person 3

a 5
Intr Narra e Le er 6
State Incorpora Documents 7
Licenses 8
Insurance Requirements 9
Previous Performance Bond 10
Key Personnel 15
Workload of the Firm 16
Similar Past Projects 17

a eam 28
Sta sheets ..... (see A achment D - Resumes)
Subconsultants 29
Project Manager 34
Organiza Chart 35
Resumes ..... (see A achment D - Resumes)
Sta Workload 36

4. Project Methodology & Approach 37

5. References 48

6. Price Proposal Form 60

7. Contract Forms 64
Statement of a a
Non-Collusion Statement
Contract Payment Method
Sample Insurance ate
Non-Discrimina a Form
Trench Safety
CITB Prime Contractor Iden a
E-Verify Statement
Acknowledgment of Addenda
Proposal Bond

A achment A - Design Plans (separate digital a achment in BidSync) 80
A achment B - Project Schedule 82
A achment C - Pipe Stringing/MOT Plans 84
A achment D - Team Resumes 90
A achment E - Project Experience Matrices 127
A achment F - Drill Bore Calcula 134

Section 1

Proposal Contact Person

1 – Proposal Contact Person

The Amici Team's Point of Contact for this proposal will be as follows:

Legal name of proposer(s):
Amici Engineering Contractors, LLC

Federal employee iden a
47-4185194

Loc ess:
10621 SW 139 Street
Miami, FL 33176

ess:
28947 State Road 54
Wesley Chapel, FL 33543

Contact person's name:
Juan Barreneche, PE

Title:
Project Manager & Managing Member
of Amici Engineering Contractors, LLC

Email address:
juanb@amiciec.com

Phone number:
(954) 650-4699

Fax number:
(754) 264-8350

Section 2

Qualifications of the Firm

Introduction Narrative Letter

February 17th, 2021

Ms. Tanisha Boynton, Senior Procurement Specialist
City of Fort Lauderdale
100 N. Andrews Avenue, 6th Floor
Fort Lauderdale, FL 33301

RE: RFP 12470-416 - RE-BID Design-Build Pump Sta B-4 Redundant Force Main P12567

Dear Mrs. Boynton and Evalua ee Members:

Amici Engineering Contractors, LLC (Amici) appreciates the opportunity to present this a package and bid proposal in compliance with the Request for Design-Build Services for the referenced project within the City of Fort Lauderdale (City). Amici's Design-Build Team has more than 10 years of experience working together within the South Florida region and is familiar with and understands the technical and physical challenges associated with the cons of service infrastructure within the City. Our experience, ally in the cons of infrastructure trenchless installa methods such as those proposed for this project, uniquely our team for this project which requires a knowledgeable and experienced team of professionals ready to begin work immediately. For that reason, Amici is proud to present the Amici Design-Build Team composed as follows Amici Engineering Contractors, LLC as the Design-Build Firm & Lead Constructor and Aluces Corpora as the Lead Engineering Design Consultant.

Amici is a full-service civil contractor ering services to private and governmental en throughout the State of Florida. Our mission is centered on helping our clients successfully construct their infrastructure projects for future genera while minimizing impacts to all stakeholders. Our wide, specialized, and in-depth experience surpasses that of our compe and enables us to construct complex infrastructure projects a variety of tr and/or innova e cons methods. Amici's managing members have extensive experience in the cons of water and sewer transmission mains; water dis and sewer c systems; trenchless installa methods such as horizontal dir drilling (HDD) and jack-and-bore; drainage systems; pump sta roadwork; etc. Amici's managing members have over 75 years of combined experience and are highly respected within the engineering contr industry. We have the experience required to achieve project goals e tly, on and within budget. At Amici, we pride ourselves on ge the job done right for all our clients.

Our team's Lead Engineering Design Consultant, Aluces Corpora (Aluces), is a y c engineering specializing in water and sewer, drainage, roadway, and civil-site design. Their sta is uniquely to successfully service clients in a of engineering roles where they emphasize their engineering e responsive communica and commitment to their clients. Aluces' formula for success is based on combining strong project management; technical hands-on design and cons experience; and well-established quality control procedures. Their lead sta has over 80 years of combined engineering experience within the South Florida region and over 50 years of combined water and sewer y design experience in all types of water and sewer service infrastructure projects such as water and sewer transmission mains; water dis and sewer c systems; pump sta and trenchless installa methods. Their sta is ready to serve clients with the engineering e they need today to design for the future.

For this project, the Amici Design-Build Team has performed an analysis of this project's key components and has conceptually developed and provided a detailed cons plan to op e cons minimize exis impacts; reduce the impacts to residents and visitors; and provide safe pedestrian, cyclist, and vehicular tra w in the area during cons As an authorized representa e of the Amici Design-Build Team, I a and commit to the City of Fort Lauderdale that if chosen as the selected Design-Builder, Amici will undertake the project in accordance with the City's terms and c and provide the City of Fort Lauderdale with the level of service expected from the Amici Design-Build Team.

Sincerely,

Juan Barreneche, PE
Amici Engineering Contractors, LLC

2 – Qualifications of the Firm

Corporate Info & Licenses

Amici Engineering Contractors, LLC

AMICI ENGINEERING CONTRACTORS

State of Florida
Department of State

I certify from the records of this office that AMICI ENGINEERING CONTRACTORS LLC is a limited liability company organized under the laws of the State of Florida, filed on May 11, 2015.

The document number of this limited liability company is L15000085955.

I further certify that said limited liability company has paid all fees due this office through December 31, 2020, that its most recent annual report was filed on March 18, 2020, and that its status is active.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Third day of October, 2020

Secretary of State

Tracking Number: 8223539755CU

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

2 – Qualifications of the Firm

Corporate Info & Licenses

Amici Engineering Contractors, LLC

Ron DeSantis, Governor

Halsey Beshears, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

BARRENECHE, JUAN JOSE
AMICI ENGINEERING CONTRACTORS LLC
10621 SW 139 ST
MIAMI FL 33176

LICENSE NUMBER: CUC1224698
EXPIRATION DATE: AUGUST 31, 2022
Always verify licenses online at MyFloridaLicense.com

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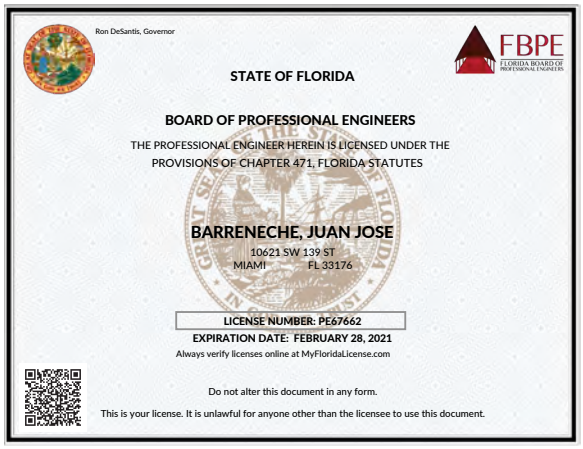

Ron DeSantis, Governor

FBPE FLORIDA BOARD OF PROFESSIONAL ENGINEERS

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

BARRENECHE, JUAN JOSE
10621 SW 139 ST
MIAMI FL 33176

LICENSE NUMBER: PE67662
EXPIRATION DATE: FEBRUARY 28, 2021
Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

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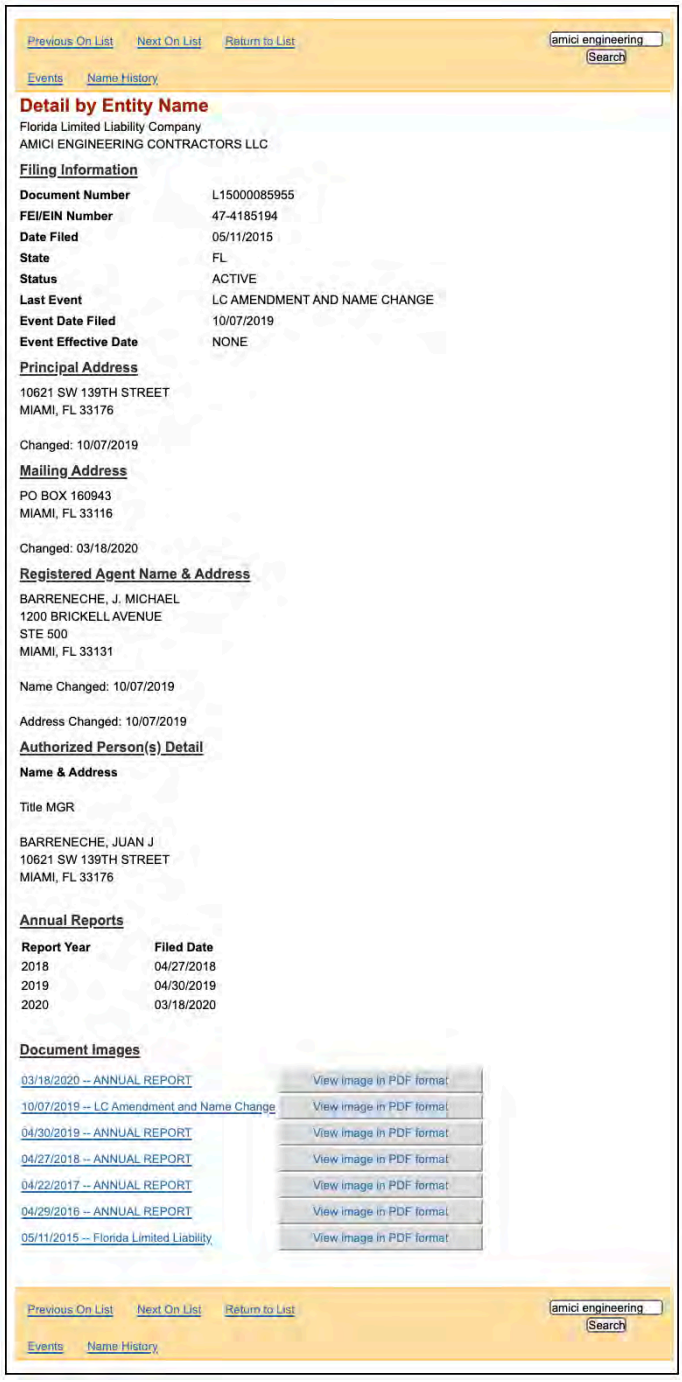

Previous On List | Next On List | Return to List | amici engineering Search

Events | Name History

Detail by Entity Name

Florida Limited Liability Company
AMICI ENGINEERING CONTRACTORS LLC

Filing Information

Document Number	L15000085955
FEI/EIN Number	47-4185194
Date Filed	05/11/2015
State	FL
Status	ACTIVE
Last Event	LC AMENDMENT AND NAME CHANGE
Event Date Filed	10/07/2019
Event Effective Date	NONE

Principal Address

10621 SW 139TH STREET
MIAMI, FL 33176

Changed: 10/07/2019

Mailing Address

PO BOX 160943
MIAMI, FL 33116

Changed: 03/18/2020

Registered Agent Name & Address

BARRENECHE, J. MICHAEL
1200 BRICKELL AVENUE
STE 500
MIAMI, FL 33131

Name Changed: 10/07/2019

Address Changed: 10/07/2019

Authorized Person(s) Detail

Name & Address

Title MGR

BARRENECHE, JUAN J
10621 SW 139TH STREET
MIAMI, FL 33176

Annual Reports

Report Year	Filed Date
2018	04/27/2018
2019	04/30/2019
2020	03/18/2020

Document Images

03/18/2020 -- ANNUAL REPORT	View image in PDF format
10/07/2019 -- LC Amendment and Name Change	View image in PDF format
04/30/2019 -- ANNUAL REPORT	View image in PDF format
04/27/2018 -- ANNUAL REPORT	View image in PDF format
04/22/2017 -- ANNUAL REPORT	View image in PDF format
04/29/2016 -- ANNUAL REPORT	View image in PDF format
05/11/2015 -- Florida Limited Liability	View image in PDF format

Previous On List | Next On List | Return to List | amici engineering Search

Events | Name History

2 – Qualifications of the Firm

Corporate Info & Licenses

Amici Engineering Contractors, LLC

AMICI ENGINEERING CONTRACTORS

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 10/1/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Sharon R. Myers, AAI, CRIS
Frank H. Furman, Inc. 1314 East Atlantic Blvd. P. O. Box 1927 Pompano Beach FL 33061	PHONE (A/C, No, Ext): (954)943-5050 FAX (A/C, No): (954)942-6310 E-MAIL ADDRESS: sharonm@furmaninsurance.com
INSURED	INSURER(S) AFFORDING COVERAGE / NAIC #
Amici Engineering Contractors LLC 10621 SW 139 Street Miami FL 33176	INSURER A: United Specialty Ins Co 12537 INSURER B: Evanston Insurance Company 35378 INSURER C: FCCI Insurance Co 10178 INSURER D: Wilshire Insurance Company 13234 INSURER E: INSURER F:

COVERAGES **CERTIFICATE NUMBER:** 2020 Master w/endt **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	X	Y	LIG155444146	1/1/2020	1/1/2021	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
C	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	X	Y	CA10005453700	1/20/2020	1/20/2021	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Basic PIP	$ 1,000,000 $ $ $ $ 10,000
B	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10,000			MKLV2EUL103792	1/1/2020	1/1/2021	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	001WC20A79040	1/1/2020	1/1/2021	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 500,000 $ 500,000 $ 500,000
D	Excess Umbrella Liability Following Form			XL00018262	1/1/2020	1/1/2021	Each Occurrence Annual Aggregate	$5,000,000 $5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Design-Build Pump Station B-4 Redundant Force Main P12567. City of Fort Lauderdale is included as additional insured regarding General Liability & Auto on a primary & non contributory basis as required by written contract. Waiver of Subrogation applies to General Liability Auto and Workers Compensation as required by written contract.

CERTIFICATE HOLDER	CANCELLATION
City of Fort Lauderdale 100 N. Andrews Avenue Fort Lauderdale, FL 33301	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Dirk DeJong/CBA

ACORD 25 (2014/01)
INS025 (201401)

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2 – Qualifications of the Firm

Corporate Info & Licenses

Amici Engineering Contractors, LLC

AMICI ENGINEERING CONTRACTORS

Sample Performance & Payment Bond

INSTR# 2020013560 BK 10042 PG 2881
01/27/2020 11:27am Page 1 of 5
Rcpt: 2129112 Rec: 44.00
DS: 0.00 IT: 0.00
Nikki Alvarez-Soules, Esq.
Pasco County Clerk & Comptroller

THIS BOND ONLY COVERS CLAIMS O
CONTRACTORS, SUB-SUBCONTRAC
SUPPLIERS AND LABORERS TO THE EX-
TENT THE CONTRACTOR HAS BEEN PAID
FOR THE LABOR, SERVICES, OR MATERI-
ALS PROVIDED BY SUCH PERSONS. THIS
BOND DOES NOT PRECLUDE YOU FROM
SERVING A NOTICE TO OWNER OR FILING
A CLAIM OF LEIN ON THIS PROJECT.

Conditional Payment Bond Bond No. PB12159900238

AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)
Amici Engineering Contractors, LLC
10621 SW 139th Street
Miami, FL 33176

SURETY:
(Name, legal status and principal place of business)
Philadelphia Indemnity Insurance Company
One Bala Plaza, Ste. 100
Bala Cynwyd, PA 19004

OWNER:
(Name, legal status and address)
Taylor Morrison of Florida, Inc.
501 N Cattlemen Road, Ste 100
Sarasota, FL 342324

CONSTRUCTION CONTRACT
Date: December 24, 2019

Amount: $9,257,917.98

Description: *(Name and location)* Construction of state road 56 Utilities & Morris Bridge Road Utilities at the Taylor Morrison of Florida, Tampa's division project known as River Landing as per Authorizing Addendum #1-River Landing - 1

BOND
Date: January 10, 2020
(Not earlier than Construction Contract Date)

Amount: $9,257,917.98

Modifications to this Bond: ☐ None ☒ See Section 18

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*
Amici Engineering Contractors, LLC
Signature:
Name and Title: JUAN BARRENECHE MANAGING MEMBER

SURETY
Company: *(Corporate Seal)*
Philadelphia Indemnity Insurance Company
Signature:
Name and Title: Warren M. Alter, Attorney-In-Fact

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or BROKER:
Alter Surety Group, Inc.
5979 NW 151st Street, #202
Miami Lakes, FL 33014
305-517-3803

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

PHILADELPHIA INDEMNITY INSURANCE COMPANY CORPORATE SEAL 1927 PENNSYLVANIA

SEAL

Init.

AIA Document A312™ – 2010. The American Institute of Architects.

5

2 – Qualifications of the Firm

Corporate Info & Licenses

Aluces Corporation

ALUCES CORPORATION
• Consulting Engineers •

State of Florida
Department of State

I certify from the records of this office that ALUCES CORPORATION is a corporation organized under the laws of the State of Florida, filed on July 9, 2014, effective July 8, 2014.

The document number of this corporation is P14000058212.

I further certify that said corporation has paid all fees due this office through December 31, 2020, that its most recent annual report/uniform business report was filed on January 15, 2020, and that its status is active.

I further certify that said corporation has not filed Articles of Dissolution.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Fifteenth day of January, 2020

GREAT SEAL OF THE STATE OF FLORIDA
IN GOD WE TRUST

Secretary of State

Tracking Number: 7664901852CC

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

2 – Qualifications of the Firm

Corporate Info & Licenses

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

RICK SCOTT, GOVERNOR JONATHAN ZACHEM, SECRETARY

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE ENGINEERING BUSINESS HEREIN IS AUTHORIZED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

ALUCES CORPORATION
14750 SW 26TH STREET
SUITE 204
MIAMI FL 33185

LICENSE NUMBER: CA30834
EXPIRATION DATE: FEBRUARY 28, 2021
Always verify licenses online at MyFloridaLicense.com

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RICK SCOTT, GOVERNOR JONATHAN ZACHEM, SECRETARY

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

SILVA, LUIS A.
12555 SW 34TH STREET
MIAMI FL 33175

LICENSE NUMBER: PE76875
EXPIRATION DATE: FEBRUARY 28, 2021
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Ron DeSantis, Governor Halsey Beshears, Secretary

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

BORGES, CESAR DAVID
16421 SW 60TH TERRACE
MIAMI FL 33193

LICENSE NUMBER: PE63064
EXPIRATION DATE: FEBRUARY 28, 2021
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Events | No Name History

Detail by Entity Name

Florida Profit Corporation
ALUCES CORPORATION

Filing Information

Document Number	P14000058212
FEI/EIN Number	47-1310425
Date Filed	07/09/2014
Effective Date	07/08/2014
State	FL
Status	ACTIVE
Last Event	AMENDMENT
Event Date Filed	07/18/2016
Event Effective Date	NONE

Principal Address

14750 SW 26TH STREET
SUITE 204
MIAMI, FL 33185

Changed: 07/18/2016

Mailing Address

14750 SW 26TH STREET
SUITE 204
MIAMI, FL 33185

Changed: 07/18/2016

Registered Agent Name & Address

SILVA, LUIS A
14750 SW 26TH STREET
SUITE 204
MIAMI, FL 33185

Address Changed: 07/18/2016

Officer/Director Detail

Name & Address

Title P

SILVA, LUIS A
12555 SW 34TH ST.
MIAMI, FL 33175

Title VP

BORGES, CESAR D
16421 SW 60 TER.
MIAMI, FL 33193

Title VP

BORGES, DAVID O
11439 SW 5TH STREET
MIAMI, FL 33174

Annual Reports

Report Year	Filed Date
2018	01/10/2018
2019	02/08/2019
2020	01/15/2020

Document Images

01/15/2020 -- ANNUAL REPORT View image in PDF format
02/08/2019 -- ANNUAL REPORT View image in PDF format
01/10/2018 -- ANNUAL REPORT View image in PDF format

2 – Qualifications of the Firm

Corporate Info & Licenses

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 09/23/20

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: TKJ
FLORIDA DESIGN INSURANCE LLC 4707 W Gandy Blvd Ste 15 Tampa, FL 33611	PHONE (A/C, No, Ext): (813)600-5379 FAX (A/C, No): E-MAIL ADDRESS: tjohnson@floridadesigninsurance.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : Economy Preferred Ins Co. A XV — 38067
INSURED Aluces Corporation 14750 SW 26th Street, Suite 204 Miami, FL 33185	INSURER B : Transportation Insurance Company — 42404
	INSURER C : Liberty Insurance Under A XV — 42404
	INSURER D :
	INSURER E :
	INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: X POLICY PRO-JECT LOC OTHER:			BP042457P2020	5/21/2020	5/21/2021	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000.00 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY ANY AUTO OWNED AUTOS ONLY X HIRED AUTOS ONLY SCHEDULED AUTOS X NON-OWNED AUTOS ONLY			BP042457P2020	5/21/2020	5/21/2021	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000.00 $ $ $
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y / N: Y If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC 6 25725337	8/20/2020	8/20/2021	PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
C	Professional Liability			AEX102203-0005	10/24/2019	10/24/2020	Each Claim Annual Aggr	$1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Professional Liability is written on a claims made and reported basis.

CERTIFICATE HOLDER	CANCELLATION
For Proposal Purposes	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE: Tammy K. Johnson

ACORD 25 (2016/03) The ACORD name and logo are registered marks of ACORD

2 – Qualifications of the Firm

Corporate Info & Licenses

Centerline Directional Drilling Service, Inc.

CENTERLINE
Directional Drilling Service, Inc.

Ron DeSantis, Governor Halsey Beshears, Secretary

dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
CONSTRUCTION INDUSTRY LICENSING BOARD

THE UNDERGROUND UTILITY & EXCAVATION CO HEREIN IS CERTIFIED UNDER THE PROVISIONS OF CHAPTER 489, FLORIDA STATUTES

ACEVEDO, LAURO M
CENTERLINE DIRECTIONAL DRILLING SERVICE, INC.
530 CASE RD
LABELLE FL 33935

LICENSE NUMBER: CUC1225062
EXPIRATION DATE: AUGUST 31, 2022
Always verify licenses online at MyFloridaLicense.com

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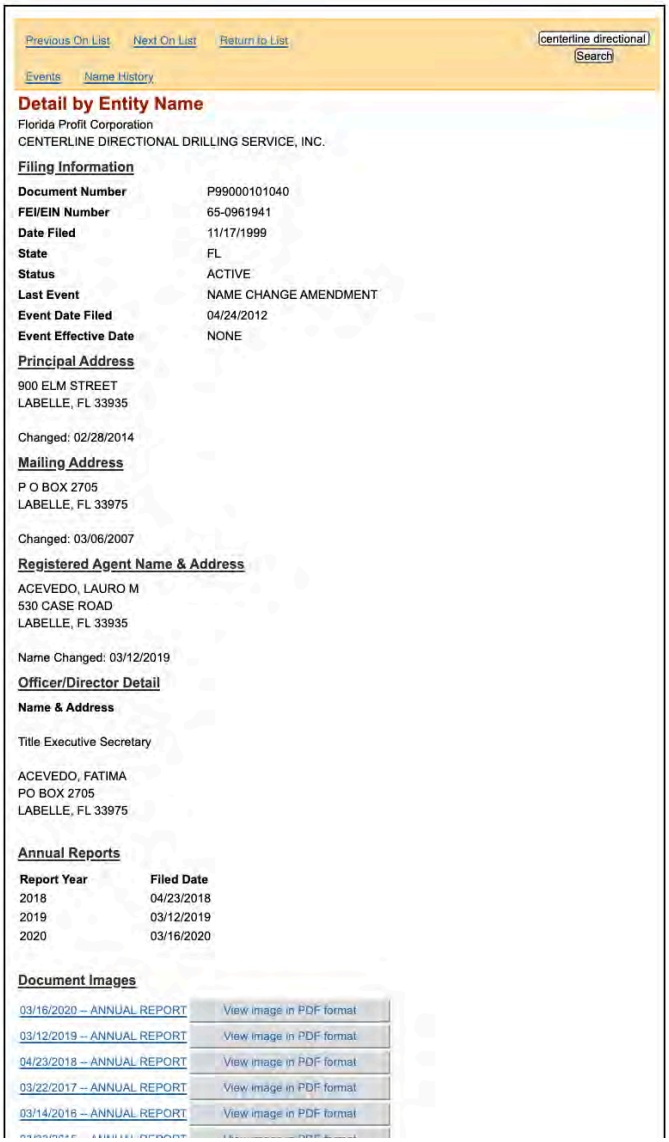

Previous On List | Next On List | Return to List | centerline directional Search
Events | Name History

Detail by Entity Name

Florida Profit Corporation
CENTERLINE DIRECTIONAL DRILLING SERVICE, INC.

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Principal Address

900 ELM STREET
LABELLE, FL 33935

Changed: 02/28/2014

Mailing Address

P O BOX 2705
LABELLE, FL 33975

Changed: 03/06/2007

Registered Agent Name & Address

ACEVEDO, LAURO M
530 CASE ROAD
LABELLE, FL 33935

Name Changed: 03/12/2019

Officer/Director Detail

Name & Address

Title Executive Secretary

ACEVEDO, FATIMA
PO BOX 2705
LABELLE, FL 33975

Annual Reports

Report Year	Filed Date
2018	04/23/2018
2019	03/12/2019
2020	03/16/2020

Document Images

03/16/2020 -- ANNUAL REPORT	View image in PDF format
03/12/2019 -- ANNUAL REPORT	View image in PDF format
04/23/2018 -- ANNUAL REPORT	View image in PDF format
03/22/2017 -- ANNUAL REPORT	View image in PDF format
03/14/2016 -- ANNUAL REPORT	View image in PDF format

2 – Qualifications of the Firm

Key Personnel

Amici Design-Build Team

Name/Title	Phone/Fax	Email
Amici Engineering Contractors, LLC		
Juan Barreneche, PE - 80% Available Project Manager - Managing Member	P - (954) 650-4699 F - (754) 264-8350	juanb@amiciec.com
Nelson - 50% Available General Superintendent - Managing Member	P - (954) 895-0741 F - (754) 264-8350	nelsonl@amiciec.com
Christopher Lazzari - 40% Available Scheduler/Project Control Specialist - Managing Member	P - (786) 682-0192 F - (754) 264-8350	chrisl@amiciec.com
Cody Cook - 100% Available Site Superintendent	P - (954) 650-4699 F - (754) 264-8350	codyc@amiciec.com
Aluces Corpora		
Luis A. Silva, PE - 90% Available Design Manager & Pe	P - (786) 505-8665 F - N/A	lsilva@alucescorp.com
Cesar D. Borges, PE - 90% Available Project QA/QC Manager	P - (786) 505-8665 F - N/A	cborges@alucescorp.com
David O. Borges - 95% Available Senior Design Engineer	P - (786) 505-8665 F - N/A	dborges@alucescorp.com
Blaynier Varela - 85% Available CADD Manager/Design Engineer	P - (786) 505-8665 F - N/A	bvarela@alucescorp.com
Raul Viltres - 80% Available Cons Inspector	P - (786) 505-8665 F - N/A	rviltres@alucescorp.com
Centerline Dir Drilling Service, Inc.		
Lauro Acevedo - 50% Available Drilling Opera Superintendent	P - (863) 674-0913 F - (863) 674-0912	cdir hotmail.com
DRMP, Inc.		
Derek G. Zeman, PSM - 30% Available Survey and Subsurface Engineering (SUE)	P - (561) 757-2303 F - (561) 451-8142	dzeman@drmp.com
Tierra South Florida, Inc.		
Raj Krishnasamy, PE - 30% Available Geotechnical	P - (561) 687-8536 F - (561) 687-8570	raj@tsfgeo.com
Francois Thomas, PE, SI - 65% Available Materials Tes	P - (561) 687-8536 F - (561) 687-8570	fgeo.com
Media Rela Group, LLC		
Laila Haddad - 80% Available Public Involvement	P - (305) 254-8598 F - (305) 256-1613	agonzalez@mrgmiami.com
ECS Group Fl, LLC		
Marisa J. Magrino, MS, ISA, LIAF, FNGLA - 80% Available Arborist	P - (954) 309-3225 F - N/A	magrino@ecsgroup om

2 – Qualifications of the Firm

Workload of the Firm

Amici Engineering Contractors has several pipe crews and restora crews ready to be called upon to help expedite the project comple should it become necessary. Our current workload has us busy through the beginning of the st quarter in 2021 but this project would not be st cons un the 2nd quarter of 2021 and will be our primary project under scheduling priority at that Amici also owns all of its own large equipment, but we are able to supplement our current inventory should the need arise. We have the experience, the personnel, and the resources necessary to ensure the successful comple of a quality project.

Please refer to A achment E for past and current work experience for Amici Engineering Contractors with dollar values and comple dates. More detailed experience for select projects is included in the following sheets within this

2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

Cons ate R e R t the Taylor Morrison of Florida, Tampa's division project known as River Landing			
Role	Prime Contractor, Constructability Review of Design		
Loca	Pasco County, Florida		
Client Informa & Point of Contact	Taylor Morrison of Florida 501 N Ca Road, Suite 100 Sarasota, FL 34224 ---------- Points of Contact: Bryan Jackson, PE (Waldrop Eng.) Ph. : (813) 372-6227 bryan.jackson@waldropengineering.com Andrew Miller (Taylor Morrison) Ph.: (727)647-0566 drew.miller63@gmail.com		
Date Started	1/2020	Date Finished	1/2021 (65% Complete)
Budget	$ 9,269,917.98 (Contract Amount)		
Involved Sta	Chris Lazzari (Project Manager), Nelson (General Superintendent), Cody Cook (Site Superintendent), Juan Barreneche (Constructability Review/Contract Admin)		
Project Descrip	A project funded by Pasco County and SWFWMD, this al infrastructure project consists of the installa of approximately 10 miles (50,000 LF) of water, sewer force main, and reclaimed water site pipelines ranging in size from 8" to 24" (PVC/HDPE). The pipe alignments ran through FDOT and County ROWs and presented challenges with Maintenance of Tra on a congested county roadway. Approximately 5 miles of the pipelines were installed via horizontal dir drilling by Centerline Dir Drilling Service. The balance of the work was installed via open cut by Amici Engineering Contractors forces.  		

2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

Furnish & Install 42” D.I. Water Main between the Inter ayne Blvd (SR 5/US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102			
Role	Prime Contractor		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Gary Clark Ph. : (305) 205-6980 gary.clarke@miamidade.gov		
Date Started	5/2018	Date Finished	12/2019
Budget	$ 22,800,000.00 (Cons		
Involved Sta	Nelson (Superintendent for DMSI), Chris Lazzari (Es tor/Contract Adm. For DMSI), Juan Barreneche, PE (Project Manager for SUI, for PS and Venturi Meter). NOTE: Aluces Engineer also involved in Pipeline & HDD Design		
Project Descrip	The project consists of installing approx. 9,740 LF of 42-inch DIP, Venturi Meter Assembly, making an inline c to a proposed 36-inch water main at Biscayne Blvd., approx. 4,600 LF of twin 30-inch HDPE horizontal dir drilling subaqueous channel crossing along Biscayne Bay from Bayside to Port of Miami. The replacement of Pump Sta 9141 and a 10-Inch DIP force main.		

2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

Hollywood WWTP Force Main and Yard Piping Project			
Role	Subcontractor to WWTP Contractor		
Loca	Hollywood, Florida		
Client Informa & Point of Contact	Seminole Tribe of Florida (Work Performed for Prime Contractor: Wharton-Smith, Inc.) 125 W Indiantown Rd #201, Jupiter, FL 33458 --- Point of Contact: Lee Pursley (Wharton-Smith, Inc.) Ph. : (561) 339-9109 lpursley@whartonsmith.com		
Date Started	12/2017	Date Finished	9/2019
Budget	$3,886,282.00 (Cons Contract)		
Involved Sta	Juan Barreneche, PE (Project Manager and HDD Designer for SUI)		
Project Descrip	This project consisted of redesigning and installing a 24" force main across the Florida Turnpike (1,250 LF of 24" HDPE Force Main inside a 36" HDPE Casing) and through the Seminole Tribe Hollywood Reserva to the Well Site (1,400 LF of 24" HDPE) to service a new hotel under cons for the 2020 Super Bowl hosted at Hard Rock Stadium. The dir drilling subcontractor was Centerline Dir Drilling. Juan Barreneche, PE designed HDD alignment and HDD Calcs. The WWTP Yard Piping scope consisted of open cut installa of approx. 13,500 LF of 24" to 8" PVC piping for force main, sewer, and drainage piping.  		

2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

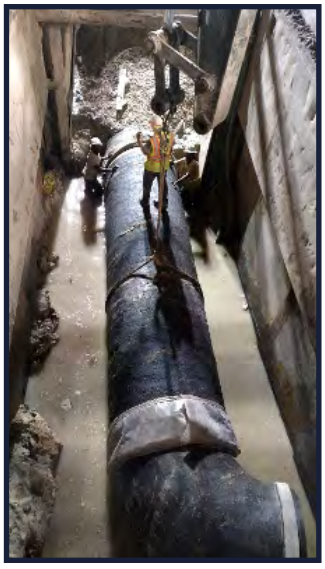
Water's Edge Resident Ridge Golf Course Reclaimed Water Transmission Main			
Role	Prime Contractor		
Location	Pasco County, Florida		
Client Information & Point of Contact	Pasco County Purchasing Department 8919 Government Drive New Port Richey, FL 34654 --- Point of Contact: Ivan z (Pasco County PM) Ph. : (813) 235-6189 z@pascocounty t		
Date Started	2/2018	Date Finished	6/2019
Budget	$2,826,605.00 (Cons Contract)		
Involved Staff	Juan Barreneche, PE (Project Manager and HDD Redesign for SUI)		
Project Description	Working together with our dir drilling subcontractor, Centerline Dir Drilling Services, we redesigned the HDD alignments with the County's design consultant to recon e the drills to bene the project and minimize tra impacts. Project included e dir drills of 18" HDPE (631 LF, 278 LF, 1003 LF, 1277 LF, and 302 LF) and the open cut installa of 14,700 LF of 16" DIP for this al reclaimed water main project with strict budget deadlines.		

2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

54 Inch Redundant Sewer Force Main Project			
Role	Prime Contractor		
Loca	Miami Beach, Florida		
Client Informa & Point of Contact	City of Miami Beach Public Works Department 1700 Conven Center Drive Miami Beach, FL 33139 ---------- Point of Contact: Luis Soto, PE (Assistant City Engineer) Ph. : (786) 717-2010 luissoto@miamibeach gov		
Date Started	6/2017	Date Finished	4/2018 (65% Complete)
Budget	$ 18,000,000.00 (Cons Contract)		
Involved Sta	Nelson (Superintendent for DMSI), Chris Lazzari (Es tor/Contract for DMSI)		
Project Descrip	A design-build project for a 54-inch PCCP/HDPE redundant force main for the City of Miami Beach demonstrates our commitment to addressing all client concerns. The project consisted of several phase of work, including design and cons of approx. 4,450 LF of 54-inch HDPE force main installed by horizontal dir drilling (HDD), open-cut installa of 54-inch PCCP force main (1,191 LF) and 36-inch DIP force main (405 LF) along 11th St up to Meridian Avenue where it connected to Pump Sta #31.		



2 – Qualifications of the Firm

Similar Past Projects

Amici Engineering Contractors, LLC

East Water Treatment Plant Renova Raw Water & Concentrate Main Design-Build Project			
Role	Prime Contractor		
Loca	Miramar, Florida		
Client Informa & Point of Contact	City of Miramar Public Works Dept (Work Performed for Prime Contractor: Wharton-Smith, Inc.) 125 W Indiantown Rd #201, Jupiter, FL 33458 ---------- Point of Contact: Lee Pursley (Wharton-Smith, Inc.) Ph. : (561) 339-9109 lpursley@whartonsmith.com		
Date Started	8/2017	Date Finished	6/2019
Budget	$ 2,137,169.00 (Cons Contract)		
Involved Sta	Juan Barreneche, PE (Project Manager and HDD Designer for SUI)		
Project Descrip	This Design-Build project included the installa of seven dir drill of 14" and 18" HDPE totaling 5,000 LF and open cut installa of 5,520 LF of 10" to 24" PVC pipe for the raw water main and reject main needed to connect this WTP to the new wells drills by Wharton-Smith (Prime Contractor). Juan Barreneche, PE was directly involved in redesigning the HDD alignments and pr to avoid and minimize tra impacts.  		

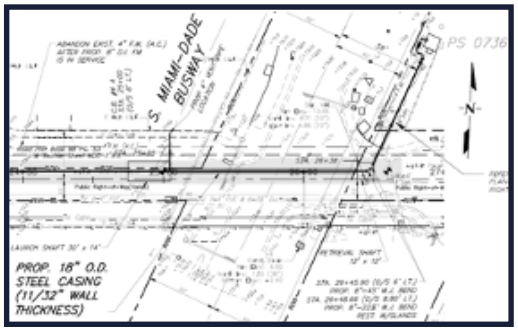
2 – Qualifications of the Firm

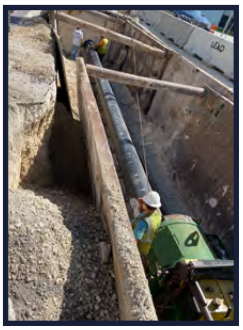
Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

CD 4.9 (34-43) Installa .I. Force Mains from PS 0713 to SW 112 Ave; from PS 0745 to PS0602; from PS 0732 to US-1; from PS 0736 to PS 0709. PCTS 13182. ER No. S043482			
Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department via Consent Decree PM/CM Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Edgar Diaz, PE (CD PM/CM) Ph. : (305) 704-6473 Edgardo.Diaz@miamidade.gov		
Date Started	9/2016	Date Finished	11/2017
Budget	$225,000 (Design), $2,555,000 (Est. Cons		
Involved Sta	Luis A. Silva, PE (Engineer of Record), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	At the beginning of this project, Aluces value-engineered the route, helping WASD to avoid a possible duplica of survey e ort and designed for a more cost-e e alterna e to crossing US-1 at SW 174th Street, which required an FDOT permit. The project also includes a jack-and-bore design for crossing the Miami-Dade Busways corridor along SW 168th Street, which was done using an 18" O.D. steel casing. The project also required coordina with c design to PS 0709 by CD 4.9 (73). Permits were obtained from FDOT, the City of Palme o Bay, and dry run from Miami-Dade County Public Works.		





2 – Qualifications of the Firm

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

SR 823/NW 57 Ave from South W. 53rd Terr. To North of W. 65th St and at NW 138th St, Prop. 54" D.I. WM (Post Design Revision to 54" BWCCP WM)			
Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Central Florida Equipment Rental, Inc. (contractor) 9030 NW 97 Terrace Medley, FL 33178 Owner: Miami-Dade County Water & Sewer Department (PM Carlos Benavides 786-268-5285) ---------- Point of Contact: Kim Umbaugh Ph. : (305) 591-2935 Kimu@centr om		
Date Started	1/2015	Date Finished	4/2017
Budget	$40,000 (Design), $20,865,000 (Cons		
Involved Sta	Cesar D. Borges, PE (Engineer of Record), Luis A. Silva, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project was bid as a roadway improvement project for FDOT to include replacement of the exis 54" PCCP with 54" DIP. Aluces prepared the design and cons plans for this project are part of the post-design revision of the water main to a bar-wrapped concrete cylinder pipe (BWCCP). The redesign of approx. 6,400 LF of 54" BWCCP WM included several value engineering and implement beveled ends and restrained joints where necessary. 		

2 – Qualifications of the Firm

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

48" & 36" Water Main Interconnect for the Miami Central East Area. PCTS 11480 (Project No. W016596) & PCTS 11481 (Project No. W016597)			
Role	Pipeline Designers		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Ric-man Cons of Florida (contractor) 3071 SW 38th Avenue Miami, FL 33146 Owner: Miami-Dade County Water & Sewer Department (PM: Eduardo Luis 786-552-8837) ---------- Point of Contact: Michael Fischer Ph. : (954) 426-1221 MFischer@Ric-manFL.com		
Date Started	5/2017	Date Finished	10/2019
Budget	$70,000 (Design), $9,300,000 (Cons		
Involved Sta	Luis A. Silva, PE (Design Engineer), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project is a design-build project for the "downtown loop closure", which included a large mix of exis to design around within a small corridor. The project included 200 LF of 30" D.I. WM, 2,250 LF of 36" WM, 4,100 LF of 48" D.I. WM, and 180 LF view micro-tunnel. Aluces performed pipeline design & thrust restraint calcula		

2 – Qualifications of the Firm

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

Furnish & Install 42” D.I. Water Main between the Inter ayne Blvd (SR 5/US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102			
Role	Pipeline Designers		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Eduardo Luis Ph. : (786) 552-8837 Eduardo.Luis@miamidade.gov		
Date Started	5/2017	Date Finished	5/2020
Budget	$120,000 (Design), $20,900,000 (Cons		
Involved Sta	Cesar D. Borges, PE (Engineer of Record), Luis A. Silva, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project consists of the design of approx. 9,800 LF of 42” D.I. WM, 2,050 LF of dual 30” HDPE via horizontal dir drilling (HDD), from Biscayne Blvd to the Port of Miami and 2,000 LF of 30” D.I. WM. The project also consisted of a microtunnel under a railroad crossing within the Port of Miami. Aluces performed pipeline design & thrust restraint calcula  		

2 – Qualifications of the Firm

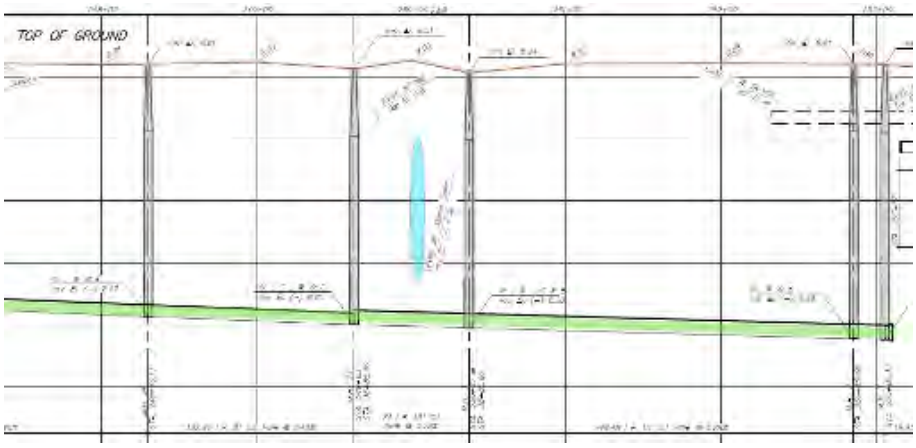
Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

D2-C-2 – 16”, 12”, & 8” D.I. Water Mains and 10” & 8” D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8” D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958

Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Eduardo Luis Ph. : (786) 552-8837 Eduardo.Luis@miamidade.gov		
Date Started	9/2018	Date Finished	On-going
Budget	$500,000 (Design), $6,900,000 (Est. Cons		
Involved Sta	Luis A. Silva, PE (Engineer of Record), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project consists of 9,000 LF design of 8”, 12”, 16” D.I. water main, 9,400 LF of 8” & 12” D.I. Gravity Sewer, and 450 LF of 8” D.I. FM. The project includes providing service and laterals to approximately 100 pr within the project limits. The project also required coordina with c design to PS D2-C-2.		



Section 3

Qualifications of the Team

3 – Qualification of the Team

Subconsultants

Aluces Corporation

Aluces Corpora a y c engineering specializing in water & sewer, civil-site design, roadway, stormwater management, and GIS. With over 40 years of water and wastewater system design experience within Miami-Dade County, Aluces Corpora s senior sta has successfully completed a of projects of various sizes and levels of complexity. They er considerable experience, technical e and thorough knowledge of water and sewer design to ensure an uncompromised level of quality to all clients. Their experience includes analyzing exis and proposed systems, performing r studies, providing engineering design services, preparing cons cost analyses, and preparing bid documents for f that include:

- Water Dis System Design
- Water Transmission Line Design
- Force Main Design
- Large Diameter Force Main Design
- Gravity Sanitary Sewer Design
- Sanitary Pump Sta Design

Their senior sta has implemented many types of water and sewer using pipe materials such as prestressed concrete cylinder pipe (PCCP), iron pipe (DIP), bar wrapped concrete cylinder pipe (BWCCP), polyvinyl chloride (PVC) pipe, and high-density polyethylene (HDPE) pipe in sizes up to and beyond 54-inches in diameter, under both gravity and pressure c ns. Their engineers have experience designing for standard open cut installa methods and also specifying trenchless installa methods such as dir drilling, microtunneling (pipe jacking), and jack and bore (auger boring) in loca where open cut is not feasible. Their extensive experience in designing water and sewer systems within Miami-Dade County gives them a keen understanding of how to develop that are feasible, cost-e e, and sustainable for decades to come.

Aluces' sta emphasizes responsive a en and communica dedica to all work assignments, and commitment of service to all clients. Their formula for success is based on combining strong project management, technical hands-on experience, and well-established quality control procedures in order to provide quality deliverables. They have a clear understanding of the needs of their clients; the tools necessary for developing cost-e e, sustainable, and streamlined and the ability to provide dedicated quality service to all clients in a manner. Their expert sta is ready to serve clients with the engineering e they need today to design for the future.

REFERENCES

WSP - Werner J. Reinefeld, PE - (305) 514-3100
7650 Corporate Center Drive, Suite 300, Miami, FL 33126

MD-WASD - Eduardo M. Luis - (786) 552-8837
3071 SW 38th Avenue, Miami, FL 33146

3 – Qualification of the Team

Subconsultants

Centerline Directional Drilling Service, Inc.

Centerline Dir Drilling Service, Inc., has over 20 years of experience in horizontal dir drilling. We are dedicated to tackling challenging, large-scale underground dir drilling projects. Lauro Acevedo is the project manager and superintendent, his outmost a en to the details in a project. The knowledge and experience we have gained through our diverse projects has given us the con and experience to handle any job. Centerline Dir Drilling Service, Inc. is fully geared to handle all aspects of a drilling opera Centerline has a variety of drill rigs ranging from 36,000 lbs to 660,000 lbs, and have all of the necessary support equipment needed to ensure a clean and opera Centerline also owns all of their own vacuum trucks, fusing machines, and support equipment which eliminates the possibility of anyone delaying the drilling process.

Service Capacity

Horizontal Dir Drills:

- (1) - American Auger 440T
- (1) - Vermeer 330x500
- (2) - 100x120 Vermeer
- (3) - 36x50 Vermeer
- (3) - 24x40 Vermeer
- (1) 9x13 Vermeer
- 8000 Gal Mud Technology Mud Recycler
- 10,0000 Gal Vermeer Mud System

Support Equipment:

- (6) - Vermeer Mixing tanks
- (6) - Mini-Excavators (Komatsu)
- (3) - Maxi-Excavators (Komatsu)
- (2) - Mud Reclaimers with built on Triplex Pumps
- (2) - Stand-Alone Large to Mini Reclaimers
- (2) - Stand-Alone Triplex Mud Pumps
- (8) - 4,000 gallon Vacuum Trucks
- (10) - Flatbed trailers
- (4) - Semi-Trucks
- F5 Digitrak Locators

SEE ATTACHMENT E FOR CENTERLINE'S PROJECT AND EXPERIENCE REFERENCES

3 – Qualification of the Team

Subconsultants

DRMP, Inc.

Founded in 1977, DRMP was among the st in Central Florida to er its clients a full-service with a line approach to civil engineering and surveying services. DRMP now has 18 throughout the southeastern United States that ers a broad range of services from our expert sta of engineers, surveyors, planners, scien ts and cons inspectors who work together to make powerful ideas a reality and transform the c we serve. Along with the dedica to improve c through our services, DRMP was built on a core set of values – e quality, leadership, trust and respect. Our values go far beyond words; they are what we pr and what inspires the way we do business every day. It is this commitment that has led to long-las client rela s and being ranked in Engineering News-Record's "Southeast Top Design Firms" and "Top 500 Design Firms" in the United States.

SURVEYING AND MAPPING

Surveying and Mapping is the founda of any successful design or cons project. Whether an in-house project or another DRMP's registered professional surveyors and mappers perform a full array of highly technical services for any size project, including providing one of the largest survey capab in Florida. Our delivery of the most accurate surveying and mapping data quickly and cost-e ely, includes thorough research of available documents, on-site reconnaissance before sending crews to the site and employing state-of-the-art equipment, are and survey techniques.

Surveying and Mapping Services include:

- Mobile LiDAR (3D Laser Scanning)
- Cons Surveying
- GIS Applica
- Right-of-Way Mapping
- Topographic Surveying

SUBSURFACE UTILITY ENGINEERING (SUE)

The need for precise informa has consistently increased as are placed underground with a lack of accurate documenta DRMP's Subsurface Engineering services provide our clients with the capability to e reliable underground informa in the design process or during cons . Through the use of state-of-the-art equipment and by applying professional implementa of ASCE Quality Standards, DRMP assists engineers and general contractors in preven unnecessary reloca elimina unexpected con enhancing accuracy of project designs and increasing safety.

Subsurface Engineering Services include:

- Electromagne (EM) Loca
- Ground Penetra Radar (GPR)
- Vacuum Excava
- Coordina
- Designa

REFERENCES

Lake Worth Drainage District, David A. Bends, P.S.M., (561) 819.5559
13081 South Military Trail, Delray Beach, FL 33484

CALTRAN Engineering Group, Inc., Ricardo A. Castro, PE, (786) 456-7700 xt. 115
790 NW 107 Avenue, Suite 200, Miami, FL 33172

3 – Qualification of the Team

Subconsultants

Tierra South Florida, Inc.

TSF (Tierra South Florida, Inc.) is a full-service c Geotechnical Engineering, Cons Materials Tes and Firm with capab to provide test borings, engineering analyses and reports, AutoCAD and Microsta plan sheets, laboratory soils tes , and cons engineering services. Their professional team has been working together since 2000 and is c ed to providing quality, responsive service establishing a reputa for sound approaches and professional competence in a wide range of technically demanding areas. TSF is a Disadvantaged Business Enterprise (DBE) with the Florida Department of Transporta and a Minority Business Enterprise (MBE) with the State of Florida's of Supplier Diversity and the City of Orlando. , TSF is a Small Business Enterprise (SBE) with the SFWMD and Pinellas County. Their main is in West Palm Beach, Florida with branch in Miami Lakes and Tampa, Florida. Their sta includes principal engineers with more than 33 years of experience in geotechnical, cons laboratory and materials tes and services. We feature master's degree level or higher educa background amongst the majority of their Registered Professional Engineers and maintain licenses in the State of Florida.

Geotechnical Engineering Services: TSF can provide a complete range of geotechnical engineering services. Whether buildings, airport f transporta systems, dams, or other civil and private projects, their engineers have the experience and e to handle the most technically demanding projects. TSF owns a large, diverse t of 8 drill rigs with automa hammers (truck-mounted, track-mounted, rotary, tripod, ATV, barge) capable of drilling in challenging c including remote, marshy, over-water, access or environmentally e areas. We also employee Maintenance of Tra (MOT) sta to safely perform drilling services in high tra areas. TSF's geotechnical services include:

- Laboratory tes and analysis
- Subsurface explora ɡ
- Site prepara recommenda
- Soil reinforcement
- Pavement evalua and design
- Deep and shallow founda analysis and design
- Slope stability analysis
- Sinkhole studies

Cons Materials Tes TSF ers materials engineering, tes and services applicable to the governmental, cons and manufacturing industries. During cons , monitoring and quality control services will cover every phase of cons and all materials used. TSF owns and operates fully equipped in-house soils, concrete, aggregate, and asphalt tes laboratories cer by Cons Materials Engineering Council (CMEC). TSF labs follow American Society for Tes and Materials (ASTM) and American Associa of State Highway and Transporta (AASHTO) standards and Their West Palm Beach laboratory is also validated by Florida Department of Transporta (FDOT) and the United States Army Corp of Engineers (USACE). Their and laboratory technicians hold industry-recognized a (ACI/CTQP/PCI/FPCA) for aggregates, asphalt, concrete, and earthwork tes as well as drilled sha augercast pile, and pile driving monitoring. TSF's cons material tes and services include:

- Soils/aggregates/concrete/masonry/asphalt
- Concrete tes and placement observa ɡ
- Asphalt paving monitoring
- Earthwork tes and observa
- Masonry, grout, and mortar sampling and tes
- Asphalt plant observa and monitoring

REFERENCES

City of Sunrise – Mr. Alan Gavazzi, AIA, Capital Projects Director - 954-572-2487
10770 Oakland Park Blvd., Sunrise, Florida 33351

Craven Thompson & Associates, Inc - Mr. Tom McDonald, President - 954-739-6400
3563 NW 53rd Street., Fort Lauderdale, Florida 33309

3 – Qualification of the Team

Subconsultants

Media Relations Group, LLC

Media Rela Group, LLC, (MRG) is a public rela company specializing in public sector outreach/engagement campaigns for more than 20 years. The company provides media rela marke , graphics services, the organiza of business interests, grassroots door-to-door consensus building, and serves as a liaison for its clients. MRG's commitment to personal inter as well as building and maintaining strong rela hips, remains the standard of how we operate. We pride ourselves on becoming an extension of our client's sta as we provide outreach/engagement services from concept to concrete.

Design-Build Experience: We ensure design-build projects are executed in an organized, structured and e t manner, similar to the procedures employed during independent design and cons phases but on a more compressed schedule. As the design-build phase moves forward, MRG works with the project team and a ected c to establish a strong consensus. The MRG team uses public mee and workshops as a forum to inform the public on design plans, cons and landmark occurrences. MRG's most important role is to keep the project moving during an aggressive schedule.

Cons Experience: We support our clients throughout the life of a project, including the al cons period. During this phase, members of our team work on-site with the engineers and cons companies. We ensure the day-to-day needs of a ected stakeholders are met and are available 24/7 to address emergencies. Prior to cons the MRG team thoroughly reviews all public involvements e orts completed during the design phase to determine the appropriate course of MRG meets with a ected stakeholders prior to cons to inform them of upcoming and build a rela that will last the dura of the project. This informa is used to develop a comprehensive Community Awareness Plan (CAP), which serves as the guide for public informa Through previous experience, MRG has learned it is important to iden y a trusted point of contact within the community who can disseminate informa MRG coordinates and executes a public mee prior to the start of cons that provides stakeholders the opportunity to view plans, speak with project sta and provide comments. Throughout the cons process, the MRG team works with the project engineers, inspectors and contractors to stay ahead of the schedule and iden y possible issues.

Subconsultants

ECS Group Fl, LLC

ECS Group is a woman-owned small business enterprise (SBE) providing arborist and environmental services throughout Florida. The principal, Marisa Magrino, has been working as an environmental professional in Florida since 2004. She has worked both as a consultant and government employee. With extensive experience of Florida ecosystems, ECS Group can provide a wide array of services including but not limited to , tree inventories, wildlife assessments, wetland determina benthic surveys, a and cons monitoring and GIS mapping. Our focus is to create a customized plan for each client to ensure mee our client's needs in a manner.

REFERENCES

old Hoyte, RLA - (954) 480-4210
150 NE 2nd Av

City of West P enhouse - (561) 804-4993
401 Clema eet, West Palm Beach, FL 33401

3 – Qualification of the Team

Project Manager's Experience

Juan Barreneche, PE

Juan Barreneche, PE will serve as the Project Manager for the Amici Team on this project. As can be noted in the a ached resume, Mr. Barreneche has extensive experience as a Project Manager with large diameter dir drill design-build projects. For the past 15 years, he has been involved in the design and cons of large diameter drills of lengths up to 4,000 LF in length. Mr. Barreneche uses his engineering e in this and pr al experience gained through years working alongside drillers to design or redesign dir drills to ensure that pipeline installa pr alignments, and pipe materials are appropriate for the installa He has also been working closely with our drilling subcontractor, Centerline Dir Drilling Service, over the past 6 years on over 50 dir drills, so there is considerable history and no learning curve for our team. A few of the projects with similar scope to this one for which Mr. Barreneche played a role as a Project Manager and for which his drilling knowledge was implemented to improve on the general design and minimize impacts to stakeholders are as follows. More informa on each of these projects is available in the project reference

PROJECT REFERENCE #1 - "River Landing site es" in Wesley Chapel, FL currently 65% complete, which includes approximately 25,000 LF of 12" to 24" (PVC/HDPE) Water Main, Force Main, and Reclaimed Water Main via Dir Drill and another 25,000 LF of PVC open cut installa

PROJECT REFERENCE #2 – "Hollywood WWTP Force Main and Yard Piping Project" for the Seminole Tribe of Florida which included a 24" DIPS DR9 HDPE dir drill approximately 1372 LF in length and a 36" IPS DR11 HDPE Pipe (with 24" DR9 DIPS Carrier Pipe Inside) approximately 1224 LF in length crossing under Florida Turnpike. Mr. Barreneche personally prepared the drill plans and calcula for this project and directly oversaw the driller, Centerline Dir Drilling Service, as Project Manager.

PROJECT REFERENCE #3 – "Waters Edge Residen and River Ridge Golf Course Reclaimed Water Transmission Main" which was completed for Pasco County included e dir drills of 18" HDPE (631 LF, 278 LF, 1003 LF, 1277 LF, and 302 LF) and open cut installa of 14,700 LF of 16" DIP for a al reuse project along a busy corridor. Mr. Barreneche redrew several of the long drills which had compound curves into more manageable alignments which be er address pipe staging concerns.

PROJECT REFERENCE #4 – "East Water Treatment Plant Renova Raw Water & Concentrate Main Design-Build Project". This Design-Build project included the installa of seven dir drill of 14" and 18" HDPE totaling 5,000 LF and open cut installa of 5,520 LF of 10" to 24" PVC pipe for the raw water main and reject main needed to connect this WTP to the new raw water wells. Once again, Mr. Barreneche worked with the Engineer to rearrange the HDD alignments to limit impacts to tra ws and allow for be er pipe stringing.

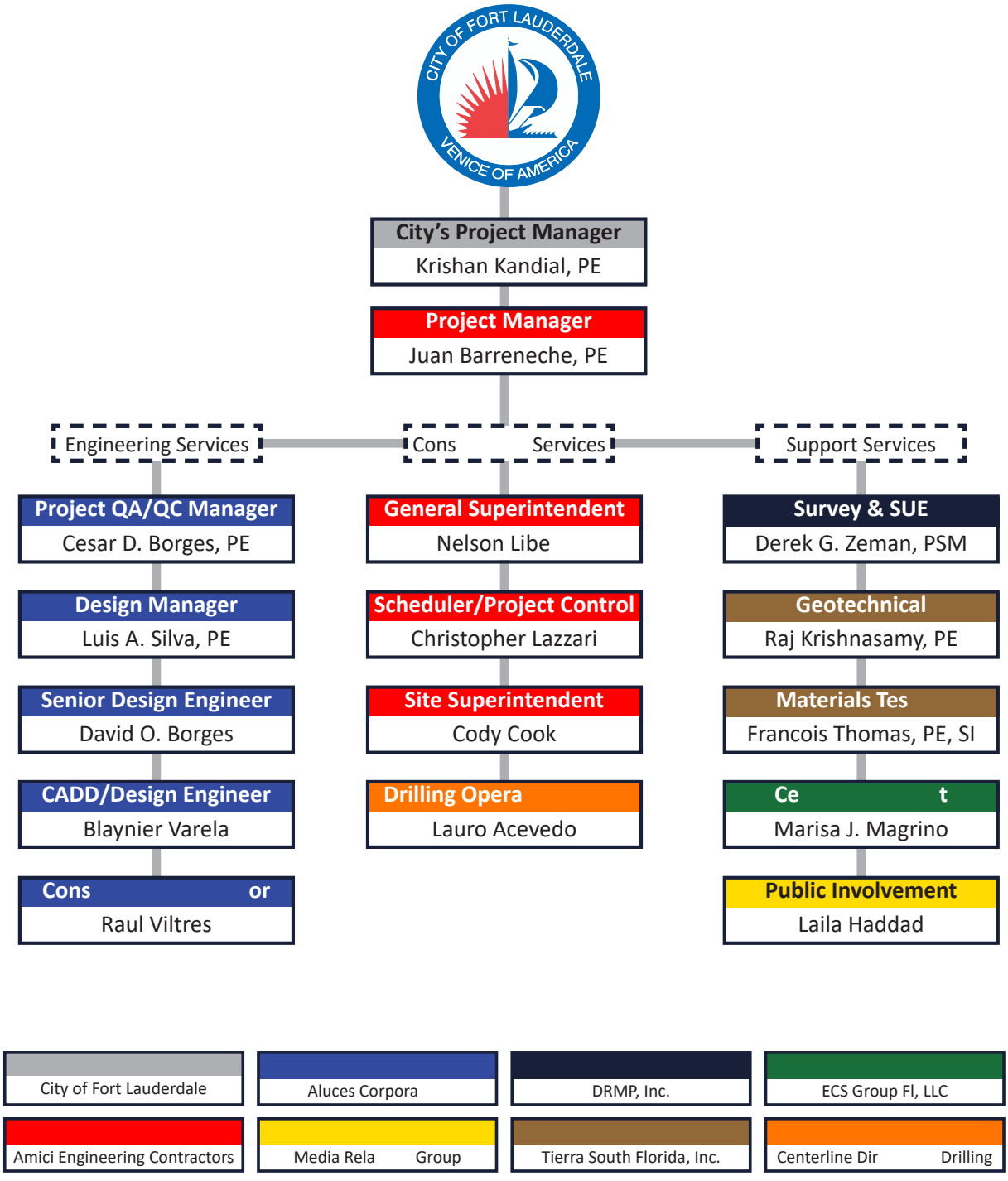
In each dir drill project he manages, Mr. Barreneche self-performed all dir drilling calcula as prescribed by the Plas Pipe and to meet ASTM F1962-05. These drilling calcula have been presented within this package for your review. Once soil borings are performed, we will also perform hydrofracture calcula and es the areas along each alignment where a drilling pressure release, or "frac-out" is most likely to occur. By having an understanding of these calcula our team can more accurate design the depth and alignments, providing the factors of safety desired for a successful drill.

Mr. Barreneche is uniquely as a licensed Professional Engineer (see a ached license) specializing in dir drill and a licensed Underground Contractor with the State of Florida (see a ached license) with over 15 years of experience in this As one of the Managing Members for Amici Engineering Contractors, he is also in a of authority to act on behalf of the Amici Team and as Project Manager for this project he will personally ensure the successful design and comple of this project for the City of Fort Lauderdale.

3 – Qualification of the Team

Organizational Chart

Amici Design-Build Team



3 – Qualification of the Team

Staffing Workload

Our current workload for the lead team members and subconsultants are as follows.

Juan Barreneche, PE, Amici - Design-Build Project Manager - Mr. Barreneche is currently focused on business development in the South Florida Area for Amici and upon award of this project, Mr. Barreneche will fully commit his into managing the progress of the engineering plans development with the team's lead design subconsultant, Aluces. He will also take the lead in preparing dewatering permits, and assis the designer in e all permits pertaining to the project. During cons he will directly manage the coordina between the drilling subcontractor, Centerline Dir Drilling Service and all stakeholders, to ensure all materials are onsite, and tra impacts are coordinated closely with the residents and the City.

Nelson - Amici - General Superintendent - Mr. oversees all of Amici's opera as the General Superintendent. We are currently comple several projects in Central Florida which Mr. Lib is overseeing. Mr. will be ed during the planning phase of this project and once cons begins in the 3rd quarter of 2021, Mr. will dedicate 50% of his to this project. Amici will also dedicate a Project Superintendent, Mr. Cody Cook, to oversee and address the project's daily needs during the cons phase.

Amici Engineering Contractors, LLC - Cons Crews - Amici currently has 27 team members on sta , including three full pipe crews, a tes crew, and a restora crew. We an te to have between 30-40 team members on sta by the 3rd quarter of this year, including at least 2 pipe crews dedicated to South Florida. These crews are currently not yet allocated to any other work in South Florida. Our crews will assist our drilling subcontractor with pipe handling and fusing as well as MOT and restora The majority of our open cut work will commence in the 3rd quarter of 2021. Amici is able to supplement the crews dedicated to this project with other crews should e of work be required. Amici owns all of its equipment. We also have access to the rental equipment market should it be necessary. We are fully capable of mee the manpower needs of this project and an te a successful comple of this project.

Centerline Dir Drilling Service Cons Resources - Dir Drilling Contractor - Centerline Dir Drilling Service, Inc. (CDDS), has over 20 e employees. These include e CDL driver's, four foremen, and over ten laborers who either locate, operate a mudmixer/reclaimer, or help with rig opera and clean-up.

Aluces Corpora - Lead Design Engineer - Aluces sta has personally been serving South Florida in water and sewer projects since 1974. Due to budgetary issues associated with the COVID19 pandemic a various public agencies, Aluces' availability to work on this project has increased. Aluces recently ed 100% design documents for a 9,000 LF of water and sewer dis pipeline project, 100% design documents of a 13,000 LF of 60" force main, and is a sewer feasibility study. Aluces is prepared to fully commit the necessary resources to serve the City of Fort Lauderdale on this Design-Build Project.

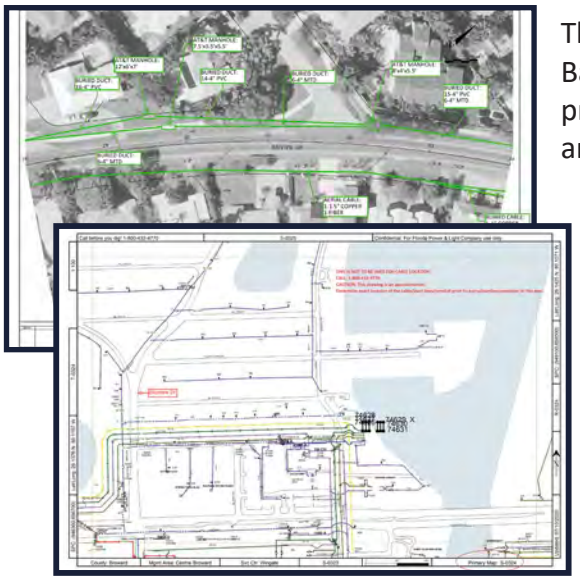
Section 4

Project Methodology & Approach

4 – Project Methodology & Approach

Project Understanding

The City of Fort Lauderdale has issued this Request for Proposal to solicit design-build services for the design, , and cons of a redundant force main. The work includes approximately 5,300-lf of 24-inch inside diameter (I.D.) HDPE pipe via horizontal direc drilling (HDD) and iron pipe for open-cut segments. The southern end of the installa connects to a 16-inch discharge pipe from Pump Sta B-4 and proceeds northward along Bayview Drive connec to a 24-inch stub out just south of the inter located at NE 21st Street and Bayview Drive. The project intent is to perform the pipe installa primarily through horizontal dir drilling per the City's Design Criteria Package (DCP). The work also includes restora work around all cons areas including areas around George English Park, Coral Ridge Park, and areas where roadway asphalt has been impacted by cons equipment as well as accoun for any or stormwater management systems in con with the installa where applicable. The work also entails op the design within the DCP in order to minimize impacts to the public, ensuring maintainability, and providing a high-quality product within the DCP's schedule requirements for this project (see A achment B - Preliminary Schedule).



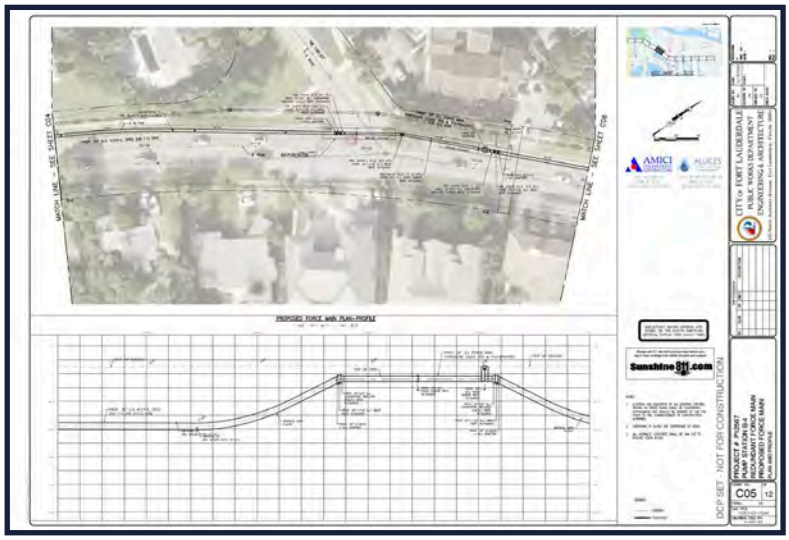
The Amici Team is also aware of the future roadway project along Bayview Drive from Sunrise Blvd to Commercial Blvd. This roadway project is being designed by FDOT as part of an MPO priority project and currently has a le date programmed for January 2022.

Our plan for comple the work on and on budget is based on an extensive review of the exis c present throughout the project corridor. Our team has thoroughly researched the corridor and carefully assessed the exis drainage systems, and private pr that are within proximity of all to be performed under this project. Our design team has established an HDD route that complies with all drilling and material requirements needed to successfully accomplish the installa however we feel that our proposed plan improves on the maintainability, vastly improves on the poten stakeholder impacts, and ensures comple by minimizing risks. Our experience within the region with this type of work allows us to iden y all poten challenges and risk factors for which we have developed associated a measures over the years.

4 – Project Methodology & Approach

Conceptual Design

The Amici Team has reviewed the conceptual design and compared it to the exis site c and we have made some rela ely minor, yet important mod a to greatly improve the design and cons of this project with public impacts as our key considera (**see A achment A - Amici Design-Build Team's Preliminary Design Drawings**). Our team developed a design that not only conforms to the City's design criteria package but also makes some improvements to the cons and of this pipeline.



In comparison to the conceptual design, we have made several a to the conceptual design layout and re cons method which will provide numerous bene to the City and reduce impacts to residents. The primary improvements with our team's design and cons concept is as follows:

IMPROVEMENT #1 – Several smaller drill Bores with simpler curves versus longer drill bores with compound curves.

The long drill bore between Coral Ridge Park and NE 15th Street as shown on the DCP's Conceptual Plan is approximately 2,000 feet long and follows a complex curved geometry which requires that a drill of that length minimize the impacts of these curves by elonga the drill geometry. One downside of this is that the pipe alignment stretches diagonally across the roadway and crosses numerous exis in loca This compound curve alignment adds to the risk associated with comple a long drill bore and it also impedes on the future maintainability of this pipeline as it zigzags across the right-of-way. This zigzagging of the proposed pipe results in major poten impacts and in accessing the pipe should any future repairs be required. Separa this drill into several smaller drill bores approximately 850- in length also has several bene as outlined further.

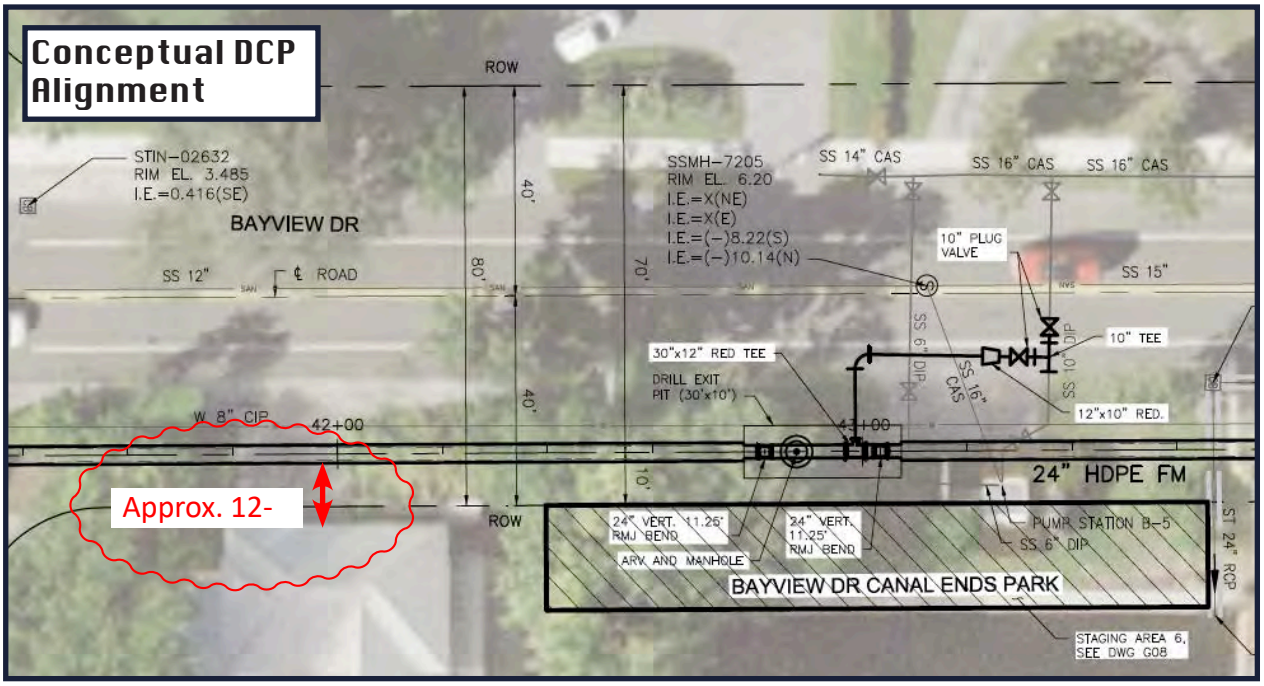
4 – Project Methodology & Approach

IMPROVEMENT #2 – Shifting pipe alignment to the west side of the Right-of-Way.

er careful considera of the Conceptual Plan's proposed pipe alignment along the East side of the Right-of-Way along Bayview Drive, our reviews, and our research into the exis along the corridor, we found many challenges that needed to be addressed in order to successfully perform this installa The challenges of the original proposed alignment included:

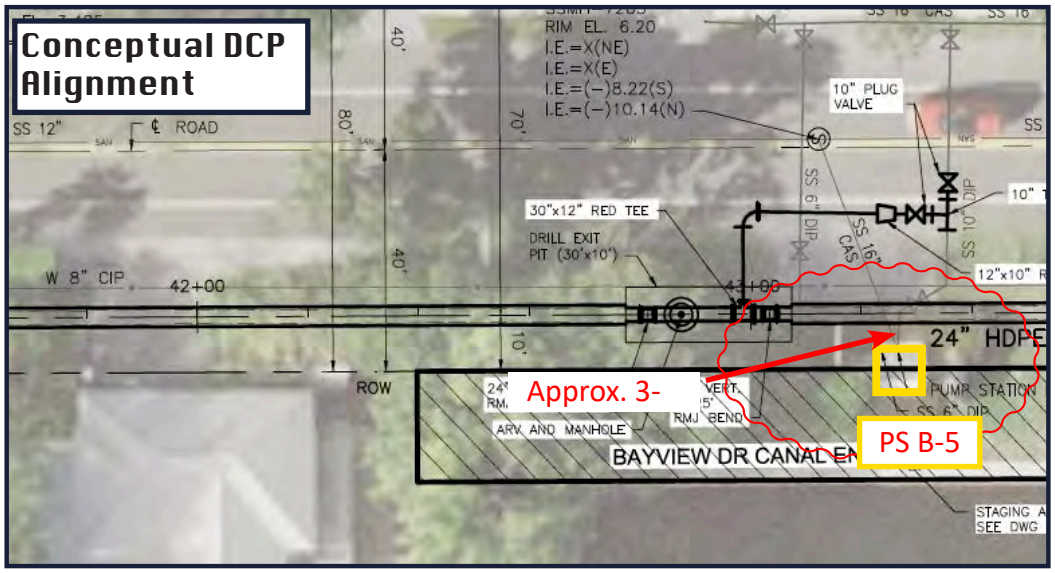
1. Dead End Roadway Access on the East side would be impeded during the pipe stringing and drilling opera Although the exit and entry points of the drills are located in grassy areas away from tra this alignment does not seem to allow for the necessary staging of the fused HDPE pipe strings without completely blocking several entrances to dead end roadways. This is not only a nuisance to residents but also presents a life-safety issue in case of an emergency. Moving the alignment to the West side of the corridor solves this problem because the inter on the West side of the corridor can be temporarily blocked and tra rerouted without impeding access to any pr (see A achment C - Pipe Stringing/MOT Plans).

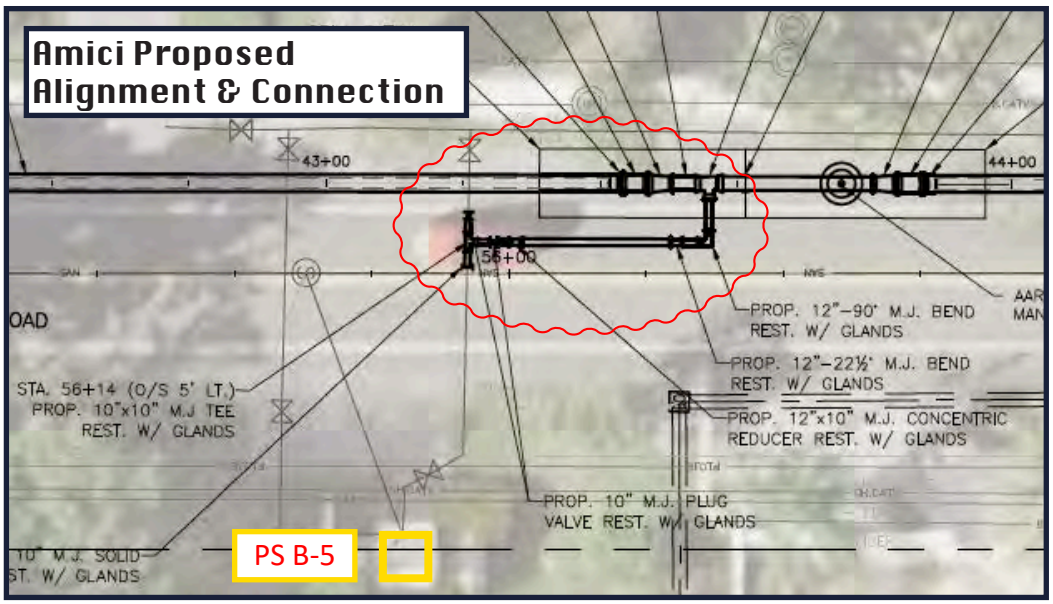
2. Pipe alignment on East side of corridor is very close to homes and their founda The proposed alignment within the DCP results in the proposed pipe being within 15 feet (home at STA 40+00) and 12 feet (homes STA 42+00, STA 33+00, and STA 31+50) of the founda of several homes. Although drilling this close to structure founda (likely pile founda is possible and has been done in the past, it should be avoided, if possible, due to the poten risks associated with hydrofracture (frac-out) during the drilling opera and during long drills that could nega ely impact the founda of these structures.



4 – Project Methodology & Approach

3. Pipe alignment on East Side is close to exis es. The proposed alignment within the DCP also appears to pass almost directly beneath an exis sewer pump sta (PS B-5 at STA 43+00) which likely has a deep wet well structure. Having a pipe under this structure will not only impede maintainability of the proposed force main in the future but may also impede any future pump sta rehabilita or retr e orts which would likely require deep excava and shoring. The eastern alignment also appears to be very close to an exis water main, which could also impede future maintenance of either pipeline.





4 – Project Methodology & Approach

Based on these considera we are proposing to the alignment to the West side of the Right-of-Way along Bayview Drive. By breaking the drilling opera into several shorter, more manageable, drill bores, this will allow us to meet the ter radii we have proposed (see A achment F - Drill Bore Calcula er examining the available space along the West side of the Right-of-Way, we have found that we could closely follow the alignment of the exis 16-inch force main which appears to be no longer in use. By staying just east of this force main, we can ensure that we are not in con with the exis duct banks and drainage f to the West. Being this close to the exis abandoned force main also allows for removal of this force main in the areas where we have proposed open cut installa should the City elect to have this done to eliminate ty conges We would thoroughly expose this e force main and any nearby before commencing with drilling opera

IMPROVEMENT #3 - Increased maintainability.

Having the proposed force main on the West side of the Right-of-Way rela ely close to the exis force main provides several bene in regard to maintainability in comparison to the Eastern alignment proposed in the DCP's conceptual plans. Accessing this pipe in the future in the general area of the bike lane on the west side of the road would allow for a secure excava with the pipe slightly higher in the water table than in would be on the East side. We would be crossing over (not under) the sanitary sewer in several loca which would also avoid any poten problems the City may have in the future should shoring be required to replace the sewer main. Having a live 30-inch force main just below the exis sewer would add unnecessary risk and should be avoided whenever possible.

IMPROVEMENT #4 - Less MOT impacts by using smaller drill rig where appropriate.

Using this alignment with a smaller drill rig (100,000 lb rig) we can maintain tra w during installa and minimize the we are setup in each area which we are es to be approximately 7-10 days per setup. These smaller drill shots also allow us to reduce the amount of area we need for pipe stringing prior to the pipe pullback opera which typically creates issues for the traveling public. We an te the need to close the southbound travel lane during day hours while drilling but expect to be able to reopen the roadway daily during non-working hours as the pipe alignment falls within the swale just outside of the bike lane.

4 – Project Methodology & Approach

Other Considerations

As can be seen from our approach and our schedule, we plan on e our design and process and will work closely with City's sta and design criteria consultant to ensure any concerns are addressed in a manner. On the cons side, our dir driller and our open cut crews will be working concurrently so that there are crews working on-site at all to expedite comple of the project. Another bene of having the dir drills broken up into smaller is that this allows for the op to commence with the shorter drills in the Southern of the project while simultaneously performing the long drill in the North of the project with a second drilling crew and a larger equipment set-up, should the need arise.

Phasing/Staging/MOT

Our phasing for this project will be coordinated to ensure that e work zones are smaller and impact residents for the least amount of We understand that residents have some pa for changes to their everyday live because of cons but prolonged periods can become intolerable and lead to unnecessary complaints. Our design helps to resolve this issue by shortening the drill lengths and smaller drilling equipment. As can be seen in the pipe staging and Maintenance of Tra (MOT) es provided in A achment C, we have reduced the number of homes directly impacted during cons minimized the length of we are working in each area, and maintained access to all pr for homeowners and emergency vehicles. The progression of our dir drilling cons will tely be from south to north along Bayview Drive and our open cut and restora crews will follow closely behind to complete c and restore the areas. Lane closures and detours will be closely coordinated with our Public Informa , the City, and residents to ensure that the traveling public and residents are aware of our progress and of upcoming impacts. All MOT devices will be ely monitored, maintained, and removed daily, as applicable. Our cons crews monitor tra circula through work zones and will y our Project Superintendent and Engineers of any issues encountered during cons

4 – Project Methodology & Approach

Dewatering Considerations

We have also addressed dewatering by analyzing the site for any poten contamina areas as depicted on Broward County's Contaminated Sites database and found just one contaminated site within a ¼ mile radius of the project. Per the e below, this site is located on Sunrise Blvd on the West side of the Middle River. We an te that this contaminated site will not be impacted by any dewatering opera given that the Middle River is deeper than the intended dewatering depth of approximately 6 feet from the surface. As a result, the r drawdown will not impact any plume which may exist at that loca This will be con with the agency.

For the an ted dewatering complete dewatering opera calcula and a site plan that includes project boundaries, loca of proposed dewatering as well as any addi required elements such as size and loca of sedimenta tanks; wellpoints; turbidity barriers and control devices; discharge points; waterways; monitoring points, etc., as needed, will be iden and provided to the agency for review and approval prior to commencement of said

Given that most of our open cut excava are an ted to be shallow rela e to the groundwater table, we don't an te a heavy need for dewatering. We will be applying for a SFWMD general use permit as we an te that we will be pumping less than 10 million gallons per day. As is required in projects with dewatering we will be installing turbidity curtains and prot e devices on all drainage inlets impacted by our work as part of our SWPPP measures. Should the water table be high during excava we will be ready to e open pumps (3" to 6" diameter) with sedimenta tanks to handle and treat dewatering ws before discharging into the alls, which will be protected by turbidity curtains and monitored daily for turbidity. In the event that ant dewatering will be require or if the water table needs to be lowered more than a couple of feet, then we are prepared to install wellpoints to draw down the water table further and will address requirements with the r e agencies, as needed.

4 – Project Methodology & Approach

Public Outreach

As can be noted from our review of the project and our discussion regarding our Team's proposed design and cons approach, the Amici Team has taken the to properly inves ate the site and the sit challenges presented with this project. Being that our team's experience is local and consists of actual City of Fort Lauderdale experience, we understand the importance of the public being major stakeholders in this process. Our en e team is e to this and we have included a Public Rela on our team, Media Rela Group, who will assist with making sure any concerns and considera are addressed in a fashion.

This project calls for a very pr e approach to public engagement. Early during the design stage, City of Fort Lauderdale District 1 Commissioner Heather Mor should be made aware of the commencement of this project and its scope and an ted impacts to the area. This will be accomplished by reaching out to her sta and providing a Project Fact Sheet presen key details of the project. This Fact Sheet will be clear and in plain language and will outline the scope of the project, its impacts to the local area, and project contact informa The Coral Ridge Associa will also be contacted as they will be a good source to help disseminate project informa to the local area. A st class mailing to the surrounding area will also be scheduled to announce the project to businesses, property owners, and other stakeholders.

Pr e outreach should be scheduled again, mid-design, with a complete door-to-door blanke of the area with updated fact sheets. Included in this door-to-door dis will be every property east of Bayview Drive on the er isles, the pr on both sides of Bayview Drive, and the pr west of Bayview Drive along the side streets. This dis of project informa should happen again just before cons starts to ensure that residents have a point of contact for the project.

During the design stage, the Public Informa (PIO) for the DB Team who had been providing public outreach will have developed a database of residents and other stakeholders so that communica via email would be possible during cons As not all impacted resident's emails would have been collected, door-to-door ca will s be essen It is an ted that there will be lane closures from but Amici will strive to minimize these impacts. Cons will primarily take place on the west side of Bayview Drive where side streets can be used as detours, allowing con access to all pr for residents and

4 – Project Methodology & Approach

those driving through the area. a of detours and/or and lane closures will be distributed in a manner so if there is a poten con within the impacted area, such as moving trucks are scheduled in the area, it can be resolved to everyone's sa f

It is essen that the stakeholders have someone they can call to get ques answered and/or to resolve an issue. This is why we propose to have an onsite PIO available to be in the cons zone within a manner throughout the dura of the project. We know cons can be a challenging process for the general public but having a compassionate and understanding public rela professional as the face of the project and an advocate of the stakeholders is instrumental to the success of a project such as this.

City of Fort Lauderdale Landscape & Tree Preservation Ordinance

Given the number of trees lining the corridor, the Amici Team is aware of the City's requirements for prot these natural resources. Per the City of Fort Lauderdale's Landscape & Tree Preserva Ordinance, no encroachments, excava opera of heavy equipment, storage or use of materials or equipment, land clearing or change of the natural grade will occur within the drip line of trees during project Any work within the drip line of a tree may nega ely impact the tree and require authoriza from the City or County prior to commencement of work. A prot e barrier will be installed and maintained around the drip line of a tree when work is occurring within the vicinity of the tree. The prot e barrier shall be easily visible by operators of trucks and other equipment. This protected area must be free of any damage that may be in cted upon the roots by machinery. , changing the natural grade within the drip line or des of the natural shape or any which causes inf infesta or decay is strictly prohibited. Our goal is to minimize impacts, whenever possible.

4 – Project Methodology & Approach

Quality Assurance/Quality Control Program

Amici Team understands that we are solely accountable and fully responsible for the quality of our deliverables. Our design team has developed and implemented a standardized Quality Assurance/Quality Control Program that produces high quality deliverables that meet and exceed all client requirements and goals. In our QA/QC process, it is the Design Team's Project Manager's responsibility to ensure that all documents, plans, and permits are thorough and complete prior to al. All Quality Control Reviewers (QCRs) will be senior level engineers, with ant experience in their area of review responsibility. The following QA/QC Program components of our document review process encompasses the procedure undertaken for all work products:

- Step 1 - The Project Manager (PM) produces the al and reviews all deliverables
- Step 2 - The QCR and marks up the al and returns it to the PM
- Step 3 - The PM reviews the comments and meets the QCR to discuss any pending or disputed items
- Step 4 - The PM es the post review implementa of comments and es the al
- Step 5 - The QCR v the implementa of the QA/QC Program comments

All reviews are documented using our Quality Control Tracking system where all documents are stamped and annotated according the step in the review process, the individual performing the review, the date, and the associated marking symbol. The te e of our QA/QC process is to ensure that all deliverables re the highest standards, conform to the Scope of Services, and are void of errors and omissions.

Contractor Available Resources – Workload

Amici Engineering Contractors also has several pipe crews and restora crews ready to be called upon to help expedite the project comple should it become necessary. Our current workload has us busy through the beginning of the st quarter in 2021 but this project would not be st cons un the 2nd quarter of 2021 and will be our primary project under scheduling priority at that Amici also owns all of its own large equipment, but we are able to supplement our current inventory should the need arise. We have the experience, the personnel, and the resources necessary to ensure the successful comple of a quality project.

Amici Engineering Contractors, LLC will be self-performing as much of the work as is possible to self-perform. In addi to assis our dir drilling subcontractor with HDPE pipe handling and fusing, we will also be performing all of the open cut work, dewatering, and asphalt patch restora Amici will also handle placement of all MOT devices and all restora associated with concrete work and sodding. The items of work to be subcontracted include design services, dir drilling services, and asphalt restora This subcontr cost makes up approximately 40% of our price, leaving the remaining 60% of the project cost to be self-performed by Amici Engineering Contractors, LLC.

Section 5

References

5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

Cons ate R e R t the Taylor Morrison of Florida, Tampa's division project known as River Landing			
Role	Prime Contractor, Constructability Review of Design		
Loca	Pasco County, Florida		
Client Informa & Point of Contact	Taylor Morrison of Florida 501 N Ca Road, Suite 100 Sarasota, FL 34224 ---------- Points of Contact: Bryan Jackson, PE (Waldrop Eng.) Ph. : (813) 372-6227 bryan.jackson@waldropengineering.com Andrew Miller (Taylor Morrison) Ph.: (727)647-0566 drew.miller63@gmail.com		
Date Started	1/2020	Date Finished	1/2021 (65% Complete)
Budget	$ 9,269,917.98 (Contract Amount)		
Involved Sta	Chris Lazzari (Project Manager), Nelson (General Superintendent), Cody Cook (Site Superintendent), Juan Barreneche (Constructability Review/Contract Admin)		
Project Descrip	A project funded by Pasco County and SWFWMD, this al infrastructure project consists of the installa of approximately 10 miles (50,000 LF) of water, sewer force main, and reclaimed water site pipelines ranging in size from 8" to 24" (PVC/HDPE). The pipe alignments ran through FDOT and County ROWs and presented challenges with Maintenance of Tra on a congested county roadway. Approximately 5 miles of the pipelines were installed via horizontal dir drilling by Centerline Dir Drilling Service. The balance of the work was installed via open cut by Amici Engineering Contractors forces.  		

5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

Furnish & Install 42” D.I. Water Main between the Inter ayne Blvd (SR 5/US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102			
Role	Prime Contractor		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 ---------- Point of Contact: Gary Clark Ph. : (305) 205-6980 gary.clarke@miamidade.gov		
Date Started	5/2018	Date Finished	12/2019
Budget	$ 22,800,000.00 (Cons		
Involved Sta	Nelson (Superintendent for DMSI), Chris Lazzari (Es tor/Contract Adm. For DMSI), Juan Barreneche, PE (Project Manager for SUI, for PS and Venturi Meter). NOTE: Aluces Engineer also involved in Pipeline & HDD Design		
Project Descrip	The project consists of installing approx. 9,740 LF of 42-inch DIP, Venturi Meter Assembly, making an inline c to a proposed 36-inch water main at Biscayne Blvd., approx. 4,600 LF of twin 30-inch HDPE horizontal dir drilling subaqueous channel crossing along Biscayne Bay from Bayside to Port of Miami. The replacement of Pump Sta 9141 and a 10-Inch DIP force main.  		

5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

Hollywood WWTP Force Main and Yard Piping Project			
Role	Subcontractor to WWTP Contractor		
Loca	Hollywood, Florida		
Client Informa & Point of Contact	Seminole Tribe of Florida (Work Performed for Prime Contractor: Wharton-Smith, Inc.) 125 W Indiantown Rd #201, Jupiter, FL 33458 ---------- Point of Contact: Lee Pursley (Wharton-Smith, Inc.) Ph. : (561) 339-9109 lpursley@whartonsmith.com		
Date Started	12/2017	Date Finished	9/2019
Budget	$3,886,282.00 (Cons Contract)		
Involved Sta	Juan Barreneche, PE (Project Manager and HDD Designer for SUI)		
Project Descrip	This project consisted of redesigning and installing a 24” force main across the Florida Turnpike (1,250 LF of 24” HDPE Force Main inside a 36” HDPE Casing) and through the Seminole Tribe Hollywood Reserva to the Well Site (1,400 LF of 24” HDPE) to service a new hotel under cons for the 2020 Super Bowl hosted at Hard Rock Stadium. The dir drilling subcontractor was Centerline Dir Drilling. Juan Barreneche, PE designed HDD alignment and HDD Calcs. The WWTP Yard Piping scope consisted of open cut installa of approx. 13,500 LF of 24” to 8” PVC piping for force main, sewer, and drainage piping.		

5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

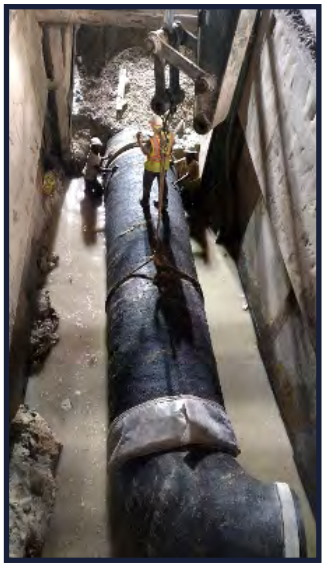
Water's Edge Resident Ridge Golf Course Reclaimed Water Transmission Main			
Role	Prime Contractor		
Location	Pasco County, Florida		
Client Information & Point of Contact	Pasco County Purchasing Department 8919 Government Drive New Port Richey, FL 34654 --- Point of Contact: Ivan z (Pasco County PM) Ph. : (813) 235-6189 z@pascocounty t		
Date Started	2/2018	Date Finished	6/2019
Budget	$2,826,605.00 (Cons Contract)		
Involved Staff	Juan Barreneche, PE (Project Manager and HDD Redesign for SUI)		
Project Description	Working together with our dir drilling subcontractor, Centerline Dir Drilling Services, we redesigned the HDD alignments with the County's design consultant to recon e the drills to bene the project and minimize tra impacts. Project included e dir drills of 18" HDPE (631 LF, 278 LF, 1003 LF, 1277 LF, and 302 LF) and the open cut installa of 14,700 LF of 16" DIP for this al reclaimed water main project with strict budget deadlines.		

5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

54 Inch Redundant Sewer Force Main Project			
Role	Prime Contractor		
Loca	Miami Beach, Florida		
Client Informa & Point of Contact	City of Miami Beach Public Works Department 1700 Conven Center Drive Miami Beach, FL 33139 --- Point of Contact: Luis Soto, PE (Assistant City Engineer) Ph. : (786) 717-2010 luissoto@miamibeach gov		
Date Started	6/2017	Date Finished	4/2018 (65% Complete)
Budget	$ 18,000,000.00 (Cons Contract)		
Involved Sta	Nelson (Superintendent for DMSI), Chris Lazzari (Es tor/Contract for DMSI)		
Project Descrip	A design-build project for a 54-inch PCCP/HDPE redundant force main for the City of Miami Beach demonstrates our commitment to addressing all client concerns. The project consisted of several phase of work, including design and cons of approx. 4,450 LF of 54-inch HDPE force main installed by horizontal dir drilling (HDD), open-cut installa of 54-inch PCCP force main (1,191 LF) and 36-inch DIP force main (405 LF) along 11th St up to Meridian Avenue where it connected to Pump Sta #31.		



5 – References

Similar Past Projects

Amici Engineering Contractors, LLC

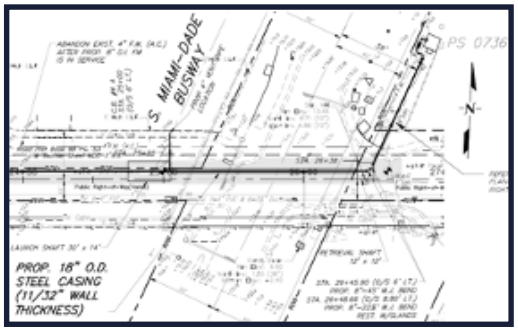
East Water Treatment Plant Renova Raw Water & Concentrate Main Design-Build Project			
Role	Prime Contractor		
Loca	Miramar, Florida		
Client Informa & Point of Contact	City of Miramar Public Works Dept (Work Performed for Prime Contractor: Wharton-Smith, Inc.) 125 W Indiantown Rd #201, Jupiter, FL 33458 ---------- Point of Contact: Lee Pursley (Wharton-Smith, Inc.) Ph. : (561) 339-9109 lpursley@whartonsmith.com		
Date Started	8/2017	Date Finished	6/2019
Budget	$ 2,137,169.00 (Cons Contract)		
Involved Sta	Juan Barreneche, PE (Project Manager and HDD Designer for SUI)		
Project Descrip	This Design-Build project included the installa of seven dir drill of 14” and 18” HDPE totaling 5,000 LF and open cut installa of 5,520 LF of 10” to 24” PVC pipe for the raw water main and reject main needed to connect this WTP to the new wells drills by Wharton-Smith (Prime Contractor). Juan Barreneche, PE was directly involved in redesigning the HDD alignments and pr to avoid and minimize tra impacts.  		

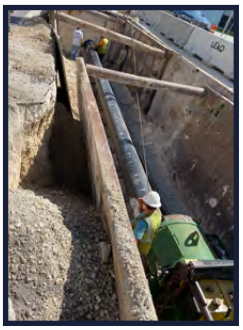
5 – References

Similar Past Projects

Aluces Corporation

CD 4.9 (34-43) Installa .I. Force Mains from PS 0713 to SW 112 Ave; from PS 0745 to PS0602; from PS 0732 to US-1; from PS 0736 to PS 0709. PCTS 13182. ER No. S043482			
Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department via Consent Decree PM/CM Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Edgar Diaz, PE (CD PM/CM) Ph. : (305) 704-6473 Edgardo.Diaz@miamidade.gov		
Date Started	9/2016	Date Finished	11/2017
Budget	$225,000 (Design), $2,555,000 (Est. Cons		
Involved Sta	Luis A. Silva, PE (Engineer of Record), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	At the beginning of this project, Aluces value-engineered the route, helping WASD to avoid a possible duplica of survey e ort and designed for a more cost-e e alterna e to crossing US-1 at SW 174th Street, which required an FDOT permit. The project also includes a jack-and-bore design for crossing the Miami-Dade Busways corridor along SW 168th Street, which was done using an 18" O.D. steel casing. The project also required coordina with c design to PS 0709 by CD 4.9 (73). Permits were obtained from FDOT, the City of Palme o Bay, and dry run from Miami-Dade County Public Works.		





5 – References

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

SR 823/NW 57 Ave from South W. 53rd Terr. To North of W. 65th St and at NW 138th St, Prop. 54" D.I. WM (Post Design Revision to 54" BWCCP WM)			
Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Central Florida Equipment Rental, Inc. (contractor) 9030 NW 97 Terrace Medley, FL 33178 Owner: Miami-Dade County Water & Sewer Department (PM Carlos Benavides 786-268-5285) ---------- Point of Contact: Kim Umbaugh Ph. : (305) 591-2935 Kimu@centr om		
Date Started	1/2015	Date Finished	4/2017
Budget	$40,000 (Design), $20,865,000 (Cons		
Involved Sta	Cesar D. Borges, PE (Engineer of Record), Luis A. Silva, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project was bid as a roadway improvement project for FDOT to include replacement of the exis 54" PCCP with 54" DIP. Aluces prepared the design and cons plans for this project are part of the post-design revision of the water main to a bar-wrapped concrete cylinder pipe (BWCCP). The redesign of approx. 6,400 LF of 54" BWCCP WM included several value engineering and implement beveled ends and restrained joints where necessary. 		

5 – References

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

48" & 36" Water Main Interconnect for the Miami Central East Area. PCTS 11480 (Project No. W016596) & PCTS 11481 (Project No. W016597)			
Role	Pipeline Designers		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Ric-man Cons of Florida (contractor) 3071 SW 38th Avenue Miami, FL 33146 Owner: Miami-Dade County Water & Sewer Department (PM: Eduardo Luis 786-552-8837) ---------- Point of Contact: Michael Fischer Ph. : (954) 426-1221 MFischer@Ric-manFL.com		
Date Started	5/2017	Date Finished	10/2019
Budget	$70,000 (Design), $9,300,000 (Cons		
Involved Sta	Luis A. Silva, PE (Design Engineer), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project is a design-build project for the "downtown loop closure", which included a large mix of exis to design around within a small corridor. The project included 200 LF of 30" D.I. WM, 2,250 LF of 36" WM, 4,100 LF of 48" D.I. WM, and 180 LF view micro-tunnel. Aluces performed pipeline design & thrust restraint calcula		

5 – References

Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

Furnish & Install 42” D.I. Water Main between the Inter ayne Blvd (SR 5/US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102			
Role	Pipeline Designers		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Eduardo Luis Ph. : (786) 552-8837 Eduardo.Luis@miamidade.gov		
Date Started	5/2017	Date Finished	5/2020
Budget	$120,000 (Design), $20,900,000 (Cons		
Involved Sta	Cesar D. Borges, PE (Engineer of Record), Luis A. Silva, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project consists of the design of approx. 9,800 LF of 42” D.I. WM, 2,050 LF of dual 30” HDPE via horizontal dir drilling (HDD), from Biscayne Blvd to the Port of Miami and 2,000 LF of 30” D.I. WM. The project also consisted of a microtunnel under a railroad crossing within the Port of Miami. Aluces performed pipeline design & thrust restraint calcula  		

5 – References

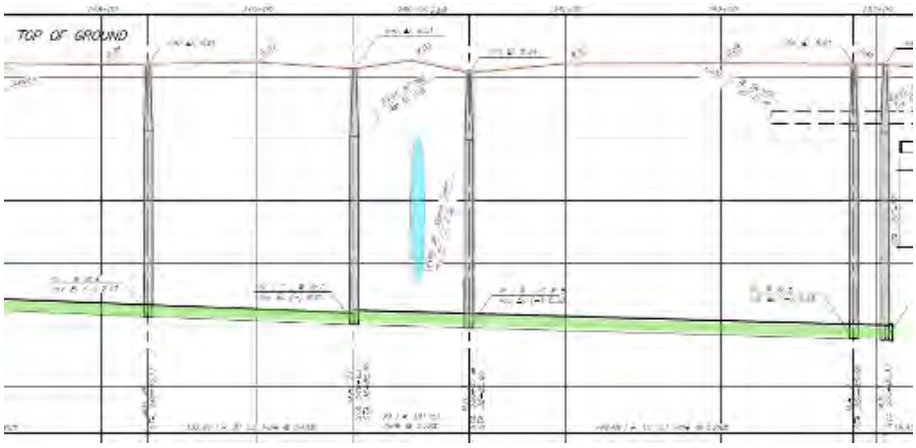
Similar Past Projects

Aluces Corporation

ALUCES CORPORATION • Consulting Engineers •

D2-C-2 – 16”, 12”, & 8” D.I. Water Mains and 10” & 8” D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8” D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958

Role	Engineer of Record		
Loca	Miami-Dade County, Florida		
Client Informa & Point of Contact	Miami-Dade County Water & Sewer Department Water and Sewer Douglas 3071 SW 38th Avenue Miami, FL 33146 --- Point of Contact: Eduardo Luis Ph. : (786) 552-8837 Eduardo.Luis@miamidade.gov		
Date Started	9/2018	Date Finished	On-going
Budget	$500,000 (Design), $6,900,000 (Est. Cons		
Involved Sta	Luis A. Silva, PE (Engineer of Record), Cesar D. Borges, PE (Design Engineer), David O. Borges (Design Engineer)		
Project Descrip	This project consists of 9,000 LF design of 8”, 12”, 16” D.I. water main, 9,400 LF of 8” & 12” D.I. Gravity Sewer, and 450 LF of 8” D.I. FM. The project includes providing service and laterals to approximately 100 pr within the project limits. The project also required coordina with c design to PS D2-C-2.		



Section 6

Price Proposal Form

CITY OF FORT LAUDERDALE

PRICE PROPOSAL FORM

RFP #12470-416 RE-BID DESIGN-BUILD SERVICES FOR

PUMP STATION B-4 REDUNDANT FORCE MAIN P12567

DESIGN

1.	**Design Development**	$ 223,500.00
2.	**Construction Administration**	$ 90,600.00
	SUB-TOTAL DESIGN COSTS	$ 314,100.00

CONSTRUCTION

GENERAL

3.	**Mobilization/Demobilization**	$ 270,000.00
4.	**Maintenance of Traffic**	$ 12,000.00
5.	**Restoration**	$ 60,000.00

FORCEMAIN

6.	**24-Inch Opencut Piping** *(Includes labor, material, fittings, valves, ARV's, manholes, testing, connection to existing force mains, connections to existing pump stations, reducers, etc.)*	$ 450,000.00
7.	**24-Inch HDPE Pipeline – Directional Drill**	$ 1,732,398.88
	SUBTOTAL CONSTRUCTION COSTS	$ 2,524,398.88

PERMIT ALLOWANCE

8.	**Permitting** *(For both Design and Construction)*	**$ 10,000.00**

TOTAL PROPOSAL – Design, Construction, and Permit Allowance Costs (proposed "Contract Price"). Enter this figure in Bidsync, Item Response Form, to indicate your total price.

Two Million Eight Hundred and Forty-Eight Thousand, Four Hundred and Ninety-Eight Dollars and Eighty-Eight Cents

(IN WORDS)

$ 2,848,498.88

(FIGURES)

1. The prices listed in the Price Proposal Form shall include the total cost to complete the Work including but not limited to materials, labor, equipment, profit, bonds, insurances, etc., as necessary to ensure proper execution of the design-build services and product requested by the City of Fort Lauderdale. Any pricing, quantities, costs or services that are not listed above, and are known to be required, must be added by the Proposer and listed on a separate sheet and included in the total.
2. I hereby certify that I am authorized to act on behalf of the firm, individual, partnership, corporation or association making this proposal and that all statements made in this document are true and correct to the best of my knowledge. I agree to hold this proposal open for a period of one hundred and eighty (120) days from the deadline for receipt of proposals.
3. I understand and agree to be bound by the conditions contained in the Request for Proposal and shall conform with all requirements of the Request for Proposal.

Juan Barreneche	Amici Engineering Contractors, LLC	
Name:	(Please Print)	
	Managing Member	2/17/21
Proposer Signature	Title:	Date:

`

PROJECT: Fort Lauderdale, Design-Build Pump Station B-4 Force Main P12567
CONTRACTOR: AMICI ENGINEERING CONTRACTORS, LLC

SCHEDULE OF VALUES

	DESIGN				
1	**Design Development**	**1**	**LS**	**$ 223,500.00**	**$ 223,500.00**
	Designer Fee	1	LS	$ 150,000.00	$ 150,000.00
	Surveyor Fee - Design	1	LS	$ 50,000.00	$ 50,000.00
	Geotechnical Fee - Soil Borings	1	LS	$ 20,000.00	$ 20,000.00
	Landscape/Arborist Fee	1	LS	$ 3,500.00	$ 3,500.00
2	**Construction Administration**	**1**	**LS**	**$ 90,600.00**	**$ 90,600.00**
	Designer Construction Admin. Fee	1	LS	$ 35,000.00	$ 35,000.00
	Project Management Admin. Fee	1	LS	$ 25,000.00	$ 25,000.00
	Surveyor - Layout and Asbuilts	1	LS	$ 21,000.00	$ 21,000.00
	Geotechnical Fee - Densities	1	LS	$ 4,600.00	$ 4,600.00
	Public Information Officer	1	LS	$ 5,000.00	$ 5,000.00
	SUBTOTAL - DESIGN COSTS			**$ 314,100.00**	
	CONSTRUCTION				
	GENERAL				
3	**Mobilization/Demobilization**	**1**	**LS**	**$ 270,000.00**	**$ 270,000.00**
	Perf. & Payment Bonds, Fees	1	LS	$ 125,000.00	$ 125,000.00
	Management/General Conditions	1	LS	$ 110,000.00	$ 110,000.00
	Mobilization/Demobilization	1	LS	$ 35,000.00	$ 35,000.00
4	**Maintenance of Traffic**	**1**	**LS**	**$ 12,000.00**	**$ 12,000.00**
5	**Restoration**	**1**	**LS**	**$ 60,000.00**	**$ 60,000.00**
	AREA #1 - PS B-4	1	LS	$ 12,000.00	$ 12,000.00
	AREA #2 - Coral Ridge Park	1	LS	$ 12,000.00	$ 12,000.00
	AREA #3 - NE 14 ST	1	LS	$ 12,000.00	$ 12,000.00
	AREA #4 - NE 16 ST	1	LS	$ 12,000.00	$ 12,000.00
	AREA #5 - NE 20 CT	1	LS	$ 12,000.00	$ 12,000.00
	FORCEMAIN				
6	**24-Inch Opencut Piping**	**1**	**LS**	**$ 450,000.00**	**$ 450,000.00**
	F&I 24" DIP w/ Fittings	1	LS	$ 318,500.00	$ 318,500.00
	F&I 16" DIP w/ Fittings	1	LS	$ 25,000.00	$ 25,000.00
	F&I 12" DIP w/ Fittings	1	LS	$ 15,000.00	$ 15,000.00
	F&I 24" Plug Valve	1	EA	$ 34,500.00	$ 34,500.00
	F&I ARV Structures	1	LS	$ 57,000.00	$ 57,000.00
7	**24-Inch HDPE Pipeline – Directional Drill**	**1**	**LS**	**$ 1,732,398.88**	**$ 1,732,398.88**
	F&I 30" IPS HDPE DR-11	1	LS	$ 1,700,000.00	$ 1,700,000.00
	F&I 30" MJ Adaptors	1	LS	$ 32,398.88	$ 32,398.88
	SUBTOTAL - CONSTRUCTION COSTS			**$ 2,524,398.88**	
8	Permitting Allowance	1	LS	$ 10,000.00	$ 10,000.00
	BID TOTAL (Including Allowance)			**$ 2,848,498.88**	

Section 7

Contract Forms

STATEMENT OF QUALIFICATION CERTIFICATION

Please Note: All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) Amici Engineering Contractors, LLC

Address: 10621 SW 139 ST

City: Miami State: FL Zip: 33176

Telephone No. 954-650-4699 FAX No. 754-264-8350 Email: juanb@amiciec.com

Does your firm qualify for MBE or WBE status: N/A MBE _____ WBE _____

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued
1	2/9/21		

VARIANCES: State any variations to specifications, terms and conditions in the space provided below or reference in the space provided below all variances contained on other pages of bid, attachments or bid pages. No variations or exceptions by the Proposer will be deemed to be part of the bid submitted unless such variation or exception is listed and contained within the bid documents and referenced in the space provided below. If no statement is contained in the below space, it is hereby implied that your bid/proposal complies with the full scope of this solicitation. If this section does not apply to your bid, simply mark N/A. **If submitting your response electronically through BIDSYNC you must click the exception link if any variation or exception is taken to the specifications, terms and conditions.**

N/A

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal. I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, hereby agrees that in no event shall the City's liability for respondent's indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of five hundred dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Juan Barreneche
Name (printed)

Signature

2/17/2021
Date:

Managing Member
Title

Revised 4/15/15

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

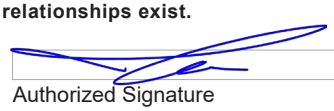
In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.



Authorized Signature

Managing Member
Title

Juan Barreneche
Name (Printed)

2/17/2021
Date

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below you agree with these terms.

Please indicate which credit card payment you prefer:

☐ MasterCard

X ☐ Visa

Amici Engineering Contractors, LLC
Company Name

Juan Barreneche
Name (Printed)


Signature

2/17/2021
Date

Managing Member
Title

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/1/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Sharon R. Myers, AAI, CRIS	
Frank H. Furman, Inc. 1314 East Atlantic Blvd. P. O. Box 1927 Pompano Beach FL 33061	PHONE (A/C, No, Ext): (954)943-5050	FAX (A/C, No): (954)942-6310
	E-MAIL ADDRESS: sharonm@furmaninsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : United Specialty Ins Co	12537
INSURED Amici Engineering Contractors LLC 10621 SW 139 Street Miami FL 33176	INSURER B : Evanston Insurance Company	35378
	INSURER C : FCCI Insurance Co	10178
	INSURER D : Wilshire Insurance Company	13234
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** 2020 Master w/endt **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:	X	Y	LIG155444146	1/1/2020	1/1/2021	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
C	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	X	Y	CA10005453700	1/20/2020	1/20/2021	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) Basic PIP	$ 1,000,000 $ $ $ $ 10,000
B	X UMBRELLA LIAB X OCCUR EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 10,000			MKLV2EUL103792	1/1/2020	1/1/2021	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N (N/A) (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	001WC20A79040	1/1/2020	1/1/2021	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 500,000 $ 500,000 $ 500,000
D	Excess Umbrella Liability Following Form			XL00018262	1/1/2020	1/1/2021	Each Occurrence Annual Aggregate	$5,000,000 $5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Design-Build Pump Station B-4 Redundant Force Main P12567. City of Fort Lauderdale is included as additional insured regarding General Liability & Auto on a primary & non contributory basis as required by written contract. Waiver of Subrogation applies to General Liability Auto and Workers Compensation as required by written contract.

CERTIFICATE HOLDER

City of Fort Lauderdale
100 N. Andrews Avenue
Fort Lauderdale, FL 33301

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Dirk DeJong/CBA

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 09/23/20

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: TKJ	
FLORIDA DESIGN INSURANCE LLC 4707 W Gandy Blvd Ste 15 Tampa, FL 33611	PHONE (A/C, No, Ext): (813)600-5379	FAX (A/C, No):
	E-MAIL ADDRESS: tjohnson@floridadesigninsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Economy Preferred Ins Co. A XV	38067
INSURED Aluces Corporation 14750 SW 26th Street, Suite 204 Miami, FL 33185	INSURER B : Transportation Insurance Company	42404
	INSURER C : Liberty Insurance Under A XV	42404
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:			BP042457P2020	5/21/2020	5/21/2021	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000.00 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [X] HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY			BP042457P2020	5/21/2020	5/21/2021	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000.00 $ $ $
	[ ] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: Y (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WC 6 25725337	8/20/2020	8/20/2021	[ ] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
C	Professional Liability			AEX102203-0005	10/24/2019	10/24/2020	Each Claim Annual Aggr	$1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Professional Liability is written on a claims made and reported basis.

CERTIFICATE HOLDER

For Proposal Purposes

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Tammy K. Johnson

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Authorized Signature	Juan Barreneche, Managing Member Print Name and Title
2/17/2021 Date	

TRENCH SAFETY

Bidder acknowledges that included in the appropriate bid items of his bid and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Florida Statutes 553.60 – 553.64. The bidder further identifies the costs of such compliance to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF/SF)	Unit (Quantity)	Unit Cost	Extended Cost
A. Steel Plates	LS	1	$ 2,000.00	$ 2,000.00
B.			$	$
C.			$	$
D.			$	$
			Total:	$ 2,000.00

The bidder certifies that all trench excavation done within his control in excess of five feet (5') in depth shall be in accordance with the Occupational Safety and Health Administration's excavation safety standards, C.F.R. s. 1926.650 Subpart P., and the Florida Trench Safety Act, Florida Statutes 553.60-553.64.

Failure to complete the above may result in the bid being declared non-responsive.

DATE: 2/17/2021

(SIGNATURE)

STATE OF: Florida COUNTY OF: Pasco

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

Juan Barreneche
(Name of Individual Signing)

Juan Barreneche who, after first being duly sworn by me,
Kelly Lisandrillo affixed his/her signature in the space provided above on this
17th day of February, 20 21.

Notary Public State of Florida
Kelly Lisandrillo
My Commission GG 947435
Expires 01/14/2024

947435
NOTARY PUBLIC

My Commission Expires: 01/14/2024

Supplier Response Form

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

MINORITY BUSINESS ENTERPRISE (MBE) - WOMEN BUSINESS ENTERPRISE (WBE)

PRIME CONTRACTOR IDENTIFICATION FORM

In order to assist us in identifying the status of those companies doing business with the City of Fort Lauderdale, this form must be completed and returned with your bid package.

Name of Firm:	Amici Engineering Contractors, LL	*
Address of Firm:	10621 SW 139 ST, Miami, FL 331	*
Telephone Number:	954-650-4699	*
Name of Person Completing Form:	Juan Barreneche	*
Title:	Managing Member	*
Signature:	Juan Barreneche	*
Date:	2/17/2021	*
City Project Number:	RFP# 12470-416	*
City Project Description:	Design-Build Pump Station B-4 Fo	*

Please check the item(s) which properly identify the status of your firm:

☑ Our firm is not a MBE or WBE.

☐ Our firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically disadvantaged individuals.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

☐ Our firm is a WBE, as at least 51 percent is owned and operated by one or more women.

☐ American Indian ☐ Asian ☐ Black ☐ Hispanic

MBE/WBE CONTRACTOR INFORMATION

The City, in a continuing effort, is encouraging the increased participation of minority and women-owned businesses in Public Works Department related contracts. Along those lines, we are requiring that each firm provide documentation detailing their own programs for utilizing minority and women-owned businesses.

Submit this information as a part of this bid package and refer to the checklist, to ensure that all areas of concern are covered. The low responsive bidder may be contacted to schedule a meeting to discuss these objectives. It is our intention to proceed as quickly as possible with this project, so your cooperation in this matter is appreciated.

CONTRACTOR CHECKLIST

☑ List Previous City of Fort Lauderdale Contracts

None as Amici Engineering Contractors, however, key personnel have experience with Fort Lauderdale. Nelson Liberti with emergency 42" Force Main Repair in *

☑ Number of Employees in your firm 20 *

--Percent (0 * %) Women

--Percent (80 * %) Minorities

--Job Classifications of Women and Minorities

Field Personnel and Owner *

☑ Use of minority and/or women subcontractors on past projects.

Centerline Directional Drilling Services is also Minority Owned and all crew members are hispanic *

☑ Nature of the work subcontracted to minority and/or women-owned firms.

Directional Drilling, Design, Paving, Concrete Restoration *

☑ How are subcontractors notified of available opportunities with your firm?

By email notiofication *

☑ Anticipated amount to be subcontracted on this project.

40%

*

☑ Anticipated amount to be subcontracted to minority and/or women-owned businesses on this project.

$1,100,000

*

Please enter your password below and click Save to update your response.

Please be aware that typing in your password acts as your electronic signature, which is just as legal and binding as an original signature. (See Electronic Signatures in Global and National Commerce Act for more information.)

To take exception:

1) Click Take Exception.
2) Create a Word document detailing your exceptions.
3) Upload exceptions as an attachment to your offer on BidSync's system.

By completing this form, your bid has not yet been submitted. Please click on the place offer button to finish filling out your bid.

Username **chrisl@amiciec.com**

Password *

Save Take Exception Close

* Required fields

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No: 12470-416

Project Description: One new 24-inch nominal internal directional drilling (HDD) and ductile iron pipe for connections via open-cut installation as required, connect proposed piping on the southern end to the discharge piping of Pump Station B-4, connect proposed piping to the 24-inch stub out near NE 21st Street and Bayview Drive, restore work area including City Park area damaged by work as required, relocate water main and reconnect services in conflict as required.

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

(a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,
(b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name: Amici Engineering Contractors, LLC

Authorized Company Person's Signature: 

Authorized Company Person's Title: Managing Member

Date: 2/17/2021

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, 619 • Fort Lauderdale, Florida 33301
954-828-5933 Fax 954-828-5576
purchase@fortlauderdale.gov

ADDENDUM NO. 1

RFP No. 12470-416

TITLE: RE-BID Design Build pump Station B-4 Redundant Force Main

ISSUED: February 9, 2021

This addendum is being issued to make the following change(s):

1. Section 4, Submittal Requirements, 4.2.2 *Qualifications of the Firm*,

Business Structure
CHANGE FROM:
Corporations, Joint Ventures, LLC or Partnerships – submit a copy indicating when the corporation was organized as a legal entity in the State of Florida, corporation number. ~~Shall be a minimum of ten (10) years to do business in the State of Florida.~~

CHANGE TO:
Corporations, Joint Ventures, LLC or Partnerships – submit a copy indicating when the corporation was organized as a legal entity in the State of Florida, corporation number.

All other terms, conditions, and specifications remain unchanged.

Penelope Burger,
Procurement Administrator

Company Name: Amici Engineering Contractors, LLC
(please print)

Bidder's Signature: _____

Date: 2/16/2021

PHILADELPHIA
INSURANCE COMPANIES

A Member of the Tokio Marine Group

One Bala Plaza, Suite 100, Bala Cynwyd, Pennsylvania 19004
610.617.7900 • Fax 610.617.7940 • PHLY.com

SURETY BOND SEAL ADDENDUM

PHILADELPHIA INDEMNITY INSURANCE COMPANY

As part of its business continuity efforts during the pendency of the COVID-19 pandemic, Philadelphia Indemnity Insurance Company ("PIIC") has temporarily authorized its Attorneys-in-Fact to affix PIIC's corporate seal in a digital format in lieu of its traditional raised seal to any bond issued on its behalf by any such Attorney-in-Fact.

PIIC agrees and affirms that the digital corporate seal found herein is deemed affixed to the bond and the Power of Attorney with the same effect as if its raised corporate seal had been affixed to the bond itself.

Effective this 20TH day of March, 2020.

Philadelphia Indemnity Insurance Company

PHILADELPHIA INDEMNITY INSURANCE COMPANY CORPORATE SEAL 1927 PENNSYLVANIA

By:_____
Michael Cundiff, Senior Vice President

Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

Bid Bond

CONTRACTOR:
(Name, legal status and address)
Amici Engineering Contractors, LLC
10621 SW 139th Street
Miami, FL 33176

SURETY:
(Name, legal status and principal place of business)
Philadelphia Indemnity Insurance Company
One Bala Plaza, Suite 100
Bala Cynwyd, PA 19004

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)
City of Fort Lauderdale
100 North Andrews Avenue
Fort Lauderdale, FL 33301

BOND AMOUNT: $ Five Percent of Total Amount Bid (5%)

PROJECT:
(Name, location or address, and Project number, if any)
RFP No. 12470-416, Re-Bid Design Build Pump Station B-4 Redundant Force Main P12567

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 17th day of February, 2021

(Witness) Blaynie Varela

Amici Engineering Contractors, LLC
(Principal) *(Seal)*

(Title) Juan Barreneche, Managing Member

(Witness) Lily Rafford

Philadelphia Indemnity Insurance Company
(Surety) *(Seal)*

(Title) Warren M. Alter, Attorney-in-Fact

S-0054/AS 8/10

PHILADELPHIA INDEMNITY INSURANCE COMPANY
One Bala Plaza, Suite 100
Bala Cynwyd, PA 19004-0950

Power of Attorney

KNOW ALL PERSONS BY THESE PRESENTS: That **PHILADELPHIA INDEMNITY INSURANCE COMPANY** (the Company), a corporation organized and existing under the laws of the Commonwealth of Pennsylvania, does hereby constitute and appoint **David T. Satine, Warren M. Alter and Jonathan A. Bursevich of Alter Surety Group, Inc.** , its true and lawful Attorney-in-fact with full authority to execute on its behalf bonds, undertakings, recognizances and other contracts of indemnity and writings obligatory in the nature thereof, issued in the course of its business and to bind the Company thereby, in an amount not to exceed **$50,000,000**.

This Power of Attorney is granted and is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of PHILADELPHIA INDEMNITY INSURANCE COMPANY on the 14th of November, 2016.

RESOLVED: That the Board of Directors hereby authorizes the President or any Vice President of the Company: (1) Appoint Attorney(s) in Fact and authorize the Attorney(s) in Fact to execute on behalf of the Company bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof and to attach the seal of the Company thereto; and (2) to remove, at any time, any such Attorney-in-Fact and revoke the authority given. And, be it

FURTHER RESOLVED: That the signatures of such officers and the seal of the Company may be affixed to any such Power of Attorney or certificate relating thereto by facsimile, and any such Power of Attorney so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

IN TESTIMONY WHEREOF, PHILADELPHIA INDEMNITY INSURANCE COMPANY HAS CAUSED THIS INSTRUMENT TO BE SIGNED AND ITS CORPORATE SEALTO BE AFFIXED BY ITS AUTHORIZED OFFICE THIS 27TH DAY OF OCTOBER, 2017.

(Seal)

Robert D. O'Leary Jr., President & CEO
Philadelphia Indemnity Insurance Company

On this 27th day of October, 2017, before me came the individual who executed the preceding instrument, to me personally known, and being by me duly sworn said that he is the therein described and authorized officer of the **PHILADELPHIA INDEMNITY INSURANCE COMPANY**; that the seal affixed to said instrument is the Corporate seal of said Company; that the said Corporate Seal and his signature were duly affixed.

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Morgan Knapp, Notary Public
Lower Merion Twp., Montgomery County
My Commission Expires Sept. 25, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

(Notary Seal)

Notary Public: Morgan Knapp
residing at: Bala Cynwyd, PA
My commission expires: September 25, 2021

I, Edward Sayago, Corporate Secretary of PHILADELPHIA INDEMNITY INSURANCE COMPANY, do hereby certify that the foregoing resolution of the Board of Directors and the Power of Attorney issued pursuant thereto on the 27th day of October, 2017 are true and correct and are still in full force and effect. I do further certify that Robert D. O'Leary Jr., who executed the Power of Attorney as President, was on the date of execution of the attached Power of Attorney the duly elected President of PHILADELPHIA INDEMNITY INSURANCE COMPANY.

In Testimony Whereof I have subscribed my name and affixed the facsimile seal of each Company this 17th day of February, 20 21.

Edward Sayago, Corporate Secretary
PHILADELPHIA INDEMNITY INSURANCE COMPANY

Attachment A

Design Plans

Please see separate file attached in BidSync for Preliminary plan set.

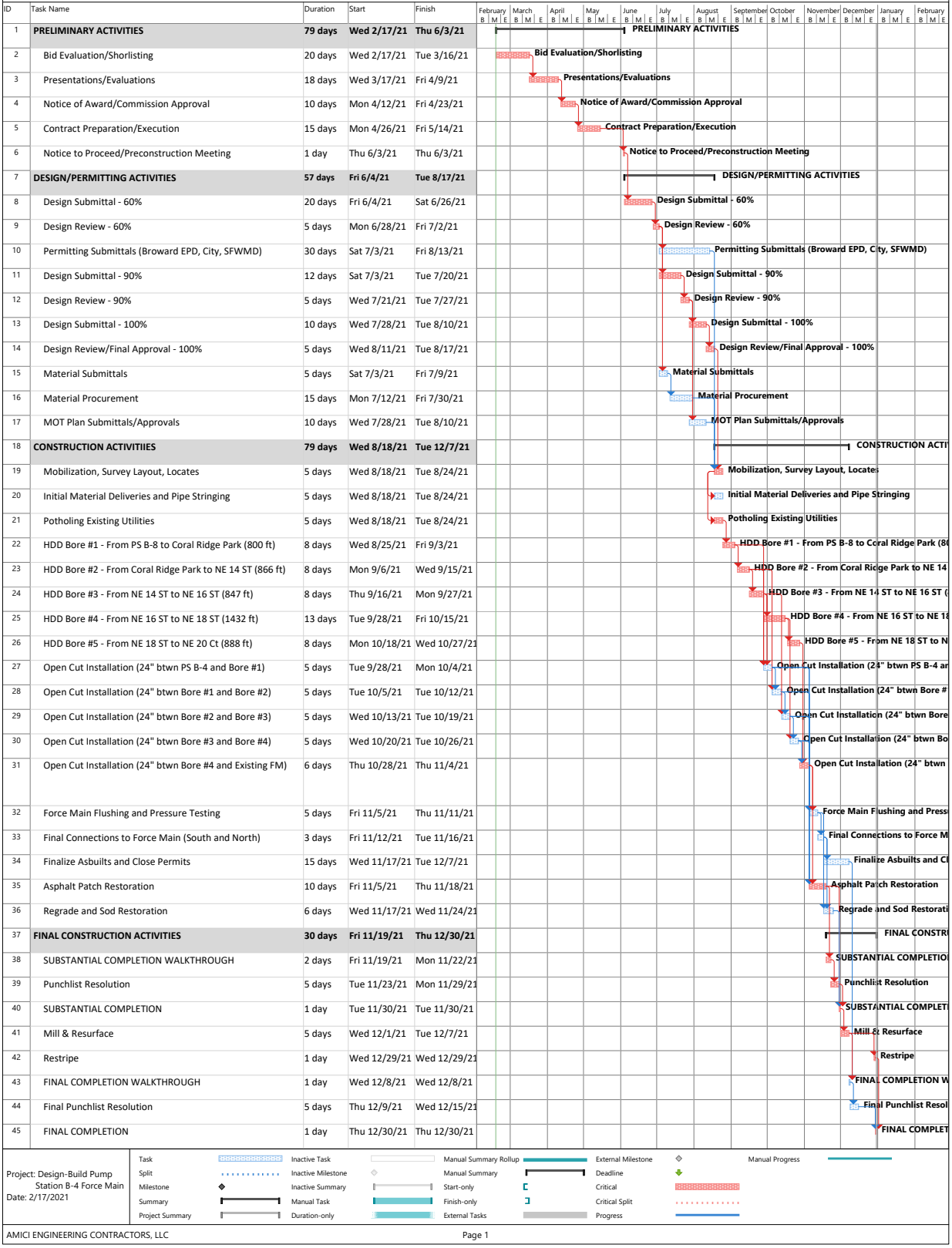
Attachment B

Project Schedule

Project Schedule

Design-Build Pump Station B-4 Force Main — AMICI ENGINEERING CONTRACTORS, LLC

ID	Task Name	Duration	Start	Finish
1	**PRELIMINARY ACTIVITIES**	**79 days**	**Wed 2/17/21**	**Thu 6/3/21**
2	Bid Evaluation/Shorlisting	20 days	Wed 2/17/21	Tue 3/16/21
3	Presentations/Evaluations	18 days	Wed 3/17/21	Fri 4/9/21
4	Notice of Award/Commission Approval	10 days	Mon 4/12/21	Fri 4/23/21
5	Contract Preparation/Execution	15 days	Mon 4/26/21	Fri 5/14/21
6	Notice to Proceed/Preconstruction Meeting	1 day	Thu 6/3/21	Thu 6/3/21
7	**DESIGN/PERMITTING ACTIVITIES**	**57 days**	**Fri 6/4/21**	**Tue 8/17/21**
8	Design Submittal - 60%	20 days	Fri 6/4/21	Sat 6/26/21
9	Design Review - 60%	5 days	Mon 6/28/21	Fri 7/2/21
10	Permitting Submittals (Broward EPD, City, SFWMD)	30 days	Sat 7/3/21	Fri 8/13/21
11	Design Submittal - 90%	12 days	Sat 7/3/21	Tue 7/20/21
12	Design Review - 90%	5 days	Wed 7/21/21	Tue 7/27/21
13	Design Submittal - 100%	10 days	Wed 7/28/21	Tue 8/10/21
14	Design Review/Final Approval - 100%	5 days	Wed 8/11/21	Tue 8/17/21
15	Material Submittals	5 days	Sat 7/3/21	Fri 7/9/21
16	Material Procurement	15 days	Mon 7/12/21	Fri 7/30/21
17	MOT Plan Submittals/Approvals	10 days	Wed 7/28/21	Tue 8/10/21
18	**CONSTRUCTION ACTIVITIES**	**79 days**	**Wed 8/18/21**	**Tue 12/7/21**
19	Mobilization, Survey Layout, Locates	5 days	Wed 8/18/21	Tue 8/24/21
20	Initial Material Deliveries and Pipe Stringing	5 days	Wed 8/18/21	Tue 8/24/21
21	Potholing Existing Utilities	5 days	Wed 8/18/21	Tue 8/24/21
22	HDD Bore #1 - From PS B-8 to Coral Ridge Park (800 ft)	8 days	Wed 8/25/21	Fri 9/3/21
23	HDD Bore #2 - From Coral Ridge Park to NE 14 ST (866 ft)	8 days	Mon 9/6/21	Wed 9/15/21
24	HDD Bore #3 - From NE 14 ST to NE 16 ST (847 ft)	8 days	Thu 9/16/21	Mon 9/27/21
25	HDD Bore #4 - From NE 16 ST to NE 18 ST (1432 ft)	13 days	Tue 9/28/21	Fri 10/15/21
26	HDD Bore #5 - From NE 18 ST to NE 20 Ct (888 ft)	8 days	Mon 10/18/21	Wed 10/27/21
27	Open Cut Installation (24" btwn PS B-4 and Bore #1)	5 days	Tue 9/28/21	Mon 10/4/21
28	Open Cut Installation (24" btwn Bore #1 and Bore #2)	5 days	Tue 10/5/21	Tue 10/12/21
29	Open Cut Installation (24" btwn Bore #2 and Bore #3)	5 days	Wed 10/13/21	Tue 10/19/21
30	Open Cut Installation (24" btwn Bore #3 and Bore #4)	5 days	Wed 10/20/21	Tue 10/26/21
31	Open Cut Installation (24" btwn Bore #4 and Existing FM)	6 days	Thu 10/28/21	Thu 11/4/21
32	Force Main Flushing and Pressure Testing	5 days	Fri 11/5/21	Thu 11/11/21
33	Final Connections to Force Main (South and North)	3 days	Fri 11/12/21	Tue 11/16/21
34	Finalize Asbuilts and Close Permits	15 days	Wed 11/17/21	Tue 12/7/21
35	Asphalt Patch Restoration	10 days	Fri 11/5/21	Thu 11/18/21
36	Regrade and Sod Restoration	6 days	Wed 11/17/21	Wed 11/24/21
37	**FINAL CONSTRUCTION ACTIVITIES**	**30 days**	**Fri 11/19/21**	**Thu 12/30/21**
38	SUBSTANTIAL COMPLETION WALKTHROUGH	2 days	Fri 11/19/21	Mon 11/22/21
39	Punchlist Resolution	5 days	Tue 11/23/21	Mon 11/29/21
40	SUBSTANTIAL COMPLETION	1 day	Tue 11/30/21	Tue 11/30/21
41	Mill & Resurface	5 days	Wed 12/1/21	Tue 12/7/21
42	Restripe	1 day	Wed 12/29/21	Wed 12/29/21
43	FINAL COMPLETION WALKTHROUGH	1 day	Wed 12/8/21	Wed 12/8/21
44	Final Punchlist Resolution	5 days	Thu 12/9/21	Wed 12/15/21
45	FINAL COMPLETION	1 day	Thu 12/30/21	Thu 12/30/21



Project: Design-Build Pump Station B-4 Force Main
Date: 2/17/2021

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

AMICI ENGINEERING CONTRACTORS, LLC Page 1

Attachment C

Pipe Stringing/MOT Concept Plans

DRILL #1 – PIPE STRINGING/MOT PLAN

Per 11.0 of the Tech Specs, the maximum number of fusion welds that will be allowed during the pullback opera is two (2) welds, therefore a maximum of 3 of pipe dictate the area impacted by HDPE pipe stringing.

DRILL #2 – PIPE STRINGING/MOT PLAN

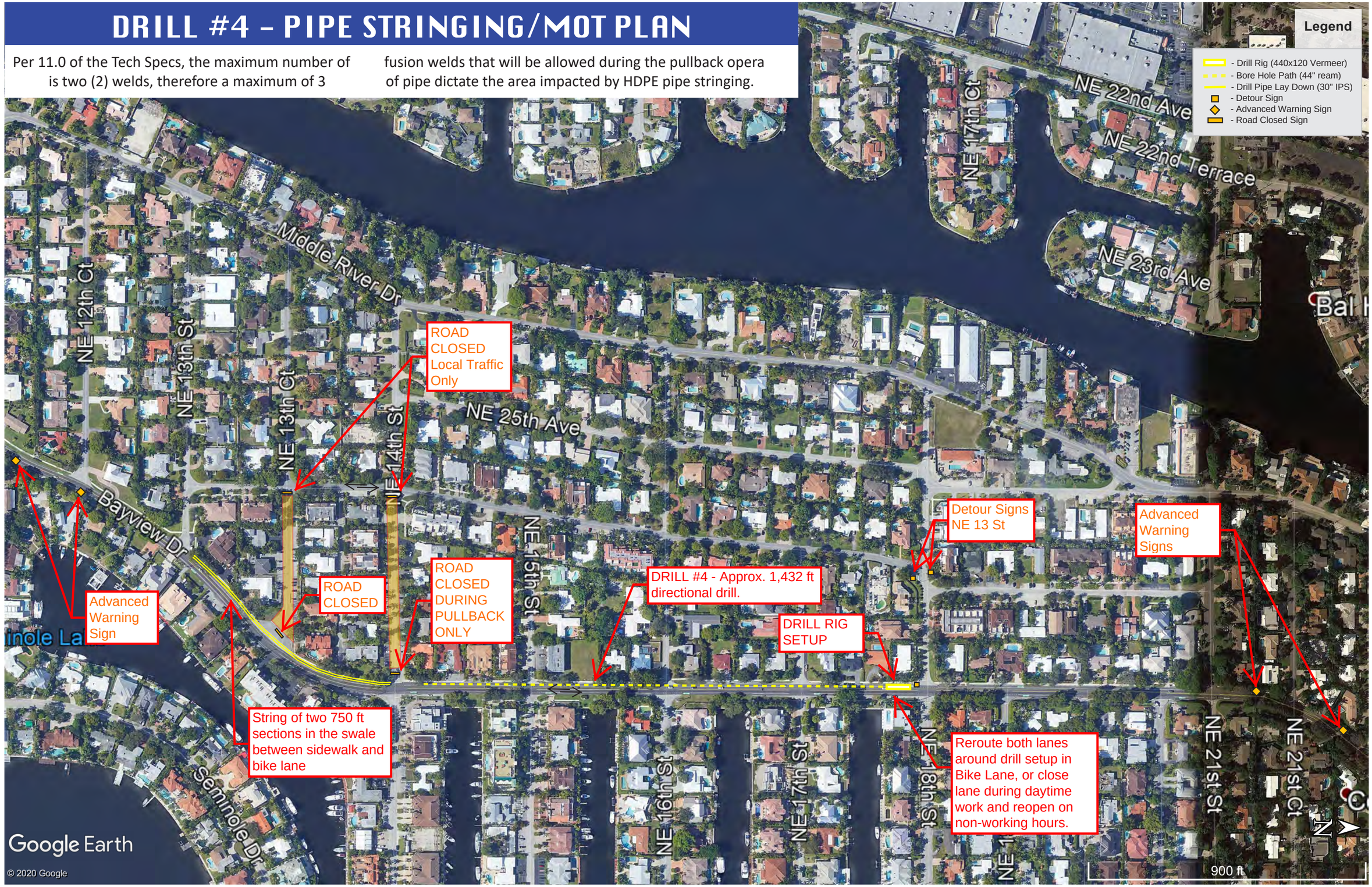
Per 11.0 of the Tech Specs, the maximum number of fusion welds that will be allowed during the pullback opera is two (2) welds, therefore a maximum of 3 of pipe dictate the area impacted by HDPE pipe stringing.

DRILL #3 – PIPE STRINGING/MOT PLAN

Per 11.0 of the Tech Specs, the maximum number of fusion welds that will be allowed during the pullback opera is two (2) welds, therefore a maximum of 3 of pipe dictate the area impacted by HDPE pipe stringing.

DRILL #4 – PIPE STRINGING/MOT PLAN

Per 11.0 of the Tech Specs, the maximum number of fusion welds that will be allowed during the pullback opera is two (2) welds, therefore a maximum of 3 of pipe dictate the area impacted by HDPE pipe stringing.



DRILL #5 – PIPE STRINGING/MOT PLAN

Per 11.0 of the Tech Specs, the maximum number of fusion welds that will be allowed during the pullback opera is two (2) welds, therefore a maximum of 3 of pipe dictate the area impacted by HDPE pipe stringing.

Attachment D

Team Resumes

AMICI ENGINEERING CONTRACTORS

Juan Barreneche, P.E. – Managing Member

Mr. Barreneche, Sr, Project Manager for Amici Engineering Contractors., has experience in transmission pipelines installations, roadway and infrastructure since 2003. Mr. Barreneche has experience in civil engineering, construction management and cost estimating in the field of underground utility construction. As Senior Project Manager and Estimator his experience developed around projects involving the installation of water mains, drainage improvements, and sanitary sewer construction. He has obtained further specialization in neighborhood improvement projects, design-build projects, directional drilling, PCCP, box culvert construction, pump stations, treatment plants and sewer force mains for various publicly bid projects for municipalities throughout South Florida. As a Civil Engineer, he has combined technical knowledge and design thought processes with underground construction experience, thereby ensuring the success of design-build partnerships and broadening the capabilities of his company.

Years of Experience

- 15 years
- Design Build experience since 2005 with an emphasis on large diameter directional drills, open cut, pump stations, MOT & all facets of construction

Registrations & Certifications

- Licensed Professional Civil Engineer in the State of Florida, PE#67662
- Certified Underground Utility and Excavation Contractor, CUC1224698

Education

- University of Florida Bachelor in Science in Civil Engineering, May 2003

Recent Project Experience

Waters Edge Residential and River Ridge Golf Course Reclaimed Water Transmission Main, Pasco County, FL – The installation of a 16-inch DIP (approx.. 11,000 LF) reclaimed water main for Pasco County was a critical project that had strict funding deadlines. Working together with our directional drilling subcontractor, Centerline Directional Drilling Services, we redesigned the HDD alignments with the County's design consultant to reconfigure the drills to benefit the project timeline and minimize traffic impacts. This project consisted of the installation of 19,000 lineal feet of 16- inch reclaimed water main to serve the River Ridge Golf Course and the Waters Edge Community. The project began at the intersection of Starkey Boulevard and DeCubellis Road connected to the existing 16-inch reclaimed watermain and continued along DeCubellis Road, crossing Ridge Road, then along Moon Lake Road terminating at the Waters Edge irrigation pond at Belle Haven Drive. The proposed reclaimed watermain was metered and discharge into the irrigation pond. The meter assembly contained an automatic flow control valve actuated by float control to refill the pond as necessary for irrigation.

WWTP 24" Effluent Force Main and Yard Piping, Seminole Tribe of Florida – Hollywood Reservation, FL This project consisted of redesigning and installing a 24" force main across the Florida Turnpike (inside a 36" HDPE Casing) and through the Seminole Tribe Hollywood Reservation to the Injection Well Site. The work was performed as a subcontractor to Wharton-Smith who was the G.C. hired to complete the WWTP Construction. By working with the engineering firm hired by STOF, we effectively redesigned the open cut portion of the work through a newly constructed segment of the reservation neighborhood to be installed via HDD, thereby reducing impacts to the reservation roadways and residents. Once again, we worked closely with our directional drilling subcontractor, Centerline Directional Drilling, to complete these directional drills (1st shot across Turnpike was 1,250 of 36" HDPE Casing with 24" Carrier, 2nd shot was 1,400 LF of 24' HDPE). The project also included open cut installation of approx.. 13,500 LF of 24" to 8" piping for force main, sewer, and drainage piping.

East Water Treatment Plant Renovations Raw Water & Concentrate Main, City of Miramar, FL. This design-build project was a critical for the City of Miramar's East WTP Expansion. Working as a subcontractor to Wharton-Smith, we assisted the engineer with the design and construction of this directional drill/open cut project. The project consisted of the installation of parallel 16" PVC Raw Water Main (approx. 4,000 LF incl. 18" HDPE HDDs) and a 12" PVC Reject Water Main (approx. 6,000 LF incl. 14" HDPE HDDs) from

Juan Barreneche, P.E. – Managing Member

the WTP to a downstream pump station and to 3 new production wells. By working closely with the engineering firm hired by Wharton-Smith, we effectively designed the parallel directional drills to enter and exit and points of minimal impact to the nearby residents and traffic patterns. We had to work closely to avoid impacting a nearby Community Center and in order to maintain access via flagman to some critical roadways. Once again, we worked closely with our directional drilling subcontractor, Centerline Directional Drilling, to complete these directional drills within the project timeframe and budget. This project is yet another example of our commitment to work closely with project owners to provide the best possible solution to the project challenges we come across.

City-Wide High Tide Mitigation Project, City of Miami Beach, FL. Project Manager for this $3.3 million project which consisted of the installation of approximately 200 inline check valves on the drainage outfall system throughout the City of Miami Beach. Some areas required design-build solutions to ensure protection from tidal flooding prior to the October King Tide. Project also included the installation of over 13 drainage structures, 400 LF of 30" RCP, and repairs to drainage force mains.

McKinley Street Interceptor Project, City of Hollywood, FL. - Project Manager for this $11.5 million gravity sewer project. Preliminary investigations and utility relocations were critical to ensuring that the 7,460 LF of 66" PCCP gravity sewer could be installed without delay. The project includes two 96" steel casings installations under FDOT and FEC Railroad via sand-shield tunnel. Varying soil and groundwater conditions proved to be the major challenges of this project.

Belcher Road 48" Water Main Replacement, Pinellas County, FL. - Project Manager for this $7.5 million water main replacement project. The project included installation of 15,000 LF of 42" DIP and 12"/16" DIP parallel high line in the same trench. The project includes a jack and bore installation of a 60" steel casings under FDOT roadway. Dividing work and MOT into 5 phases and working within 10 ft of existing deteriorating 48" PCCP water main proved to be the greatest challenges of this project.

Sunset Islands 1 & 2 Neighborhood Improvements, City of Miami Beach, FL The project includes water and storm water improvements, including the renovation of storm water outfalls and the installation of valley gutters with full roadway reconstruction in a high-end exclusive community. Major challenges to this unit price contract were extensive conflicts with existing utilities and a high-water table.

Nautilus Neighborhood Improvement, City of Miami Beach, FL. This project consisted of 40,000 Linear feet of 8" water main, 20,000 linear feet of drainage piping ranging from 15 inch to 48 inch in diameter, drainage structures, (6) storm water pump stations, (36) injection wells, (20) gravity wells, milling and overlay. Extensive coordination and resident coordination.

Biscayne Point Neighborhood Improvements Project, City of Miami Beach, FL. A $17.7 million neighborhood improvement project. The project began as a standard straight bid unit price contract ($10.9) and was converted into a design-build project by the City after a series of deficiencies with design were exposed and corrected by our team thereby adding value to the neighborhood. Project improvements consist of water and stormwater improvements, including pump stations, and above ground improvements to lighting, sidewalks, curb gutter, and roadway

Horizontal Direction Drill 30-Inch Force Main Across Miami River, Miami Dade County, FL. Project consisted of the installing 1,400 LF OF 30" DIP Directional Drill Design Build.

Replacement of 48" Force Main Design-Build Project, Broward County, FL. This $4.4 million design/build project included over 5,000' of replacement of existing 48" PCCP in DOT ROW relocated and replaced with 48" Ductile Iron Pipe in Broward County ROW. Met aggressive 8 month schedule including design, permits and construction by working closely with Civil Engineering Subcontractor (Chen and Associates). Performed constructability reviews and assisted with permit acquisition. Project included a 48" subaqueous crossing.

AMICI ENGINEERING CONTRACTORS

Nelson Liberti II – Managing Member

Mr. Liberti, General Superintendent for Amici Engineering Contractors., has experience in transmission pipelines installations, roadway and infrastructure since 1999. Mr. Liberti has successfully completed over $50 Million Dollars' worth of projects per year. These projects include Construction/ design build, sanitary sewers, water mains, force mains, drainage pump stations, directional drilling, jack and bores, and micro tunnels. Mr. Liberti II has successfully completed a long list of projects within an urban environment throughout South Florida that include the installation of transmission water mains (PCCP, PVC & DIP), transmission force mains (PCCP, PVC & DIP), sanitary sewers, storm sewers, pump stations, jack and bores, micro tunnels, directional drills, roadways, sub-aqueous crossings and neighborhood improvement projects over the past two decades.

Years of Experience
- 20 years

- Design Build experience since 2005 with an emphasis on large diameter PCCP, PVC and DIP transmission mains, HDD, MOT & all facets of construction

Registrations & Certifications

OSHA 1O Hour Training
Certification # 00190 9709
OSHA Permit-Required Confined Space Entry
OSHA29 CFR 1910. 146
Hydrogen Sul fide Safety C our se
OSHA 29 CFR l 9 10.1000
fall Protection Course
OSHA Subpart M 1926.500-503

Recent Project Experience

MDWASD Installation of 42-Inch DIP Water Main and 10-Inch Force Main to Port of Miami and PS 9141 Replacement, Miami-Dade County, FL. Miami-Dade Water and Sewer Department (MDWASD) installation of 9,740 linear feet of 42-inch ductile iron pipe (DIP) and fittings; 42-inch mechanical joint resilient seated wedge gate valve; Venturi meter (including valve and fittings, manhole frame and cover, valve box quick disconnect, and concrete support slab); 260 linear feet of micro tunneling under existing Florida East Coast (FEC) railroad right- of-way (including steel casing, drill shafts, and proposed area of construction); 4,600 linear feet of twin 30-inch high density polyethylene pipe (HDPE) horizontal directional drilling (HDD) subaqueous channel crossing along Biscayne Bay from Bayside to Port of Miami; replacement of Pump Station (PS) 9141 (including existing eight-inch cast iron pipe (CIP) force main connecting to wastewater collection and transmission system); and installation of approximately 5,000 linear feet of 10-inch replacement force main pipeline between PS 9141 and a point of connection on the mainland.

City of Miami Beach/Florida Department of Transportation (FDOT) Indian Creek Storm Water Drainage Improvements, Miami-Dade County, FL. Installation of approximately 2,400 linear feet of 72-inch pipe, 400 linear feet of 36-inch pipe, and 32 drainage structures, traffic control, and all ancillary and miscellaneous work. Infrastructure improvements include new stormwater drainage system, pump station, and seawall. The existing roadway, curbs, gutters, and sidewalks were elevated to meet new flood elevation requirements of 3.7 feet North American Vertical Datum (NAVD). Driveways, light poles, signals, signage, and pavement markings were replaced to match the new roadway alignment and configuration.

FDOT Alton Road 5th Street to Michigan Avenue (T6290), Miami-Dade County, FL. Construction in Miami Beach of approximately 15,000 linear feet of six-inch to 20-inch water main, 12-inch to 72-inch storm sewer, three storm water pump stations (20,000 GPM axial flow pumps each station), 36-inch stormwater force main, removal of contaminated material, restoration of FDOT roadway, outfall connection to Biscayne Bay, box culverts, and multiple excavations 25 feet deep and greater. Three stormwater pump stations were relocated from Alton Road to street ends as a cost-saving initiative with FDOT.

MDWASD Norris Cut, Miami-Dade County, FL. Design-build project in Virginia Key including deep shaft excavation over 95 feet and installation of ring beam, topper slab, leveling slab, thrust wall, and seal wall. The project included installation of approximately 2,100 linear feet of 60-inch prestressed concrete cylinder pipe (PCCP) force main and 1,000 linear feet of high-density polyethylene pipe (HDPE) directional drill on Fisher Island.

Nelson Liberti II – Managing Member

Sunset Islands 1 & 2 Neighborhood Improvements, City of Miami Beach, FL The project includes water and storm water improvements, including the renovation of storm water outfalls and the installation of valley gutters with full roadway reconstruction in a high-end exclusive community. Major challenges to this unit price contract were extensive conflicts with existing utilities and a high-water table.

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54-Inch Redundant Sewer Force Main, City of Miami Beach, FL. The project involved the installation of approximately 5,300 LF of 54-inch force main commencing at the existing 48-inch plug valve located at the intersection of Washington Avenue and Commerce Street, extending northerly in the right-of-way of Washington to the intersection of Euclid Avenue; approximately 4,200 LF of horizontal directional drilling along the urban corridor between Euclid Avenue and Washington Avenue; approximately 1,000 LF of open cut pipe installation along 11th Street and in Washington Avenue to accomplish final connections to the 30-inch discharge PS No.1 and the existing 48-inch plug valve in the intersection of Commerce and Washington Avenue. The 54-inch pipe replaces the existing force main sanitary line that was constructed in 1977 and served as the sole means on wastewater conveyance through Miami Beach.

54-Inch Water Main Subaqueous Crossing, Miami Dade County, FL. This deep subaqueous crossing appx. 300 LF of 54" DIP, was constructed alongside a bridge where (2) canals intersect to facilitate widening by the FDOT. The minimal tolerances of this pipeline and the deep complex installation within the canal were major challenges to this project.

Horizontal Direction Drill 30-Inch Force Main Across Miami River, Miami Dade County, FL. Project consisted of the installing 1,400 LF OF 30" DIP Directional Drill Design Build.

Pump Stations for City of Miami Beach, City of Miami Beach, FL. - This Design-Build Project included the installation of (2) Stormwater Pump Stations at the street end of 14th & 10th street along Biscayne Bay. Projects included the installation of wet well approximately 25' in depth, drainage defender box, grate box, valve vault, dissipator box and all miscellaneous piping. Installation was performed in a tight corridor at the street end of 14th & 10th Street along Biscayne Bay.

Convention Center Pump Station, City of Miami Beach, FL. - This Design-Build of (2) Stormwater pump stations consisted of 4-20,000 gallons per minute (GPM) with a 18 feet total design head axial pumps, control panels, VFD's, (2) wet wells, (2) Water treatment quality units, trash rack, dissipator structure and new seawall.

City of Hollywood Water Main Replacement Phase I & 2, City of Hollywood, FL. This project consisted of the installing 53,825 Linear feet of 8" PVC watermain, 604 rear to front conversions, 352-meter relocations, restoration and asphalt overlay. This project had extensive coordination with homeowners as well as the FDOT.

City of Hollywood Water Main Replacement Phase 3, City of Hollywood. This project consisted of 25,600 Linear feet of 8" PVC watermain, 340 Rear to front conversions, multiple meter relocations, restoration and asphalt overlay. This project had extensive coordination with homeowners as well as the FDOT

Nelson Liberti II – Managing Member

Water Main & Force Main Intracoastal Waterway Crossings at Las Olas Blvd., Fort Lauderdale, FL. This project includes the installation of a 20" diameter water main and a new 16" diameter subaqueous force main on the south of Las Olas Blvd. Bridge to provide additional redundancy to the Las Olas area. The City had selected the horizontal directional drilling (HDD) method for construction of the proposed subaqueous crossings.

11th Street Water Main, Sanitary Sewer, Drainage & Road Reconstruction, City of Miami Beach, FL. This design build project which extended from Alton road to Washington Ave. consisted of installing a new 12" water main, drainage pipe ranging from 15" to 36" in diameter, 12" sanitary PVC gravity main, signalization, landscaping, concrete sidewalks and full road reconstruction. This project was very challenging since the new road was being raised by 1.5' and all the existing buildings required to be harmonized. Extensive public outreach and coordination with building owners.

Crespi Blvd, City of Miami Beach, FL. This Design Build Project included the Installation of Water Main and Storm Sewer System along Crespi Blvd between 85TH street and 79TH Street. The project also includes the installations of over 2500 LF of Water Main, over 2800 LF of Storm Sewer collection system, Installations of pollution Control Structure, Installation of (1) Storm Sewer Pump Station, construction of seawall and landscaping along a residential neighborhood.

AMICI ENGINEERING CONTRACTORS

Christopher Lazzari – Managing Member

Mr. Lazzari has over 30 years of experience in accounting, construction management, Design-Build and cost estimating in the field of underground utility, roadwork and all facets of civil construction. As Sr. Project Manager, Chief Estimator and Design Build Manager. Mr. Lazzari's experience developed around projects involving the installation of force and water mains ranging in size from 6" to 60", drainage improvements, roadwork, sanitary sewer and bridge construction. He has obtained further specialization in directional drilling, prestressed concrete cylinder pipe (PCCP), box culvert construction, pump stations, treatment plants and sewer force mains on publicly bid, private and design-build projects for municipalities throughout Florida, New York and Texas.

Years of Experience
- 30 years

Education
- B.S. - Accounting

Registrations & Certifications
- Qualified Appliance Inspector of Stormwater (QCIS) Certification #4470793

Recent Project Experience

MDWASD Installation of 42-Inch DIP Water Main and 10-Inch Force Main to Port of Miami and PS 9141 Replacement, Miami-Dade County, FL. Miami-Dade Water and Sewer Department (MDWASD) installation of 9,740 linear feet of 42-inch ductile iron pipe (DIP) and fittings; 42-inch mechanical joint resilient seated wedge gate valve; Venturi meter (including valve and fittings, manhole frame and cover, valve box quick disconnect, and concrete support slab); 260 linear feet of micro tunneling under existing Florida East Coast (FEC) railroad right- of-way (including steel casing, drill shafts, and proposed area of construction); 4,600 linear feet of twin 30-inch high density polyethylene pipe (HDPE) horizontal directional drilling (HDD) subaqueous channel crossing along Biscayne Bay from Bayside to Port of Miami; replacement of Pump Station (PS) 9141 (including existing eight-inch cast iron pipe (CIP) force main connecting to wastewater collection and transmission system); and installation of approximately 5,000 linear feet of 10-inch replacement force main pipeline between PS 9141 and a point of connection on the mainland (City of Miami).

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AMICI ENGINEERING CONTRACTORS

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Sweetwater Storm Sewer Improvements Phase IIB, Miami Dade County, FL. Installation of about 6000 LF of storm sewer collection system and two (2) storm sewer pump stations with capacity of 5500 GPM along a residential neighborhood.

48" Force Transmission Main Along N. Miami Ave, Miami Dade County FL Project included Furnishing and installing approximately 12,700 linear feet of 48-inch Prestressed Concrete Cylinder Pipe (PCCP), Furnishing and installing approximately 5,600 linear feet of 12-inch ductile iron water main to replace an existing 6-inch water main, including valves, fittings, cleaning and disinfection.

Central Regional Reclaimed Pipeline, West Palm Beach, FL Project included construction of a pipeline that transports reclaimed water from the Palm Beach County WWTP to the Florida Power & Light power plant. The pipeline consisted of two sections, eastern and western. Mr. Lazzari was the PM on the eastern section which parallels State Road 704 and ends at the FP&L power plant near State Road 80. The pipeline consisted of 37,000 LF of 36" ductile iron pipe along SR 704 and over 9,000 LF of HOPE Directional Drilling thru a highly environmental sensitive area and a Jack and Bore under the Florida Turnpike. The project included multiple directional drills, jack & bore under Florida Turnpike including a horizontal directional drill using 36" HOPE to cross a wetland. The right-of-way included a number of roads, canal, and wetland crossings. Well pointing and sock were used to dewater the pipe route.

Pump Stations for City of Miami Beach, City of Miami Beach, FL. - This Design-Build Project included the installation of (2) Stormwater Pump Stations at the street end of 14th & 10th street along Biscayne Bay. Projects included the installation of wet well approximately 25' in depth, drainage defender box, grate box, valve vault, dissipator box and all miscellaneous piping. Installation was performed in a tight corridor at the street end of 14th & 10th Street along Biscayne Bay.

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Christopher Lazzari – Managing Member

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11th Street Water Main, Sanitary Sewer, Drainage & Road Reconstruction, City of Miami Beach, FL. This design build project which extended from Alton road to Washington Ave. consisted of installing a new 12" water main, drainage pipe ranging from 15" to 36" in diameter, 12" sanitary PVC gravity main, signalization, landscaping, concrete sidewalks and full road reconstruction. This project was very challenging since the new road was being raised by 1.5' and all the existing buildings required to be harmonized. Extensive public outreach and coordination with building owners.

AMICI ENGINEERING CONTRACTORS

Cody Cook – Superintendent

Mr. Cook, Superintendent for Amici Engineering Contractors., has experience in transmission pipelines installations, roadway and infrastructure since 2009.These projects include Construction/ design build, sanitary sewers, water mains, force mains, drainage pump stations, directional drilling, jack and bores, and micro tunnels. Mr. Cook has successfully completed a long list of projects within an urban environment throughout South Florida that include the installation of transmission water mains (PCCP, PVC & DIP), transmission force mains (PCCP, PVC & DIP), sanitary sewers, storm sewers, pump stations, jack and bores, micro tunnels, directional drills, roadways sub-aqueous crossings and neighborhood improvement projects over the past decade..

Years of Experience

- 11 Years

- Design Build experience since 2009 with an emphasis on large diameter PCCP, PVC and DIP transmission mains, HDD, MOT & all facets of construction

Registrations & Certifications

OSHA 1O Hour Training
OSHA 30 Hour Training
OSHA Permit-Required Confined Space Entry
OSHA29 CFR 1910. 146
Hydrogen Sulfide Safety Course
OSHA 29 CFR l 9 10.1000
fall Protection Course
OSHA Subpart M 1926.500-503

Recent Project Experience

Turnpike Feeder @ Indrio Road Water Main Extension, St. Lucie Constructing approximately 27,390 LF of 12" water main and 90 LF of 6" water main along Turnpike Feeder Road, US Highway #1, and Indrio Road in St. Lucie County, Florida. The 12" and 6" water mains will include Fire Hydrants, Gate Valves, and all other appurtenances necessary for the construction of this project.

Indrio Road Utility Extension, St. Lucie FL Constructing approximately 10,000' of both 12" PVC sanitary Force main and 16" PVC Watermain along Indrio Rd from Emerson Ave. to Koblegard Rd.

Hobe Sound 8” FM Utility Extension, Hobe Sound, FL. Extension of 7,300 linear feet of 8-inch force main on US-1 in Hobe Sound

FDOT Alton Road 5th Street to Michigan Avenue (T6290), Miami-Dade County, FL. Construction in Miami Beach of approximately 15,000 linear feet of six-inch to 20-inch water main, 12-inch to 72-inch storm sewer, three storm water pump stations (20,000 GPM axial flow pumps each station), 36-inch stormwater force main, removal of contaminated material, restoration of FDOT roadway, outfall connection to Biscayne Bay, box culverts, and multiple excavations 25 feet deep and greater. Three stormwater pump stations were relocated from Alton Road to street ends as a cost-saving initiative with FDOT.

MDWASD Norris Cut, Miami-Dade County, FL. Design-build project in Virginia Key including deep shaft excavation over 95 feet and installation of ring beam, topper slab, leveling slab, thrust wall, and seal wall. The project included installation of approximately 2,100 linear feet of 60-inch prestressed concrete cylinder pipe (PCCP) force main and 1,000 linear feet of high-density polyethylene pipe (HDPE) directional drill on Fisher Island.

Sunset Islands 1 & 2 Neighborhood Improvements, City of Miami Beach, FL The project includes water and storm water improvements, including the renovation of storm water outfalls and the installation of valley gutters with full roadway reconstruction in a high-end exclusive community. Major challenges to this unit price contract were extensive conflicts with existing utilities and a high-water table.

Nautilus Neighborhood Improvement, City of Miami Beach, FL. This project consisted of 40,000 Linear feet of 8” water main, 20,000 linear feet of drainage piping ranging from 15 inch to 48 inch in diameter, drainage structures, (6) storm water pump stations, (36) injection wells, (20) gravity wells, milling and overlay. Extensive coordination and resident coordination.

Cody Cook – Superintendent

Biscayne Point Neighborhood Improvements Project, City of Miami Beach, FL. A $17.7 million neighborhood improvement project. The project began as a standard straight bid unit price contract ($10.9) and was converted into a design-build project by the City after a series of deficiencies with design were exposed and corrected by our team thereby adding value to the neighborhood. Project improvements consist of water and stormwater improvements, including pump stations, and above ground improvements to lighting, sidewalks, curb gutter, and roadway

54-Inch Redundant Sewer Force Main, City of Miami Beach, FL. The project involved the installation of approximately 5,300 LF of 54-inch force main commencing at the existing 48-inch plug valve located at the intersection of Washington Avenue and Commerce Street, extending northerly in the right-of-way of Washington to the intersection of Euclid Avenue; approximately 4,200 LF of horizontal directional drilling along the urban corridor between Euclid Avenue and Washington Avenue; approximately 1,000 LF of open cut pipe installation along 11th Street and in Washington Avenue to accomplish final connections to the 30-inch discharge PS No.1 and the existing 48-inch plug valve in the intersection of Commerce and Washington Avenue. The 54-inch pipe replaces the existing force main sanitary line that was constructed in 1977 and served as the sole means on wastewater conveyance through Miami Beach.

54-Inch Water Main Subaqueous Crossing, Miami Dade County, FL. This deep subaqueous crossing appx. 300 LF of 54" DIP, was constructed alongside a bridge where (2) canals intersect to facilitate widening by the FDOT. The minimal tolerances of this pipeline and the deep complex installation within the canal were major challenges to this project.

Pump Stations for City of Miami Beach, City of Miami Beach, FL. - This Design-Build Project included the installation of (2) Stormwater Pump Stations at the street end of 14th & 10th street along Biscayne Bay. Projects included the installation of wet well approximately 25' in depth, drainage defender box, grate box, valve vault, dissipator box and all miscellaneous piping. Installation was performed in a tight corridor at the street end of 14th & 10th Street along Biscayne Bay.

Convention Center Pump Station, City of Miami Beach, FL. - This Design-Build of (2) Stormwater pump stations consisted of 4-20,000 gallons per minute (GPM) with a 18 feet total design head axial pumps, control panels, VFD's, (2) wet wells, (2) Water treatment quality units, trash rack, dissipator structure and new seawall.

City of Hollywood Water Main Replacement Phase I & 2, City of Hollywood, FL. This project consisted of the installing 53,825 Linear feet of 8" PVC watermain, 604 rear to front conversions, 352-meter relocations, restoration and asphalt overlay. This project had extensive coordination with homeowners as well as the FDOT.

City of Hollywood Water Main Replacement Phase 3, City of Hollywood. This project consisted of 25,600 Linear feet of 8" PVC watermain, 340 Rear to front conversions, multiple meter relocations, restoration and asphalt overlay. This project had extensive coordination with homeowners as well as the FDOT

Crespi Blvd, City of Miami Beach, FL. This Design Build Project included the Installation of Water Main and Storm Sewer System along Crespi Blvd between 85TH street and 79TH Street. The project also includes the installations of over 2500 LF of Water Main, over 2800 LF of Storm Sewer collection system, Installations of pollution Control Structure, Installation of (1) Storm Sewer Pump Station, construction of seawall and landscaping along a residential neighborhood.

48" Force Transmission Main Along N. Miami Ave, Miami Dade County FL Project included Furnishing and installing approximately 12,700 linear feet of 48-inch Prestressed Concrete Cylinder Pipe (PCCP), Furnishing and installing approximately 5,600 linear feet of 12-inch ductile iron water main to replace an existing 6-inch water main, including valves, fittings, cleaning and disinfection.

Cesar D. Borges, PE, GISP

Design QA/QC Manager

ALUCES CORPORATION
• Consulting Engineers •

Areas of Expertise

Project Management

MDWASD Standards of Design

Miami-Dade County & Local Municipal Requirements

Small and Large pipeline design

Planning Studies

AutoCAD; MicroStation Office Suite; Thrust Restraint Design Software

Hydraulic Modeling

Education

BS, Civil Engineering, Florida International University, 1999

Years of Experience

With Aluces	6
Total Years	21

Registrations / Certifications

Professional Engineer, Florida, No. 63064

GISCI – GIS Professional No. 90082

FDOT MOT Adv. Cert# 4897

Professional Overview

Cesar Borges is a Civil Engineer possessing over 21 years of engineering experience. Mr. Borges' experience encompasses a wide range of projects including roadway design; hydrology, hydraulic and stormwater quality modeling; water resources engineering; stormwater infrastructure analysis and design; roadway drainage design; environmental permitting; utility coordination and relocation; evaluation of Best Management Practices (BMPs) performance for surface water disposal projects; Master Planning; and application of GIS technologies in civil engineering projects. Mr. Borges' clients have included private, State, and municipal clients throughout the State of Florida..

Relevant Project Experience

Miami-Dade MDWASD. D2-C-2 – 16", 12", & 8" D.I. Water Mains and 10" & 8" D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8" D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958. Mr. C. Borges is a Sr. Project Engineer on this project consisting of 9,000 LF design of 8", 12", 16" water main, 9,400 LF of 8" & 12" D.I. Gravity Sewer and 450 LF of 8" D.I. FM. The project includes providing service and laterals to approximately 100 properties within the project limits. The project also required coordination with connecting design to PS D2-C-2. The preliminary construction cost is approx. $6.9 Million.

Central Florida Equipment Rentals, Inc. SR 823/NW 57 Ave from South of W. 53rd Terrace to North of W. 65th Street and at NW 138th Street, Proposed 54" D.I. Water Main. Florida Department of Transportation (FDOT) FPID 249941-6-56-01 (MDWASD ER No. 16698) and FPID 429014-1-59-01 (MDWASD Project No. WO 16707) Post-design Revision. Miami-Dade County, FL: Mr. Borges was the engineer of record (EOR) on the post-design revision of this water main relocation project. During the initial design phase, a 54" D.I. WM was proposed to replace an existing 54" prestressed concrete pipe. However, the contractor requested a redesign of the 54" WM from D.I. to a bar-wrapped concrete cylinder pipe (BWCCP). Mr. Borges assisted in redesigning and signing/sealing the redesign of approximately 6,400 LF of 54" WM. The redesign included various value engineering solutions and implemented beveled ends and restrained joints where necessary. The redesign also included all necessary appurtenances per MDWASD standards. The post design-revision was completed within four weeks of NTP.

Miami-Dade MDWASD. CD 4.9 (34-43) – Installation of 8" & 12" D.I. Force Mains from PS 0713 to SW 112 Ave; from PS 0745 to PS 0602; from PS 0732 to US-1; from PS 0736 to PS 0709. PCTS 13182. ER No. S043482. Mr. Borges is a project engineer working on this 8,300 LF design of 8" and 12" D.I. FM. At the beginning of the project, Mr. Borges assisted in the value-engineering of the route, helping MDWASD to avoid a possible duplication of survey effort, and

Cesar D. Borges, PE, GISP

Design QA/QC Manager

cont.

designing for a more cost-effective alternative to crossing US-1. The project included a jack-and-bore design for crossing the Miami-Dade Busways corridor, which required an FDOT utility permit. The project also required coordination with connecting design to PS 0709. The preliminary construction cost is approx. $2.5 Million.

Miami-Dade MDWASD. CD 4.9 (46) – Installation of 8" D.I. Force Mains from SW 155 St and SW 107 Ct to SW 156 Ter. PCTS 13195. ER No. S043982. Mr. Borges is a project engineer working on 700 LF design of 8" D.I. FM. The design required a disconnection and removal of a valve at the easement of the rear of a single-family home and the crossing of existing slab-covered trench. The preliminary construction is approx. $230,000.

Miami-Dade MDWASD. Furnish & Install 42" D.I. Water Main between the Intersection of Biscayne Blvd (SR 5/ US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102. This project consists of the design of approx. 12,000 LF of 42" D.I. WM (inclusive of 1,900 LF of dual 30" HDPE via horizontal directional drilling (HDD)) from Biscayne Blvd to the Port of Miami and 1,900 LF of 30" D.I. WM. The project also consisted of a micro-tunnel under a railroad crossing within the Port of Miami. Mr. Borges is a pipeline design engineer on the project for the non-trenchless pipeline portion of this project. Mr. Borges designed through many utilities within the Port of Miami, performed thrust restraint calculations, performed various site visits within the Port to evaluate the proposed route. The preliminary construction cost is approx. $15 Million.

Astaldi Construction Corp. / FDOT District 7. SR 43/ US-301 from SR 674 to South of Balm Rd – Utility Relocation Plans. Mr. Borges is a design engineer on this post-design redesign that is part of the Cost Savings Initiative (CSI) process of approx. 19,000 LF of 36" D.I. WM and 2,600 LF of 16" WM & FM. The project was part of an FDOT roadway widening project in Hillsborough County. The redesign required value-engineering and redesigning the drainage-related components in order to maintain as much of the existing 16" WM & FM, in addition to optimizing the design of the 36" D.I. WM, including avoiding the use of horizontal directional drilling (HDD) for a portion of the 36" WM.

Miami-Dade MDWASD. 48" & 36" Water Main Interconnect for the Miami Central East Area. PCTS 11480 (Project No. W016596) & PCTS 11481 (Project No. W016597). This project is a design-build project for the "downtown loop closure". Mr. Borges is a pipeline design engineer on this complicated project in Downtown Miami. The project included 150 LF of 30" D.I. WM, 2,200 LF of 36" WM, and 4,100 LF of 48" D.I. WM.

FDOT District 6. SR 907/Alton Road from 5th Street to Michigan Avenue. Miami Beach, FL: This roadway segment, which spans approximately 8,100 linear feet (1.5 miles), This particular segment of Alton Road is also a historic district as well as a year-round tourist destination. The proposed system design is exceedingly challenging due to the low topographic elevations which are susceptible to spring and high tides; highly developed areas with no available areas for above ground storage; and large contributing areas beyond the FDOT right-of-way. The complexity of the project is exacerbated by the poor soils and the extensive utility present along the corridor, particularly at the intersections. Mr. Borges was responsible for the design and analysis of a new, controlled stormwater management system designated for this corridor. The proposed system utilized a gravity collection system to collect and convey stormwater runoff to three separate 20,000 GPM peak capacity stormwater pumps stations, each discharging at different points along the project via 36" DIP force mains. The new stormwater management system for Alton Road will provide a higher protection level of service than what is currently provided by the existing stormwater management system with the added of freeing additional capacity in the existing system for the remaining portions of the island. Water quality considerations for the project will be met through the use of pollution control structures. The quality of the discharges to the Bay will be better due to the implementation of these pollution control structures, in addition to oversized structure sumps and trash racks in each of the pump stations. The proposed system's performance was analyzed in ICPR using the standard FDOT 10-year, 1-, 8-, and 24-hour design storm events in addition to the 25-year, 72-hour and 100-year, 1-, 8-, and 24-hour design storm event.

Luis A. Silva, PE

Engineer of Record

ALUCES CORPORATION
• Consulting Engineers •

Areas of Expertise

Project Management

MDWASD Standards of Design

Miami-Dade County & Local Municipal Requirements

Small and Large pipeline design

Planning Studies

AutoCAD; MicroStation Office Suite; Thrust Restraint Design Software

Hydraulic Modeling

Education

BS, Civil Engineering, Florida International University, 2001

Years of Experience

With Aluces	6
Total Years	20

Registrations / Certifications

Professional Engineer, Florida, No. 76875

FDOT MOT Adv. Cert# 4908

Professional Overview

Luis A. Silva is a Civil Engineer possessing 20 years of engineering experience. Mr. Silva's experience encompasses a wide range of projects including water & sewer design; roadway design; hydrology, hydraulic and stormwater quality modeling; water resources engineering; stormwater infrastructure analysis and design; roadway drainage design; environmental permitting; utility coordination and relocation; Master Planning; and application of GIS technologies in civil engineering projects. Mr. Silva's clients have included private, State, and municipal clients throughout the State of Florida.

Relevant Project Experience

Miami-Dade MDWASD. D2-C-2 – 16", 12", & 8" D.I. Water Mains and 10" & 8" D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8" D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958. Mr. Silva is the EOR of this project consisting of 9,000 LF design of 8", 12", 16" water main, 9,400 LF of 8" & 12" D.I. Gravity Sewer and 450 LF of 8" D.I. FM. The project includes providing service and laterals to approximately 100 properties within the project limits. The project also required coordination with connecting design to PS D2-C-2. The preliminary construction cost is approx. $6.9 Million.

Miami-Dade MDWASD. CD 4.9 (34-43) – Installation of 8" & 12" D.I. Force Mains from PS 0713 to SW 112 Ave; from PS 0745 to PS 0602; from PS 0732 to US-1; from PS 0736 to PS 0709. PCTS 13182. ER No. S043482. Mr. Silva is the EOR for this 8,300 LF design of 8" and 12" D.I. FM. At the beginning of the project, Mr. Silva value-engineered the route, helping MDWASD to avoid a possible duplication of survey effort, and designing for a more cost-effective alternative to crossing US-1. The project included a jack-and-bore design for crossing the Miami-Dade Busways corridor, which required an FDOT utility permit. The project also required coordination with connecting design to PS 0709. The preliminary construction cost is approx. $2.5 Million.

Miami-Dade MDWASD. CD 4.9 (46) – Installation of 8" D.I. Force Mains from SW 155 St and SW 107 Ct to SW 156 Ter. PCTS 13195. ER No. S043982. Mr. Silva is the EOR of this 700 LF design of 8" D.I. FM. The design required a disconnection and removal of a valve at the easement of the rear of a single-family home and the crossing of existing slab-covered trench. The preliminary construction is approx. $230,000.

Miami-Dade MDWASD. Furnish & Install 42" D.I. Water Main between the Intersection of Biscayne Blvd (SR 5/US-1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102. This project consists of the design of approx. 12,000 LF of 42" D.I. WM (inclusive of 1,900 LF of dual 30" HDPE via horizontal directional drilling (HDD)) from Biscayne Blvd to the Port of Miami and 1,900 LF of 30" D.I. WM. The project also consisted of a micro-tunnel under a

Luis A. Silva, PE

Engineer of Record

cont.

railroad crossing within the Port of Miami. Mr. Silva is a pipeline design engineer on the project for the non-trenchless pipeline portion of this project. Mr. Silva designed through many utilities within the Port of Miami, performed thrust restraint calculations, performed various site visits within the Port to evaluate the proposed route. The preliminary construction cost is approx. $15 Million.

Astaldi Construction Corp. / FDOT District 7. SR 43/ US-301 from SR 674 to South of Balm Rd – Utility Relocation Plans. Mr. Silva is the EOR on this post-design redesign that is part of the Cost Savings Initiative (CSI) process of approx. 19,000 LF of 36" D.I. WM and 2,600 LF of 16" WM & FM. The project was part of an FDOT roadway widening project in Hillsborough County. The redesign required value-engineering and redesigning the drainage-related components in order to maintain as much of the existing 16" WM & FM, in addition to optimizing the design of the 36" D.I. WM, including avoiding the use of horizontal directional drilling (HDD) for a portion of the 36" WM.

Miami-Dade MDWASD. 48" & 36" Water Main Interconnect for the Miami Central East Area. PCTS 11480 (Project No. W016596) & PCTS 11481 (Project No. W016597). This project is a design-build project for the "downtown loop closure". Mr. Silva is a pipeline design engineer on this complicated project in Downtown Miami. The project included 150 LF of 30" D.I. WM, 2,200 LF of 36" WM, and 4,100 LF of 48" D.I. WM.

Central Florida Equipment Rentals, Inc. SR 823/NW 57 Ave from South of W. 53rd Terrace to North of W. 65th Street and at NW 138th Street, Proposed 54" D.I. Water Main. FDOT FPID 249941-6-56-01 (MDWASD ER No. 16698) and FPID 429014-1-59-01 (MDWASD Project No. WO 16707) Post-design Revision. Miami-Dade County, FL: Mr. Silva was the assistant designer on the post-design revision of this water main relocation project. During the initial design phase, a 54" D.I. WM was proposed to replace an existing 54" prestressed concrete pipe. However, the contractor requested a redesign of the 54" WM from D.I. to a bar-wrapped concrete cylinder pipe (BWCCP). Mr. Silva one of the designers in this redesign of approx. 6,400 LF of 54" WM. The redesign included various value engineering solutions and implemented beveled ends and restrained joints where necessary. The redesign also included all necessary appurtenances per MDWASD standards. The post design-revision was completed within four weeks of NTP.

Town of Davie. N-17 Canal Bridge over Orange Drive. Davie, FL: Mr. Silva was involved in the replacement of a bridge along Orange Dr. in Davie, FL, over the CBWCD N-17 Canal. Mr. Silva was the lead designer responsible for the drainage analysis and design of a bridge replacement with a box culvert, along with all the utility coordination and relocation at the project site. The utilities relocated included the removal of a 16" overhead water main and an 8" overhead force main to underground conditions. Mr. Silva developed the construction plans, which included the site plan, stormwater pollution prevention plan, water and sewer connection plan and details, pavement markings, and maintenance of plans. Mr. Silva also developed the bid documents and responded to contractor's requests for additional information (RAI) during the bid process and during construction of the park. Shop drawing reviews were done by Mr. Silva, along with verifying that as-built drawings represented the actual as-built condition and requirements by CBWCD.

FDOT District 6. SR 907/Alton Road from 5th Street to Michigan Avenue. Miami Beach, FL: Mr. Silva was a project engineer tasked with assisting in the drainage design of the reconstruction of Alton Road from 5th Street to Michigan Avenue. The design included 2-36" stormwater D.I. force mains 700 LF and 1,100 LF in length and a total of 6 submersible wastewater pumps capable of discharging 20,000 GPM per pump station (60,000 GPM total for the system). The force mains incorporated numerous elbows to avoid existing utility wyes to manifold discharges from the pump stations, 36" plug and check valves, reducers, and joint restraint glands in lieu of thrust blocks.

David O. Borges

Senior Design Engineer

ALUCES CORPORATION
• Consulting Engineers •

Areas of Expertise

MDWASD Design Engineer (1974 – 2013)

MDWASD Standards of Design

Miami-Dade County & Local Municipal Requirements

Small and Large pipeline design

AutoCAD; MicroStation Office Suite; Thrust Restraint Design Software

2011, Hanson Pressure Pipe BWCCP Certificate of Completion

Years of Experience

With Aluces	6
Total Years	46

Registrations / Certifications

2011, Hanson Pressure Pipe BWCCP Certificate of Completions

Professional Overview

David O. Borges is a Civil Engineer possessing over 46 years of water and sewer engineering experience in South Florida. During his long tenure at Miami-Dade Water and Sewer Department (MDWASD) in the Utility Design Section, Mr. D. Borges has implemented all types of water and sewer solutions including reinforced concrete (PCCP & BWCCP), ductile iron, and PVC pipe in sizes up to and, on occasion, beyond 54 inches in diameter, under both gravity and pressure conditions. He has worked on designs involving aerial/subaqueous canal crossings, railroad crossings, microtunneling, jack-n-bore designs, pipeline routing studies, alternative analyses, and developed design criteria packages. Mr. D. Borges' water and sewer design experience has also allowed him to produce construction plan sets for projects along with permitting coordination, cost estimating, and utility coordination and relocation.

Relevant Project Experience

Miami-Dade MDWASD. D2-C-2 – 16", 12", & 8" D.I. Water Mains and 10" & 8" D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8" D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958. Mr. Borges is a pipeline designer on this project consisting of 9,000 LF design of 8", 12", 16" water main, 9,400 LF of 8" & 12" D.I. Gravity Sewer and 450 LF of 8" D.I. FM. The project includes providing service and laterals to approximately 100 properties within the project limits. The project also required coordination with connecting design to PS D2-C-2. The preliminary construction cost is approx. $6.9 Million.

Central Florida Equipment Rental, Inc./MDWASD. SR 823/NW 57 Ave from South of W. 53rd Terrace to North of W. 65th Street and at NW 138th Street, Proposed 54" D.I. Water Main. FDOT FPID 249941-6-56-01 (MDWASD ER No. 16698) and FPID 429014-1-59-01 (MDWASD Project No. WO 16707), Miami-Dade County, FL: Mr. D. Borges was a designer on the post-design revision of this water main relocation project. During the initial design phase, a 54" D.I. WM was proposed to replace an existing 54" prestressed concrete pipe. However, the contractor requested a redesign of the 54" WM from D.I. to a bar-wrapped concrete cylinder pipe (BWCCP). Mr. D. Borges has experience working with concrete pipe and redesigned approximately 6,400 LF of 54" WM. The redesign included raising the originally proposed 54" D.I. WM by up to 5 ft to reduce depth of excavation and implement beveled ends and restrained joints where necessary. The redesign also included all necessary appurtenances per MDWASD standards. The post design-revision was completed within four weeks of NTP.

MDWASD. Furnish & Install 42" D.I. Water Main between the Intersection of Biscayne Blvd (SR 5/US 1) and NW 5th Street to Port of Miami. PCTS 15091. ER No. W017102, Miami, FL: This project consists of the design of approx. 9,800 LF of 42" D.I. WM, 2,050 LF of dual 30" HDPE via horizontal directional

David O. Borges

Senior Design Engineer

cont.

drilling (HDD), from Biscayne Blvd to the Port of Miami and 2,000 LF of 30" D.I. WM. The project also consisted of a micro-tunnel under a railroad crossing within the Port of Miami. Mr. D. Borges is a pipeline design engineer on the project. Mr. D. Borges designed through many utilities within the Port of Miami, performed thrust restraint calculations, performed various site visits within the Port to evaluate the proposed route. The construction cost is approx. $21 Million.

MDWASD. 48" & 36" Water Main Interconnect for the Miami Central East Area. PCTS 11480 (Project No. W016596) & PCTS 11481 (Project No. W016597), Miami, FL: This project is a design-build project for the "downtown loop closure". Mr. D. Borges is a pipeline design engineer on this complicated project in Downtown Miami. The project included 200 LF of 30" D.I. WM, 2,250 LF of 36" WM, and 4,100 LF of 48" D.I. WM.

MDWASD. Installation of 60" Force Main (NL-1A) between the intersection of NE 151st St and Biscayne Blvd and NE 163rd St and NE 8th Ave. PCTS 14696, Miami, FL: Mr. Borges is currently working as a pipeline design engineer on this project. The project consists of 13,000 LF of 60" PCCP (Concrete) Force Main, which ties to NL-1B on the west end and to the existing 72" PCCP FM east of Biscayne Blvd. The project includes a trenchless design for crossing Biscayne Blvd.

Miami-Dade MDWASD. CD 4.9 (34-43) – Installation of 8" & 12" D.I. Force Mains from PS 0713 to SW 112 Ave; from PS 0745 to PS 0602; from PS 0732 to US-1; from PS 0736 to PS 0709. PCTS 13182. ER No. S043482. Mr. D. Borges is a project engineer for this 8,300 LF design of 8" and 12" D.I. FM. Mr. D. Borges worked on the value-engineering of the route and designing for a more cost-effective alternative to crossing US-1. The project included a jack-and-bore design for crossing the Miami-Dade Busways corridor, which required an FDOT utility permit. The project also required coordination with connecting design to PS 0709. The preliminary construction cost is approx. $2.5 Million.

NW 32 Ave Sanitary Sewer Improvement Project between NW 62 St and NW 78 St. MDWASD Project No. S-757 (ER 47269). Miami-Dade County, FL: The purpose of this project was to provide sanitary sewer improvements for the purposes of promoting economic development in an economically disadvantaged industrial neighborhood. Mr. D. Borges was the MDWASD design engineer responsible for the design of new sanitary sewer mains, gravity and force mains. Mr. D. Borges designed approximately 4,300 LF of 12" DI force main and approximately 1,100 LF of 8" DI gravity sewer. The project also included 420 LF of 6" extra heavy duty DIP for laterals, 110 LF jack-and-bore construction for crossing the FEC Railroad, and sanitary pump station. Mr. D. Borges developed design plans, coordinated with utilities, resolved utility provided quantity take-offs along with cost estimates, and provided a list of materials for The force main was designed with automatic air release valves and adhered to MDWASD design criteria. The estimated construction cost was approximately $1 Million.

24" C905 PVC Force Main along NE 35 Ave from NE 168 St to NE 171 St. MDWASD PCTS No. 11154. Miami-Dade County, FL: This project entailed replacing approximately 1,000 LF existing 12" D.I. sanitary force main (FM) with a new 24" C905 PVC force main. The existing force main was less than 20-years old (less than the expected service life) and required replacement due to issues with corrosion, which was attributed to tidal in the groundwater table. High tide conditions would percolate seawater into the groundwater table and resulted in the D.I. FM being submerged in saltwater continuously over its life, ultimately affecting the service life of the system. Mr. D. Borges was the MDWASD design engineer responsible for the design of approximately 1,000 LF of 24" PVC sanitary sewer force main. Mr. D. Borges developed design plans, coordinated with utilities, resolved utility permitting, provided quantity take-offs along with cost estimates. The estimated construction cost was approximately $700,000.

Raul Viltres

Construction Inspector

ALUCES CORPORATION
• Consulting Engineers •

Education

Bachelors of Science in Civil Engineering University of Oriente, Santiago de Cuba, Cuba, 1982

Building Technician Technical Institute of Construction, Santiago de Cuba, 1975

Years of Experience

With Aluces	< 1
With Others	45

Registrations / Certifications

MOT Intermediate

CTQP Concrete Field Technician Level I

CTQP Asphalt Paving Technician Level I

CTQP Earthwork Construction Insp- Level I

CTQP Earthwork Construction Insp. Level II

CTQP Drilled Shaft Inspection

CTQP Final Estimate Level I(Spired)

ACI Concrete Field Technician Level II(Spired)

ACI Concrete Field TestingTech Grade I

Hazmat Certification by FDOT and IATA

FDEP Qualified Stormwater Management Inspector-Insp. No. 21083

Professional Overview

Raul Viltres has over 44 years of experience in Construction Engineering Inspections (CEI). His experience includes inspection of pipeline construction for MD-WASD, roadways in milling & resurfacing, widening and reconstruction, bridges, drainage activities, materials sampling and testing, lighting, signalization, and maintenance of projects for the Miami-Dade Expressway Authority, FDOT, City of Miramar, Miami Beach, Doral, Miami International Airport Miami-Dade Aviation Department, and MD-WASD.

Relevant Project Experience

Consent Decree Project 5.7, 5.6, & 5.4 Upgrade of Pump Station NO.0417, PCTS NO. 13347, Pump Station No. 0416 PCTS No. 13075, Pump Station No. 0414 PCTS No. 13997. MD-WASD Consent Decree Program. Mr. Viltres was an inspector for the replacement of switchgear and rehabilitation of wet well at Pump Station No. 417 and oversee the upgrade of two Booster and one Regional Wastewater Pump Station with a combined of 24 MGD to the North District Wastewater Treatment Plant. The upgrade consisted of replacing all switchgear, motors, pumps, piping and appurtenances. Also, structural additions to incorporate the VFD and the required air conditioning components. These pump stations were all unmanned facilities which PLC automation was used to control and operation. Client Reference: Warren Howard (B. Eng.) (954) 300-6479, Martin J. Benzaquen (Gannett Fleming) (954) 547-0017. Dates of Service: June 2019-June 2020

Design-Build Services to Furnish/Install a 48-inch Force Main along N. Miami Ave from NW 8 St to 36 St and along NE 36 St from N. Miami Ave to NE 2 Ave (DB14-WASD-05). MD-WASD Ocean Outfall Legislation Program. Mr. Viltres was an inspector for the installation of the 48-inch FM along North Miami Ave. and NE 36th St included three Jack & Bores. The project also included the installation of a 12-inch WM along North Miami Ave., including all pressure tests for FM and WM, job restoration, concrete curbs & gutters, sidewalk, and milling & resurfacing. The Interceptor box for a 102-inch pipe to connect to the wet well at Virginia Key Treatment Plant. Client Reference: Neil Wilson, PE (PM OOL) (404) 394-0193 or (786) 506-5926, Ron Fields, P.E. (WSP) (305) 587-9791. Dates of Service: April 2017- June 2019

Replacement of the Existing 54 inches Force Main from CDWWTP to Fisher Island under Norris Cut Cannel (DB12-WASD-01). Mr. Viltres was an inspector responsible for overseeing the construction and testing activities of secant piles for launch shafts (Virginia Key) including drilling, casing Installation, form work, reinforcing steel and concrete placement, precast (rings for the tunnel) at the precast plant, retrieval shaft (Fisher Island), soil mix, tunneling activities,

Raul Viltres

Construction Inspector

cont.

new 60" FM to be constructed via segmental tunnel trenchless technology (carrier pipes) and open cut trenching method ECP 60", HDPE bypass, commissioning and job restorations, among others. Project Cost $72 million. Client Reference: Gary Clarke (WASD PM) (786) 552-8970; Ron Fields, P.E. (WSP) (305) 587 9791. Dates of Service: August 2014 – February 2017

Central Blvd Widening, Realignment, and Service Loop Reconstruction at MIA; Miami, FL. MDX Project No. 11211.030. Mr. Viltres was a roadway inspector whose responsibilities included inspections of landscaping, irrigation installation, as well as Class 5 coding and bridge placement for steel bridges. Project cost $50 million. Client Reference: Juan Toledo, PE (MDX) (305) 986-6417. Dates of Service: June 2014 – August 2014

Various Roadway Improvements Area 2, East of Turnpike (Milling & Resurfacing) IFB 12-007. City of Miramar. Mr. Viltres was a Senior Roadway Inspector for the roadway inspection, responsible for the construction inspection and documentation of maintenance of
He produced daily reports for contractor operations and maintained record of quantities for milling and resurfacing, adjust MH and valves. Project Cost $2 million. Client Reference: Glenford Gayle (City of Miramar Engineering Inspector III) (954) 602-3308. Dates of Service: January 2014 – June 2014

425145-1-52-01, 425211-2-52-01, 249615-9-52-01, & 427508-1-52-01 North Miami-Dade Residency Krome North Grouping FDOT District VI. Miami, FL. Mr. Viltres was a Senior Roadway Inspector for this project that included contract administration, inspection and materials sampling and testing in compliance with FDOT manuals, procedures, and memorandums. Project Cost $19.4 million. Client Reference: Tony Hernandez, P.E. (786) 251-8056; Ivan Hay, P.E. (FDOT PM) (305) 650-0009. Dates of Service: May 2012 – February 2014

Design-Build project-SR 874 Mainline Widening and reconstruction from Kendall Drive to The Palmetto Expressway. Design-Build team with Community Asphalt. MDX Job No. 87409. Mr. Viltres was a Senior Roadway Inspector responsible for the construction inspection and documentation of maintenance of earthwork, excavation, drainage, embankment, lime rock base, asphalt pavement, MSE wall, concrete, lighting, signalization, striping, signage, and landscaping, as well as materials sampling and testing of the earthwork and concrete materials being incorporate into the Project Log book. Project Cost $46 million. Client Reference: Juan Toledo, P.E. (MDX) (305) 986-6417. Dates of Service: September 2011 – May 2012

Design-Build MIA Mover APM System. Miami, Florida. Miami-Dade Aviation Department. Mr. Viltres was a Senior Inspector for this project. MDAD Design Build MIA Mover APM System - The MIA Mover is an Automated People Mover (APM) system that now links the terminal area at Miami International Airport (MIA) with the facilities at the Miami Intermodal Center (MIC). The system was an elevated dual lane Guideway approximately 1.25 miles long with two end stations and approximately 40 feet above grade. Foundations consisted of auger-cast piles, drilled shafts or concrete piles. Conventional or post-tensioning concrete piers with hammerhead, post-tensioning cantilever, inverted tee or straddled beams will support the Florida I-beams (95 to 125 feet approximate span) and steel box girders; the deck supports four plinths where the rubber-tire people mover will operate. In addition, the project also consisted of roadway restorations and new drainage installations connecting to the existing drainage system. He was responsible for the overall QA inspections; and reporting of all performed activities on site and assured that the projects have been executed according to the contract documents, contract MDAD and FDOT standards. Client Reference: Tony Hernandez, P.E., Project Administrator (786) 251-8056. Dates of Service: October 2009 – April 2011

Downtown Beautification Project, Miami, Florida. City of Miami. Mr. Viltres was a Senior Roadway Inspector in charge of inspection of concrete curb & gutter and sidewalk reconstruction, new street light system installation, landscape and milling & resurfacing. Project cost $5 Million. Client Reference: Wilfredo S Mulkay, Project Administrator (786) 299-1583. Dates of Service: January 2009 – August 2009

Blaynier Varela

CADD Manager/Design Engineer

ALUCES CORPORATION
• Consulting Engineers •

Education

Bachelors of Science in Civil Engineering University of Camaguey, Cuba, 2011

Years of Experience

With Aluces	2
Total Years	8

Professional Overview

Blaynier Varela has 8 years of professional experience in Engineering, which includes experience in Construction, Roadway Design, Drainage, and Structures. Responsibilities included design of components of highway design projects, plans review, plans production, preparation of reports, inspections, control plans, calculations, modeling, and miscellaneous structures.

Relevant Project Experience

Miami-Dade MDWASD. D2-C-2 – 16", 12", & 8" D.I. Water Mains and 10" & 8" D.I. Gravity Sewer along NW 22 Ave from NW 79 St to NW 90 St and 8" D.I. Force Main along NW 87 St. PCTS 15835. Contract S-958. Mr. Varela is a Project Engineer on this project consisting of 9,000 LF design of 8", 12", 16" water main, 9,400 LF of 8" & 12" D.I. Gravity Sewer and 450 LF of 8" D.I. FM. The project includes providing service and laterals to approximately 100 properties within the project limits. The project also required coordination with connecting design to PS D2-C-2. The preliminary construction cost is approx. $6.9 Million.

SR 933/NW 12 Ave from S. of NW 20 St to N. of NW 29 St (3,200 LF) | Florida Department of Transportation (FDOT) District 6 | Miami, Florida | 12/2018 to Present | Joaquin de la Cruz, PE | (305) 470-5258. Mr. Varela is currently working on this ride rehabilitation project with safety improvements along NW 12 Ave. Mr. Varela is a Project Engineer for this roadway project that includes upgrades to curb ramps, a pedestrian hybrid beacon, and widening to the turning radius requiring right-of-way acquisition. The project is approx. 0.6 miles long and includes closure of two railroad tracks, relocation of City of Miami bus stops, and work under the Metrorail.

SR 826/Palmetto Expressway from E. of NW 42nd Ave to E. of NW 32nd Ave (4,600 LF) | FDOT District 6 | Miami, Florida | 6/2017 to Present | Raul Quintela, PE | (305) 470-5117. Mr. Varela is currently working on the design plans associated with the drainage design for the reconstruction, including express lanes, of the Palmetto Expressway. Mr. Varela is a Project Engineer for this project and is responsible for plans production of the drainage design plan sheets. The drainage for this project includes French drain along the frontage roads and

District-wide Drainage Design & Plans Review Consultant Services | FDOT District 6 | Miami-Dade & Monroe County, Florida | 6/2019 to Present | Mario Dominguez, PE | (305) 470-5482. This Districtwide contract includes all necessary engineering, research, and coordination required for reviewing scoping reports, reports, PD&E reports, permit packages. This project's scope of services included roadway elements associated with the safety improvements

Blaynier Varela

CADD Manager/Design Engineer

cont.

(roadway and control plans, signing and marking, structural plans, drainage plans, and utility components). Mr. Varela served as designer and provided design duties, including detailing and calculations.

City of Hollywood Mobility Improvements at Various Locations | FDOT District 4 | Broward County, FL. This project provided improved mobility within the corridor by providing connectivity using bicycle lanes and pedestrian paths and improvements. The scope of work covered 14 sub-projects that included roadway widening and drainage improvements of SR 820 between Academy Circle and 35th Street, widening and drainage improvements to North and South Park Rd. and miscellaneous sidewalks and bike lanes. Mr. Varela served as roadway and drainage designer.

SR 916/NW/NE 135th Street from NW 6th Avenue to SR 5/Biscayne Boulevard | FDOT District 6 | 2015 – 2018. Mr. Varela served as designer on this project. The project consisted of designing for milling and resurfacing the existing roadway; pavement markings, including high emphasis pedestrian crosswalks at school zones, stop bars, standard yellow and white line striping, arrows, and messages. The project also included pedestrian signalization features at signalized intersections, design of curb ramps to meet current standards, add detectable warnings, where missing, and close unused driveways.

Project No. 2017-1-288 (Contract: T1368213BI) Bridge Strike Repairs on the bridge located at Sheridan Street (Bridge No. 860155) over Florida's Turnpike located 0.3 Miles West of US- 441 | City of Hollywood | Hollywood, FL. John Low, PE, Broward Public Works (954) 357-6043. This project involved working for Broward County Highway and Bridge Maintenance Division performing bridge maintenance services that included design of repairs to 24 precast AASHTO girder beams, including strand replacements from bridge hits, expansion joint systems, and replacement of the pedestrian sidewalk fencing enclosures on both sides of the bridge with associated maintenance of Mr. Varela worked as a designer on this project performing loading calculations and design of beam repair details.

General Engineering Consultant (GEC) Services | FDOT District 5 | Martha L. Moore, PE, Alfred Benesch & Company | (904) 396- 5727. This GEC contract supported the Work Program for District 5 and the operation, maintenance and construction of the state highway system with a focus on Transportation Development and Transportation Operations, including planning, PD&E, design, surveying, construction, operations and maintenance. Mr. Varela worked as designer on this contract, whose duties included working on the Scenic Byway Standard Kiosk project. He worked on the design plans and assembly construction manuals.

SR 820 / Pines Blvd. / Hollywood Blvd. from East of US-27 to east of Young Circle | FDOT District 4 | Broward County, FL. Henry Oaikhena, PE, (954) 777-4445. This was a two-part project that included planning and design. This project provided improved mobility within the corridor by providing connectivity through the use of bicycle lanes and pedestrian paths and improvements, recommended by the District 4 of Modal Development in conjunction with the Broward Metropolitan Planning Organization, Broward County Public Works, the City of Pembroke Pines, City of Hollywood, and City of Miramar. Mr. Varela served as roadway and drainage designer, responsible for developing design plans and public meeting presentation documents for projects within these three cities.

SR 5/US 1 from SW 37th Avenue to Ponce De Leon Blvd. | FDOT District 6 | Miami-Dade County, FL. The project included safety improvements and reconstruction of SR 5. The roadway was re-aligned to eliminate substandard reverse curve horizontal curvatures and included the replacement of the pedestrian bridge over SR 5. The design also included a composite slab on the stringers, steel staircases, a new tower building using an open frame glass enclosure to provide visibility to the interior of the building. Mr. Varela provided support for the roadway signing and pavement components, maintenance of bridge plans, the sections

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Derek G. Zeman, PSM

Survey and Subsurface Utility Engineering (SUE) Manager

Derek G. Zeman, PSM, is Surveying and Subsurface Utility Engineering (SUE) Project Manager in South Florida for DRMP's Surveying and Mapping Division. He serves as the Boca Raton Survey Office Manager for both public and private sector clients specializing in transportation, design surveys and Mobile LiDAR. He is currently responsible for servicing Florida Department of Transportation clients, overseeing field operations, production staff, coordinating with the civil engineering group and providing overall QA/QC for deliverables.

Mr. Zeman's experience ranges from above-ground and below-ground design surveys, LiDAR laser scanning surveys, platting reviewer for municipalities, and boundary/topographic surveys. In addition to his day-to-day responsibilities, he also serves as the Florida Survey and Mapping Society Palm Beach Chapter President and as a board member on Palm Beach County Land Development Review Advisory Board as well as the Florida Atlantic University Geomatics Student Advisory Board.

Years of Experience
32 Total
2 With Firm

Professional Registration
Professional Surveyor and Mapper
No. 5655, Florida, 1996
Registered Professional Land Surveyor
No. 6305, Texas, 2012

Professional Affiliation
President, Palm Beach Chapter, Florida Surveying and Mapping Society
National Society of Professional Surveyors
Florida Atlantic University Geomatics Engineering Advisory Council

Software Aptitude
MicroStation
Trimble Business Center
AutoCAD Civil 3D

RELEVANT PROJECT EXPERIENCE

Dixie Highway Reconstruction Design-Build, FDOT District Four, Broward County, Florida: Survey Project Manager for this design-build project involving the realignment of Dixie Highway from south of Hillsboro Boulevard in Broward County to north of the Hillsboro Canal in Palm Beach County, approximately 0.75-miles. The project included the realignment of Dixie Highway, a 4-lane divided urban arterial, to ultimately bridge the Hillsboro Canal, NE 2nd Avenue, Florida East Coast Railway, North River Avenue, NE 1st Avenue and NE 2nd Street. A pedestrian pathway structure and an off-ramp structure from Dixie Highway to NE 2nd Avenue will also be constructed. A bathymetric survey was performed on the Hillsboro Canal to provide information regarding the conditions beneath both the FEC and the Dixie Highway bridge. Conventional survey methods were used to extend the digital terrain model above the high water line.

Southbound I-95 Weigh-in-Motion Station, FDOT District Four, Martin County, Florida: Project Surveyor responsible for the survey coordination phase of this design-build project. This project was a multidiscipline effort involving roadway, architectural, drainage, environmental permitting, signing and pavement markings, signalization, roadway lighting, electrical, mechanical, structural and landscape architecture design. The project also consisted of site civil providing for potable water, self-supportive septic treatment, a package water treatment plant and an emergency power generator. The weigh-in-motion/static scale system is designed to sort potential overweight and over-height trucks by requiring potential violators to travel through the station. The southbound I-95 weigh-in-motion station in Martin County is the first of its kind in Florida to weigh trucks in-motion with sensors embedded in the outside at-speed travel lane of I-95.

Boynton Beach Regional Force Main and Lift Station, City of Boynton Beach, Palm Beach County, Florida: Survey Project Manager responsible for preparing three miles of route survey and several sketches and legal descriptions for a temporary construction easement in support of a $7.5 million project to construct new force main to provide an emergency 4-mile bypass.

Continuing Engineering Services (Contract No. 2018-21) for the City of Parkland, Broward County, Florida: Serving as Survey and Subsurface Utility Engineering Manager for this continuing services contract with the City of Parkland, Florida. Services under this contract include survey, roadway and drainage design, utility coordination and investigation, signing and pavement markings, GIS analysis, hardscape and landscape design. Representative projects include:

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- **Old Club Road and University Drive Roundabout, City of Parkland, Broward County, Florida**: Survey Manager responsible for Topographic survey required for the design of an urban roundabout at Old Club Road and University Drive at the Parkland Golf and Country Club entrance. Project stakeholder involvement includes an aesthetic gateway entry feature with hardscape and landscape design directed by City Commission. Design elements include; survey, roadway and drainage design, utility coordination and investigation, signing and pavement markings, hardscape and landscape design.

Coral Ridge Drive (437798-1-32-01), FDOT District Four, Broward County, Florida: Survey and Subsurface Utility Engineering Manager for design survey of the widening, milling and resurfacing the existing off-system 4-lane divided highway from Southgate Boulevard to Holmberg Road, approximately 5.5-miles within the City of Coral Springs. The project consists of widening the road to add buffered bike lanes, adding sidewalk at gap locations, performing drainage upgrades, providing signing and pavement markings and improving substandard ADA elements. In addition, this project will upgrade existing intersection signals to mast arms at West Atlantic Boulevard, Royal Palm Boulevard, West Sample Road, Wiles Road, Westview Drive and Sawgrass Expressway. Coral Ridge Drive between Southgate Boulevard and Holmberg Road is a heavily residential area with large pockets of commercial properties and will require a significant public involvement effort. This project includes utility coordination, permitting, survey and geotechnical exploration.

Sample Road Interchange Improvements at I-95 (436958-1-52-01), FDOT District Four, Broward County, Florida: Project Surveyor responsible for the design survey in support of approximately 3-miles of the roadway and interchange ramps with SR 9 and Sample Road as well as intersection improvements at Sample Road and NE 3rd Avenue. Survey tasks included supplementing existing survey, subsurface utility engineering and preparing sketches and descriptions. The overall project added ramps widening and ramp metering to improve function of the interchange at Sample Road. The project included roadway, drainage, utilities, bridge widening (Sample Road), lighting, intelligent transportation systems, signing and pavement markings, maintenance of traffic and surveying. The project also includes the purchase of right-of-way.

University Drive (431756-1-32-02), FDOT District Four, Broward County, Florida: Subsurface Utility Engineering Leader and Project Surveyor responsible for the design survey of the reconstructing/widening/milling and resurfacing of the existing suburban 4-lane divided highway to a 6-lane divided urban highway from just south of Cardinal Road/ NW 40th Street to the Sawgrass Expressway/SR 869, approximately 1.6-miles within the City of Coral Springs. Project includes roadway design, lighting design, signing and pavement marking, signalization, intelligent transportation systems, miscellaneous structures, utilities, surveying and right-of-way mapping, permitting, landscaping and public involvement.

US 27 and SR 826 TWO No. 3 (432282-2-32-01), FDOT Statewide, Miami-Dade to Lake County, Florida: Project Surveyor for the ground control survey and responsible for overall survey operation and quality assurance/quality control support. This 244-mile project included the US 27 corridor form the intersection of US 27 and SR 826 in Miami-Dade County to the intersection of US 27 and Florida Turnpike in Lake County. This mapping project provided a controlled GPS Network which incorporated GPS Static Observations on 24 NGS Control Points and 126 aerial targets across south Florida utilizing FDOT's FPRN Stations. The ground control survey scope included identifying new photo control positions, adjusting and documenting ground control points, creating field sketches with survey data, provided a Control Survey Report with adjusted horizontal and vertical values of over 150 occupied locations. This data was used for aerial photogrammetry to create a digital terrain model of the roadway corridor for planning purposes. Due to the high amount of accidents along the US 27 corridor, field crews needed to maintain strict compliance to maintenance of traffic work zone safety.

Miscellaneous Surveying Services, FDOT District Four, Florida: Project Surveyor responsible for providing survey assistance for miscellaneous engineering design surveys. Surveys included laser scanning, hydrographic survey, GPS control, bench level, aerial targets for fixed wing and LAMP, bridge, channel, drainage and lake surveys, right-of-way maps and locating all underground utilities with subsurface utility engineering.

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Eric C. Detassis, PSM

Project Surveyor

Eric C. Detassis, PSM, is a Project Surveyor in South Florida for DRMP's Surveying and Mapping Division. His primary duties consist of assisting in project management and production on Topographic, Horizontal and Vertical Control, Boundary/ Right-of-Way, Static and Mobile LiDAR projects. In addition, he processes and maps GPS, EFB, Static and Mobile LiDAR and performs calculations using various CAD platforms. Mr. Detassis trains field crews and office staff.

Years of Experience
17 Total
>1 With Firm

Professional Registration
Professional Surveyor and Mapper
No. 7277, Florida, 2020

Education
Bachelor of Science in
Industrial Engineering, Florida
State University, 2000

Professional Affiliation
Florida Surveying & Mapping Society

Software Aptitude
AutoCAD Civil 3D
Faro Scene
Leica Cyclone
Leica Pegasus
MicroStation SS10 PowerGEOPAK
OpenRoads Designer
Trimble Business Center

RELEVANT PROJECT EXPERIENCE

Oakland Park Sidewalk Design, FDOT District Four, Broward County, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production and QA/QC of all field and office work for the survey deliverables. The purpose of this 8-mile project was to add sidewalks for students and parents going to and from Oakland Park Elementary School. In addition to Utility Designation Services, Vacuum Excavation (Test Holes) are also performed to verify location and establish an accurate depth. Overall project included survey baseline establishment, Mobile LiDAR 3D Topographical Survey, Drainage Survey and above ground (aerial) utilities.

Widen Turnpike Spur (SR 91), Golden Glades Toll Plaza to Turnpike Extension (SR 821) (MP 0.4-3.6), Florida's Turnpike Enterprise, Miami-Dade and Broward Counties, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production, and QA/QC of all field and office work for the survey deliverables. This project involved the widening of Turnpike Spur (SR 91) from six to eight lanes including managed lanes and auxiliary lanes for approximately three miles. This project includes modifications to the NW 199th Street interchange at Dolphin Stadium, replacement of the Turnpike bridges over Miami Gardens Drive with aesthetic features, widening of the Spur bridges over the C-9 Canal, addition of noise walls along the corridor and replacement of the existing Golden Glades Mainline Plaza with all electronic tolling gantries. Two FGT gas lines run parallel to the southbound lanes and extensive coordination between FGT and FTE will be required to minimize impacts to the project. This project includes roadway, complex maintenance of traffic, drainage, environmental permitting, structures, signalization, lighting, signing and pavement markings, intelligent transportation systems, landscape opportunity plans, survey and utility coordination. Extensive coordination is being completed with local agencies and the public as the design progresses. The project also includes the purchase of right-of-way. Extensive coordination is being completed with local agencies and the public as the design progresses.

Right of Way Mapping and Survey Staking for Canal Rehabilitation Projects, Lake Worth Drainage District, Palm Beach County, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production and QA/QC of all field and office work for the survey deliverables on this 2-year contract for Mapping and right-of-way determination involving 500-miles of canals over 13 municipalities. As part of the Canal Rehabilitation Project, sections of canals are researched for fee simple ownership and easement rights. Right-of-way maps were prepared and checked for concurrence. Section corners and boundary monuments are field located and additional determinations are made. Once completed, right-of-way lines are staked and possible encroachments are noted for future clearing and rehabilitation efforts. Survey Services also performed are topographic surveys, canal cross sections and inverts of drainage structures.

Continuing Survey and Subsurface Utility Engineering Services for Florida Power & Light, Statewide, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production and QA/QC of all field and office work for the survey deliverables to provide survey and subsurface utility

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Eric. C. Detassis, PSM, continued

engineering services at FP&L's substations,transmission Lines and powerplants across Florida. Survey services have included layout of 500KV tower structures, poles, anchors as well as topographical surveys proposed and existing substations for design. Subsurface utility engineering has included utility designation in and adjacent to substations for construction projects as well as designating utilities for planning of future projects.

North Dixie Highway Resurfacing, HDR, Inc. for FDOT District Four, Palm Beach County, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production, and QA/QC of all field and office work for the survey deliverables. The project involved the resurfacing of North Dixie Highway from US 1 N Quadrille to Palm Beach Lakes Boulevard for a total of 0.413-miles.

SR 7 Southern Boulevard to Okeechobee Boulevard, GPI Geospatial Inc., Palm Beach County, Florida: Surveyor responsible for supervising field crews and survey office technicians. Assisting in project management, production, and QA/QC of all field and office work for the survey deliverables.The purpose of this 2-mile project is widening, milling and resurfacing from Southern Boulevard to Okeechobee Road. Utility Designation Services and metric to US survey feet conversion to the existing baseline and right-of-way were performed on this project.

RAJ KRISHNASAMY, P.E.

PRESIDENT, PRINCIPAL ENGINEER
33 Years of Experience

PROFESSIONAL QUALIFICATIONS

EDUCATION

- MS in Geotechnical Engineering, University of Memphis, 1995
- BS in Civil Engineering, Christian Brothers University, 1987
- Diploma in Electronic Engineering, Malaysian Air Force Institute, 1984

PROFESSIONAL ORGANIZATION AND REGISTRATION

- Professional Engineer: Florida, 53567
- Water Well Contractor, Florida, 11346
- Certified OSHA Supervisor
- Certified Environmental Consultant

PROFESSIONAL EXPERIENCE

Mr. Raj Krishnasamy, P.E., President and Principal Engineer of TSF, is a Florida State registered Geotechnical Engineer with over 33 years of experience. Mr. Krishnasamy oversees the geotechnical engineering, construction materials testing, and inspection services operations. His experience consists of successfully completing over 5,000 public and private projects. He serves as Project Manager for continuing contracts with over 20 Florida public agencies. He has a history of repeatedly retaining those contracts through successful, cost-effective and prompt execution of each task order. Mr. Krishnasamy's daily involvement with the in-house and field operations of the construction and geotechnical services departments provides him the "hands-on" experience and knowledge of current construction codes and construction practices throughout the State of Florida. Mr. Krishnasamy and his highly experienced team focus on providing the client with a consistently accurate, cost-effective quality product that is delivered on time and within budget.

RELEVANT PROJECT EXPERIENCE

BCWWS Gravity Sewer, Force Main, and Lift Station, UAZ 235 Improvement Project, Pompano Beach, Florida. Mr. Krishnasamy was the Principal-in-Charge of the Geotechnical Engineering Services for the BCWWS – Gravity Sewer, Force Main, and Lift Station, UAZ 235 Improvement project in Pompano Beach. The project included the construction of Gravity Sewer, Force Main, and Lift Stations. Provided geotechnical evaluations and recommendations regarding site preparation, foundation design, excavations, trench backfill, lateral earth pressures and related construction considerations.

54-inch Force Main, Broward County, Florida. Mr. Krishnasamy was the Principal-in-Charge of the Geotechnical Engineering Services for the 54-inch Force Main in Broward County, Florida. Provided a geotechnical engineering report including geotechnical evaluations and recommendations regarding site preparation above existing pipes, site preparation with sufficient cover, construction excavation and dewatering, vibration and settlement monitoring and pre and post construction survey, excavations, and lateral Earth pressures.

NW 44th Street/Pine Island Road Water Transmission Main Improvements, Sunrise, Florida. Mr. Krishnasamy was the Principal-in-Charge of the Construction Material Testing Services for the subject project**.** Provided Pre-Stressed Pile Inspection and Construction Material Testing Services for the NW 44th Street/Pine Island Road Water Transmission Main Improvements project in Sunrise, Florida. A TSF Senior Engineer is available for review of daily reports, handle project coordination and attend meetings as necessary.

RELEVANT PROJECT EXPERIENCE *Continued*

Miramar Wastewater Reclamation Facility Expansion, Miramar, Florida. Mr. Krishnasamy was the Principal-in-Charge of the Geotechnical Engineering Study for the Miramar Wastewater Reclamation Facility Expansion project. The project consisted of a new Reuse Storage Tank, Chlorine Contact Basin, and Filters, and roadway improvements along Pembroke Road. Provided a geotechnical engineering report that outlined the testing procedures, described the site and subsurface conditions, and provided geotechnical recommendations for foundation design, foundation soil preparation requirements; general site development, and comments regarding factors that may impact construction and performance of the construction.

Copans Road Wastewater Replacement Design, Coconut Creek, Florida Mr. Krishnasamy was the Principal-in-Charge of the Geotechnical Engineering Study for the Copans Road Wastewater Replacement Project in Coconut Creek. The project consisted of the replacement of the existing force main extending from Sample Road along Lyons to Copans Road and from Copans Road to Florida's Turnpike for a length of about 11,500 linear feet. Provided geotechnical evaluations and recommendations regarding excavations, trench backfill and lateral earth pressures.

ABBREVIATED RELEVANT PROJECT EXPERIENCE

- Seminole Tribe of Florida WWTP Improvements, Hollywood, Florida
- NE 22nd Avenue Force Main Replacement, Lighthouse Point, Florida
- Water Main Canal Crossing of the Captain Knight Bayou Canal on Sample Road in Lighthouse Point, Lighthouse Point, Florida
- Control Structure N-17, Broward County, Florida
- BCWWS # 104538 Davis Isles New Sewer and Water Main Replacement, Fort Lauderdale, Florida
- City of Sunrise - NW 44th Street/Pine Island Road Water Transmission Main Improvement Project, Sunrise, Florida
- NE 15th Avenue, Fort Lauderdale, Florida
- City of Hallandale Pump Station #8 Replacement, Hallandale Beach, Florida
- Reclaimed Water Transmission System, Broward County, Florida
- Miramar EWTP Improvements, Miramar, Florida
- NW 21 St Water & Sewer Replacement - Phase I and II, Lauderhill, Florida
- Pump Station A-13, Gravity Sewer Re-Direction, Broward County, Florida
- Relocation of Existing 16" Watermain, Fort Lauderdale, Florida
- Water Main Replacement, Hollywood, Florida
- Reuse Distribution Main, Sunrise, Florida
- Lift Station 28-D1, Broward County, Florida
- Master Sewer Pump Station 226, Pompano Beach, Florida
- North Regional Waste Water Treatment Plant Expansion-Broward County Water and Wastewater Services, Broward County, Florida
- University Drive Force Main, Plantation, Florida
- Three islands Irrigation Reuse, Hallandale Beach, Florida
- Lift Station A6, Hollywood, Florida
- Broadview Estate BCWWS Improvements, Broward County, Florida
- Septage Receiving Facility Improvements, Broward County Water and Wastewater Services, Pompano Beach, Florida
- North County Regional Wastewater Treatment Plant, Broward County, Florida

FRANCOIS THOMAS, P.E., S.I.

PRINCIPAL MATERIALS ENGINEER/ SPECIAL INSPECTOR
27 Years of Experience

PROFESSIONAL QUALIFICATIONS

EDUCATION

- MS in Geotechnical Engineering, University of Alabama, 1993
- BS in Civil Engineering, University of Alabama, 1991

PROFESSIONAL ORGANIZATION AND REGISTRATION

- Professional Engineer: Florida, 56381
- Special Inspector 7021399
- Radiation Safety Officer
- Certified Masonry Inspector
- Certified Troxler Operator

PROFESSIONAL EXPERIENCE

Mr. Thomas is a Florida-Registered Professional Engineer and Special Inspector with more than 27 years of experience in geotechnical engineering, construction materials testing, and inspection services. He serves as Principal Materials Engineer, supervising the laboratory services, construction materials testing and inspections. He has extensive experience in deep and shallow foundation systems, soil stabilization methods, grouting, and pavement sections evaluation. He has been involved in construction monitoring and supervision for private and government facilities, including construction/foundation installation for port, airport, commercial, municipal, healthcare, retail and school facilities. He has monitored the construction of numerous civil and structural designs involving earthwork, concrete, masonry and asphalt operations. He is committed to completing projects on time and within budget, with a proven record of flexible scheduling through night/weekend shifts and on occasions 24 hour shifts as needed.

RELEVANT PROJECT EXPERIENCE

Broward County WWTP 3B Facility Chlorination System, Broward County, Florida. Mr. Thomas is currently the Principal Engineer of the Construction Material Testing Services for the Broward County WWTP 3B Facility Chlorination System, located in Broward County, Florida. TSF services include laboratory testing, soils, and concrete sampling/testing, and reporting. A TSF Senior Engineer is available for review of daily reports, handle project coordination and attend meetings as necessary.

NW 44th Street/Pine Island Road Water Transmission Main Improvements, Sunrise, Florida. Mr. Thomas was the Principal Engineer of the Construction Material Testing Services for the subject project**.** Provided Pre-Stressed Pile Inspection and Construction Material Testing Services for the NW 44th Street/Pine Island Road Water Transmission Main Improvements project in Sunrise, Florida. A TSF Senior Engineer is available for review of daily reports, handle project coordination and attend meetings as necessary.

Retail Master Pump Station 226 Rehabilitation, Pompano Beach, Florida. Mr. Thomas was the Principal Engineer of the Special Inspection Services for the Retail Master Pump Station 226 Rehabilitation located at 2600 NE 16th Avenue in Pompano Beach, Florida. The project consists of Odor Control Equipment and Generator attachments to concrete slabs. A final compliance letter was provided confirming that all inspected work was performed as per Florida Building Code, project specifications and county requirements. A TSF Senior Engineer provided review of daily reports, handled project coordination and attended meetings as necessary.

ABBREVIATED PROJECT EXPERIENCE

- Seminole Tribe of Florida (STOF) Injection Well Pump System - 24" Ductile Iron Pipe (DIP) Excavation Work, Hollywood, Florida
- STOF Raw Water Supply Improvements, Hollywood, Florida
- Big Cypress WTP Chemical System Improvements, Clewiston, Florida
- North Regional Load Center 5 & 6 Replacement, Broward County, Florida
- Melaleuca Water Main Phase I Dania Beach, Florida
- Broward College Chiller Plant Underground Pipe, Fort Lauderdale, Florida
- Utility Repair - Oakland Park Blvd & Dixie Hwy, Oakland Park, Florida
- Sodium Hypochlorite & CO2 Injection System, Pembroke Pines, Florida
- Annual Utility Repairs, Weston, Florida
- SFWMD C4 Canal Bank Improvements, Miami-Dade County, Florida
- SFWMD S-197 Automation, Miami-Dade County, Florida
- SFWMD BOMA Basins 2 and 3 AGI's Repair, Belle Glade, Florida
- South County Water Replacement-Phase 5, Boca Raton, Florida
- FPL Central Warehouse, Riviera Beach, Florida
- SFWMD S-140 Pump Station Improvements, Broward County, Florida
- SFWMD Information Technology Shelters Replacement Project - Homestead Field Station Package, Homestead, Florida
- SFWMD C-51 Canal Bank Stabilization, Palm Beach County, Florida
- GT Lohmeyer Emergency Generator Connection and Switchgear Upgrades, Fort Lauderdale, Florida
- South Broward WWTP Generator Enclosure, Broward County, Florida
- Springtree Water Treatment Plant, Sunrise, Florida
- Broward 3A WTP, Dania Beach, Florida
- Miramar EWTP Renovations, Miramar, Florida
- Peele Dixie Water Treatment Plant Building Repair, Fort Lauderdale, Florida
- East Central Regional Water Reclamation Facility, West Palm Beach, Florida
- Boynton Beach Water Treatment Plant, Boynton Beach, Florida
- PBCWUD-Water Treatment Plant No.2 Filter Replacement, Palm Beach County, Florida
- Chlorination Facilities, Central District WWTP, Miami-Dade, Florida
- Glades Road Water Treatment Plant Residuals, Boca Raton, Florida
- Wellington WWTP Headworks Repairs, Wellington, Florida
- Martin County Utilities North WWTP Headworks Improvements, Martin County, Florida
- WWTP Drying Bed Relocation, Boca Raton, Florida
- Boca Headworks Building Rehabilitation, Boca Raton, Florida
- WTP Raw Water Main Repairs, Jupiter, Florida

KUMAR VEDULA, P.E.

PRINCIPAL ENGINEER
24 Years of Experience

PROFESSIONAL QUALIFICATIONS

EDUCATION

- MS in Geotechnical Engineering, University of Memphis, 1995
- BE in Civil Engineering, Andhra University, 1992

PROFESSIONAL ORGANIZATION AND REGISTRATION

- Professional Engineer: Florida, 54873
- American Society of Civil Engineers, Past President (Broward Branch)

PROFESSIONAL EXPERIENCE

Mr. Vedula, a Florida-Registered Professional Engineer, has over 24 years of experience providing engineering services for a wide variety of geotechnical projects involving foundation design, slope stability analysis, WEAP analysis and interpreting PDA reports, excavation support, and construction inspection. His extensive experience includes foundation inspections (shallow and deep foundations), soil modification (dynamic compaction, stone columns), preloading, excavations, backfilling, and post construction monitoring. Mr. Vedula has served as a principal inspector on numerous surcharging and settlement evaluations of organic laden soils assignments. His project experience includes 300+ geotechnical engineering studies for various projects types including stadiums, parks, piers, shoreline stabilization, dredging, bridges, roadways, utilities, high rise buildings, schools and government facilities. Mr. Vedula has authored, and co-authored papers published in national and international publications.

RELEVANT PROJECT EXPERIENCE

Broward County Water and Wastewater, Pompano Beach, Florida. Mr. Vedula was the Geotechnical Principal Engineer Geotechnical Engineering Services for the Broward County Water and Wastewater in Pompano Beach, Florida. The project consists of drainage upgrades along roadways in Pompano Beach including; NW 33rd Court, NW 18th Terrace, NW 33rd Street, NW 32nd Street and NW 16th Terrace. The purpose of this study was to provide geotechnical input to the design team to assist in preparation of the design plans for the drainage improvements. Provided a geotechnical engineering report including geotechnical engineering evaluations and recommendations regarding, soil suitability and construction excavation and dewatering.

54-inch Force Main, Broward County, Florida. Mr. Vedula was the Geotechnical Principal Engineer of the Geotechnical Engineering Services for the 54-inch Force Main in Broward County, Florida. The purpose of this geotechnical study was to review subsurface soil conditions with SPT borings and provide the design with general soils information for the project alignment. Provided a geotechnical engineering report including geotechnical evaluations and recommendations regarding site preparation above existing pipes, site preparation with sufficient cover, construction excavation and dewatering, vibration and settlement monitoring and pre and post construction survey, excavations, and lateral Earth pressures.

Master Lift Station 226, Pompano Beach, Florida Mr. Vedula was the Geotechnical Principal Engineer of the Geotechnical Engineering Services for the improvements at the Master Lift Station 226 which included two new driveways, concrete pad for outdoor generator and re-designing a concrete transformer pad that failed. Provided a geotechnical engineering report that outlined the testing procedures, described the site and subsurface conditions, and presented geotechnical recommendations for foundation, pavement design, comments regarding factors that may impact construction and general site development.

RELEVANT PROJECT EXPERIENCE *continued*

Inverrary Bridge Force Main Relocation, Sunrise, Florida. Mr. Vedula was the Geotechnical Principal Engineer of the Geotechnical Engineering Study for the Inverrary Bridge Force Main Relocation located in Sunrise, Florida. The project includes the construction of approximately 1,400 LF of 12-inch FM from connection located at the Southeast corner of the at W. Inverrary Boulevard and Routed West approximately 1,000 feet. The new FM will transition above ground and be routed north for an aerial crossing supported on concrete piles over C-13 Canal. The FM will transition underground and be routed west for 200 feet to the tie in location. Provided a geotechnical engineering report including geotechnical engineering evaluations and recommendations regarding driven pile axial capacity, trench excavation, trench backfill, and existing facilities protection consideration.

Copans Road Wastewater Replacement Project, Coconut Creek, Florida Mr. Vedula was the Geotechnical Principal Engineer of the Geotechnical Engineering Study for the Copans Road Wastewater Replacement Project. The project consists of the replacement of the existing force main for a length of about 11,500 linear feet. The purpose of the study was to explore the subsurface conditions at the site to enable an evaluation of acceptable construction considerations. Provided geotechnical evaluations and recommendations regarding excavations, trench backfill, lateral earth pressure and related construction considerations.

BCWWS Gravity Sewer, Force Main, and Lift Station, UAZ 235 Improvement Project, Pompano Beach, Florida Mr. Vedula was the Geotechnical Principal Engineer of the Geotechnical Engineering Study for the BCWWS – Gravity Sewer, Force Main, and Lift Station, UAZ 235 Improvement project in Pompano Beach. The Broward County Septic Tank Elimination Program District 2 Area 2-G, UAZ 235 project includes the construction of Gravity Sewer, Force Main, and Lift Stations. The project is located between NW 16th Lane and NW 17th lane, just north of West Copans Road in the City of Pompano Beach. Provided geotechnical evaluations and recommendations regarding site preparation, foundation design, excavations, trench backfill, lateral earth pressures and related construction considerations.

ABBREVIATED PROJECT EXPERIENCE

- Reclaimed Water Transmission System, Broward County, FL
- BCWWS # 104538 Davis Isles New Sewer and Water Main Replacement, Fort Lauderdale, FL
- Pump Station 310 Relocation, Broward County, FL
- Hillsboro Pines Neighborhood Improvement, Broward County, FL
- North Regional Wastewater Treatment Plant, Broward County, FL
- Project UAZ 124, Oakland Park, FL
- N Course Drive Sewer Main, Pompano Beach, FL
- Sub Basin NW 1-3 - Drainage, Pompano Beach, FL
- Palm Club Sewer, Lauderdale By the Sea, FL
- Sub Basin NC 2-1 - Drainage, Pompano Beach, FL
- Neighborhood Water & Sewer Improvement - UAZ, Broward County, FL
- Drainage Improvement - NW 21st Street and 18th Avenue, Pompano Beach, FL
- 48-inch Force Main between Atlantic Blvd. and Lyons Rd., Broward County, FL
- Lauderdale by the Sea - Drainage Improvements, Broward County, FL
- North Andrews Neighborhood #4, Broward County, FL
- County Line Road-Drainage, Sewer, Water, & Grading/Paving, Parkland, FL
- North Andrews Bid Pack 9, Broward County, FL
- North County Neighborhood Improvement BP-10, Broward County, FL

Media Relations Group, LLC

Alicia Gonzalez

Project Manager (Bilingual)

Professional Credentials
Bachelor of Science, Telecommunications, University of Florida-1992

Basis for Team Selection
28 years of public engagement experience.

Successfully spearheaded numerous community involvement efforts which involve the planning and implementation or public relations activities, preparation of media communications and collateral materials for media interviews

Expertise in effectively managing crisis situations related to traffic events, construction activities, as well as political issues for multiple agencies including Miami-Dade TPO, Broward MPO, Lee County MPO and FDOT.

Bilingual (English/Spanish)

Office Location:
14707 South Dixie Hwy
Suite 404
Miami, FL 33176

Mrs. Gonzalez has over 28 years of experience in working on multiple major public infrastructure projects. Mrs. Gonzalez has extensive experience working with FDOT Districts 1, 4, 5, 6, and 7, Florida's Turnpike Enterprise, Miami-Dade Expressway Aurthority, Central Florida Expressway Aurthority, the MPOs in Miami-Dade, Lee and Broward counties, numerous municipalities in South Florida and for the Pennsylvania DOT.

She has served as a Principal of Media Relations Group, LLC, since its inception in 1999, and has successfully executed projects at all phases including Planning, PD&E, Design, Design-Build and Construction. Mrs. Gonzalez has extensive project management experience. As such, she has a deep understanding of the processes at each stage, the role it plays in the local transportation system and economy, and the products and services it provides. *Select project experience includes:*

- **2017 – Present – I-395/ State Road (SR) 836/I-95 Design-Build Project, Miami-Dade County, Florida** – This approximately $556 million design-build project involves the reconstruction of the Interstate 395 corridor from west of the I-95/Midtown Interchange (I-95/State Road 836/I-395) to US 41/MacArthur Causeway Bridge. Mrs. Gonzalez is responsible for ensuring contract compliance, managing budgets, executing special projects, and performing QA/QC on all collateral materials. She also supervises the work production of an assigned staff of 10. *Reference: Tish Burgher, Tish.Burgher@dot.state.fl.us, 305.470.5349*

- **2019 – 2020 – Miami-Dade Water and Sewer (MD-WASD) SW 117 Avenue (Area N), Miami-Dade County, Florida** – Mrs. Gonzalez oversaw all outreach efforts for this project which involved the installation of a six-mile 48-inch water line along SW 117 Avenue from the Snapper Creek Canal to SW 152 Street and a 16-inch wastewater line on SW 127 Avenue from SW 88 Street to 108 Street. *Reference: Dan Smolik, Garney Construction, 321.221.2826.*

- **2009 – 2016 – FDOT District Six State Road (SR) 826/Palmetto Expressway Public Communications Consulting Services (SR 826/836 Interchange Reconstruction (Design/Build/Finance), Miami-Dade County, Florida –** Mrs. Gonzalez oversaw all public information strategies as the Public Information Project Manager with this FDOT District Six project. She was responsible for managing the production of all collateral materials and contract budget maintenance. Mrs. Gonzalez worked with the entire project team to develop an overall effective, cohesive marketing/public relations campaign in the early phases of the project and continued in this role to consistently message the media, elected officials and the motoring public through the end of the project. *Reference: Kathy McLendon, FDOT Project Manager, 305-640-7437, Kathy.McLendon@dot.state.fl.us*

- **2006 – 2014 – FDOT District Four I-595 Corridor Improvements Design/Build/Operate/ Finance/Maintain (DBFOM) Broward County, Florida** – Mrs. Gonzalez oversaw all public information strategy in

coordination with the District's Public Information Office for the Design Phase, Design/Build, Criteria Package through construction ($1.2 billion) and opening of the express lanes. She was responsible for managing the PIS staff assigned to this project, as well as performing Quality Assurance/Quality Control for all deliverables. She developed the elected official strategy and conducted many elected official briefings with affected municipalities. *Reference: Paul Lampley, P.E. 954-732-0644, Paul.Lampley@dot.state.fl.us*

- **2007 – 2011 – FDOT District Six NW 25th Street Construction Project from SR 826 to NW 67 Avenue (East Phase), Miami-Dade County, Florida** – Mrs. Gonzalez managed an on-site PIO to address the day-to-day concerns of the surrounding business community as well as elected and agency officials and formed working groups with corridor stakeholders. As the Public Information Manager on this contract, Mrs. Gonzalez oversaw this proactive approach which minimized disruptions and negative impacts to businesses, allowing the contractor and CEI to stay ahead of the project schedule. She also worked on the public affairs strategy/briefings. *Reference: Andres Berisiartu, P.E. 305-525-4976, Andres.Berisiartu@dot.state.fl.us*

- **2011 – 2013 – Miami-Dade Water and Sewer Department (MDWASD) Government Cut Utility Relocation Projects Design/Build, CMIT, Miami-Dade County, Florida** – Mrs. Gonzalez was in charge of the public involvement for all these projects as a Department liaison to the project manager, Department of Public Affairs Manager Adriana Lamar and Isaac Gutierrez. She attended all progress meetings and worked daily on public involvement strategies and notifications, as necessary. She prepared a Community Awareness Plan (CAP) and fact sheet for the project. In Spring 2012, Mrs. Gonzalez also began working with the Department on the Emergency 60-inch Force Main Installation project in the City of Miami Beach. She attended several City of Miami Beach and other key stakeholder meetings. She also coordinated and executed a community meeting in June 2012 and reviewed and finalized project fact sheets and display boards. She continued to serve as the day to day public information contact through summer 2013, upon completion of the emergency contract, while managing her PI staff assigned to this contract. *Reference: Adriana Lamar, 786-552-8087, alamar@miamidade.gov*

- **2013 – 2016 – MDWASD Norris Cut Utility Relocation Project, Miami-Dade County, Florida** – Mrs. Gonzalez oversaw the public involvement for this design/build project which consists of the replacement of the existing 54-inch sanitary sewer force main with a 60-inch force main. She oversaw the preparation of a fact sheet for the project's Kick-Off meeting and assisted the department with coordination of a naming competition for the Tunnel Boring Machine (TBM) being used to drill between Virginia Key and Fisher Island and coordinated key events and celebrations for the launch and removal of the TBM. She also attended biweekly construction progress meetings. *Reference: Adriana Lamar, 786-552-8087, alamar@miamidade.gov*

Media Relations Group, LLC

Laila Haddad

Sr. Public Information Officer

Professional Credentials
Bachelor of Science, Business Administration (Cum Laude), University of New Hampshire – 1979

Basis for Team Selection
Have led or currently leads PI efforts for multiple design-build, infrastructure and resiliency improvements projects, including the award-winning I-595 Corridor Improvements Project – a Design / Build / Operate / Finance / Maintain (DBOFM) Public Private Partnership

Extensive experience working in FDOT District Four in Broward, Palm Beach, St Lucie and Indian River counties

Led the public involvement and outreach efforts for a multi-faceted and award-winning transportation project and holds extensive media and crisis communications experience

Office Location
Fort Lauderdale, FL

Mrs. Haddad is a public relations professional with more than 37 years of diversified experience, who has worked in the planning, PD&E, design and construction management of major Florida Department of Transportation (FDOT) and municipalities' projects over the past 11 years with MRG. Her expertise is in the production and management of all phases of roadway and infrastructure projects. She has served and continues to serve as lead Senior Public Information Officer on numerous PD&E, Design and Construction related projects, overseeing all the public involvement activities required for those contracts in Broward County.

In addition, throughout the years, Ms. Haddad has managed and provided technical leadership on a number of transportation and infrastructure projects for many agencies throughout Florida, including the FDOT District Four, Broward County Metropolitan Planning Organization (MPO), the Florida's Turnpike Enterprise (FTE), the City of Fort Lauderdale, and the City of Miami Beach. Her extensive involvement in the creation and development of community awareness plans, public involvement activities, consensus building, strategic alliances, plain language educational platforms and media outreach has afforded her the opportunity to have successful working relationships with cultural and economically diverse communities. Her years of experience and dedication will allow Ms. Haddad to consistently ensure contract compliance, manage budgets, execute special projects as well as effectively oversee all staff and work production. Ms. Haddad has completed similar work for the City of Fort Lauderdale, FDOT District 4 on the 595 Express Improvements Project, and the City of Miami Beach. Select project experience includes:

- **2013 – 2020: FDOT District Four 95 Express CDC, Phase 3A, 3B and 3C Broward County, Florida –** Ms. Haddad successfully executed the efforts for all the public involvement activities for Phases 3A, 3B and 3C. During these phases, she coordinated several outreach meetings, including Public Workshops, Industry Forums and multiple small group meetings with key stakeholders and homeowner associations (HOAs). These meetings with residents and HOAs included coordination of sound barriers planned along the corridor. Ms. Haddad was responsible for overseeing the design and production of meeting collaterals, as well as distribution of materials to the public. She was also responsible for writing the Community Awareness Plan for each phase of the project and relevant portions of the RFP. She worked closely with the Department's Project Manager and completed the construction hand-off packages for the project(s) CEI as each phase transitioned into construction. *Reference: Vanita Saini, P.E., FDOT, 954.777.4468. Project Role: Sr. Public Information Officer*

- **2009 – 2014: FDOT District Four I-595 Corridor Improvements Project – a Design/Build/Operate/Finance/Maintain (DBOFM) Public Private Partnership, Broward County, Florida** – Ms. Haddad served as the Senior Public Information Officer on this over $1.2 billion project for FDOT District Four. She oversaw all public information outreach in coordination with the District's Public Information Office and served as

the day-to-day contact and media spokesperson on the project. She created and disseminated project fact sheets and electronic construction alerts, continuously updated the project website, maintained stakeholder database, and served as a liaison for the media, elected officials, residents and businesses to answer questions and address and mitigate their concerns. Through a public-private partnership, design and construction teams completed the project on time and $275 million below the originally estimated cost. This project was also the recipient of the People's Choice Award for the 2015 American Transportation Awards National Competition. *Reference: Paul Lampley, P.E., FDOT, 954.732.0644*

- **2013 – 2015 – FDOT District Four, Bridges of the Isles of Las Olas (Fiesta Way, Isle of Venice Drive, Royal Palm Drive, and Nurmi Drive Bridges) Design-Build Project, Broward County, Florida** – Ms. Haddad successfully assisted with the public outreach activities during the construction phase of the project, including coordination with stakeholders, city, agencies and adjacent property owners. *Reference: FDOT Project Manager, Ray Holzweiss, P.E., 954.777.4425*

- **2013 – 2014 – FDOT District Four Ravenswood Bridge Replacement Design Project, Broward County, Florida –** Ms. Haddad successfully executed all public involvement and outreach efforts during the design stage of this bridge replacement project, including the addition of sidewalks and bike lanes. In doing so she worked closely with neighboring businesses to learn of their concerns and to mitigate potential economic and physical impacts that may affect the businesses. *Reference: FDOT Project Manager Donovan Pessoa 954.777.4442; Project Manager Robert Vasquez, P.E., Bolton, Perez and Associates 305.392.3190*

- **2015 – 2018: City of Miami Beach Sunset Islands 3 & 4 Neighborhood Improvement Project, Miami-Dade County, Florida** – The City of Miami Beach Office of Capital Improvement Projects (CIP) and a local Design/Build firm began the design of Sunset Islands 3 and 4 Neighborhood Improvements Project in January 2015. This project involved undergrounding utilities and roadway improvements. Ms. Haddad was the day-to day PIO on this contract responsible for the distributions of project advisories (door hangers and email updates). She also met with property owners as part of the Project Team to clarify impacts and spearhead mitigation efforts, fielded phone and email inquiries and attended association and project progress meetings. *Reference: Office of Capital Improvements, Lauren Firtel, PIS, 305.673.7000*

- **2007 – 2009 – Florida Turnpike Enterprise Construction Projects under GEC contract, Palm Beach, Martin and Indian River Counties, Florida** – Ms. Haddad oversaw all public outreach related to construction activities, media relations and coordination, wrote and published FTE's monthly construction newsletter and served as a day-to-day PIO contact for the general public in South Florida. *Reference: Former FTE Communications Director, Kim Poulton, 954.934.1288*

Marisa J. Magrino, MS, ISA, LIAF, FNGLA

Principal/Certified Arborist/Senior Environmental Scientist

Ms. Magrino is an environmental scientist and Certified Arborist with 17 years of experience. With her extensive educational and professional experience, Ms. Magrino is proficient in plant and wildlife identification, tree assessments, plan reviews, report writing, mitigation assessments, GIS, coordinating/obtaining permits, and performing coastal, wetland and landscape surveys and compliance inspections. She served as a Natural Resources Specialist for Broward County, requiring her to effectively manage projects, issue licenses and permits, conduct biological assessments and wetland determinations, create and review technical reports, map wetland and seagrass in GIS, and ensure compliance with regulations on all levels. Professional certifications include ISA Certified Arborist, LIAF Certified Landscape Inspector, FNGLA Certified Landscape Technician and Horticulture Professional, FDEP Stormwater Inspector and FDOT Maintenance of Traffic.

Relevant Experience

Tree Appraisal Evaluation, City of Sunrise, FL: Conducted a tree appraisal evaluation for trees on city property for the expansion of a treatment facility. The evaluation included a site visit and report providing ratings (condition, functional limitation and external limitation), basic cost and depreciated cost of each tree. The evaluation utilized the 10th edition of the Guide for Plant Appraisal.

Tree Inventory: City of West Palm Beach, FL: Currently conducting a tree inventory for multiple parks within the City. Data being collected includes species, DBH, height, condition, spread and photos.

Streetscape Project: Tree Inventory, City of Miami, FL: Conducted a portion of the tree inventory for multiple neighborhoods within the City. Collected data (i.e. species, DBH, spread, condition) for 5,823 trees using a GPS unit and trained one person on tree data collection and species identification.

Tree Inventory: City of Deerfield Beach, FL: Conducted a tree inventory for multiple neighborhoods within the City. Data (i.e. species, DBH, height, condition) was collected for 2,353 trees using a GPS unit.

Tree Assessment: Sunny Isles, FL: Conducted a tree assessment for recently installed trees at a new development and prepared a report for the client.

Sandlot (Florida Tracks and Trails): Landscape Compliance and Gopher Tortoise - Charlotte County: Conducted landscape compliance inspection, created GIS maps for gopher tortoise surveys and conducting surveys for new track and trail system.

Hillsboro El Rio Park Phase II: Tree, Wetland and Wildlife Surveys/Permitting, Boca Raton, FL: Conducted the tree, wetland and wildlife surveys, prepared reports including GIS maps and assisted in permitting and construction compliance. These tasks were completed for the design process of a 17-acre city park.

Homestead Extension Florida Turnpike (HEFT): Landscape CEI, Miami-Dade and Broward Counties, FL: Conducted landscape CEI for 6 sites along the Florida Turnpike to verify maintenance conformance with contract documents and prepare reports.

FDOT District 4: Dania Beach Boulevard, Tree Assessment, Dania Beach, FL: FPID 437847-1-52-01 along Dania Beach Blvd. between US-1 and A1A for trees located within the median requiring condition assessment, caliper, height, spread, DBH and distance to ROW.

FDOT District 4: Prospect Road, Tree Assessment, Pompano Beach, FL: FPID 435925-1-52-01 along Prospect Road for trees located within the median and along edge of road (north and south bound) requiring an assessment of condition, caliper, height, spread, DBH and distance to ROW and sidewalk.

Academic Background
M.S., Marine Biology, Nova Southeastern University, 2006

B.S., Biology, Arizona State University, 2001

Professional Certifications
ISA Certified Arborist, # FL-6436A
LIAF Certified Landscape Inspector, #2016-0196
FNGLA Certified Landscape Technician #TC9 00427
FNGLA Certified Horticulture Professional
FDOT Maintenance of Traffic Intermediate, # 11314
FDEP Certified Stormwater Inspector, # 33987
CPR and Emergency First Response certified
PADI Certified Advanced Open Water Rescue SCUBA Diver

Professional Training
Supervisory/Leadership Training, 2014
Scientific Diving Training (AAUS)
GIS Trainings, 2011 & 2012
Wetland Delineation and Species ID Training, 2013

Professional Affiliations
Association of State Wetland Managers, Member
International Society of Arboriculture

FDOT District 6: Landscape CEI, State Road 826, Miami, FL: FPID 250071-2-52-01 from NW 62nd Ave. to NW 42nd Ave. Conducted Landscape CEI (includes MOT and erosion control inspection) and continuous installation monitoring on this project that included 7500 shrubs and 2600 trees.

Turnpike Gateway Signs at MP 113 and MP 154, FPID 190778-1-52-79: Conducted Landscape CEI to ensure contract compliance specifications and to ensure long-term landscape installation success.

FDOT District 6: Landscape CEI, US-1, Key Largo and Tavernier, FL: FPID 419853-2-52-01 and 419848-2-52-01 from MM 90.8 to MM 99.6. Conducted 2-year monthly tree inspections of this project in the Florida Keys. The project required local agreements and the use of 1900 native tree and 39,000 shrub species.

FDOT District 6: Landscape CEI, I-95, Miami, FL: FPID 433924-1-52-01 and 433924-2-52-01 from NW 170th St. to Miami-Dade/Broward County line. Conducted Landscape CEI (includes MOT and erosion control) and installation monitoring on this project that included 4500 trees and 4800 shrubs.

FDOT District 6: Roadway Widening/Tree Assessment, N. Alton Road, Miami Beach, FL: FPID 429193-1-52-01 from Michigan Ave. to Ed Sullivan Dr. A roadway widening project impacting 450 trees and requiring an assessment of condition, caliper, height, spread as well as a relocation plan.

FDOT District 6: Flagler Street from NW 72nd Avenue to NW 27th Avenue, FPID 435407-1-52-01, Miami, FL: A RRR project improving turn lanes and adding medians. Performed monthly inspections of the landscape installation.

FDOT District 4: SR-A1A Landscaping, Fort Lauderdale, FL: FPID 433688-6-52-01 from Sunrise Blvd. to NE 18th St. Conducted inspections and nursery approvals to ensure plan compliance for this beach streetscape project.

FDOT District 6: SW 8th Street from SW 22nd Avenue Road to SW 5th Avenue, FPID 437475-1-52-01, Miami, FL: Conducted a tree assessment (identification, condition, caliper and location) for a roadway/sidewalk improvement project for FDOT District 6.

FDOT District 6: SW 312th Street/Campbell Drive from Krome Avenue to US-1, FPID 405575-6-52-01, Homestead, FL: Conducted a tree inventory (identification, condition, caliper, height, spread and location) for a roadway improvement project for FDOT District 6.

Mangrove Inspections (various locations: Rolly Marine, Aquabella), Fort Lauderdale, FL: Contracted to perform site inspections for purposes of locating mangrove limits, identifying species and providing coverage. Ms. Magrino conducted the site inspections and prepared the inspection reports including GIS mapping.

Natural Resource Specialist, Broward County, Plantation, FL: As Natural Resource Specialist, Ms. Magrino was responsible for the management and issuance of County Environmental Resource Licenses and State Environmental Resource Permits. Additional duties included: biological assessments, wetland determinations, technical reports, impact analysis, project recommendations, monitoring, plat review, GIS mapping, pre/post construction surveys, code compliance, violation issuance, financial assurance/conservation easement review, and internal guidance and policy development. *(12/2005 to 4/2015)*

Biologist and Biological Assistant, Miami-Dade County DERM, Miami, FL: Ms. Magrino managed, processed and issued Class I permits for coastal construction projects, while ensuring code compliance. Additional duties included: biological assessments, technical reports, impact analysis, project recommendations, pre/post construction surveys, restoration/ enhancement projects, fish and coral transects, water sample collection/analysis preparation, and hydrolab and Li-cor data collection. *(2/2004 to 12/2005)*

Attachment E

Additional Project Experience Matrices

AMICI ENGINEERING CONTRACTORS

Project Experience of Key Personnel

**J - Juan Barreneche's Project Experience (as Southern Underground Industries Owner or DMSI PM)*
**C - Chris Lazzari's Project Experience (as DMSI PM/Estimator)*
**N - Nelson Liberti's Project Experience (as DMSI Superintendant)*
**A - Amici Engineering Contractors, LLC Project*

PROJECT NAME	OWNER	CONTACT INFORMATION	CONTRACT AMOUNT	DESCRIPTION OF WORK	COMPLETION DATE
River Landing - Offsite Utilities Project (*A)	Taylor Morrison of Florida 501 N Cattlemen Road, Suite 100 Sarasota, FL 34224	Bryan Jackson, P.E. (805)748-8675 Bryan.Jackson@waldropengineering.com Andrew Miller (727)647-0566 drew.miller63@gmail.com	$9,527,917.00	Installation of approx. 50,000 LF of 12" to 24" (PVC/HDPE) Water Main, Force Main, and Reclaimed Water Main via Open Cut and Directional Drill	approx. 40% complete
Emergency Repair of 36" Force Main at 72nd Street Parking Lot (*A)	City of Miami Beach Public Works Department - 451 Dade Blvd., Miami Beach, FL 33139	Rudy De La Torre (305)987-0768 RodolfoDeLaTorre@miamibeachfl.gov	$237,752.00	Removal and replacement of ruptured 36-inch DIP force main and instalaltion fo a 36" butterfly valve	3/20/2020
48" PCCP Water Main (Area N) Project (*N,C)	Miami Dade Water & Sewer 3071 SW 38th Ave Miami, FL 33146	Dan Smolik (407) 832-2291 dsmolik@garney.com	$9,800,000.00	Design Build - Subcontractor to Garney Construction to install 15,000 LF of 48" PCCP Water Main (Labor/Equiment Only Contract)	1/1/2020
MDWASD Installation of 42-Inch DIP WM, 10-Inch FM and Pump Station 9141 Replacement (*N)	Miami Dade Water & Sewer 3071 SW 38th Ave Miami, FL 33146	Gary Clark (305) 205-6980 gary.clarke@miamidade.gov	$22,800,000.00	Installation of 9,740 LF of 42" DIP WM, 4,600 LF of 30" HDD, 5,000 LF of 10-Inch FM and Pump Station	12/1/2019
11th Street Improvements Project (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Otniel Rodriguez (786) 831-0483 otnielrodriguez@maimibeachfl.gov	$6,800,000.00	Design Build - Install 5280 LF of watermain, storm drainage, gravity sewer, streetscape and road reconstruction	11/1/2019
McMullen Booth Road and SR580 Water Main Improvements (*J)	Pinellas County 22211 U.S. 19 N. Clearwater, FL 33765	Paul Giuliani, P.E. (727) 464-8900 (727)453-3491	$1,255,203.00	Installation of approx. 3,000 LF of 16" Reclaimed Watermain via HDD and Open Cut (FPVC/DIP)	10/3/2019
Upgrade of Sewage Pump No. 0843 & Installation of 8" Force main from PS 0843 (*J)	Miami-Dade County Water & Sewer Dept 3071 SW 38th Ave, Miami, FL 33146	Kevin Keene, P.E. (786) 236-3503 kkeane@miamidade-psip.com	$1,337,361.25	Upgrade of Sewage Pump & Force Main Installation	10/1/2019
Seminole Tribe of Florida - Hollywood WWTP Force Main and Yard Piping (*J)	Wharton-Smith, Inc. (Prime Contractor) 125 W Indiantown Rd #201, Jupiter, FL 33458 Seminole Tribe of Florida (Owner)	Greg Williams, P.E. (561) 748-5956, (561) 345-1858 gwilliams@whartonsmith.com	$3,886,282.00	Installation of 2,650 LF of 24" HDPE FM via HDD and open cut installation of approx.. 13,500 LF of 24" to 8" piping for force main, sewer, and drainage piping.	9/1/2019
Upgrade of Sewage Pump Station No. 0506 (*J)	Miami-Dade County Water & Sewer Dept 3071 SW 38th Ave, Miami, FL 33146	Kevin Keene, P.E. (786) 236-3503 kkeane@miamidade-psip.com	$897,682.00	Rehabilitation of an existing sewer pump station. The lift station rehab required a 24 hour manned bypass and will require the removal and replacement of the existign 8 ft diameter wet well.	8/27/2019
East Water Treatment Plant Renovations Raw Water & Concentrate Main, City of Miramar (*J)	Wharton-Smith, Inc. (Prime Contractor) 125 W Indiantown Rd #201, Jupiter, FL 33458 City of Miramar Utilties (Owner)	Greg Williams, P.E. (561) 748-5956, (561) 345-1858 gwilliams@whartonsmith.com	$2,137,169.00	This Design-Build project included the installation of seven directional drill of 14" and 18" HDPE totaling 5,000 LF and open cut installation of 5,520 LF of 10" to 24" PVC pipe for the raw water main and reject main needed to connect this WTP to the new wells drills by Wharton-Smith (Prime Contractor).	8/1/2019
Waters Edge Residential and River Ridge Golf Course Reclaimed Water Transmission Main (*J)	Pasco County Purchasing Department 8919 Government Drive New Port Richey, FL 34654	Ivan Martinez (813) 235-6189 imartinez@pascocountyfl.net	$2,826,605.00	Project included five directional drills of 18" HDPE (631 LF, 278 LF, 1003 LF, 1277 LF, and 302 LF) and open cut installation of 14,700 LF of 16" DIP for a critical reuse project along a busy corridor	6/17/2019

AMICI ENGINEERING CONTRACTORS

Project Experience of Key Personnel

**J - Juan Barreneche's Project Experience (as Southern Underground Industries Owner or DMSI PM)*
**C - Chris Lazzari's Project Experience (as DMSI PM/Estimator)*
**N - Nelson Liberti's Project Experience (as DMSI Superintendant)*
**A - Amici Engineering Contractors, LLC Project*

Neighborhood Road Program Year 1-District 2 15th, 16th, 17th, & 18th Avenue North (*J)	City Of Lake Worth Water Utilities Administration 301 College Street Lake Worth, FL 33461	Giles Rhoads (561)586-1640 grhoads@lakeworthbeachfl.gov Richard Hasko (561) 234-9193 Richardhasco@wginc.com	$4,339,626.20	Construction of Roadway Potable Water and Sanitary Sewer Improvements including installation of over 15,000 LF of 4" to 12" Water Main (DIP/PVC) in a residential area. Included roadway, curb, and sidewalk restoration and sewer main lining.	4/15/2019
48 Inch PCCP Force Main Along N Miami Ave Project (*N,C)	Miami Dade Water & Sewer 3071 SW 38th Ave Miami, FL 33146	Arnelio Alfonso (786) 252-3373 aalfonso@apcte.com	$22,000,000.00	Design Build - 13,000 LF of 48" PCCP FM and trench restoration	3/1/2019
City-Wide High Tide Mitigation Project (*J)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Eugene Egemba, P.E. (305)-673-7080 EugeneEgemba@miamibeachfl.gov	$3,346,512.66	Installation of approximately 200 inline backflow prevention valves and 11 large drainage structures over on the City's stormwater outfalls throughout the City also included the installation of small water mains and valves, and 400 LF of 42" RCP Drainage Piping.	1/28/2019
Upgrade of Sewage Pump Station No. 0836 (*J)	Miami-Dade County Water & Sewer Dept 3071 SW 38th Ave, Miami, FL 33146	Nico Gage PM (954) 554-7149 Ngage@miamidade-psip.com	$545,000.00	Rehabilitation of an existing sewer pump station. The lift station rehab required a 24 hour manned bypass.	12/5/2018
C-14 Canal Force Main (*J)	Broward County Water & Wastewater Engineering Division 2555 W. Copans Road, Pompano Beach FL 33069	Micheal Hagerty P.E. (954) 831-3217 Mhagerty@broward.org	$1,915,200.00	Installation of approx. 3700 LF of 30-Inch DIP Force Main along the C-14 Canal Bank and 624 LF of 36" HDPE via Horizontal Directional Drill across Rock Island Road. Project also included a 30" and 20" Linestop. with bypass to replace valves at the connection point.	11/2/2018
FDOT Indian Creek Water Drainage Improvements (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Otniel Rodriguez (786) 831-0483 otnielrodriguez@maimibeachfl.gov	$12,000,000.00	Install 2,400 LF of 72" Pipe, 400 LF of 36" pipe and 32 drainage structutres. Also install strom water Pump Station	9/1/2018
Convention Center Pump Station Project (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Giancarlo Pena (305) 546-2943 giancarlopena@maimibeachfl.gov	$6,800,000.00	Design Build - Storm Water Pump Station and Install 450 LF 96" Pipe	7/1/2018
54 Inch Redundent Sewer Force Main Project (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Luis Soto (786) 717-2010 luissoto@miamibeachfl.gov	$18,000,000.00	Design Build - 4,450 LF of 54" HDPE via HDD and 1,191LF of 54" PCCP via open cut	4/1/2018
Siesta Key Force Main Phase 1 and Water Main (*J)	Sarasota County Board of Commisioners 1660 Ringling Blvd. Sarasota, FL 33423	Matt Taylor, (941)-323-8624 Mataylor@scgov.net	$4,370,000.01	Installation of approx. 10,000 LF of 20" HDPE force and water main across the Intracoastal Waterway from Siesta Key to Constitutional Blvd. and approx. 1000 LF of 20" PVC piping for connections.	3/7/2018
Water Main Extension Connecting SR15 to SR80 (*J)	Palm Beach Water Utilities Department 8100 Forest Hill Blvd. West Palm Beach, FL 33413	Joseph Tanecredi, P.E. (561)- 493-6088 Jtanecredi@pbcwater.com	$687,900.00	Installation of approx. 6500 LF of a new 16" water main connecting to the existing 12" water main on State Road 15 to the 16-inch water main along State Road 80.	11/29/2017
Simpson Road 30" Water Main Project (J*)	Tohopekaliga Water Authority 951 Martin Luther King Blvd 3rd Floor Kissimmee, FL34741	Edwin Matos, P.E (407)-944-5000 Ematos@tohowater.com	$2,084,625.00	Installation of approx. 3200 LF of 30" DIP Water Main and 1300 LF of 30" Fusible PVC via HDD along an Osceola County Roadway.	10/1/2017
172nd Street Drainage Improvements (*J)	City of Sunny Isles Beach 16070 Collins Avenue, 3rd Floor Sunny Isles Beach, FL 33160	Elka Linton 305-792-1939 edorsett@sibfl.net	$1,306,962.00	Installation of approx. 1,500 LF of 15" to 24" RCP Drainage Replacement Piping, offset utilities, and install drainage backflow preventors.	9/21/2017
Upgrade of Sewage Pump Station 0076 & 10-inch Force Main on NW 24th Avenue (J*)	Miami-Dade County Water & Sewer Dept 3071 SW 38th Ave, Miami, FL 33146	Aaron Anderson PM (305) 446-7450 Aanderson@miamidade-psip.com	$711,833.00	installation of approx. 200 LF a new 10" DIP force main. The lift station rehab required a 24 hour manned bypass and was a dry pit/wet well configuration.	8/10/2017

AMICI ENGINEERING CONTRACTORS

Project Experience of Key Personnel

**J - Juan Barreneche's Project Experience (as Southern Underground Industries Owner or DMSI PM)*
**C - Chris Lazzari's Project Experience (as DMSI PM/Estimator)*
**N - Nelson Liberti's Project Experience (as DMSI Superintendant)*
**A - Amici Engineering Contractors, LLC Project*

Flamingo Road Reclaimed Water Main Project (*J)	City of Miramar Water Utilities Dept. 13900 Pembroke Road, Miramar, FL 33027	Stephen Glatthorn, P.E (954) 883-5143 Sglatthorn@miramarfl.gov	$1,260,000.00	Design-Build Project Included Installation of approx. 9,500 LF of 8-Inch HDPE and PVC reclaimed water main along the Flamingo Road via Horizontal Directional Drill and via open cut.	6/20/2017
Margate Design Build- 24" Force Main & 30" Force Main Canal Crossing (*J)	City of Margate Engineering Department 901 NW 66th Avenue, Margate, FL 33063	Jeanine Athias, P.E. (954) 972-0828 Jathias@margatefl.com	$896,562.00	Water Main and 24" DIP Force Main, including 2- 30" Linestops and 2 – 24" Linestops with bypass to remove existing aerial and replace with buried pipelines.	4/1/2017
Upgrade of Pump Station No. 0435 (J*)	Miami-Dade County Water & Sewer Dept 3071 SW 38th Ave, Miami, FL 33146	Micheal Mazer PM (305) 446-7454 Mmazer@miamidade-psip.com	$522,975.00	Rehabilitation of an existing sewer pump station. The lift station rehab required a 24 hour manned bypass and will require the removal and replacement of the existing 8 ft diameter wet well.	12/7/2016
Crespi Blvd Water Transmission Main, Sewer Collection system and Pump Station Project (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Carla Dixon (786) 412-9537 carladixon@miamibeachfl.gov	$3,000,000.00	Install 2500 LF of WM, 2800 LF of storm water and (1) Pump Station	8/1/2016
Roadway Improvements Various Project Areas (*J)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Giancarlo Pena (305) 546-2943 giancarlopena@maimibeachfl.gov	$650,253.00	Project Drainage Structure & Piping Installation to 24" diameter with full roadway reconstruction including curb & gutter & sidewalks.	3/29/2016
NW 18th Street Force Main Construction (*J)	City of Margate Engineering Department 901 NW 66th Avenue, Margate, FL 33063	Kelly McAtee, P.E. (954) 972-0828 Kmcatee@margatefl.com	$437,498.00	Street. Project also included a crossing of Rock Island Road, a directional drill across a canal, and roadway restoration in an urban environment.	3/8/2016
FDOT Alton Road Drainage Improvements from 5th Street to Michigan Ave (*N,C)	Bergeron Land Development 19612 SW 69th Place Fort Lauderdale, Florida 33332	Enrique Tamayo (786) 999-9671 enriquet@rkk.com	$13,000,000.00	Install 15,000 LF of Watermain from 6" -20" in diameter, storm drainage 12" -82" and (3) Storm Water Pump Stations	3/1/2016
Miami Beach Drainage Pump Stations Project (*N,C)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Brian Landis (954) 218-7875 blandis@bergeroninc.com	$1,100,000.00	Install storm water pump stations at 10th and 14th street ends	2/1/2016
South Andrews Avenue & 17th Street Large Water Main Replacement Project (*J)	City of Ft. Lauderdale Water & Wastewater CIP 100 North Andrews Ave, Suite 500 Ft. Lauderdale, FL 33301	Jean Examond P. E. (561) 391-2810 Jexamond@fortlauderdale.gov	$408,869.50	17th Street, just East of Andrews Ave. The project involved the installation of two 18-inch linestops to abandon the existing 20-inch main.	10/7/2015
Water Main and Force Main Aerial Crossing Replacement (*J)	Palm Beach Water Utilities Department 8100 Forest Hill Blvd. West Palm Beach, FL 33413	Joseph Tanecredi, P.E. (561)- 493-6088 jtanecredy@pbcwater.com	$534,236.20	Project Included Installation of 8-inch to 12-inch DIP water main and force main aerial crossing replacements on three bridges.	9/1/2015
Biscayne Point Neighborhood Improvement Project (*N,J)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Carla Dixon (786) 412-9537 carladixon@miamibeachfl.gov	$18,000,000.00	Design Build - 24,000 LF of WM ranging 8"-16" DIP, 8,500 strom drainage and 6 storm water pump stations	5/1/2014
Sunset Islands 1 & 2 Neighborhood Improvement Project (*N,J)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Maria Hernandez (786) 371-3168 mariahernandez@miamibeachfl.gov	$6,500,000.00	10,800 LF of 8" DIP WM, 9578 LF of storm water pipe 15"-24" in diameter, reconstruct 23,000 SY of road	8/1/2012
Nautilus Neighborhood Improvement Project (*N,J)	City of Miami Beach Public Works Department - 1700 Convention Center Drive, Miami Beach, FL 33139	Jose Perez (786) 367-8115 joseperez@miamibeachfl.gov	$33,600,000.00	40,000 LF of 8" DIP, 16,300 of storm water conveyance pipe, 92 inlets, 74 manholes andd 177 water services	6/1/2009

Centerline Directional Drilling Service, Inc. License #: CUC1225062

Qualification & Experience

CENTERLINE
Directional Drilling Service, Inc.

To: AMICI Engineering Contractors

Prime Contractor	Project Manager	Project Manager Information	HDD Project Name	Pipe Size/ Material	Length	Date Completed
David Mancini & Sons, Inc. 3401 N. Miami Avenue (#214) Miami, FL 33127	David Mancini Jr.	(754) 264-9594 dmancinijr@dmsi.com	19-FL.EM54 54-Inch Break Repair Rio Vista (Tarpon River) Force Main Crossing	54" Directional Bore	1,800 LF HDPE 1,664 LF HDPE 2,400 LF HDPE 3,080 LF HDPE	Still in progress
TLC Diversified Inc. 2719 17th St. East Palmetto, FL 34221	Alex Zettel	(813) 810-1510 azettel@tlcdiversified.com	LS 45 Force Main Replacement Project 17-0016-UT	1-20" Directional Bore	4,150 LF	Apr-20
Felix Associates for Florida 8526 SW Kansas Ave. Stuart, FL 34997	Adam Schmitt	(772)-200 -6943 aschmidt@felixassociates.net	Crosstown Pkwy Seg. 1 D/B	1-24" Directional Bore	3,8880 LF	Aug-19
Southern Underground Industries, Inc. 5979 NW 151 Street. Suite 102. Miami Lakes, FL 33014	Juan Barreneche	(954) 650-4699	McMullen Booth Road and SR 580 Water Main Improvements	1-16" Directional Bore 1-16" Directional Bore	1340 LF 1140 LF	May-19
E.T Mackenzie of Florida, Inc 6212 33rd Street E. Bradenton, FL 34203	Scott Pryor	(941)-756-6760 spryor@mackenzieco.com	Waterside East-West Transmission Mains	1-30" Directional Bore 1-14" Directional Bore	DB 1-30" 2,540 Ft (4) Bores DB 1-14" 1808 Ft (4) Bores DB 1-30" 1346' FT (2) Bores DB 1-14" 1200 FT (1) Bore	Mar-19
Metro Equipment Service, Inc. 9415 SW 72 St. Suite 131 Miami, FL 33173	Carlos Noguiera	(786) 236-2242	MDWASD 42" HDPE Force Main in N. Miami Ave	42" Directional Bore	1680 LF @ N 62ND ST 1489 LF @ N Miami Ave 2425 LF @ N Miami Ave 2306 LF @ N Mami Ave	Mar-19
Westra Construction 1263 12th Ave. East Palmetto, FL 34221	Mike Beukema	(941)723-1611 mike@westraconst.com	Force Main 5 Replacement Project: 655	1-18" Directional Bore 1-24" Directional Bore short 6" Directional Bores	1080 LF @ Gulf Dr 2400 LF @ Gulf Dr. Grand Total 6" Bores: 3250 LF	Jun-18
TLC Diversified Inc. 2719 17th St. East Palmetto, FL 34221	Alex Zettel	(813) 810-1510 azettel@tlcdiversified.com	Boca Ciega Bay Subaqueous Force Main Crossing: Project 170901	24" Directional Bore	4148 LF FPVC @ Boca Ciega Bay 640 LF FPVC @ Park St. N	Apr-18
Cabana Construction of SW FL, Inc. P.O. Box 61646 Ft. Myers, FL 33906	Ken Cabana	(239) 980-9405 cabanaconstructionswfl@gmail.com	Coral Creek Bridge	18" Directional Bore	1250 LF HDPE	12/13/2017
Pospiech Contracting, Inc. 201 S. Apopka Ave Inverness, FL 344452	Luis Borja	(352)726-3940 ext. 221 lborja@pospiechcontracting.com	Force Main 1M Replacement	30" Directional Bore 30" Directional Bore	240 LF HDPE 1050 LF HDPE	9/15/2017
Prince Contracting 10210 Highland Manor Dr Ste#110 Tampa, FL 33610	Neil Parekh	(305) 753-8621 nparekh@princecontracting.com	SR 482 (Sand Lake Rd) From W of Turkey Lake Rd to Universal Blvd	36" Directional Bore 24" Directional Bore	1420 LF HDPE 650 LF HDPE	7/17/2017

Project Manager: Lauro Acevedo

CENTERLINE
Directional Drilling Service, Inc.

Prime Contractor	Project Manager	Project Manager Information	HDD Project Name	Pipe Size/ Material	Length	Date Completed
Southern Underground Industries, Inc. 5979 NW 151 St. Suite #102 Miami, FL 33014	Juan Barreneche	TEL: 954-650-4699 juanb@southernui.com	Simpson Rd 30" Water Main Job #16-097 Thohopekeliga Water Authority	1-30" Directional Bore 1-30" Directional Bore	315 ft. 1,080 ft.	Mar-17
Southern Underground Industries, Inc. 5979 NW 151 Street. Suite 102. Miami Lakes, FL 33014	Juan Barreneche	(954) 650-4699	Siesta Key Force Main Phase 1 and Water Main, ICW Crossing to US 41	20" HDPE Water Main and Force Main	3,100 LF of 20" HDPE Water Main across ICW; 3,100 LF of HDPE Force Main across ICW, 400 LF of 20" HDPE Water Main across US 41; 400 LF of 20" HDPE Force Main across US 41; 1,300 LF OF of 20" HDPE Water Main under sensitive tree area in park; 1,300 LF of 20" HDPE Force Main under sensitive tree area in park; 750 LF of 20" HDPE Water Main under residential roadway (Sothy View Dr.); 750 LF of 20" HDPE Force Main under residential roadway (South View Dr). The project consisted of over 11,00 LF of 20" HDPE	Mar-17
Westra Construction 1263 12th Ave. East Palmetto, FL 34221	Dan Fix	(941) 725-1108 dan@westraconst.com	Hillsborough County-Dale Mabry Design Bulid Diversion Force Main & Reclaimed Water Transmission	HDD for Reclaimed Water only: 20" FPVC	1874 LF Phase A: 1509 LF in Sheldon, 577 LF in Henderson, 495 LF in Brushy 504 LF in Rocky 1074 LF in Citrus Mall Phase B: 1250 LF in Wetland Phase C: 920 LF in Lynn Turner	6/1/2016
Westra Construction 1263 12th Ave. East Palmetto, FL 34221	Dan Fix	(941) 725-1108 dan@westraconst.com	Hillsborough County-Dale Mabry Design Bulid Diversion Force Main & Reclaimed Water Transmission	HDD for Force Main, FPVC only: Phase A: 24" FM HDD, Phase B: is 36" FM HDD, Phase C: 24" FM HDD	1874 LF in Veterans Phase A: 1436 LF in Sheldon 532 LF in Henderson 495 LF in Brushy 504 LF in Rocky 1074 LF in Citrus Mall Phase B: 1390 LF in Wetland Phase C: 920 LF in Lynn Turner	6/1/2016

Project Manager: Lauro Acevedo

CENTERLINE
Directional Drilling Service, Inc.

Prime Contractor	Project Manager	Project Manager Information	HDD Project Name	Pipe Size/ Material	Length	Date Completed
Metro Equipment Service, Inc. 9415 SW 72 St. Suite 131 Miami, FL 33173	Daniel Gonzalez	(786) 663-2811 dg@mesinc.us	WO# 16703 NE 79 ST. Causeway SR 934 Miami Dade County	36" HDPE	1005 LF	6/1/2015
Garney Construction 370 East Crown Point Rd Winter Garden, FL 34787	Dan Smolik	(407) 832-2291 dsmolik@garney.com	Intercession City Portable Water Main Extension	30" HDPE	250 LF, 900 LF, 920 LF, 150 LF	7/28/2015
MacDriller, Inc. 22091 US 19 N, Clearwater, FL 33765	Chris Mclaughlin	(561) 234-0760 chris@macdriller.com	Tierra Verde to Isla Del Sol Bayway Structure EX-96 Intra-coastal Waterway	24" HDPE pulling 9-4" conduits inside	2693 LF	Aug-15
Metro Equipment Service, Inc. 9415 SW 72 St. Suite 131 Miami, FL 33173	Daniel Gonzalez	(786) 663-2811 dg@mesinc.us	TOHO Water Authority Simpson Rd. 30" Water Main Project	30" FPVC	1060 LF	10/1/2015
Garney Construction 370 East Crown Point Rd Winter Garden, FL 34787	Dan Smolik	(407) 832-2291 dsmolik@garney.com	Victory Way Reclaimed Water Systems Improvements Construction	30" FPVC	1800 LF 1190 LF	3/1/2014
Danella Utility Construction, Inc. 170 Commerce Rd. Unit 5 Boynton Beach, FL 33426	Fredie Brady	(954)605-3668	FPL Belvedere Subaqueous Crossing WR: 13-2584514	3-10" pipes pull together on 36" hole.	4850 LF	9/1/2013
Danella Utility Construction, Inc. 170 Commerce Rd. Unit 5 Boynton Beach, FL 33426	Felipe Santillian	(561) 702-5696	Fort Hamer Road Watermain Crossing	30" HDPE	2,851 FT	10/6/2014
Danella Utility Construction, Inc. 170 Commerce Rd. Unit 5 Boynton Beach, FL 33426	Fredie Brady	(954)605-3668	FPL Belvedere Subaqueous Crossing	3-10"	4850 LF	9/1/2013

Project Manager: Lauro Acevedo

Attachment F

Drill Bore Calculations

HDD DESIGN CALCULATIONS

Project: Design-Build Pump Station B-4 Redundant Force Main P12567, Fort Lauderdale, FL

Calculations by: Juan Barreneche, P.E. (#67662)

HDD Description: **DRILL #1, Force Main Installation consisting of a 30" IPS DR11 HDPE Pipe approximately 800 LF in length** from the B-4 Pump Station to Coral Ridge Park

Calculate the safe pull strength or allowable tensile load.

$OD := 30.0\ in$ *Outer Diameter*

$DR := 11$ *Dimension Ratio*

$T_{allow} := 1150\ \frac{lb}{in^2}$ *Typical Safe Pull Stress for PE 4710 from Table 1 (below)*

$ID := 24.219\ in$ *Inner diameter of HDPE*

$t := 2.727\ in$ *Minimum Wall Thickness of HDPE*

$D_H := 42\ in$ *Borehole Diameter*

$$F_S := \pi \cdot T_{allow} \cdot OD^2 \cdot \left(\frac{1}{DR} - \frac{1}{DR^2}\right)$$

$F_S = 268723.01\ lb$ ***Safe pull force***

TABLE 1
Safe Pull Tensile Stress @ 73° F

Duration (Hours)	Typical Safe Pull Stress (psi) @ 73°F		
	PE2xxx (PE2406)	PE3xxx (PE3408)	PE4xxx (PE4710)
0.5	1100	1400	1500
1	1050	1350	1400
12	850	1100	1150
24	800	1050	1100

The safe pull stress is the stress at 3% strain. For strains less than 3% the pipe will essentially have complete strain recovery after pullback. The stress values in Table 1 were determined by multiplying 3% times the apparent tensile modulus from the Appendix to Chapter 3 adjusted by a 0.60 factor to account for the high stress level during pullback.

Calculate Safety Factor against Bucking for Pipe

STEP 1: Determine the critical buckling pressure during installation for the pipe (include tensile reduction factor assuming the frictional drag during pull results in 1000 psi longitudinal pipe stress)

$E_{12hr} := 63000\ \frac{lb}{in^2}$ *Apparent Modulus of Elasticity (for 12 hours at 73 degrees F)*

$\mu := 0.45$ *Poisson's Ratio for PE Materials*

$\eta := 0.3$ *Coefficient of friction between pipe and slurry*

$f_o := 0.76$ *Ovality compensation factor (for 3% ovality)*

$m := 0.5$ *Coefficient of friction between HDPE pipe & ground*

$p := 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure, assumed*

$\gamma_w := 62.4\ \frac{lb}{ft^3}$ *Density of water*

$\gamma_{slurry} := 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

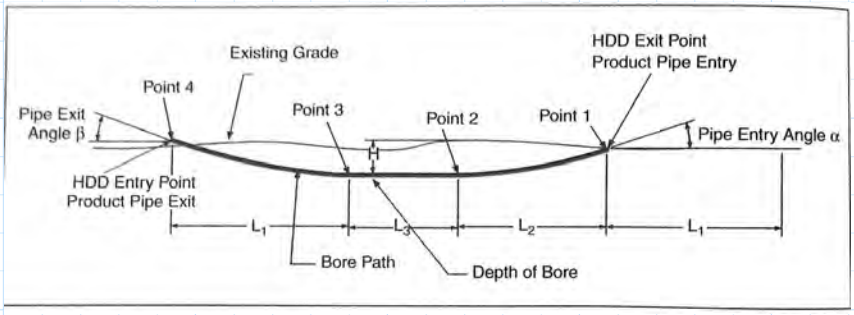
$w_{pipe} := 102.35\ \frac{lb}{ft}$ *Weight of the HDPE Pipe*

VERTICAL CURVES

$L_{ENTRY} := 141\ ft$
$R_{ENTRY} := 500\ ft$
$\phi ENT := 14\ deg = 0.24\ rad$

$L_{ST} := 196\ ft$

$L_{EXIT} := 141\ ft$
$R_{EXIT} := 500\ ft$
$\phi EXIT := 14\ deg = 0.24\ rad$



HORIZONTAL CURVES

$L_{HORIZ1} := 322.0\ ft$
$R_{HORIZ1} := 600\ ft$
$\theta HOR1 := 30.2\ deg = 0.53\ rad$

$L_{HORIZ2} := 0\ ft$
$R_{HORIZ2} := 0\ ft$
$\theta HOR2 := 0\ deg = 0\ rad$

Calculate the critical unconstrained buckling pressure for the HDPE pipe w/o safety factor.

where $w_B := \left| w_{pipe} + \gamma_w \cdot \pi \cdot \left(\frac{ID}{2}\right)^2 - \gamma_{slurry} \cdot \pi \cdot \left(\frac{OD}{2}\right)^2 \right| = 157.33\ \frac{lb}{ft}$

Bouyancy Force = Weight of Pipe + Water in Pipe - Weight of Slurry Displaced

where $F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$ *Hydrokinetic Force*

Pullback Forces:

where
$F_P := \eta \cdot w_B \cdot L_{ST} = 9251.08\ lb$ *-straight pipe*
$F_{C\_ENTRY} := e^{\eta \cdot \phi ENT} \cdot \left(\eta \cdot w_B \cdot L_{ENTRY}\right) = 7161.29\ lb$ *-Vertical curve1*
$F_{C\_EXIT} := e^{\eta \cdot \phi EXIT} \cdot \left(\eta \cdot w_B \cdot L_{EXIT}\right) = 7161.29\ lb$ *-Vertical curve2*
$F_{C\_HORIZ1} := e^{\eta \cdot \theta HOR1} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ1}\right) = 17801.88\ lb$ *-Horiz Curve 1*
$F_{C\_HORIZ2} := e^{\eta \cdot \theta HOR2} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ2}\right) = 0\ lb$ *-Horiz Curve 2*

where $F_T := F_{HK} + F_P + F_{C\_ENTRY} + F_{C\_EXIT} + F_{C\_HORIZ1} + F_{C\_HORIZ2}$

$F_T = 44089.87\ lb$ *Total Pulling Force*

where $s_T := \frac{F_T}{\pi \cdot OD^2} \cdot \frac{DR^2}{DR - 1} + \frac{E_{12hr} \cdot OD}{2 \cdot R_{ENTRY}} = 346.18\ \frac{lb}{in^2}$ *Axial Tensile Stress*

where $s := \frac{F_S}{\pi \cdot \left(\left(\frac{OD}{2}\right)^2 - \left(\frac{ID}{2}\right)^2\right)} = 1091.59\ \frac{lb}{in^2}$ *Safe Pull Stress*

where $r := \frac{s_T}{2 \cdot s} = 0.16$ *Tensile Ratio*

where $f_R := \sqrt{5.57 - (r + 1.09)^2} - 1.09 = 0.91$ *Tensile Reduction Factor*

$P_{cr} := \frac{2\ E_{12hr}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 109.6\ \frac{lb}{in^2}$ *Critical Unconstrained Buckling Pressure w/o FS*

STEP 2: Determine expected loads on pipe (assume only static drilling fluid head acting on pipe, and borehole instact with no soil loading)

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{slurry} = 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

$P_{slurry} := H \cdot \gamma_{slurry} = 16.24\ \frac{lb}{in^2}$ *Total static drilling fluid head pressue if drilled from surface.*

STEP 3: Determine the resulting safety factor against critical buckling during installation

$SF_{CR} := \frac{P_{cr}}{P_{slurry}} = 6.75$ ***Safety Factor** against critical buckling during pull*

Calculate Safety Factor for Long Term Performance

STEP 1: Determine the pipe soil load.

$E_{LONG} := 29000\ \frac{lb}{in^2}$ *Long-term apparent modulus*

$\gamma_w = 62.4\ \frac{lb}{ft^3}$ *Density of water*

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{soil} := 110\ \frac{lb}{ft^3}$ *Saturated Unit Weight of Sediments (Assume Sandy Soils until borings completed)*

$GW := 21\ ft$ *Groundwater Height*

$C := 25\ ft$ *Height of Soil Cover*

$P_{soil} := (\gamma_{soil} - \gamma_w) \cdot C = 8.26\ \frac{lb}{in^2}$

STEP 2: Calculate the ring deflection resulting from soil loads assuming no side support.

$$RD := \frac{0.0125 \cdot P_{soil}}{\left(\frac{E_{LONG}}{12 \cdot (DR-1)^3}\right)} \cdot 100 = 4.27 \ \%$$ *Deflection from soil loads*

Falls below the recommended Design Deflection Limits of Buried Polyethelyne Pipe for Pressure Applications (<5.0%)

TABLE 2
Design Deflection Limits of Buried Polyehtylene Pipe, Long Term, %*

DR or SDR	21	17	15.5	13.5	11	9	7.3
Deflection Limit (% Δy/D) Non-Pressure Applications	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Deflection Limit (%Δy/D) Pressure Applications	7.5	6.0	6.0	6.0	5.0	4.0	3.0

* Design deflection limits per ASTM F1962, Guide for Use of Maxi-Horizontal Directional Drilling for Placement of PE Pipe or Conduit Under Obstacles, Including River Crossings.

STEP 3: Determine the long-term hydrostatic loads on the pipe.

$$P_w := \left(\frac{GW}{2.31 \ \frac{ft}{\frac{lb}{in^2}}}\right) + P_{soil} = 17.35 \ \frac{lb}{in^2}$$ *External pressure due to groundwater head*

$$P_{slurry} := \gamma_{slurry} \cdot H = 16.24 \ \frac{lb}{in^2}$$

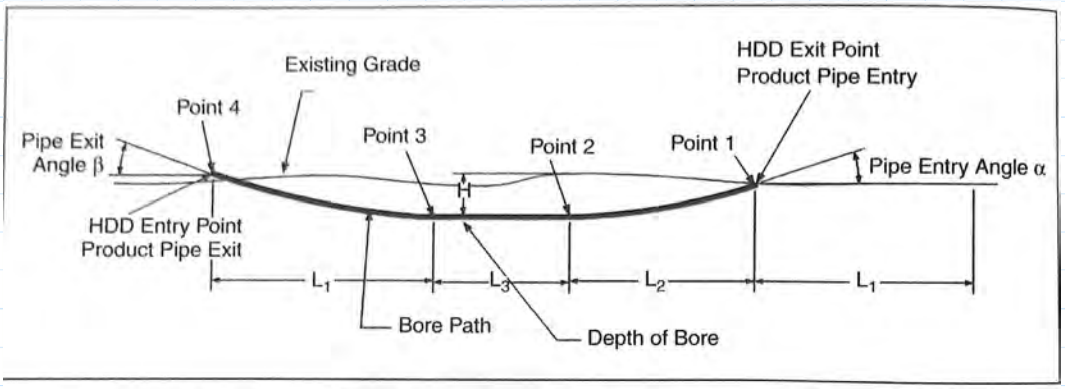
$P_w > P_{slurry}$ *therefore use Pslurry for buckling load*

STEP 4: Determine critical unconstrained buckling pressure based on deflection from loading.

$$P_{UC} := \frac{2 \cdot E_{LONG}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o = 55.27 \ \frac{lb}{in^2}$$ *Critical unconstrained buckling pressure (no safety factor)*

$$SF_{CR} := \frac{P_{UC}}{P_w} = 3.18$$ ***Safety Factor*** *against buckling pressure of highest groundwater head*

Design Calculations for Pullback Forces



Pipe Properties:

$OD = 30\ in$

$DR = 11$

$t = 2.73\ in$

$E_{LONG} = 29000\ \frac{lb}{in^2}$

$E_{12hr} = 63000\ \frac{lb}{in^2}$

$\mu = 0.45$

$s = 1091.59\ \frac{lb}{in^2}$

Path Profile:

$H = 25\ ft$

$\phi ENT = 0.24\ rad$

$\phi EXIT = 0.24\ rad$

$L_1 := 50\ ft$

$L_T := L_{ENTRY} + L_{ST} + L_{EXIT} + L_{HORIZ1} + L_{HORIZ2} = 800\ ft$

$R_{ENTRY} = 500\ ft$

$R_{EXIT} = 500\ ft$

$L_{ENTRY} = 141\ ft$

$L_{EXIT} = 141\ ft$

$L_{HORIZ1} = 322\ ft$

$R_{HORIZ1} = 600\ ft$

$\theta HOR1 = 0.53\ rad$

$L_{HORIZ2} = 0\ ft$

$R_{HORIZ2} = 0\ ft$

$\theta HOR2 = 0\ rad$

Determine Axial Bending Stress

STEP 1: Check Radius of Curvature. Should not exceed 40 times the pipe outside diameter to prevent ring collapse.

$r_{min} := 40 \cdot OD = 100\ ft$ *OK, Since* $R_{ENTRY}, R_{HORIZ1} .. R_{HORIZ2}\ R_{EXIT} > r_{min}$

STEP 2: Find Bending Strain (use smallest radius)

$e_a := \frac{OD}{2 \cdot R_{ENTRY}} = \left(2.5 \cdot 10^{-3}\right)\ \frac{in}{in}$ *Bending Strain*

STEP 3: Find Bending Stress

$S_a := E_{12hr} \cdot e_a = 157.5\ \frac{lb}{in^2}$ *Bending Stress*

Find Pulling Force

STEP 1: Calculate Net Upward Force on empty/full pipe surrounded by mud slurry

$\gamma_w = 0.0361 \ \frac{lb}{in^3}$ *Density of water*

$g_a := 0.959$ *Specific Gravity of pipe material (PE 4710)*
$g_b := 1.5$ *Specific Gravity of mud slurry*
$w_{pipe} = 102.35 \ \frac{lb}{ft}$ *Weight of empty pipe*

$w_{b\_empty} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - w_{pipe} = 357.11 \ \frac{lb}{ft}$ *Net Upward Force of Empty Pipe*

$w_{b\_fullH2O} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - \pi \cdot \left(\frac{(ID)^2}{4}\right) \cdot \gamma_w - w_{pipe} = 157.48 \ \frac{lb}{ft}$ *Net Upward Force of Full Pipe*

STEP 2: Calculate pullback force acting on pipe (Assuming Water Ballast, i.e. Full Pipe)

$L_1 = 50 \ ft$ *Length of pipe left above ground after pullback*
$L_{ENTRY} = 141 \ ft$ *Length of pipe from entry to straight run (Point 2)*
$L_{ST} = 196 \ ft$ *Length of pipe in straight run (Point 3)*
$L_{HORIZ1} = 322 \ ft$ *Length of pipe in 1st horizontal curve from entry point (Point 4)*
$L_{HORIZ2} = 0 \ ft$ *Length of pipe in 2nd horizontal curve from entry point (Point 5)*
$L_{EXIT} = 141 \ ft$ *Length of pipe from beginning of exit curve to exit point (Point 6)*

$\phi ENT = 0.24 \ rad$ *Entry angle (in radians)*
$\theta HOR1 = 0.53 \ rad$ *Angle of Curvature of 1st Horizontal Curve (in radians)*
$\theta HOR2 = 0 \ rad$ *Angle of Curvature of 2nd Horizontal Curve (in radians)*
$\phi EXIT = 0.24 \ rad$ *Exit angle (in radians)*
$v_a := 0.5$ *Coefficient of friction between pipe and ground surface*
$v_b := 0.3$ *Coefficient of friction between pipe and mud slurry*

$T_1 := e^{v_a \cdot \phi ENT} \cdot \left(v_a \cdot w_{pipe} \cdot \left(L_1 + L_{ENTRY} + L_{ST} + L_{HORIZ1} + L_{HORIZ2} + L_{EXIT}\right)\right)$

$T_1 = 49151.4 \ lb$ *Force @ Pt.1*

$T_2 := e^{v_b \cdot \phi ENT} \cdot \left(T_1 + v_b \cdot w_{b\_fullH2O} \cdot L_{ENTRY} + w_{b\_fullH2O} \cdot H - v_a \cdot w_{pipe} \cdot L_{ENTRY} \cdot e^{(v_a \cdot \phi ENT)}\right)$

$T_2 = 55520.64 \ lb$ *Force @ Pt.2*

$$T_3 := T_2 + v_b \cdot w_{b\_fullH2O} \cdot L_{ST} - e^{(v_b \cdot \phi ENT)} \cdot \left(v_a \cdot w_{pipe} \cdot L_{ST} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_3 = 52584.63\ lb$ *Force @ Pt.3*

$$T_4 := e^{v_b \cdot \theta HOR1} \cdot \left(T_3 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ1} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ1} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_4 = 54768.02\ lb$ *Force @ Pt.4*

$$T_5 := e^{v_b \cdot \theta HOR2} \cdot \left(T_4 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ2} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ2} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_5 = 54768.02\ lb$ *Force @ Pt.5*

$$T_6 := e^{v_b \cdot \phi EXIT} \cdot \left(T_5 + v_b \cdot w_{b\_fullH2O} \cdot L_{EXIT} - w_{b\_empty} \cdot H - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{EXIT} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_6 = 46581.23\ lb$ *Force @ Pt.6*

STEP 3: Calculate hydrokinetic Force

$p = 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure*

$D_H = 42\ in$ *Borehole Diameter*

$$F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$$ *Pulling Force increment*

$$F_{max} := T_2 + F_{HK} = 58234.98\ lb$$ *Maximum Pullback Force*

Compare Axial Tensile Stress with Allowable Tensile Street During Pullback

$$s = 1091.59\ \frac{lb}{in^2}$$

STEP 1: Average Axial Stress acting on pipe cross-section at Points 1,2,3,4, 5 & 6

$$s_1 := \left(T_1 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 221.96\ \frac{lb}{in^2} \quad s_1 < s = 1$$ *1=PASS, 0=FAIL*

$$s_2 := \left(T_2 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 249.22\ \frac{lb}{in^2} \quad s_2 < s = 1$$ *1=PASS, 0=FAIL*

$$s_3 := \left(T_3 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 236.65 \ \frac{lb}{in^2} \qquad s_3 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_4 := \left(T_4 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 246 \ \frac{lb}{in^2} \qquad s_4 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_5 := \left(T_5 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 246 \ \frac{lb}{in^2} \qquad s_5 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_6 := \left(T_6 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 210.96 \ \frac{lb}{in^2} \qquad s_6 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

STEP 2: Force needed to break pipe

$$ID = 24.22 \ in$$

$$F_b := s \cdot \left(\frac{\pi}{4}\right) \cdot \left(OD^2 - ID^2\right) = 268723.01 \ lb$$

STEP 3: Determine Safety Factor Against Ring Collapse During Pullback

$$P_{ha} := 1.5 \cdot \gamma_w \cdot H = 16.25 \ \frac{lb}{in^2}$$ *External Static Head Pressure*

$$P_{effa} := P_{ha} + p = 24.25 \ \frac{lb}{in^2}$$ *Combine static head with hydrokinetic pressure*

CRITICAL COLLAPSE PRESSURE

$$f_o = 0.76$$ *Ovality Compensation Factor for 3% Ovality*

$$r := \frac{s_6}{2 \cdot s} = 0.1$$ *Tensile Ratio based on Pull Stress Calculation*

$$f_R := \sqrt{5.57 - \left(r + 1.09\right)^2} - 1.09 = 0.95$$ *Tensile Reduction Factor*

$$P_{CR} := \frac{2 \cdot E_{12hr}}{\left(1 - \mu^2\right)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 114.08 \ \frac{lb}{in^2}$$ *Calculated Critical Buckling pressure*

SAFETY FACTOR AGAINST COLLAPSE

$$SF_{collapse} := \frac{P_{CR}}{P_{ha}} = 7.02$$ *Safety Factor against Collapse*

All calculations were based on the Engineering and Installation methods described in a manual by the Plastic Pipe Institute titled, Polyethylene Pipe for Horizontal Directional Drilling and meet ASTM F1962-05

Calculations performed by:

Juan Barreneche, P.E.
(#67662)

HDD DESIGN CALCULATIONS

Project: Design-Build Pump Station B-4 Redundant Force Main P12567, Fort Lauderdale, FL

Calculations by: Juan Barreneche, P.E. (#67662)

HDD Description: **DRILL #2, Force Main Installation consisting of a 30" IPS DR11 HDPE Pipe approximately 866 LF in length** from Coral Ridge Park to NE 14th St.

Calculate the safe pull strength or allowable tensile load.

$OD := 30.0\ in$ *Outer Diameter*

$DR := 11$ *Dimension Ratio*

$T_{allow} := 1150\ \frac{lb}{in^2}$ *Typical Safe Pull Stress for PE 4710 from Table 1 (below)*

$ID := 24.219\ in$ *Inner diameter of HDPE*

$t := 2.727\ in$ *Minimum Wall Thickness of HDPE*

$D_H := 42\ in$ *Borehole Diameter*

$$F_S := \pi \cdot T_{allow} \cdot OD^2 \cdot \left(\frac{1}{DR} - \frac{1}{DR^2}\right)$$

$F_S = 268723.01\ lb$ ***Safe pull force***

TABLE 1
Safe Pull Tensile Stress @ 73° F

Duration (Hours)	Typical Safe Pull Stress (psi) @ 73°F		
	PE2xxx (PE2406)	PE3xxx (PE3408)	PE4xxx (PE4710)
0.5	1100	1400	1500
1	1050	1350	1400
12	850	1100	1150
24	800	1050	1100

The safe pull stress is the stress at 3% strain. For strains less than 3% the pipe will essentially have complete strain recovery after pullback. The stress values in Table 1 were determined by multiplying 3% times the apparent tensile modulus from the Appendix to Chapter 3 adjusted by a 0.60 factor to account for the high stress level during pullback.

Calculate Safety Factor against Bucking for Pipe

STEP 1: Determine the critical buckling pressure during installation for the pipe (include tensile reduction factor assuming the frictional drag during pull results in 1000 psi longitudinal pipe stress)

$E_{12hr} := 63000\ \frac{lb}{in^2}$ *Apparent Modulus of Elasticity (for 12 hours at 73 degrees F)*

$\mu := 0.45$ *Poisson's Ratio for PE Materials*

$\eta := 0.3$ *Coefficient of friction between pipe and slurry*

$f_o := 0.76$ *Ovality compensation factor (for 3% ovality)*

$m := 0.5$ *Coefficient of friction between HDPE pipe & ground*

$p := 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure, assumed*

$\gamma_w := 62.4\ \frac{lb}{ft^3}$ *Density of water*

$\gamma_{slurry} := 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

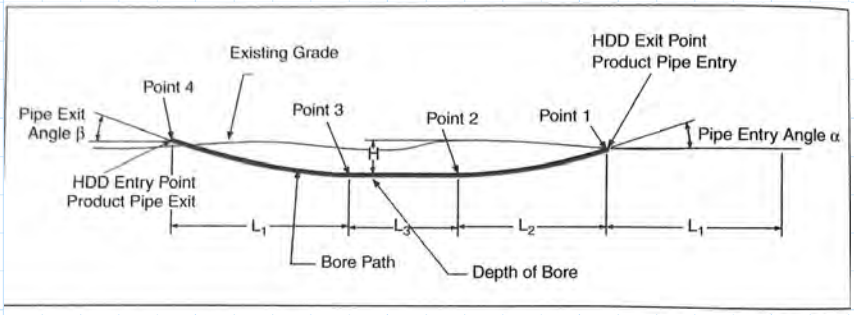
$w_{pipe} := 102.35\ \frac{lb}{ft}$ *Weight of the HDPE Pipe*

VERTICAL CURVES

$L_{ENTRY} := 141\ ft$
$R_{ENTRY} := 500\ ft$
$\phi ENT := 14\ deg = 0.24\ rad$

$L_{ST} := 200\ ft$

$L_{EXIT} := 141\ ft$
$R_{EXIT} := 500\ ft$
$\phi EXIT := 14\ deg = 0.24\ rad$



HORIZONTAL CURVES

$L_{HORIZ1} := 195.0\ ft$
$R_{HORIZ1} := 500\ ft$
$\theta HOR1 := 22.2\ deg = 0.39\ rad$

$L_{HORIZ2} := 189\ ft$
$R_{HORIZ2} := 750\ ft$
$\theta HOR2 := 15.3\ deg = 0.27\ rad$

Calculate the critical unconstrained buckling pressure for the HDPE pipe w/o safety factor.

where $w_B := \left| w_{pipe} + \gamma_w \cdot \pi \cdot \left(\frac{ID}{2}\right)^2 - \gamma_{slurry} \cdot \pi \cdot \left(\frac{OD}{2}\right)^2 \right| = 157.33\ \frac{lb}{ft}$

Bouyancy Force = Weight of Pipe + Water in Pipe - Weight of Slurry Displaced

where $F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$ *Hydrokinetic Force*

Pullback Forces:

where
$F_P := \eta \cdot w_B \cdot L_{ST} = 9439.88\ lb$ *-straight pipe*
$F_{C\_ENTRY} := e^{\eta \cdot \phi ENT} \cdot \left(\eta \cdot w_B \cdot L_{ENTRY}\right) = 7161.29\ lb$ *-Vertical curve1*
$F_{C\_EXIT} := e^{\eta \cdot \phi EXIT} \cdot \left(\eta \cdot w_B \cdot L_{EXIT}\right) = 7161.29\ lb$ *-Vertical curve2*
$F_{C\_HORIZ1} := e^{\eta \cdot \theta HOR1} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ1}\right) = 10338.39\ lb$ *-Horiz Curve 1*
$F_{C\_HORIZ2} := e^{\eta \cdot \theta HOR2} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ2}\right) = 9664.73\ lb$ *-Horiz Curve 2*

where $F_T := F_{HK} + F_P + F_{C\_ENTRY} + F_{C\_EXIT} + F_{C\_HORIZ1} + F_{C\_HORIZ2}$

$F_T = 46479.91\ lb$ *Total Pulling Force*

where $s_T := \frac{F_T}{\pi \cdot OD^2} \cdot \frac{DR^2}{DR - 1} + \frac{E_{12hr} \cdot OD}{2 \cdot R_{ENTRY}} = 356.41\ \frac{lb}{in^2}$ *Axial Tensile Stress*

where $s := \frac{F_S}{\pi \cdot \left(\left(\frac{OD}{2}\right)^2 - \left(\frac{ID}{2}\right)^2\right)} = 1091.59\ \frac{lb}{in^2}$ *Safe Pull Stress*

where $r := \frac{s_T}{2 \cdot s} = 0.16$ *Tensile Ratio*

where $f_R := \sqrt{5.57 - (r + 1.09)^2} - 1.09 = 0.91$ *Tensile Reduction Factor*

$P_{cr} := \frac{2\ E_{12hr}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 109.25\ \frac{lb}{in^2}$ *Critical Unconstrained Buckling Pressure w/o FS*

STEP 2: Determine expected loads on pipe (assume only static drilling fluid head acting on pipe, and borehole instact with no soil loading)

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{slurry} = 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

$P_{slurry} := H \cdot \gamma_{slurry} = 16.24\ \frac{lb}{in^2}$ *Total static drilling fluid head pressue if drilled from surface.*

STEP 3: Determine the resulting safety factor against critical buckling during installation

$SF_{CR} := \frac{P_{cr}}{P_{slurry}} = 6.73$ ***Safety Factor** against critical buckling during pull*

Calculate Safety Factor for Long Term Performance

STEP 1: Determine the pipe soil load.

$E_{LONG} := 29000\ \frac{lb}{in^2}$ *Long-term apparent modulus*

$\gamma_w = 62.4\ \frac{lb}{ft^3}$ *Density of water*

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{soil} := 110\ \frac{lb}{ft^3}$ *Saturated Unit Weight of Sediments (Assume Sandy Soils until borings completed)*

$GW := 21\ ft$ *Groundwater Height*

$C := 25\ ft$ *Height of Soil Cover*

$P_{soil} := (\gamma_{soil} - \gamma_w) \cdot C = 8.26\ \frac{lb}{in^2}$

STEP 2: Calculate the ring deflection resulting from soil loads assuming no side support.

$$RD := \frac{0.0125 \cdot P_{soil}}{\left(\frac{E_{LONG}}{12 \cdot (DR-1)^3}\right)} \cdot 100 = 4.27 \ \%$$ *Deflection from soil loads*

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* Design deflection limits per ASTM F1962, Guide for Use of Maxi-Horizontal Directional Drilling for Placement of PE Pipe or Conduit Under Obstacles, Including River Crossings.

STEP 3: Determine the long-term hydrostatic loads on the pipe.

$$P_w := \left(\frac{GW}{2.31 \ \frac{ft}{\frac{lb}{in^2}}}\right) + P_{soil} = 17.35 \ \frac{lb}{in^2}$$ *External pressure due to groundwater head*

$$P_{slurry} := \gamma_{slurry} \cdot H = 16.24 \ \frac{lb}{in^2}$$

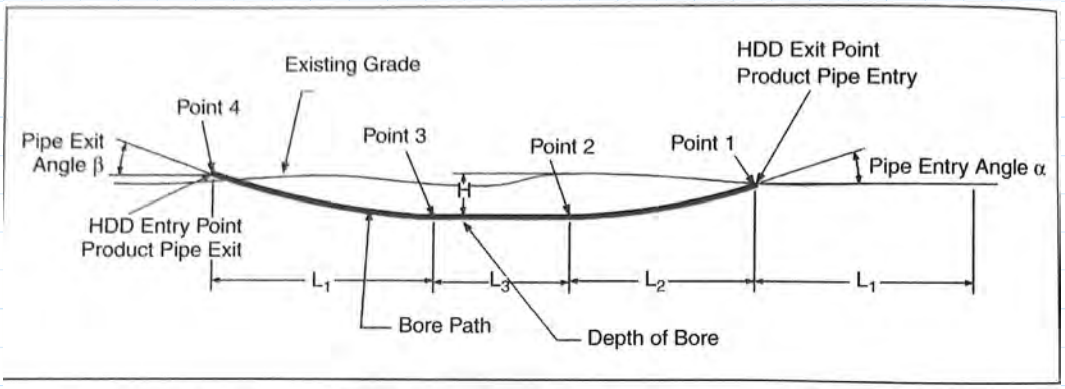
$P_w > P_{slurry}$ *therefore use Pslurry for buckling load*

STEP 4: Determine critical unconstrained buckling pressure based on deflection from loading.

$$P_{UC} := \frac{2 \cdot E_{LONG}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o = 55.27 \ \frac{lb}{in^2}$$ *Critical unconstrained buckling pressure (no safety factor)*

$$SF_{CR} := \frac{P_{UC}}{P_w} = 3.18$$ ***Safety Factor*** *against buckling pressure of highest groundwater head*

Design Calculations for Pullback Forces



Pipe Properties:

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$DR = 11$

$t = 2.73\ in$

$E_{LONG} = 29000\ \frac{lb}{in^2}$

$E_{12hr} = 63000\ \frac{lb}{in^2}$

$\mu = 0.45$

$s = 1091.59\ \frac{lb}{in^2}$

Path Profile:

$H = 25\ ft$

$\phi ENT = 0.24\ rad$

$\phi EXIT = 0.24\ rad$

$L_1 := 50\ ft$

$L_T := L_{ENTRY} + L_{ST} + L_{EXIT} + L_{HORIZ1} + L_{HORIZ2} = 866\ ft$

$R_{ENTRY} = 500\ ft$

$R_{EXIT} = 500\ ft$

$L_{ENTRY} = 141\ ft$

$L_{EXIT} = 141\ ft$

$L_{HORIZ1} = 195\ ft$

$R_{HORIZ1} = 500\ ft$

$\theta HOR1 = 0.39\ rad$

$L_{HORIZ2} = 189\ ft$

$R_{HORIZ2} = 750\ ft$

$\theta HOR2 = 0.27\ rad$

Determine Axial Bending Stress

STEP 1: Check Radius of Curvature. Should not exceed 40 times the pipe outside diameter to prevent ring collapse.

$r_{min} := 40 \cdot OD = 100\ ft$ *OK, Since* $R_{ENTRY}, R_{HORIZ1} .. R_{HORIZ2}\ R_{EXIT} > r_{min}$

STEP 2: Find Bending Strain (use smallest radius)

$e_a := \frac{OD}{2 \cdot R_{ENTRY}} = \left(2.5 \cdot 10^{-3}\right)\ \frac{in}{in}$ *Bending Strain*

STEP 3: Find Bending Stress

$S_a := E_{12hr} \cdot e_a = 157.5\ \frac{lb}{in^2}$ *Bending Stress*

Find Pulling Force

STEP 1: Calculate Net Upward Force on empty/full pipe surrounded by mud slurry

$\gamma_w = 0.0361 \ \frac{lb}{in^3}$ *Density of water*

$g_a := 0.959$ *Specific Gravity of pipe material (PE 4710)*
$g_b := 1.5$ *Specific Gravity of mud slurry*
$w_{pipe} = 102.35 \ \frac{lb}{ft}$ *Weight of empty pipe*

$w_{b\_empty} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - w_{pipe} = 357.11 \ \frac{lb}{ft}$ *Net Upward Force of Empty Pipe*

$w_{b\_fullH2O} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - \pi \cdot \left(\frac{(ID)^2}{4}\right) \cdot \gamma_w - w_{pipe} = 157.48 \ \frac{lb}{ft}$ *Net Upward Force of Full Pipe*

STEP 2: Calculate pullback force acting on pipe (Assuming Water Ballast, i.e. Full Pipe)

$L_1 = 50 \ ft$ *Length of pipe left above ground after pullback*
$L_{ENTRY} = 141 \ ft$ *Length of pipe from entry to straight run (Point 2)*
$L_{ST} = 200 \ ft$ *Length of pipe in straight run (Point 3)*
$L_{HORIZ1} = 195 \ ft$ *Length of pipe in 1st horizontal curve from entry point (Point 4)*
$L_{HORIZ2} = 189 \ ft$ *Length of pipe in 2nd horizontal curve from entry point (Point 5)*
$L_{EXIT} = 141 \ ft$ *Length of pipe from beginning of exit curve to exit point (Point 6)*

$\phi ENT = 0.24 \ rad$ *Entry angle (in radians)*
$\theta HOR1 = 0.39 \ rad$ *Angle of Curvature of 1st Horizontal Curve (in radians)*
$\theta HOR2 = 0.27 \ rad$ *Angle of Curvature of 2nd Horizontal Curve (in radians)*
$\phi EXIT = 0.24 \ rad$ *Exit angle (in radians)*
$v_a := 0.5$ *Coefficient of friction between pipe and ground surface*
$v_b := 0.3$ *Coefficient of friction between pipe and mud slurry*

$T_1 := e^{v_a \cdot \phi ENT} \cdot \left(v_a \cdot w_{pipe} \cdot \left(L_1 + L_{ENTRY} + L_{ST} + L_{HORIZ1} + L_{HORIZ2} + L_{EXIT}\right)\right)$

$T_1 = 52967.86 \ lb$ *Force @ Pt.1*

$T_2 := e^{v_b \cdot \phi ENT} \cdot \left(T_1 + v_b \cdot w_{b\_fullH2O} \cdot L_{ENTRY} + w_{b\_fullH2O} \cdot H - v_a \cdot w_{pipe} \cdot L_{ENTRY} \cdot e^{(v_a \cdot \phi ENT)}\right)$

$T_2 = 59627.37 \ lb$ *Force @ Pt.2*

$$T_3 := T_2 + v_b \cdot w_{b\_fullH2O} \cdot L_{ST} - e^{(v_b \cdot \phi ENT)} \cdot \left(v_a \cdot w_{pipe} \cdot L_{ST} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_3 = 56631.45\ lb$ *Force @ Pt.3*

$$T_4 := e^{v_b \cdot \theta HOR1} \cdot \left(T_3 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ1} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ1} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_4 = 59648.4\ lb$ *Force @ Pt.4*

$$T_5 := e^{v_b \cdot \theta HOR2} \cdot \left(T_4 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ2} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ2} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_5 = 60918.09\ lb$ *Force @ Pt.5*

$$T_6 := e^{v_b \cdot \phi EXIT} \cdot \left(T_5 + v_b \cdot w_{b\_fullH2O} \cdot L_{EXIT} - w_{b\_empty} \cdot H - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{EXIT} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_6 = 53199.05\ lb$ *Force @ Pt.6*

STEP 3: Calculate hydrokinetic Force

$p = 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure*

$D_H = 42\ in$ *Borehole Diameter*

$$F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$$ *Pulling Force increment*

$F_{max} := T_5 + F_{HK} = 63632.43\ lb$ *Maximum Pullback Force*

Compare Axial Tensile Stress with Allowable Tensile Street During Pullback

$$s = 1091.59\ \frac{lb}{in^2}$$

STEP 1: Average Axial Stress acting on pipe cross-section at Points 1,2,3,4, 5 & 6

$$s_1 := \left(T_1 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 238.29\ \frac{lb}{in^2} \quad s_1 < s = 1$$ *1=PASS, 0=FAIL*

$$s_2 := \left(T_2 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 266.79\ \frac{lb}{in^2} \quad s_2 < s = 1$$ *1=PASS, 0=FAIL*

$$s_3 := \left(T_3 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 253.97 \ \frac{lb}{in^2} \qquad s_3 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_4 := \left(T_4 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 266.88 \ \frac{lb}{in^2} \qquad s_4 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_5 := \left(T_5 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 272.31 \ \frac{lb}{in^2} \qquad s_5 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_6 := \left(T_6 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 239.28 \ \frac{lb}{in^2} \qquad s_6 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

STEP 2: Force needed to break pipe

$$ID = 24.22 \ in$$

$$F_b := s \cdot \left(\frac{\pi}{4}\right) \cdot \left(OD^2 - ID^2\right) = 268723.01 \ lb$$

STEP 3: Determine Safety Factor Against Ring Collapse During Pullback

$$P_{ha} := 1.5 \cdot \gamma_w \cdot H = 16.25 \ \frac{lb}{in^2} \qquad \textit{External Static Head Pressure}$$

$$P_{effa} := P_{ha} + p = 24.25 \ \frac{lb}{in^2} \qquad \textit{Combine static head with hydrokinetic pressure}$$

CRITICAL COLLAPSE PRESSURE

$$f_o = 0.76 \qquad \textit{Ovality Compensation Factor for 3\% Ovality}$$

$$r := \frac{s_6}{2 \cdot s} = 0.11 \qquad \textit{Tensile Ratio based on Pull Stress Calculation}$$

$$f_R := \sqrt{5.57 - \left(r + 1.09\right)^2} - 1.09 = 0.94 \qquad \textit{Tensile Reduction Factor}$$

$$P_{CR} := \frac{2 \cdot E_{12hr}}{\left(1 - \mu^2\right)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 113.17 \ \frac{lb}{in^2} \qquad \textit{Calculated Critical Buckling pressure}$$

SAFETY FACTOR AGAINST COLLAPSE

$$SF_{collapse} := \frac{P_{CR}}{P_{ha}} = 6.96$$ *Safety Factor against Collapse*

All calculations were based on the Engineering and Installation methods described in a manual by the Plastic Pipe Institute titled, Polyethylene Pipe for Horizontal Directional Drilling and meet ASTM F1962-05

Calculations performed by:

Juan Barreneche, P.E.
(#67662)

HDD DESIGN CALCULATIONS

Project: Design-Build Pump Station B-4 Redundant Force Main P12567, Fort Lauderdale, FL

Calculations by: Juan Barreneche, P.E. (#67662)

HDD Description: **DRILL #3, Force Main Installation consisting of a 30" IPS DR11 HDPE Pipe approximately 847 LF in length** from NE 14th St to NE 16th St.

Calculate the safe pull strength or allowable tensile load.

$OD := 30.0\ in$ *Outer Diameter*

$DR := 11$ *Dimension Ratio*

$T_{allow} := 1150\ \frac{lb}{in^2}$ *Typical Safe Pull Stress for PE 4710 from Table 1 (below)*

$ID := 24.219\ in$ *Inner diameter of HDPE*

$t := 2.727\ in$ *Minimum Wall Thickness of HDPE*

$D_H := 42\ in$ *Borehole Diameter*

$$F_S := \pi \cdot T_{allow} \cdot OD^2 \cdot \left(\frac{1}{DR} - \frac{1}{DR^2}\right)$$

$F_S = 268723.01\ lb$ ***Safe pull force***

TABLE 1
Safe Pull Tensile Stress @ 73° F

Duration (Hours)	Typical Safe Pull Stress (psi) @ 73°F		
	PE2xxx (PE2406)	PE3xxx (PE3408)	PE4xxx (PE4710)
0.5	1100	1400	1500
1	1050	1350	1400
12	850	1100	1150
24	800	1050	1100

The safe pull stress is the stress at 3% strain. For strains less than 3% the pipe will essentially have complete strain recovery after pullback. The stress values in Table 1 were determined by multiplying 3% times the apparent tensile modulus from the Appendix to Chapter 3 adjusted by a 0.60 factor to account for the high stress level during pullback.

Calculate Safety Factor against Bucking for Pipe

STEP 1: Determine the critical buckling pressure during installation for the pipe (include tensile reduction factor assuming the frictional drag during pull results in 1000 psi longitudinal pipe stress)

$E_{12hr} := 63000\ \frac{lb}{in^2}$ *Apparent Modulus of Elasticity (for 12 hours at 73 degrees F)*

$\mu := 0.45$ *Poisson's Ratio for PE Materials*

$\eta := 0.3$ *Coefficient of friction between pipe and slurry*

$f_o := 0.76$ *Ovality compensation factor (for 3% ovality)*

$m := 0.5$ *Coefficient of friction between HDPE pipe & ground*

$p := 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure, assumed*

$\gamma_w := 62.4\ \frac{lb}{ft^3}$ *Density of water*

$\gamma_{slurry} := 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

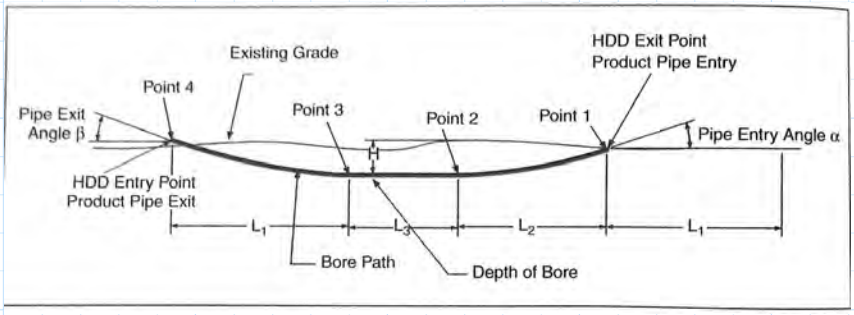
$w_{pipe} := 102.35\ \frac{lb}{ft}$ *Weight of the HDPE Pipe*

VERTICAL CURVES

$L_{ENTRY} := 141\ ft$
$R_{ENTRY} := 500\ ft$
$\phi ENT := 14\ deg = 0.24\ rad$

$L_{ST} := 105\ ft$

$L_{EXIT} := 141\ ft$
$R_{EXIT} := 500\ ft$
$\phi EXIT := 14\ deg = 0.24\ rad$



HORIZONTAL CURVES

$L_{HORIZ1} := 460.0\ ft$
$R_{HORIZ1} := 575\ ft$
$\theta HOR1 := 45.5\ deg = 0.79\ rad$

$L_{HORIZ2} := 0\ ft$
$R_{HORIZ2} := 0\ ft$
$\theta HOR2 := 0\ deg = 0\ rad$

Calculate the critical unconstrained buckling pressure for the HDPE pipe w/o safety factor.

where $w_B := \left| w_{pipe} + \gamma_w \cdot \pi \cdot \left(\frac{ID}{2}\right)^2 - \gamma_{slurry} \cdot \pi \cdot \left(\frac{OD}{2}\right)^2 \right| = 157.33\ \frac{lb}{ft}$

Bouyancy Force = *Weight of Pipe* + *Water in Pipe* - *Weight of Slurry Displaced*

where $F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$ *Hydrokinetic Force*

Pullback Forces:

where
$F_P := \eta \cdot w_B \cdot L_{ST} = 4955.94\ lb$ *-straight pipe*
$F_{C\_ENTRY} := e^{\eta \cdot \phi ENT} \cdot \left(\eta \cdot w_B \cdot L_{ENTRY}\right) = 7161.29\ lb$ *-Vertical curve1*
$F_{C\_EXIT} := e^{\eta \cdot \phi EXIT} \cdot \left(\eta \cdot w_B \cdot L_{EXIT}\right) = 7161.29\ lb$ *-Vertical curve2*
$F_{C\_HORIZ1} := e^{\eta \cdot \theta HOR1} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ1}\right) = 27552.4\ lb$ *-Horiz Curve 1*
$F_{C\_HORIZ2} := e^{\eta \cdot \theta HOR2} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ2}\right) = 0\ lb$ *-Horiz Curve 2*

where $F_T := F_{HK} + F_P + F_{C\_ENTRY} + F_{C\_EXIT} + F_{C\_HORIZ1} + F_{C\_HORIZ2}$

$F_T = 49545.24\ lb$ *Total Pulling Force*

where $s_T := \frac{F_T}{\pi \cdot OD^2} \cdot \frac{DR^2}{DR - 1} + \frac{E_{12hr} \cdot OD}{2 \cdot R_{ENTRY}} = 369.53\ \frac{lb}{in^2}$ *Axial Tensile Stress*

where $s := \frac{F_S}{\pi \cdot \left(\left(\frac{OD}{2}\right)^2 - \left(\frac{ID}{2}\right)^2\right)} = 1091.59\ \frac{lb}{in^2}$ *Safe Pull Stress*

where $r := \frac{s_T}{2 \cdot s} = 0.17$ *Tensile Ratio*

where $f_R := \sqrt{5.57 - (r + 1.09)^2} - 1.09 = 0.91$ *Tensile Reduction Factor*

$P_{cr} := \frac{2\ E_{12hr}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 108.8\ \frac{lb}{in^2}$ *Critical Unconstrained Buckling Pressure w/o FS*

STEP 2: Determine expected loads on pipe (assume only static drilling fluid head acting on pipe, and borehole instact with no soil loading)

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{slurry} = 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

$P_{slurry} := H \cdot \gamma_{slurry} = 16.24\ \frac{lb}{in^2}$ *Total static drilling fluid head pressure if drilled from surface.*

STEP 3: Determine the resulting safety factor against critical buckling during installation

$SF_{CR} := \frac{P_{cr}}{P_{slurry}} = 6.7$ ***Safety Factor** against critical buckling during pull*

Calculate Safety Factor for Long Term Performance

STEP 1: Determine the pipe soil load.

$E_{LONG} := 29000\ \frac{lb}{in^2}$ *Long-term apparent modulus*

$\gamma_w = 62.4\ \frac{lb}{ft^3}$ *Density of water*

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{soil} := 110\ \frac{lb}{ft^3}$ *Saturated Unit Weight of Sediments (Assume Sandy Soils until borings completed)*

$GW := 21\ ft$ *Groundwater Height*

$C := 25\ ft$ *Height of Soil Cover*

$P_{soil} := (\gamma_{soil} - \gamma_w) \cdot C = 8.26\ \frac{lb}{in^2}$

STEP 2: Calculate the ring deflection resulting from soil loads assuming no side support.

$$RD := \frac{0.0125 \cdot P_{soil}}{\left(\frac{E_{LONG}}{12 \cdot (DR-1)^3}\right)} \cdot 100 = 4.27 \ \%$$ *Deflection from soil loads*

Falls below the recommended Design Deflection Limits of Buried Polyethelyne Pipe for Pressure Applications (<5.0%)

TABLE 2
Design Deflection Limits of Buried Polyehtylene Pipe, Long Term, %*

DR or SDR	21	17	15.5	13.5	11	9	7.3
Deflection Limit (% Δy/D) Non-Pressure Applications	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Deflection Limit (%Δy/D) Pressure Applications	7.5	6.0	6.0	6.0	5.0	4.0	3.0

* Design deflection limits per ASTM F1962, Guide for Use of Maxi-Horizontal Directional Drilling for Placement of PE Pipe or Conduit Under Obstacles, Including River Crossings.

STEP 3: Determine the long-term hydrostatic loads on the pipe.

$$P_w := \left(\frac{GW}{2.31 \ \frac{ft}{\frac{lb}{in^2}}}\right) + P_{soil} = 17.35 \ \frac{lb}{in^2}$$ *External pressure due to groundwater head*

$$P_{slurry} := \gamma_{slurry} \cdot H = 16.24 \ \frac{lb}{in^2}$$

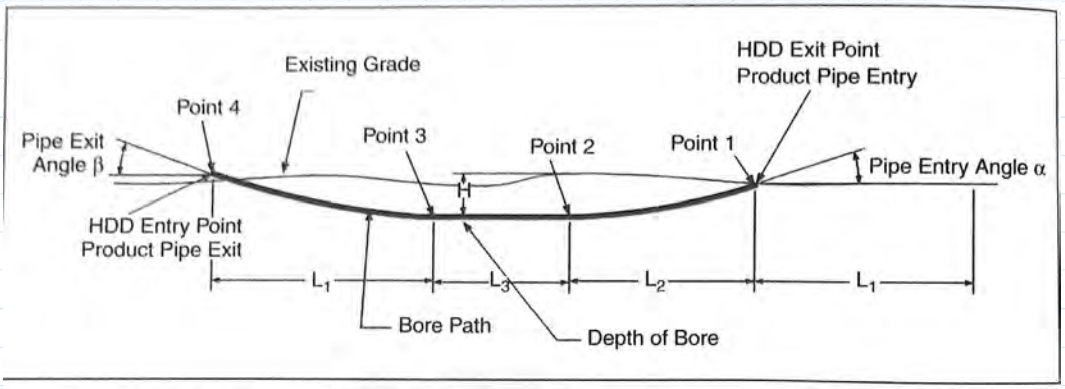
$P_w > P_{slurry}$ *therefore use Pslurry for buckling load*

STEP 4: Determine critical unconstrained buckling pressure based on deflection from loading.

$$P_{UC} := \frac{2 \cdot E_{LONG}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o = 55.27 \ \frac{lb}{in^2}$$ *Critical unconstrained buckling pressure (no safety factor)*

$$SF_{CR} := \frac{P_{UC}}{P_w} = 3.18$$ ***Safety Factor*** *against buckling pressure of highest groundwater head*

Design Calculations for Pullback Forces



Pipe Properties:

$OD = 30\ in$

$DR = 11$

$t = 2.73\ in$

$E_{LONG} = 29000\ \frac{lb}{in^2}$

$E_{12hr} = 63000\ \frac{lb}{in^2}$

$\mu = 0.45$

$s = 1091.59\ \frac{lb}{in^2}$

Path Profile:

$H = 25\ ft$

$\phi ENT = 0.24\ rad$

$\phi EXIT = 0.24\ rad$

$L_1 := 50\ ft$

$L_T := L_{ENTRY} + L_{ST} + L_{EXIT} + L_{HORIZ1} + L_{HORIZ2} = 847\ ft$

$R_{ENTRY} = 500\ ft$

$R_{EXIT} = 500\ ft$

$L_{ENTRY} = 141\ ft$

$L_{EXIT} = 141\ ft$

$L_{HORIZ1} = 460\ ft$

$R_{HORIZ1} = 575\ ft$

$\theta HOR1 = 0.79\ rad$

$L_{HORIZ2} = 0\ ft$

$R_{HORIZ2} = 0\ ft$

$\theta HOR2 = 0\ rad$

Determine Axial Bending Stress

STEP 1: Check Radius of Curvature. Should not exceed 40 times the pipe outside diameter to prevent ring collapse.

$r_{min} := 40 \cdot OD = 100\ ft$ *OK, Since* $R_{ENTRY}, R_{HORIZ1} .. R_{HORIZ2}\ R_{EXIT} > r_{min}$

STEP 2: Find Bending Strain (use smallest radius)

$e_a := \frac{OD}{2 \cdot R_{ENTRY}} = \left(2.5 \cdot 10^{-3}\right)\ \frac{in}{in}$ *Bending Strain*

STEP 3: Find Bending Stress

$S_a := E_{12hr} \cdot e_a = 157.5\ \frac{lb}{in^2}$ *Bending Stress*

Find Pulling Force

STEP 1: Calculate Net Upward Force on empty/full pipe surrounded by mud slurry

$\gamma_w = 0.0361 \ \frac{lb}{in^3}$ *Density of water*

$g_a := 0.959$ *Specific Gravity of pipe material (PE 4710)*
$g_b := 1.5$ *Specific Gravity of mud slurry*
$w_{pipe} = 102.35 \ \frac{lb}{ft}$ *Weight of empty pipe*

$w_{b\_empty} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - w_{pipe} = 357.11 \ \frac{lb}{ft}$ *Net Upward Force of Empty Pipe*

$w_{b\_fullH2O} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - \pi \cdot \left(\frac{(ID)^2}{4}\right) \cdot \gamma_w - w_{pipe} = 157.48 \ \frac{lb}{ft}$ *Net Upward Force of Full Pipe*

STEP 2: Calculate pullback force acting on pipe (Assuming Water Ballast, i.e. Full Pipe)

$L_1 = 50 \ ft$ *Length of pipe left above ground after pullback*
$L_{ENTRY} = 141 \ ft$ *Length of pipe from entry to straight run (Point 2)*
$L_{ST} = 105 \ ft$ *Length of pipe in straight run (Point 3)*
$L_{HORIZ1} = 460 \ ft$ *Length of pipe in 1st horizontal curve from entry point (Point 4)*
$L_{HORIZ2} = 0 \ ft$ *Length of pipe in 2nd horizontal curve from entry point (Point 5)*
$L_{EXIT} = 141 \ ft$ *Length of pipe from beginning of exit curve to exit point (Point 6)*

$\phi ENT = 0.24 \ rad$ *Entry angle (in radians)*
$\theta HOR1 = 0.79 \ rad$ *Angle of Curvature of 1st Horizontal Curve (in radians)*
$\theta HOR2 = 0 \ rad$ *Angle of Curvature of 2nd Horizontal Curve (in radians)*
$\phi EXIT = 0.24 \ rad$ *Exit angle (in radians)*
$v_a := 0.5$ *Coefficient of friction between pipe and ground surface*
$v_b := 0.3$ *Coefficient of friction between pipe and mud slurry*

$T_1 := e^{v_a \cdot \phi ENT} \cdot \left(v_a \cdot w_{pipe} \cdot \left(L_1 + L_{ENTRY} + L_{ST} + L_{HORIZ1} + L_{HORIZ2} + L_{EXIT}\right)\right)$

$T_1 = 51869.18 \ lb$ *Force @ Pt.1*

$T_2 := e^{v_b \cdot \phi ENT} \cdot \left(T_1 + v_b \cdot w_{b\_fullH2O} \cdot L_{ENTRY} + w_{b\_fullH2O} \cdot H - v_a \cdot w_{pipe} \cdot L_{ENTRY} \cdot e^{(v_a \cdot \phi ENT)}\right)$

$T_2 = 58445.13 \ lb$ *Force @ Pt.2*

$$T_3 := T_2 + v_b \cdot w_{b\_fullH2O} \cdot L_{ST} - e^{(v_b \cdot \phi ENT)} \cdot \left(v_a \cdot w_{pipe} \cdot L_{ST} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_3 = 56872.27\ lb$ *Force @ Pt.3*

$$T_4 := e^{v_b \cdot \theta HOR1} \cdot \left(T_3 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ1} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ1} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_4 = 61608.08\ lb$ *Force @ Pt.4*

$$T_5 := e^{v_b \cdot \theta HOR2} \cdot \left(T_4 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ2} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ2} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_5 = 61608.08\ lb$ *Force @ Pt.5*

$$T_6 := e^{v_b \cdot \phi EXIT} \cdot \left(T_5 + v_b \cdot w_{b\_fullH2O} \cdot L_{EXIT} - w_{b\_empty} \cdot H - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{EXIT} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_6 = 53941.53\ lb$ *Force @ Pt.6*

STEP 3: Calculate hydrokinetic Force

$p = 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure*

$D_H = 42\ in$ *Borehole Diameter*

$$F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 2714.34\ lb$$ *Pulling Force increment*

$$F_{max} := T_5 + F_{HK} = 64322.42\ lb$$ *Maximum Pullback Force*

Compare Axial Tensile Stress with Allowable Tensile Street During Pullback

$$s = 1091.59\ \frac{lb}{in^2}$$

STEP 1: Average Axial Stress acting on pipe cross-section at Points 1,2,3,4, 5 & 6

$$s_1 := \left(T_1 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 233.59\ \frac{lb}{in^2} \quad s_1 < s = 1$$ *1=PASS, 0=FAIL*

$$s_2 := \left(T_2 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR - 1}\right) = 261.73\ \frac{lb}{in^2} \quad s_2 < s = 1$$ *1=PASS, 0=FAIL*

$$s_3 := \left(T_3 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 255 \ \frac{lb}{in^2} \qquad s_3 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_4 := \left(T_4 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 275.27 \ \frac{lb}{in^2} \qquad s_4 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_5 := \left(T_5 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 275.27 \ \frac{lb}{in^2} \qquad s_5 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_6 := \left(T_6 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 242.46 \ \frac{lb}{in^2} \qquad s_6 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

STEP 2: Force needed to break pipe

$$ID = 24.22 \ in$$

$$F_b := s \cdot \left(\frac{\pi}{4}\right) \cdot \left(OD^2 - ID^2\right) = 268723.01 \ lb$$

STEP 3: Determine Safety Factor Against Ring Collapse During Pullback

$$P_{ha} := 1.5 \cdot \gamma_w \cdot H = 16.25 \ \frac{lb}{in^2} \qquad \textit{External Static Head Pressure}$$

$$P_{effa} := P_{ha} + p = 24.25 \ \frac{lb}{in^2} \qquad \textit{Combine static head with hydrokinetic pressure}$$

CRITICAL COLLAPSE PRESSURE

$$f_o = 0.76 \qquad \textit{Ovality Compensation Factor for 3\% Ovality}$$

$$r := \frac{s_6}{2 \cdot s} = 0.11 \qquad \textit{Tensile Ratio based on Pull Stress Calculation}$$

$$f_R := \sqrt{5.57 - \left(r + 1.09\right)^2} - 1.09 = 0.94 \qquad \textit{Tensile Reduction Factor}$$

$$P_{CR} := \frac{2 \cdot E_{12hr}}{\left(1 - \mu^2\right)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 113.06 \ \frac{lb}{in^2} \qquad \textit{Calculated Critical Buckling pressure}$$

SAFETY FACTOR AGAINST COLLAPSE

$$SF_{collapse} := \frac{P_{CR}}{P_{ha}} = 6.96$$ *Safety Factor against Collapse*

All calculations were based on the Engineering and Installation methods described in a manual by the Plastic Pipe Institute titled, Polyethylene Pipe for Horizontal Directional Drilling and meet ASTM F1962-05

Calculations performed by:

Juan Barreneche, P.E.
(#67662)

HDD DESIGN CALCULATIONS

Project: Design-Build Pump Station B-4 Redundant Force Main P12567, Fort Lauderdale, FL

Calculations by: Juan Barreneche, P.E. (#67662)

HDD Description: **DRILL #3, Force Main Installation consisting of a 30" IPS DR11 HDPE Pipe approximately 2,400 LF in length** from NE 16th St to NE 20th PL.

Calculate the safe pull strength or allowable tensile load.

$OD := 30.0\ in$ *Outer Diameter*

$DR := 11$ *Dimension Ratio*

$T_{allow} := 1150\ \frac{lb}{in^2}$ *Typical Safe Pull Stress for PE 4710 from Table 1 (below)*

$ID := 24.219\ in$ *Inner diameter of HDPE*

$t := 2.727\ in$ *Minimum Wall Thickness of HDPE*

$D_H := 44\ in$ *Borehole Diameter*

$$F_S := \pi \cdot T_{allow} \cdot OD^2 \cdot \left(\frac{1}{DR} - \frac{1}{DR^2}\right)$$

$F_S = 268723.01\ lb$ ***Safe pull force***

TABLE 1
Safe Pull Tensile Stress @ 73° F

Duration (Hours)	Typical Safe Pull Stress (psi) @ 73°F		
	PE2xxx (PE2406)	PE3xxx (PE3408)	PE4xxx (PE4710)
0.5	1100	1400	1500
1	1050	1350	1400
12	850	1100	1150
24	800	1050	1100

The safe pull stress is the stress at 3% strain. For strains less than 3% the pipe will essentially have complete strain recovery after pullback. The stress values in Table 1 were determined by multiplying 3% times the apparent tensile modulus from the Appendix to Chapter 3 adjusted by a 0.60 factor to account for the high stress level during pullback.

Calculate Safety Factor against Bucking for Pipe

STEP 1: Determine the critical buckling pressure during installation for the pipe (include tensile reduction factor assuming the frictional drag during pull results in 1000 psi longitudinal pipe stress)

$E_{12hr} := 63000\ \frac{lb}{in^2}$ *Apparent Modulus of Elasticity (for 12 hours at 73 degrees F)*

$\mu := 0.45$ *Poisson's Ratio for PE Materials*

$\eta := 0.3$ *Coefficient of friction between pipe and slurry*

$f_o := 0.76$ *Ovality compensation factor (for 3% ovality)*

$m := 0.5$ *Coefficient of friction between HDPE pipe & ground*

$p := 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure, assumed*

$\gamma_w := 62.4\ \frac{lb}{ft^3}$ *Density of water*

$\gamma_{slurry} := 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

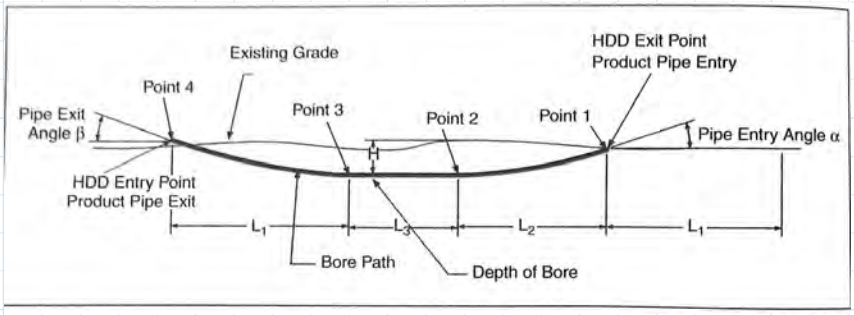
$w_{pipe} := 102.35\ \frac{lb}{ft}$ *Weight of the HDPE Pipe*

VERTICAL CURVES

$L_{ENTRY} := 141\ ft$
$R_{ENTRY} := 500\ ft$
$\phi ENT := 14\ deg = 0.24\ rad$

$L_{ST} := 2118\ ft$

$L_{EXIT} := 141\ ft$
$R_{EXIT} := 500\ ft$
$\phi EXIT := 14\ deg = 0.24\ rad$



HORIZONTAL CURVES

$L_{HORIZ1} := 0\ ft$
$R_{HORIZ1} := 0\ ft$
$\theta HOR1 := 0\ deg = 0\ rad$

$L_{HORIZ2} := 0\ ft$
$R_{HORIZ2} := 0\ ft$
$\theta HOR2 := 0\ deg = 0\ rad$

Calculate the critical unconstrained buckling pressure for the HDPE pipe w/o safety factor.

where $w_B := \left| w_{pipe} + \gamma_w \cdot \pi \cdot \left(\frac{ID}{2}\right)^2 - \gamma_{slurry} \cdot \pi \cdot \left(\frac{OD}{2}\right)^2 \right| = 157.33\ \frac{lb}{ft}$

Bouyancy Force = Weight of Pipe + Water in Pipe - Weight of Slurry Displaced

where $F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 3254.69\ lb$ *Hydrokinetic Force*

Pullback Forces:

where
$F_P := \eta \cdot w_B \cdot L_{ST} = 99968.32\ lb$ *-straight pipe*
$F_{C\_ENTRY} := e^{\eta \cdot \phi ENT} \cdot \left(\eta \cdot w_B \cdot L_{ENTRY}\right) = 7161.29\ lb$ *-Vertical curve1*
$F_{C\_EXIT} := e^{\eta \cdot \phi EXIT} \cdot \left(\eta \cdot w_B \cdot L_{EXIT}\right) = 7161.29\ lb$ *-Vertical curve2*
$F_{C\_HORIZ1} := e^{\eta \cdot \theta HOR1} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ1}\right) = 0\ lb$ *-Horiz Curve 1*
$F_{C\_HORIZ2} := e^{\eta \cdot \theta HOR2} \cdot \left(\eta \cdot w_B \cdot L_{HORIZ2}\right) = 0\ lb$ *-Horiz Curve 2*

where $F_T := F_{HK} + F_P + F_{C\_ENTRY} + F_{C\_EXIT} + F_{C\_HORIZ1} + F_{C\_HORIZ2}$

$F_T = 117545.58\ lb$ *Total Pulling Force*

where $s_T := \frac{F_T}{\pi \cdot OD^2} \cdot \frac{DR^2}{DR - 1} + \frac{E_{12hr} \cdot OD}{2 \cdot R_{ENTRY}} = 660.54\ \frac{lb}{in^2}$ *Axial Tensile Stress*

where $s := \frac{F_S}{\pi \cdot \left(\left(\frac{OD}{2}\right)^2 - \left(\frac{ID}{2}\right)^2\right)} = 1091.59\ \frac{lb}{in^2}$ *Safe Pull Stress*

where $r := \frac{s_T}{2 \cdot s} = 0.3$ *Tensile Ratio*

where $f_R := \sqrt{5.57 - (r + 1.09)^2} - 1.09 = 0.82$ *Tensile Reduction Factor*

$P_{cr} := \frac{2\ E_{12hr}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 97.92\ \frac{lb}{in^2}$ *Critical Unconstrained Buckling Pressure w/o FS*

STEP 2: Determine expected loads on pipe (assume only static drilling fluid head acting on pipe, and borehole intact with no soil loading)

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{slurry} = 93.57\ \frac{lb}{ft^3}$ *Density of mud slurry*

$P_{slurry} := H \cdot \gamma_{slurry} = 16.24\ \frac{lb}{in^2}$ *Total static drilling fluid head pressure if drilled from surface.*

STEP 3: Determine the resulting safety factor against critical buckling during installation

$SF_{CR} := \frac{P_{cr}}{P_{slurry}} = 6.03$ ***Safety Factor** against critical buckling during pull*

Calculate Safety Factor for Long Term Performance

STEP 1: Determine the pipe soil load.

$E_{LONG} := 29000\ \frac{lb}{in^2}$ *Long-term apparent modulus*

$\gamma_w = 62.4\ \frac{lb}{ft^3}$ *Density of water*

$H := 25\ ft$ *Maximum bore depth*

$\gamma_{soil} := 110\ \frac{lb}{ft^3}$ *Saturated Unit Weight of Sediments (Assume Sandy Soils until borings completed)*

$GW := 21\ ft$ *Groundwater Height*

$C := 25\ ft$ *Height of Soil Cover*

$P_{soil} := (\gamma_{soil} - \gamma_w) \cdot C = 8.26\ \frac{lb}{in^2}$

STEP 2: Calculate the ring deflection resulting from soil loads assuming no side support.

$$RD := \frac{0.0125 \cdot P_{soil}}{\left(\frac{E_{LONG}}{12 \cdot (DR-1)^3}\right)} \cdot 100 = 4.27 \ \%$$ *Deflection from soil loads*

Falls below the recommended Design Deflection Limits of Buried Polyethelyne Pipe for Pressure Applications (<5.0%)

TABLE 2
Design Deflection Limits of Buried Polyehtylene Pipe, Long Term, %*

DR or SDR	21	17	15.5	13.5	11	9	7.3
Deflection Limit (% Δy/D) Non-Pressure Applications	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Deflection Limit (%Δy/D) Pressure Applications	7.5	6.0	6.0	6.0	5.0	4.0	3.0

* Design deflection limits per ASTM F1962, Guide for Use of Maxi-Horizontal Directional Drilling for Placement of PE Pipe or Conduit Under Obstacles, Including River Crossings.

STEP 3: Determine the long-term hydrostatic loads on the pipe.

$$P_w := \left(\frac{GW}{2.31 \ \frac{ft}{\frac{lb}{in^2}}}\right) + P_{soil} = 17.35 \ \frac{lb}{in^2}$$ *External pressure due to groundwater head*

$$P_{slurry} := \gamma_{slurry} \cdot H = 16.24 \ \frac{lb}{in^2}$$

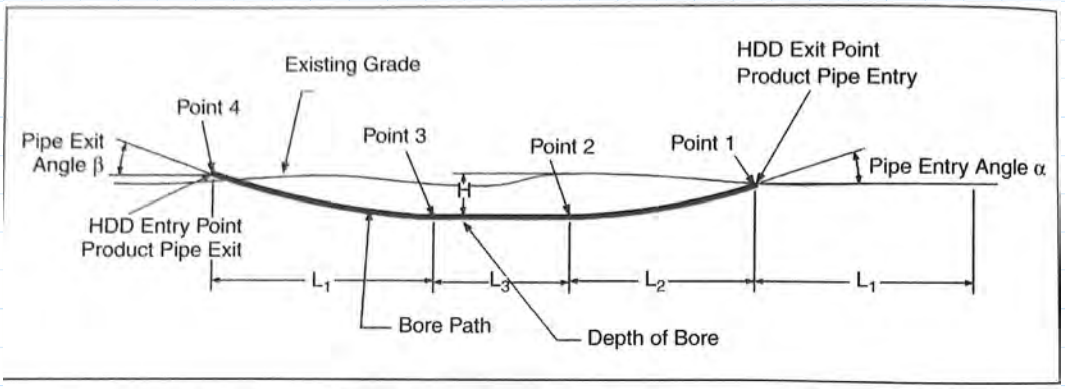
$P_w > P_{slurry}$ *therefore use Pslurry for buckling load*

STEP 4: Determine critical unconstrained buckling pressure based on deflection from loading.

$$P_{UC} := \frac{2 \cdot E_{LONG}}{(1-\mu^2)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o = 55.27 \ \frac{lb}{in^2}$$ *Critical unconstrained buckling pressure (no safety factor)*

$$SF_{CR} := \frac{P_{UC}}{P_w} = 3.18$$ ***Safety Factor*** *against buckling pressure of highest groundwater head*

Design Calculations for Pullback Forces



Pipe Properties:

$OD = 30\ in$

$DR = 11$

$t = 2.73\ in$

$E_{LONG} = 29000\ \frac{lb}{in^2}$

$E_{12hr} = 63000\ \frac{lb}{in^2}$

$\mu = 0.45$

$s = 1091.59\ \frac{lb}{in^2}$

Path Profile:

$H = 25\ ft$

$\phi ENT = 0.24\ rad$

$\phi EXIT = 0.24\ rad$

$L_1 := 50\ ft$

$L_T := L_{ENTRY} + L_{ST} + L_{EXIT} + L_{HORIZ1} + L_{HORIZ2} = 2400\ ft$

$R_{ENTRY} = 500\ ft$

$R_{EXIT} = 500\ ft$

$L_{ENTRY} = 141\ ft$

$L_{EXIT} = 141\ ft$

$L_{HORIZ1} = 0\ ft$

$R_{HORIZ1} = 0\ ft$

$\theta HOR1 = 0\ rad$

$L_{HORIZ2} = 0\ ft$

$R_{HORIZ2} = 0\ ft$

$\theta HOR2 = 0\ rad$

Determine Axial Bending Stress

STEP 1: Check Radius of Curvature. Should not exceed 40 times the pipe outside diameter to prevent ring collapse.

$r_{min} := 40 \cdot OD = 100\ ft$ *OK, Since* $R_{ENTRY}, R_{HORIZ1} .. R_{HORIZ2}\ R_{EXIT} > r_{min}$

STEP 2: Find Bending Strain (use smallest radius)

$e_a := \frac{OD}{2 \cdot R_{ENTRY}} = \left(2.5 \cdot 10^{-3}\right)\ \frac{in}{in}$ *Bending Strain*

STEP 3: Find Bending Stress

$S_a := E_{12hr} \cdot e_a = 157.5\ \frac{lb}{in^2}$ *Bending Stress*

Find Pulling Force

STEP 1: Calculate Net Upward Force on empty/full pipe surrounded by mud slurry

$\gamma_w = 0.0361 \ \frac{lb}{in^3}$ *Density of water*

$g_a := 0.959$ *Specific Gravity of pipe material (PE 4710)*
$g_b := 1.5$ *Specific Gravity of mud slurry*
$w_{pipe} = 102.35 \ \frac{lb}{ft}$ *Weight of empty pipe*

$w_{b\_empty} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - w_{pipe} = 357.11 \ \frac{lb}{ft}$ *Net Upward Force of Empty Pipe*

$w_{b\_fullH2O} := \pi \cdot \left(\frac{OD^2}{4}\right) \cdot \gamma_w \cdot g_b - \pi \cdot \left(\frac{(ID)^2}{4}\right) \cdot \gamma_w - w_{pipe} = 157.48 \ \frac{lb}{ft}$ *Net Upward Force of Full Pipe*

STEP 2: Calculate pullback force acting on pipe (Assuming Water Ballast, i.e. Full Pipe)

$L_1 = 50 \ ft$ *Length of pipe left above ground after pullback*
$L_{ENTRY} = 141 \ ft$ *Length of pipe from entry to straight run (Point 2)*
$L_{ST} = 2118 \ ft$ *Length of pipe in straight run (Point 3)*
$L_{HORIZ1} = 0 \ ft$ *Length of pipe in 1st horizontal curve from entry point (Point 4)*
$L_{HORIZ2} = 0 \ ft$ *Length of pipe in 2nd horizontal curve from entry point (Point 5)*
$L_{EXIT} = 141 \ ft$ *Length of pipe from beginning of exit curve to exit point (Point 6)*

$\phi ENT = 0.24 \ rad$ *Entry angle (in radians)*
$\theta HOR1 = 0 \ rad$ *Angle of Curvature of 1st Horizontal Curve (in radians)*
$\theta HOR2 = 0 \ rad$ *Angle of Curvature of 2nd Horizontal Curve (in radians)*
$\phi EXIT = 0.24 \ rad$ *Exit angle (in radians)*
$v_a := 0.5$ *Coefficient of friction between pipe and ground surface*
$v_b := 0.3$ *Coefficient of friction between pipe and mud slurry*

$T_1 := e^{v_a \cdot \phi ENT} \cdot \left(v_a \cdot w_{pipe} \cdot \left(L_1 + L_{ENTRY} + L_{ST} + L_{HORIZ1} + L_{HORIZ2} + L_{EXIT}\right)\right)$

$T_1 = 141671.67 \ lb$ *Force @ Pt.1*

$T_2 := e^{v_b \cdot \phi ENT} \cdot \left(T_1 + v_b \cdot w_{b\_fullH2O} \cdot L_{ENTRY} + w_{b\_fullH2O} \cdot H - v_a \cdot w_{pipe} \cdot L_{ENTRY} \cdot e^{\left(v_a \cdot \phi ENT\right)}\right)$

$T_2 = 155077.77 \ lb$ *Force @ Pt.2*

$$T_3 := T_2 + v_b \cdot w_{b\_fullH2O} \cdot L_{ST} - e^{(v_b \cdot \phi ENT)} \cdot \left(v_a \cdot w_{pipe} \cdot L_{ST} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_3 = 123350.91\ lb$ *Force @ Pt.3*

$$T_4 := e^{v_b \cdot \theta HOR1} \cdot \left(T_3 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ1} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ1} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_4 = 123350.91\ lb$ *Force @ Pt.4*

$$T_5 := e^{v_b \cdot \theta HOR2} \cdot \left(T_4 + v_b \cdot w_{b\_fullH2O} \cdot L_{HORIZ2} - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{HORIZ2} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_5 = 123350.91\ lb$ *Force @ Pt.5*

$$T_6 := e^{v_b \cdot \phi EXIT} \cdot \left(T_5 + v_b \cdot w_{b\_fullH2O} \cdot L_{EXIT} - w_{b\_empty} \cdot H - e^{v_a \cdot \phi ENT} \cdot v_a \cdot w_{pipe} \cdot L_{EXIT} \cdot e^{v_a \cdot \phi ENT}\right)$$

$T_6 = 120380.35\ lb$ *Force @ Pt.6*

STEP 3: Calculate hydrokinetic Force

$p = 8\ \frac{lb}{in^2}$ *Hydrokinetic pressure*

$D_H = 44\ in$ *Borehole Diameter*

$F_{HK} := p \cdot \frac{\pi}{8}\left(D_H{}^2 - OD^2\right) = 3254.69\ lb$ *Pulling Force increment*

$F_{max} := T_2 + F_{HK} = 158332.46\ lb$ *Maximum Pullback Force*

Compare Axial Tensile Stress with Allowable Tensile Street During Pullback

$$s = 1091.59\ \frac{lb}{in^2}$$

STEP 1: Average Axial Stress acting on pipe cross-section at Points 1,2,3,4, 5 & 6

$s_1 := \left(T_1 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 620.21\ \frac{lb}{in^2}$ $s_1 < s = 1$ *1=PASS, 0=FAIL*

$s_2 := \left(T_2 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 677.58\ \frac{lb}{in^2}$ $s_2 < s = 1$ *1=PASS, 0=FAIL*

$$s_3 := \left(T_3 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 541.81 \ \frac{lb}{in^2} \qquad s_3 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_4 := \left(T_4 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 541.81 \ \frac{lb}{in^2} \qquad s_4 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_5 := \left(T_5 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 541.81 \ \frac{lb}{in^2} \qquad s_5 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

$$s_6 := \left(T_6 + F_{HK}\right) \cdot \left(\frac{1}{\pi \cdot OD^2}\right) \cdot \left(\frac{DR^2}{DR-1}\right) = 529.1 \ \frac{lb}{in^2} \qquad s_6 < s = 1 \qquad \textit{1=PASS, 0=FAIL}$$

STEP 2: Force needed to break pipe

$$ID = 24.22 \ in$$

$$F_b := s \cdot \left(\frac{\pi}{4}\right) \cdot \left(OD^2 - ID^2\right) = 268723.01 \ lb$$

STEP 3: Determine Safety Factor Against Ring Collapse During Pullback

$$P_{ha} := 1.5 \cdot \gamma_w \cdot H = 16.25 \ \frac{lb}{in^2} \qquad \textit{External Static Head Pressure}$$

$$P_{effa} := P_{ha} + p = 24.25 \ \frac{lb}{in^2} \qquad \textit{Combine static head with hydrokinetic pressure}$$

CRITICAL COLLAPSE PRESSURE

$$f_o = 0.76 \qquad \textit{Ovality Compensation Factor for 3\% Ovality}$$

$$r := \frac{s_6}{2 \cdot s} = 0.24 \qquad \textit{Tensile Ratio based on Pull Stress Calculation}$$

$$f_R := \sqrt{5.57 - \left(r + 1.09\right)^2} - 1.09 = 0.86 \qquad \textit{Tensile Reduction Factor}$$

$$P_{CR} := \frac{2 \cdot E_{12hr}}{\left(1 - \mu^2\right)} \cdot \left(\frac{1}{DR-1}\right)^3 \cdot f_o \cdot f_R = 103.03 \ \frac{lb}{in^2} \qquad \textit{Calculated Critical Buckling pressure}$$

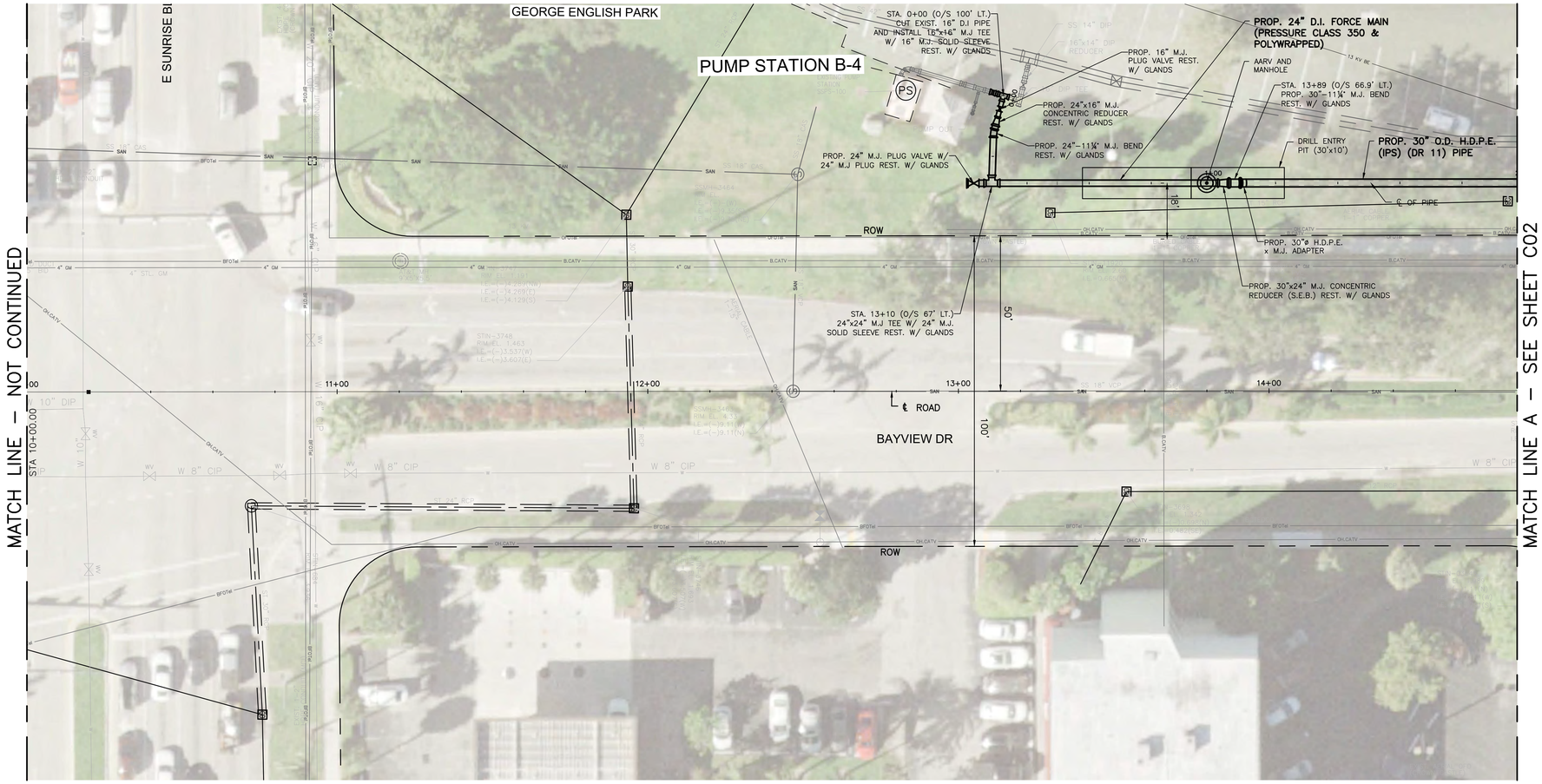
SAFETY FACTOR AGAINST COLLAPSE

$$SF_{collapse} := \frac{P_{CR}}{P_{ha}} = 6.34$$ *Safety Factor against Collapse*

All calculations were based on the Engineering and Installation methods described in a manual by the Plastic Pipe Institute titled, Polyethylene Pipe for Horizontal Directional Drilling and meet ASTM F1962-05

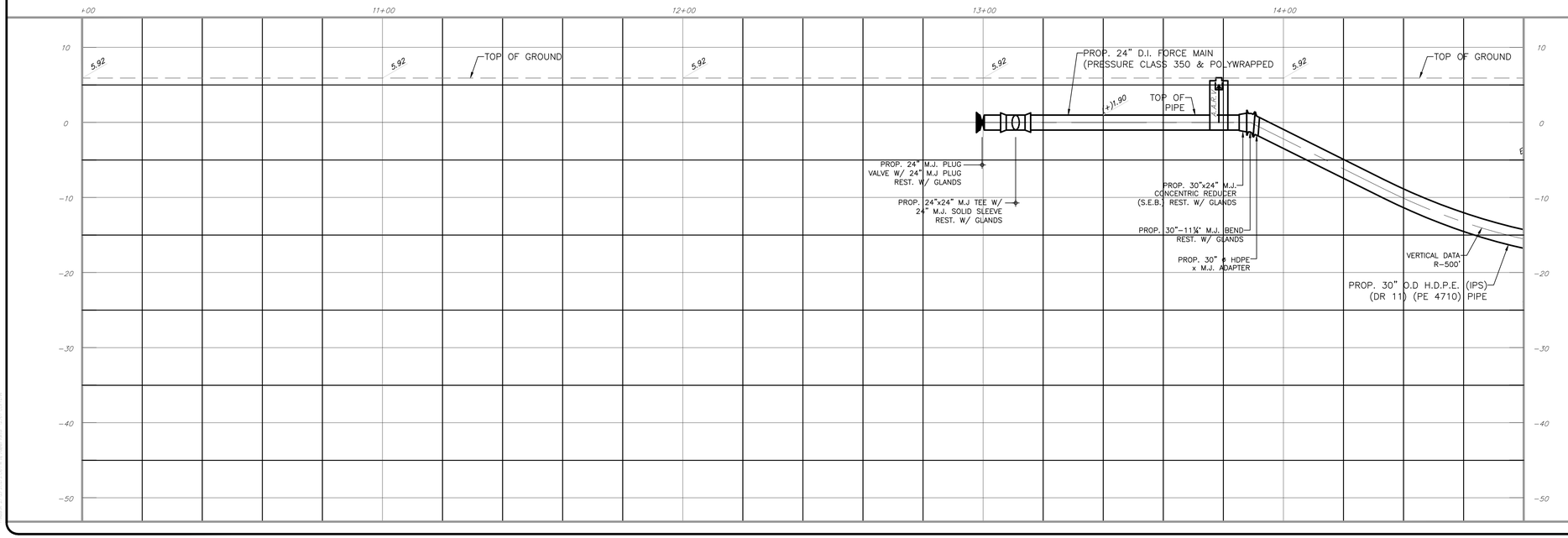
Calculations performed by:

Juan Barreneche, P.E.
(#67662)



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



0 20' 40'

ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 1988)

Always call 811 two full business days before you dig to have underground utilities located and marked

Sunshine811.com

NOTES:

1. LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE DBF PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. STATIONING IS ALONG THE CENTERLINE OF ROAD.
3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES

LEGEND:

EXISTING

PROPOSED

AMICI ENGINEERING CONTRACTORS
10621 SW 139TH ST,
MIAMI, FL 33176
954-650-4699 | CUC1224698

ALUCES CORPORATION
• Consulting Engineers •
14750 SW 26TH ST, SUITE 204
MIAMI, FL 33185
786-505-8665 | CA 30834

ENGINEER: –
REG. No: –
DATE: –
TEL: –
FAX: –

DRAWN BY: BV
DESIGNED BY: DB
CHECKED BY: LS
DATE: 10/14/2020
SCALE:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROPOSAL SET - NOT FOR CONSTRUCTION

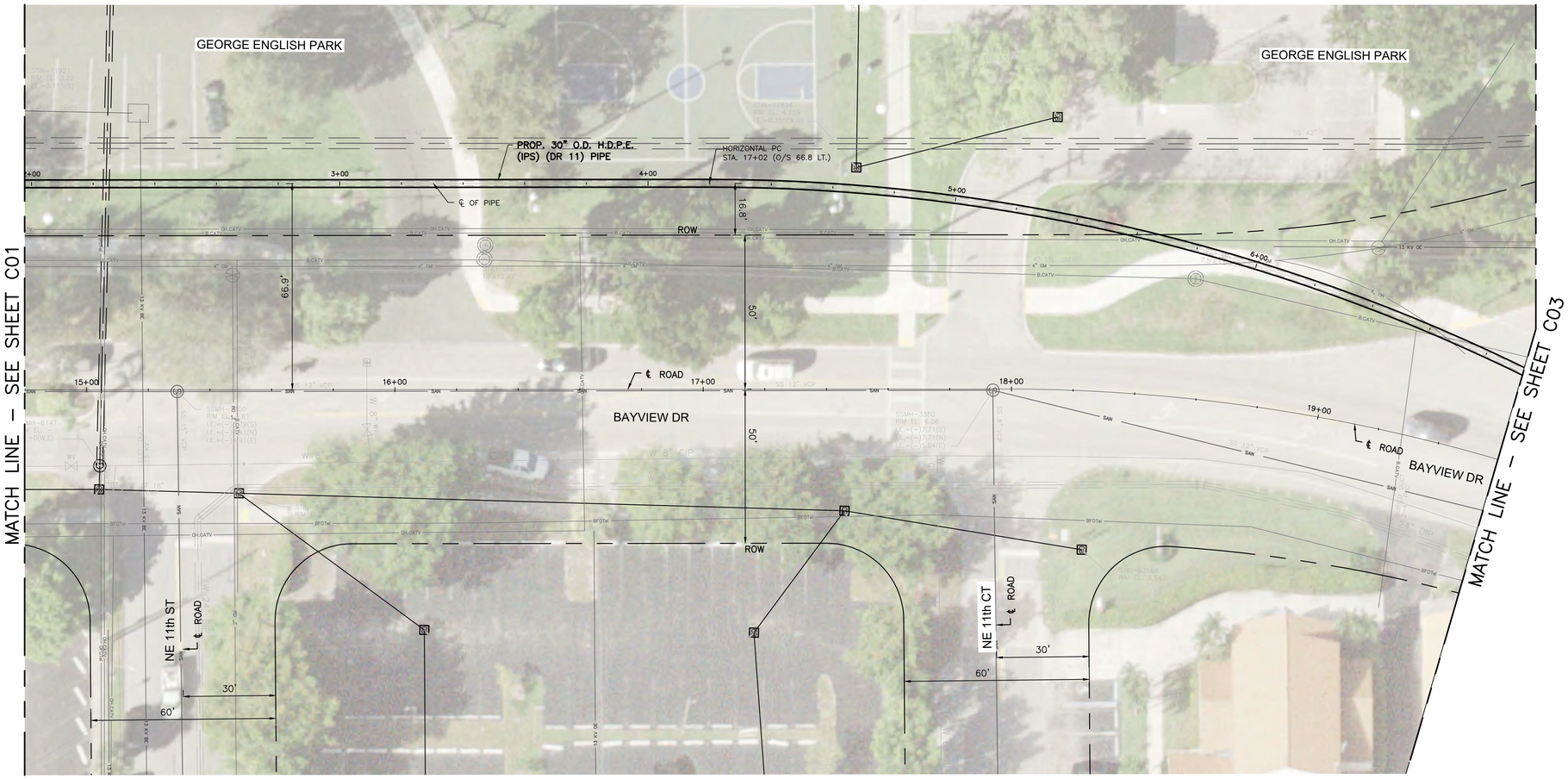
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

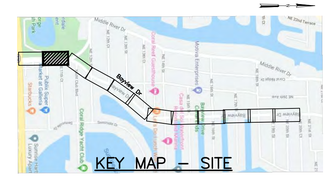
SHEET NO.	OF
C01	13

TOTAL: 13

CAD FILE: 12567-C01-PLAN

DRAWING FILE NO. 4-XXX-XX





0 20' 40'

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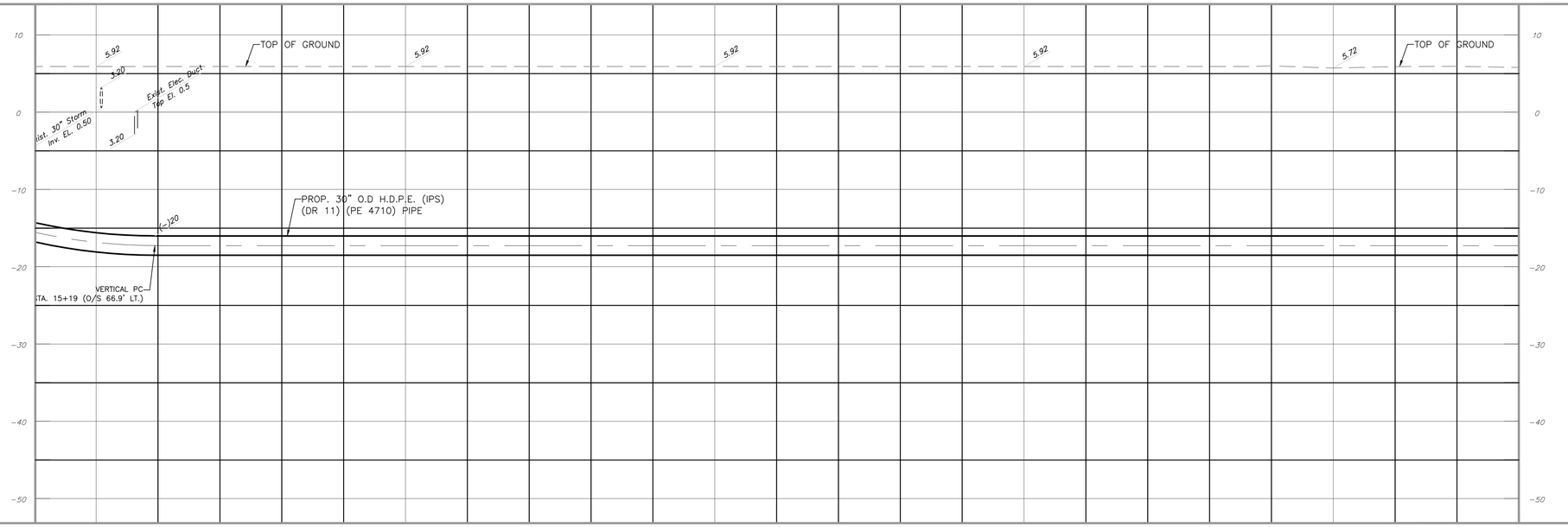
PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



NOTES:

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2. STATIONING IS ALONG THE CENTERLINE OF ROAD.
3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES

LEGEND:

EXISTING

PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
REG. No: –
DATE: –
TEL: – –
FAX: – –

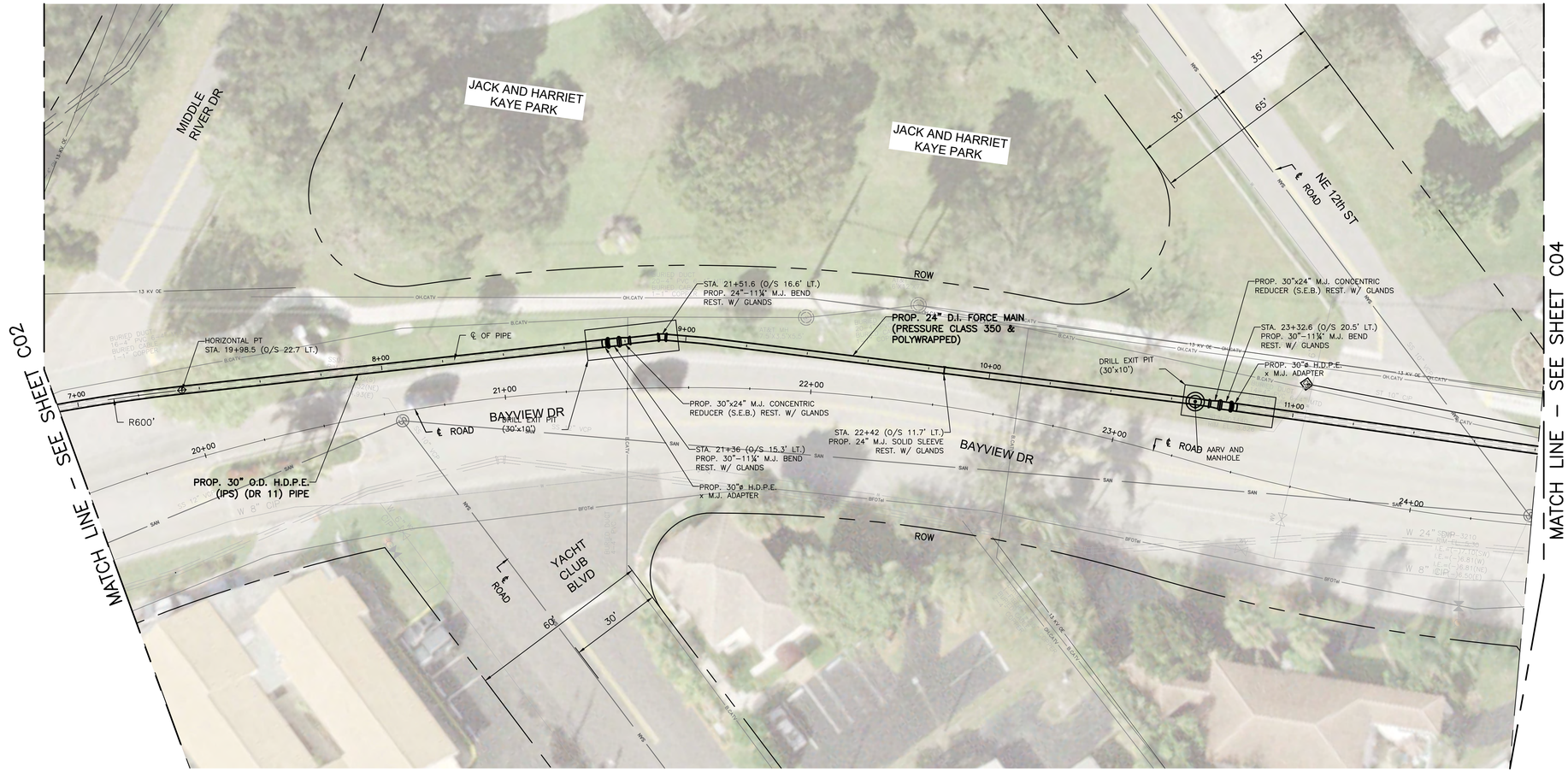
DRAWN BY: BV
DESIGNED BY: DB
CHECKED BY: LS
DATE: 10/14/2020
SCALE:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS			
NO.	DATE	BY	CHK'D

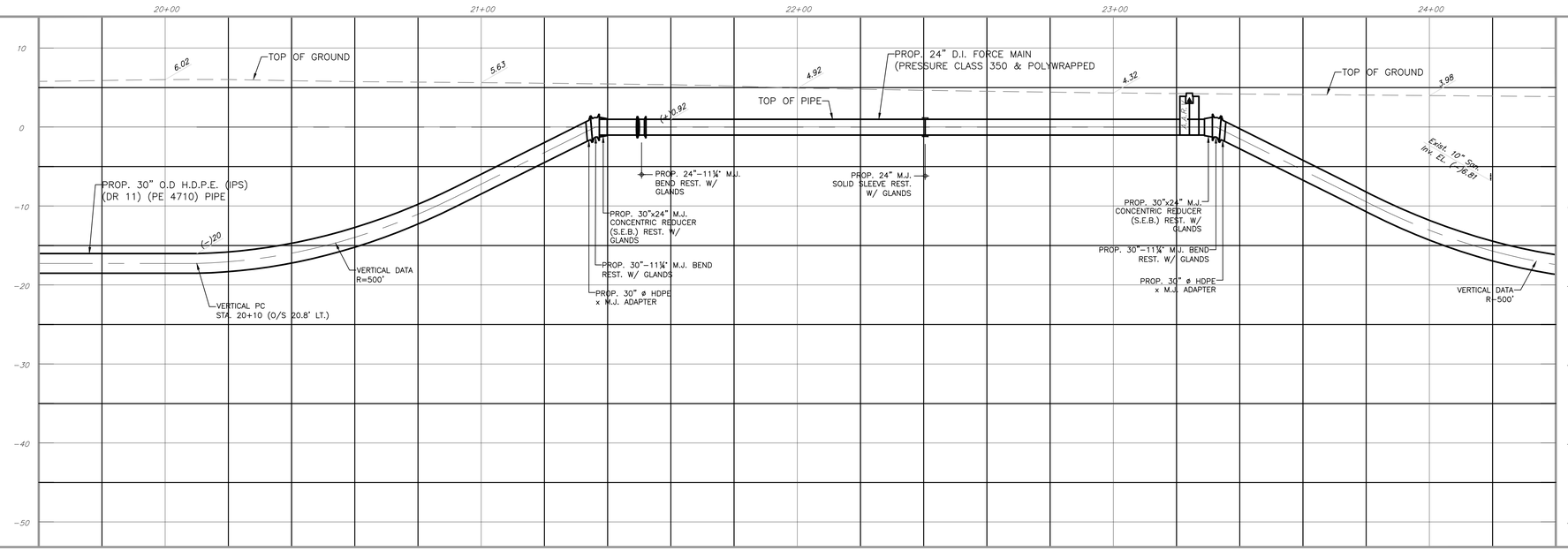
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

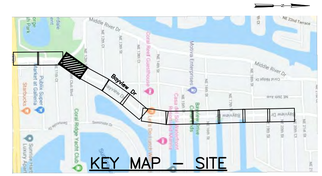
SHEET NO.	OF
C02	13
TOTAL:	13
CAD FILE: 12567-C01-PLAN	
DRAWING FILE NO. 4-XXX-XX	

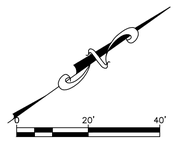


PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT







AMICI ENGINEERING CONTRACTORS
10621 SW 139TH ST,
MIAMI, FL 33176
954-650-4699 | CUC1224698

ALUCES CORPORATION
• Consulting Engineers •
14750 SW 26TH ST, SUITE 204
MIAMI, FL 33185
786-505-8665 | CA 30834

NOTES:

1. LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE DBF PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
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3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES

LEGEND:

EXISTING

PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
REG. No: –
DATE: –
TEL: – –
FAX: – –

DRAWN BY:	DESIGNED BY:	CHECKED BY:	FIELD BOOK:
BV	DB	LS	

DATE: 10/14/2020
SCALE:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS			
NO.	DATE	BY	CHK'D	DESCRIPTION

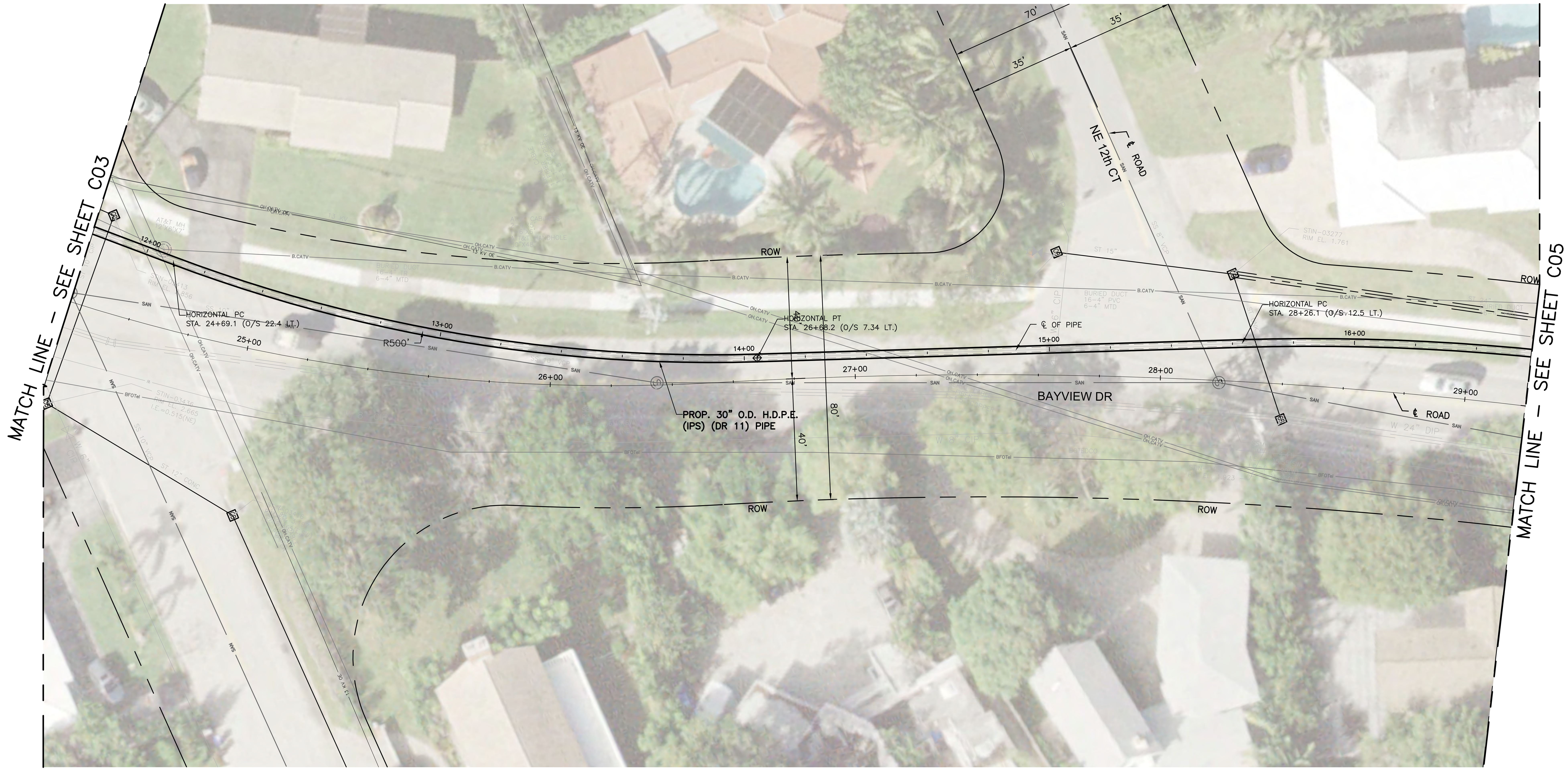
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO.	OF
C03	13

TOTAL: 13

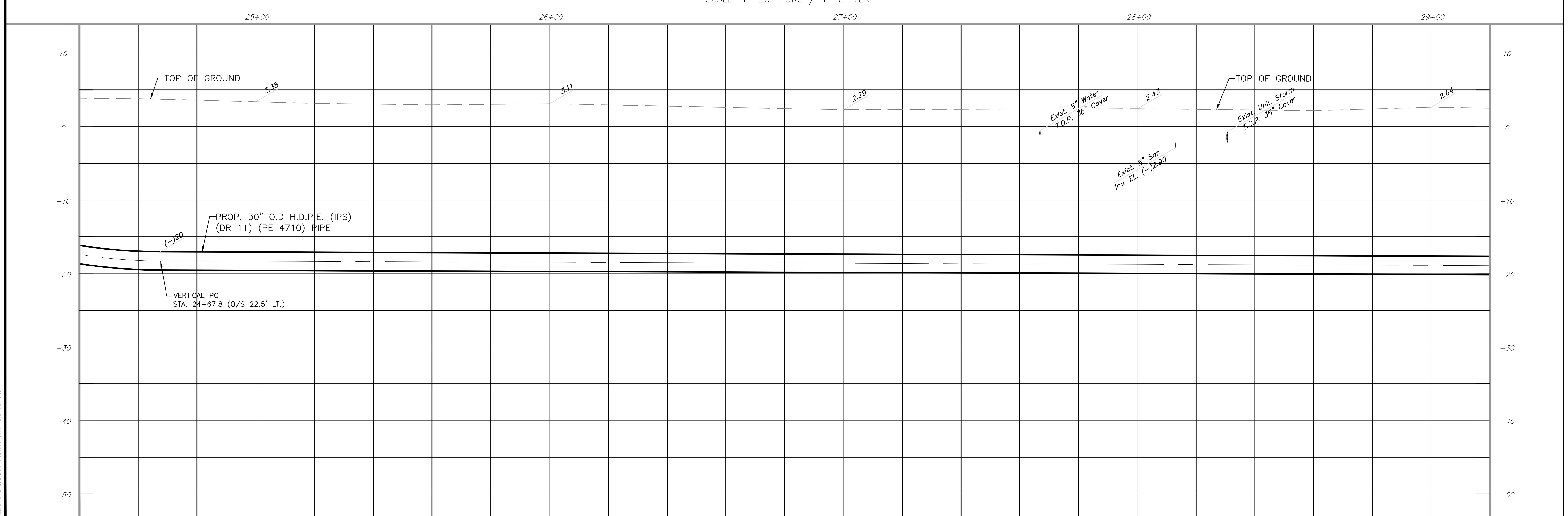
CAD FILE: 12567-C01-PLAN

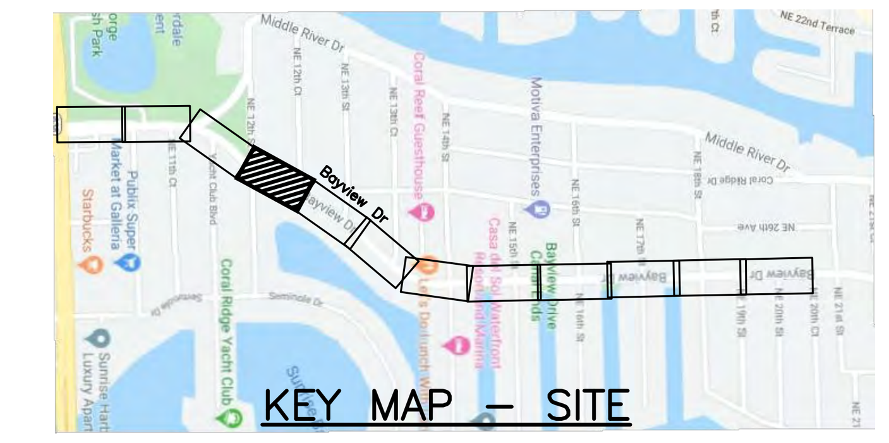
DRAWING FILE NO. 4-XXX-XX



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT





0 20' 40'

AMICI ENGINEERING CONTRACTORS
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954-650-4699 | CUC1224698

ALUCES CORPORATION • Consulting Engineers •
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LEGEND:

EXISTING

PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
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FAX: –

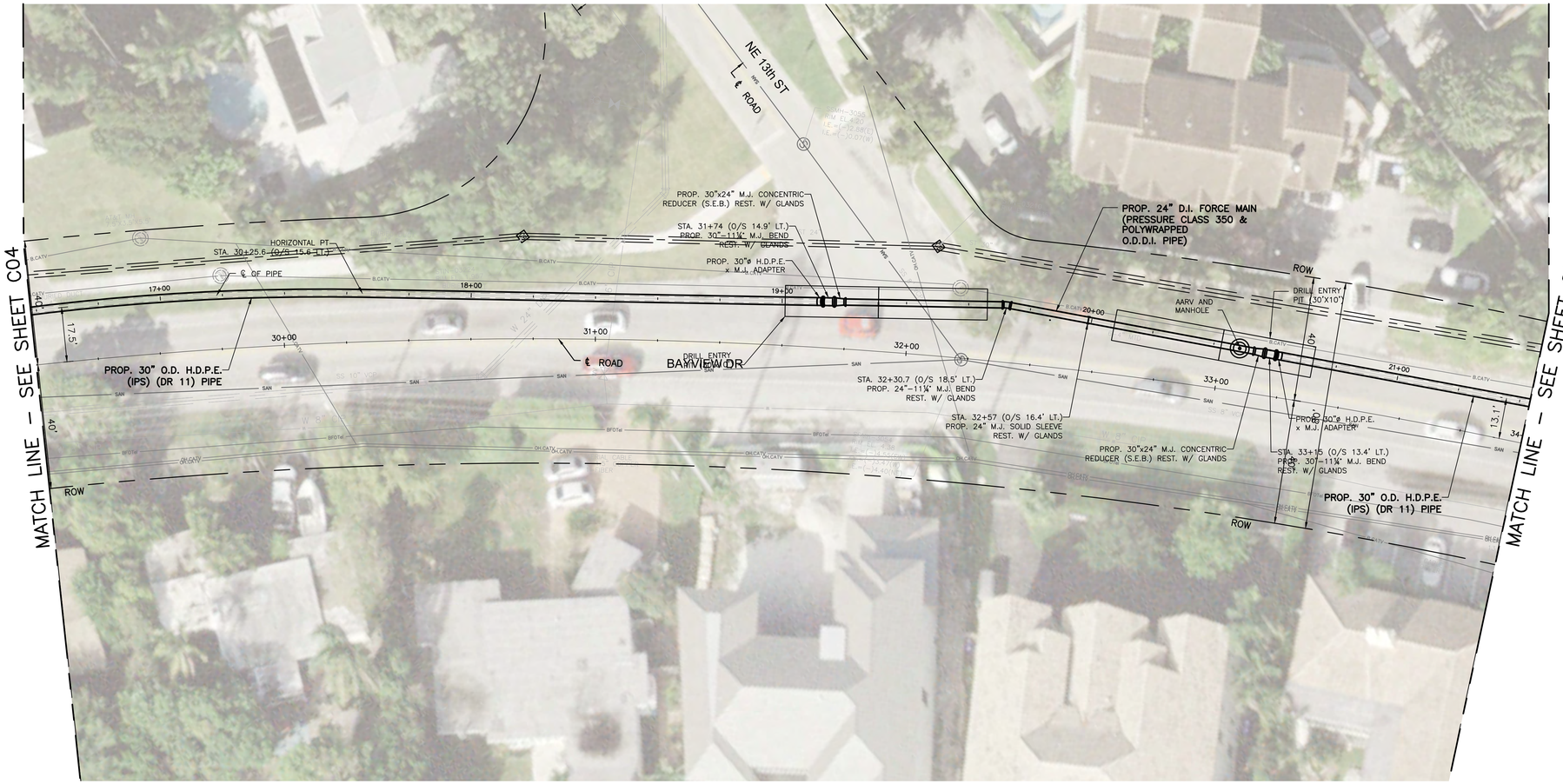
DRAWN BY: BV | DATE: 10/14/2020
DESIGNED BY: DB | SCALE:
CHECKED BY: LS
FIELD BOOK:

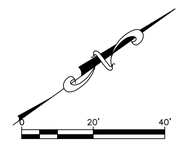
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C04 OF 13
TOTAL: 13
CAD FILE: 12567-C01-PLAN
DRAWING FILE NO. 4-XXX-XX





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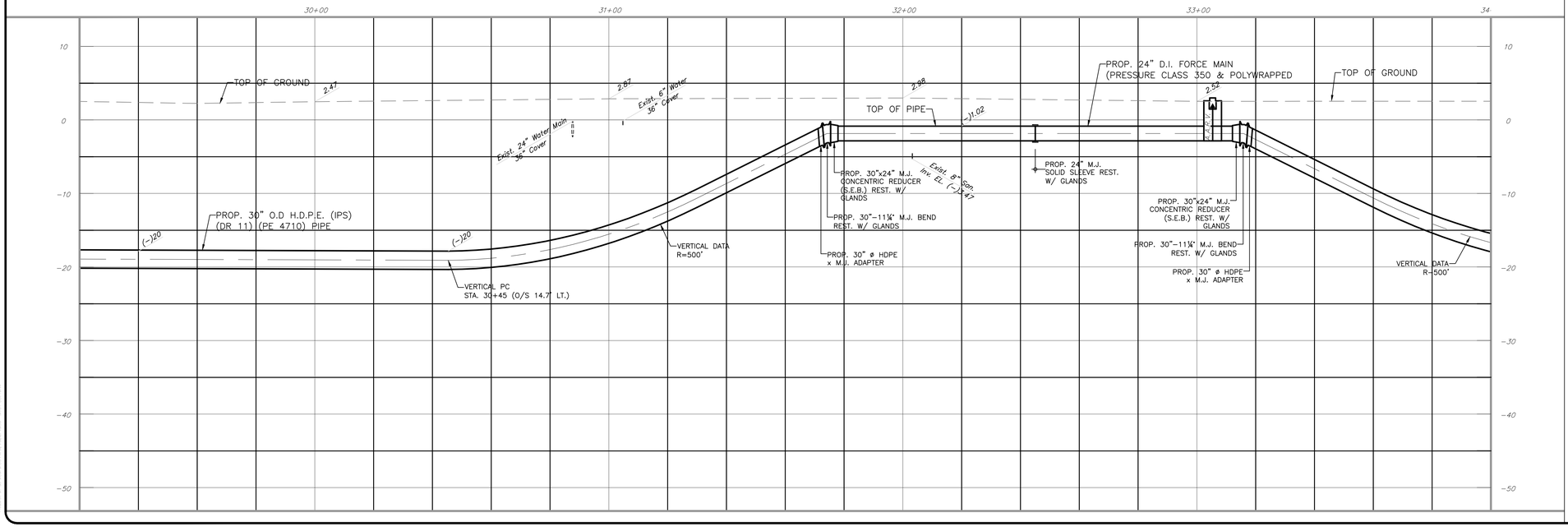
PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



NOTES:

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ENGINEER: – REG. No: – DATE: – TEL: – FAX: –

DRAWN BY:	DATE:
BV	10/14/2020
DESIGNED BY:	SCALE:
DB	
CHECKED BY:	
LS	
FIELD BOOK:	

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

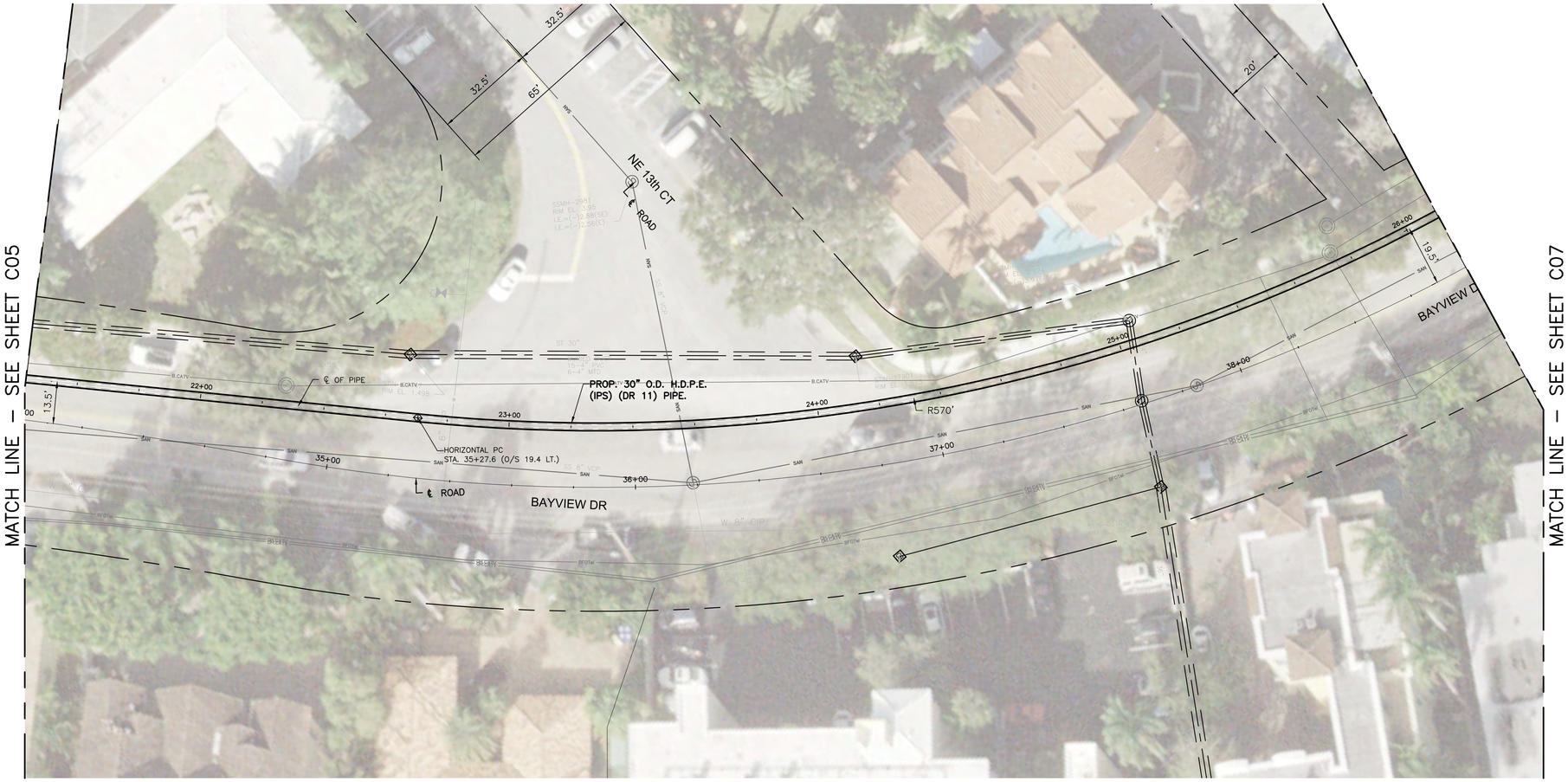
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO.	OF
C05	13

TOTAL: 13

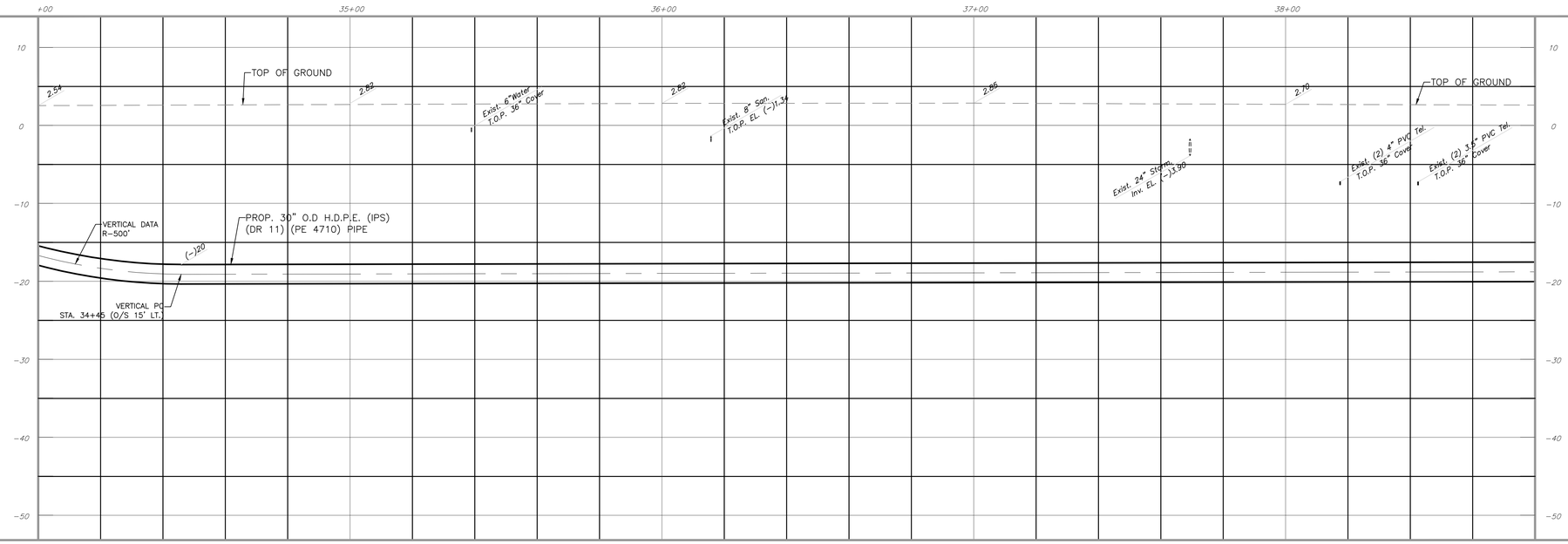
CAD FILE: 12567–C01–PLAN

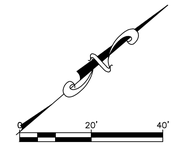
DRAWING FILE NO. 4–XXX–XX



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT





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MIAMI, FL 33185
786-505-8665 | CA 30834

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LEGEND:

EXISTING

PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
REG. No: –
DATE: –
TEL: –
FAX: –

DRAWN BY: BV
DESIGNED BY: DB
CHECKED BY: LS
DATE: 10/14/2020
SCALE:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

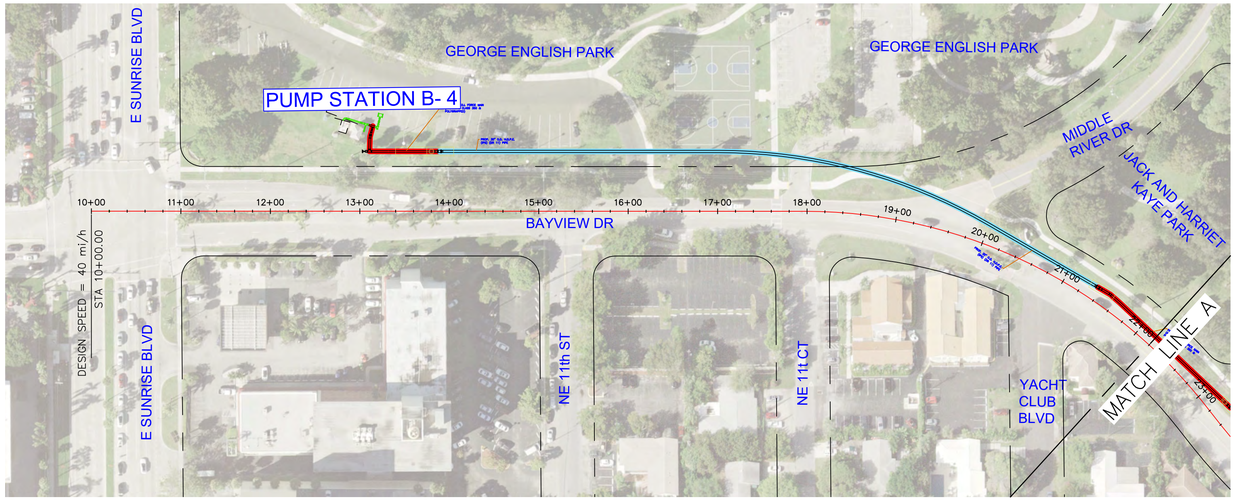
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C06 OF 13

TOTAL: 13

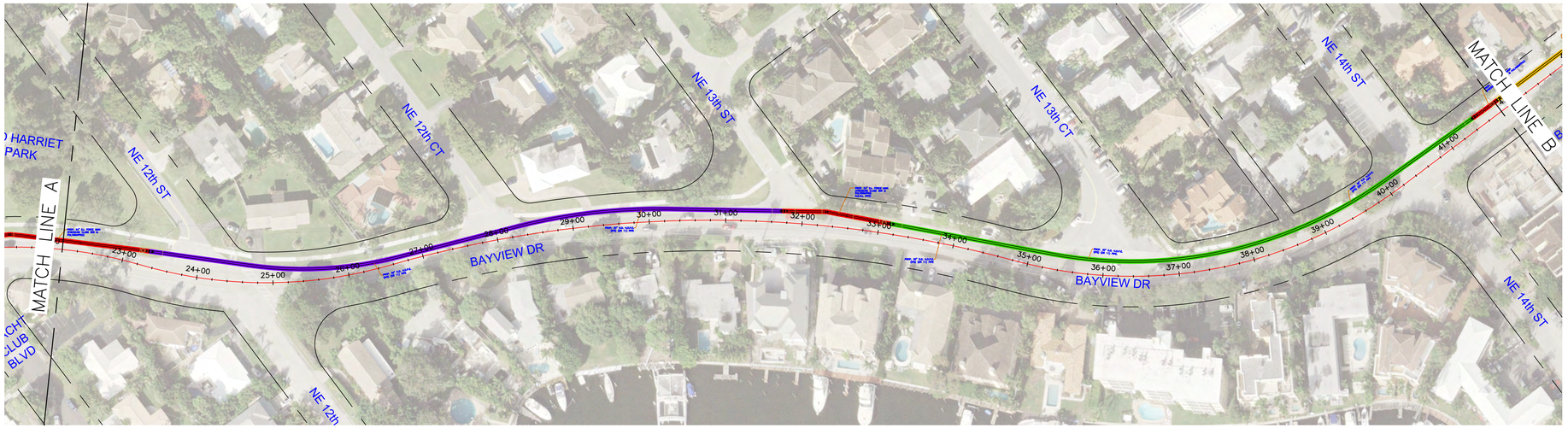
CAD FILE: 12567-C01-PLAN

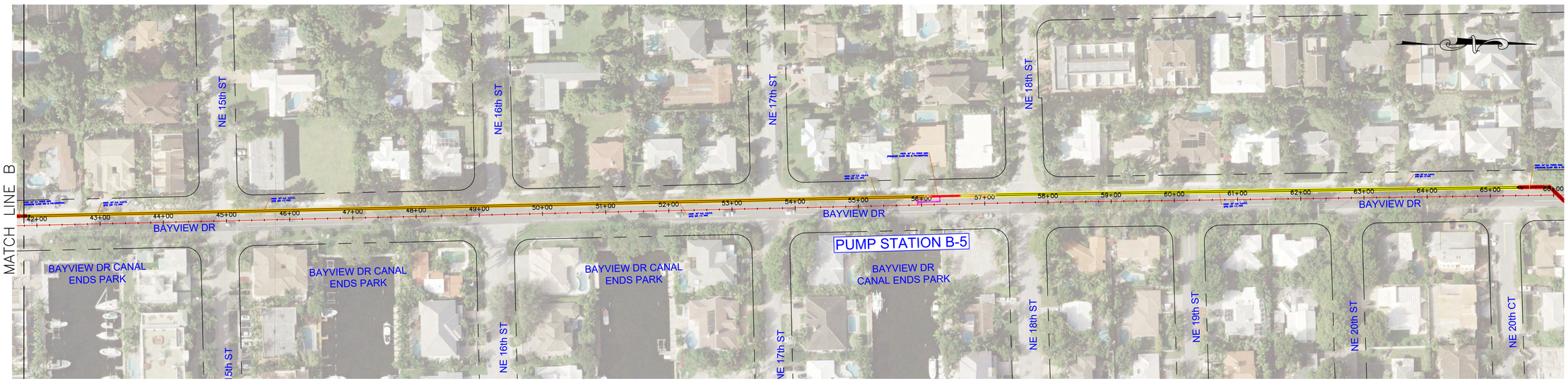
DRAWING FILE NO. 4-XXX-XX



LEGEND:

- OPEN CUT
- DRILL #1
- DRILL #2
- DRILL #3
- DRILL #4
- DRILL #5





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ALUCES CORPORATION
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786-505-8665 | CA 30834

ENGINEER: –
REG. No: –
DATE: –
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DRAWN BY: BV
DESIGNED BY: DB
CHECKED BY: LS
DATE: 10/14/2020
SCALE:
FIELD BOOK:

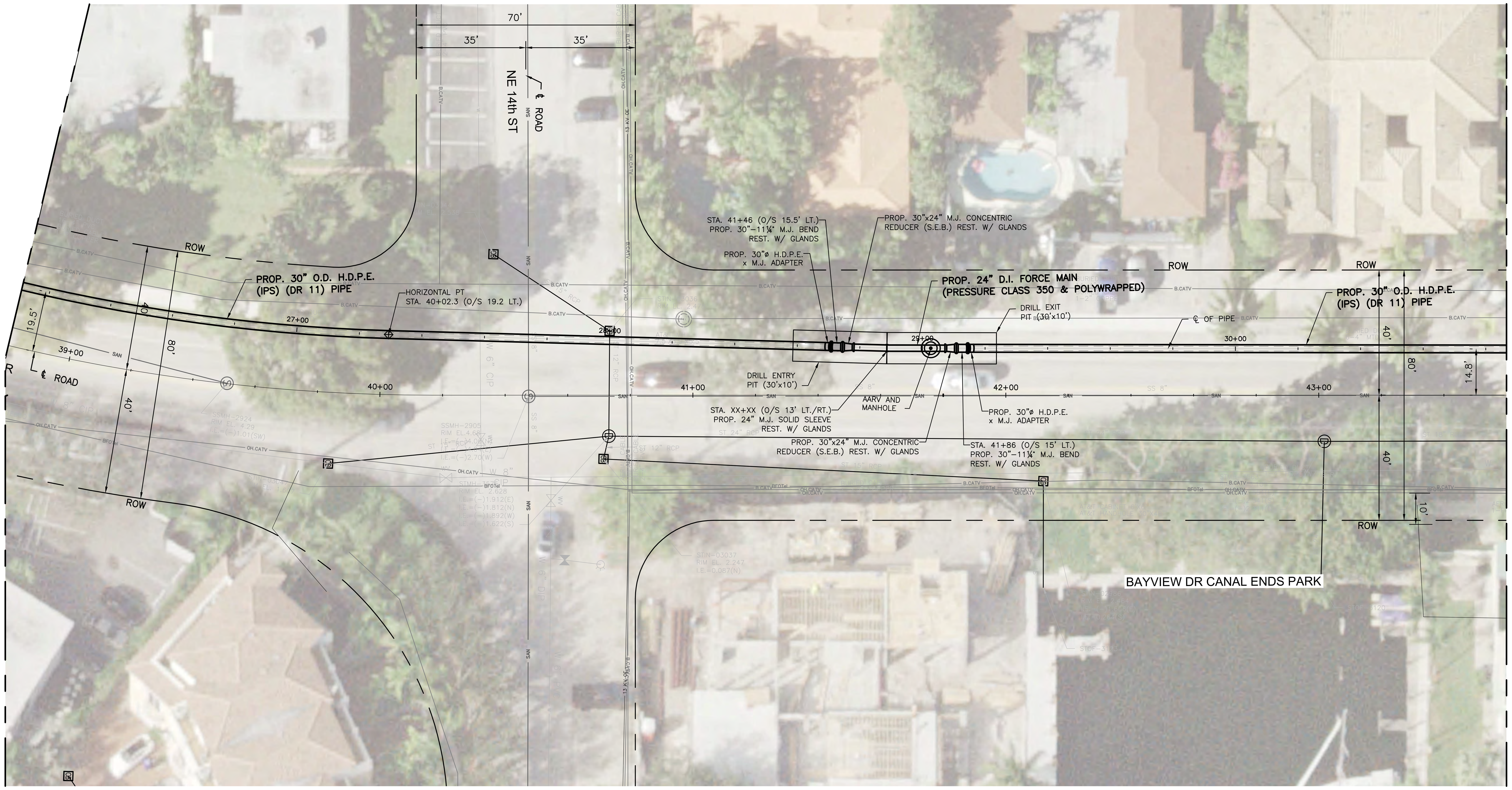
REVISIONS

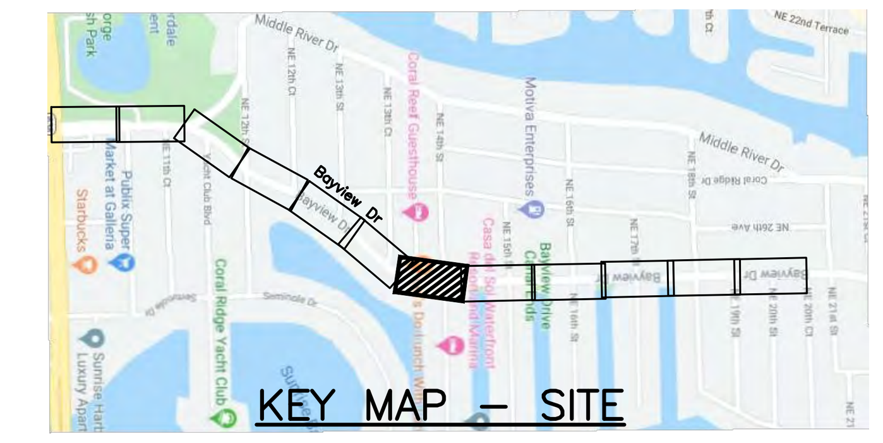
NO.	DATE	BY	CHK'D	DESCRIPTION

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
DRILL LAYOUT MAP

SHEET NO. C00 OF 13
TOTAL: 13
CAD FILE: 12567-DRILL-MAP
DRAWING FILE NO. 4-XXX-XX





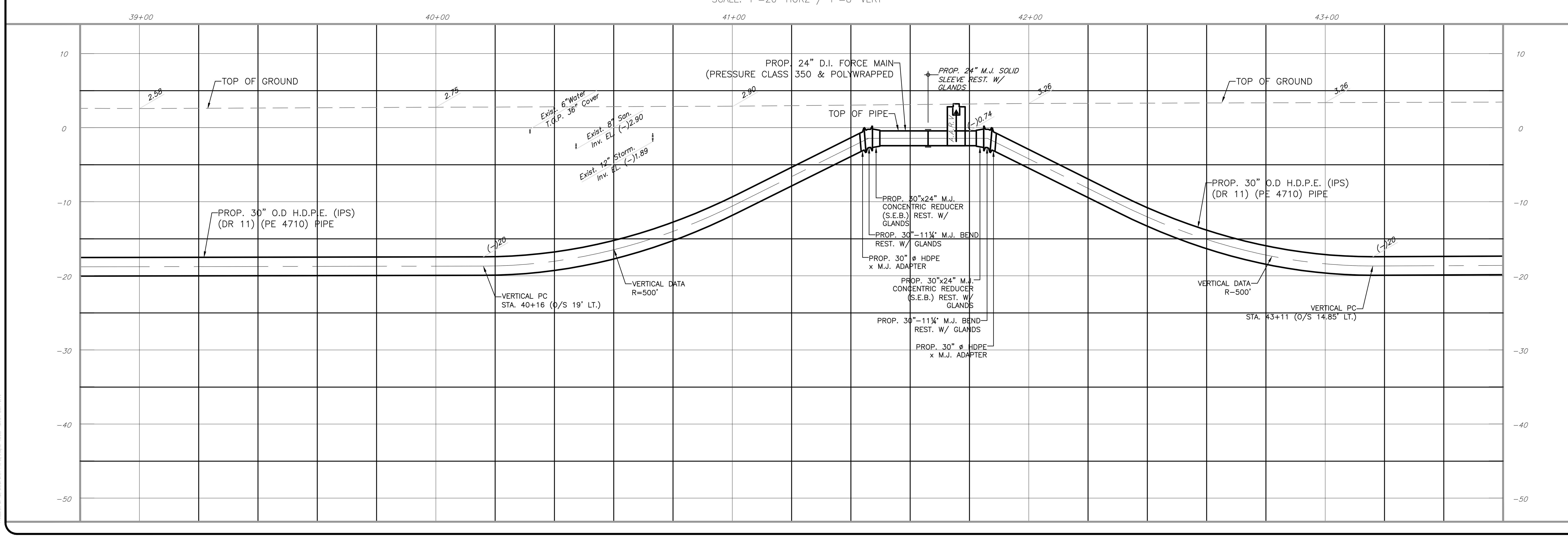
0 20' 40'

AMICI ENGINEERING CONTRACTORS
10621 SW 139TH ST, MIAMI, FL 33176
954–650–4699 | CUC1224698

ALUCES CORPORATION • Consulting Engineers •
14750 SW 26TH ST, SUITE 204 MIAMI, FL 33185
786–505–8665 | CA 30834

PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



NOTES:

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LEGEND:

EXISTING
PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
REG. No: –
DATE: –
TEL: –
FAX: –

DRAWN BY: BV	DATE: 10/14/2020
DESIGNED BY: DB	SCALE:
CHECKED BY: LS	FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

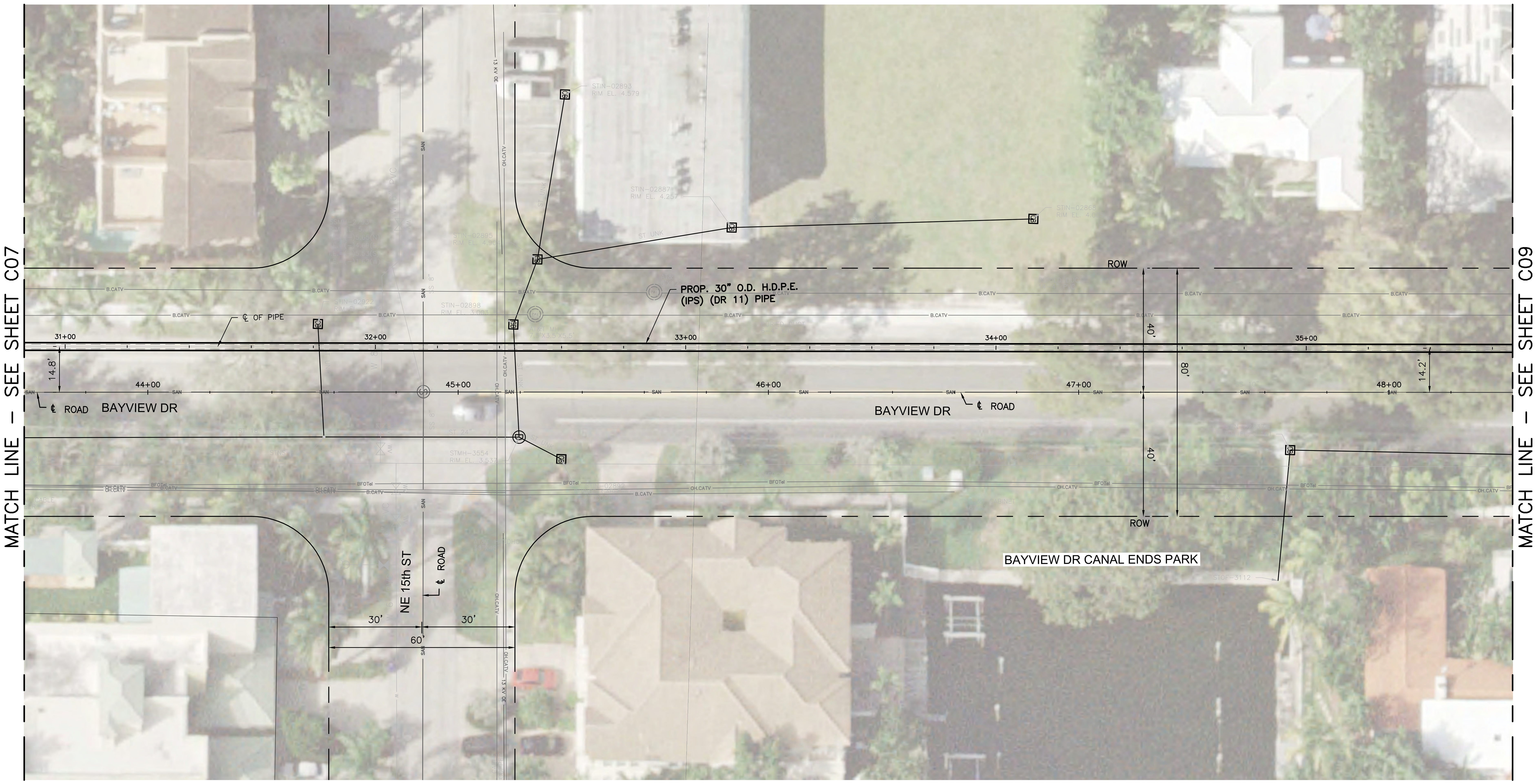
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C07 OF 13

TOTAL: 13

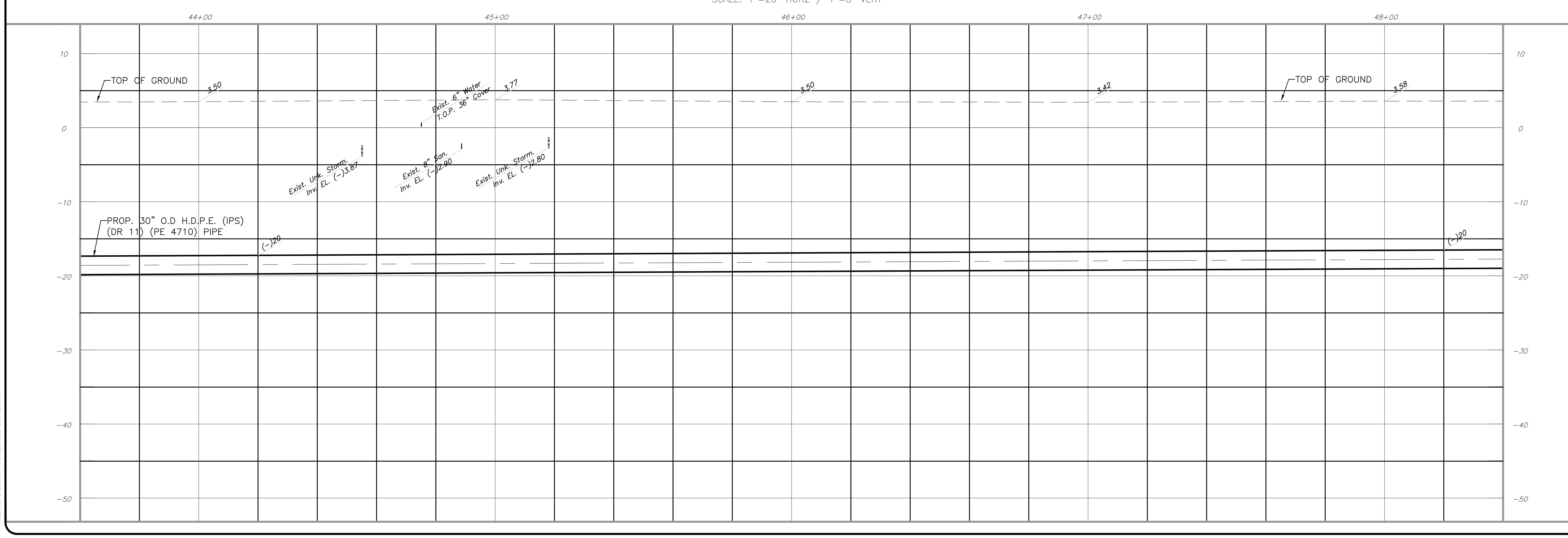
CAD FILE: 12567–C01–PLAN

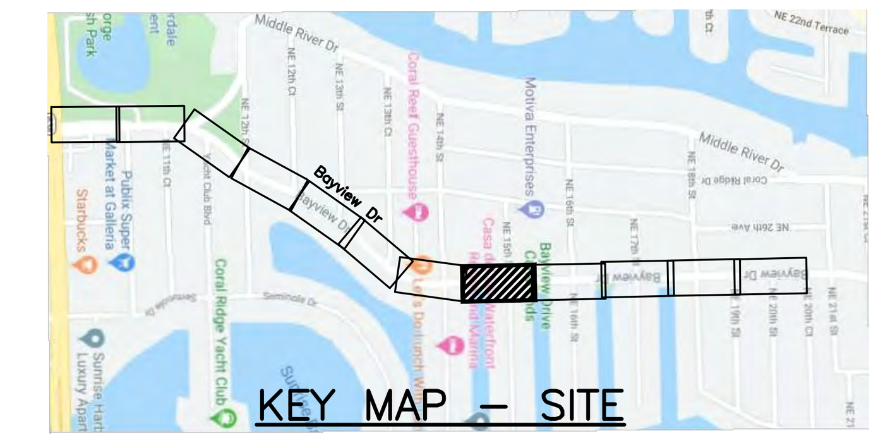
DRAWING FILE NO. 4–XXX–XX



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT





0 20' 40'

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954–650–4699 | CUC1224698

ALUCES CORPORATION • Consulting Engineers •
14750 SW 26TH ST, SUITE 204 MIAMI, FL 33185
786–505–8665 | CA 30834

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LEGEND:

EXISTING
PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: – REG. No: – DATE: – TEL: – FAX: –

DRAWN BY: BV | DATE: 10/14/2020 | DESIGNED BY: DB | SCALE: | CHECKED BY: LS | FIELD BOOK:

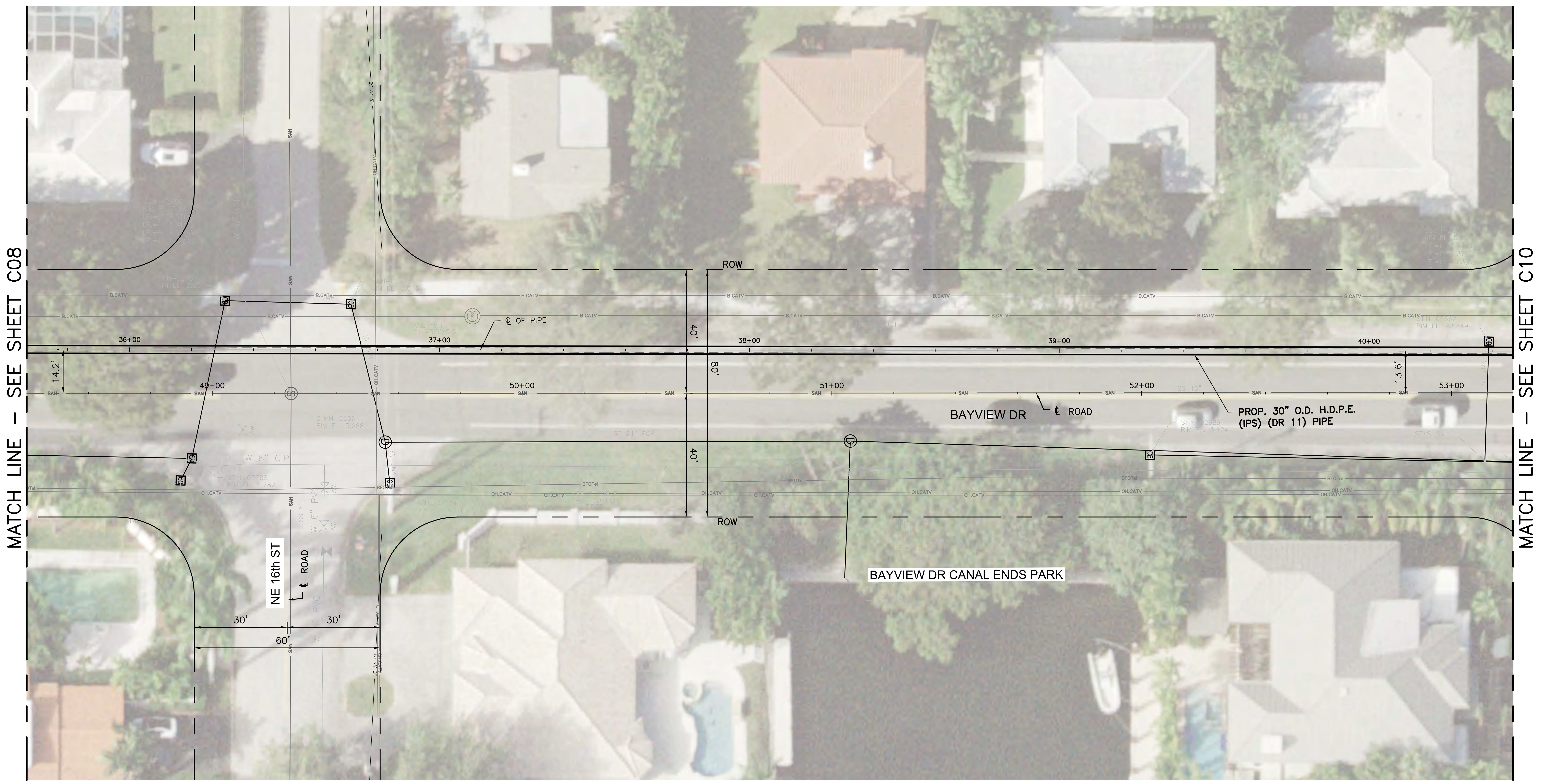
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

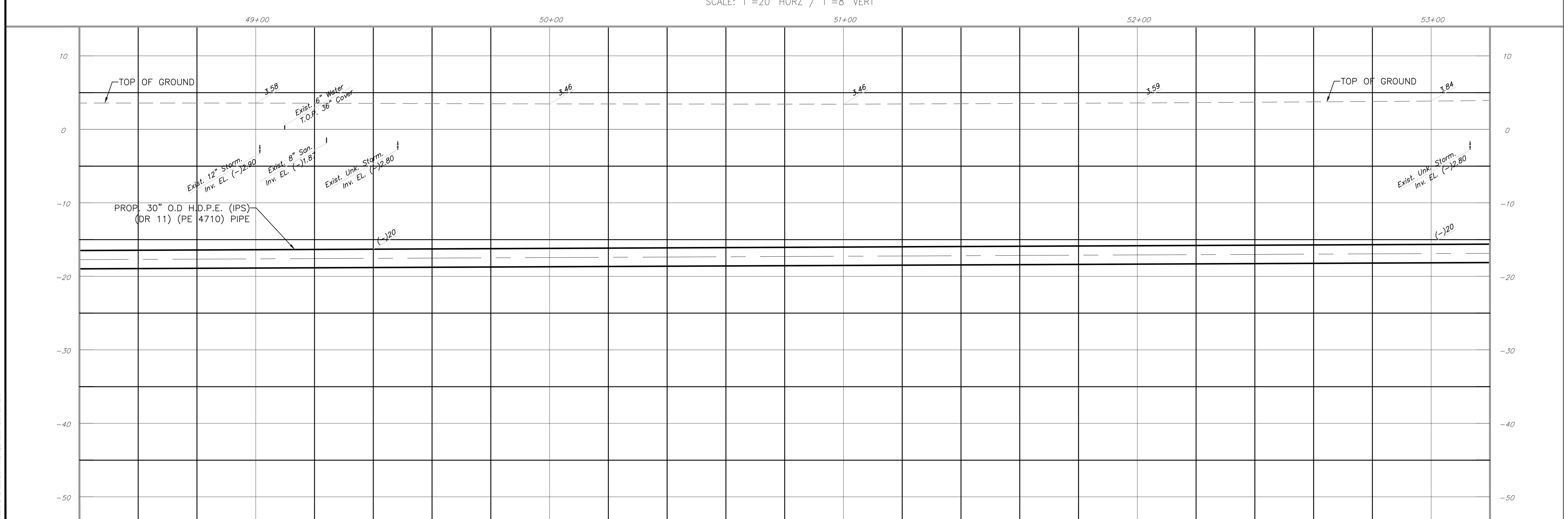
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

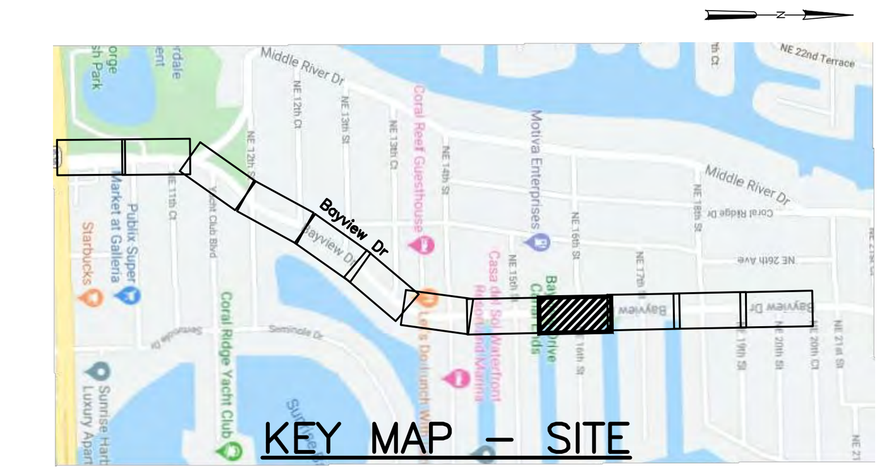
SHEET NO. C08 OF 13
TOTAL: 13
CAD FILE: 12567–C01–PLAN
DRAWING FILE NO. 4–XXX–XX



PROPOSED FORCE MAIN PLAN-PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT





0 20' 40'

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EXISTING

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ENGINEER: –
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FAX: –

DRAWN BY:	DATE:
BV	10/14/2020
DESIGNED BY:	SCALE:
DB	
CHECKED BY:	
LS	
FIELD BOOK:	

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

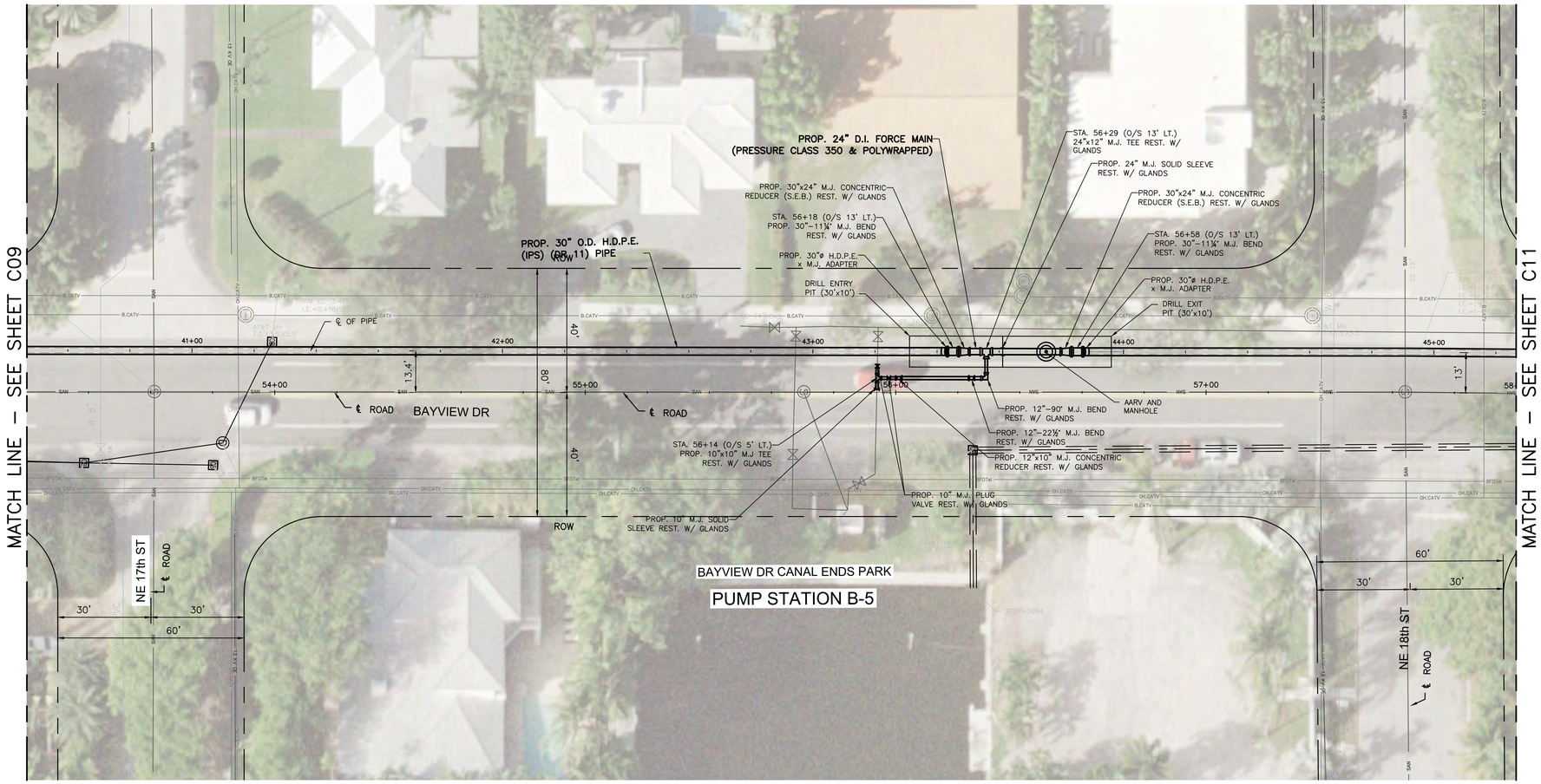
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C09 OF 13

TOTAL: 13

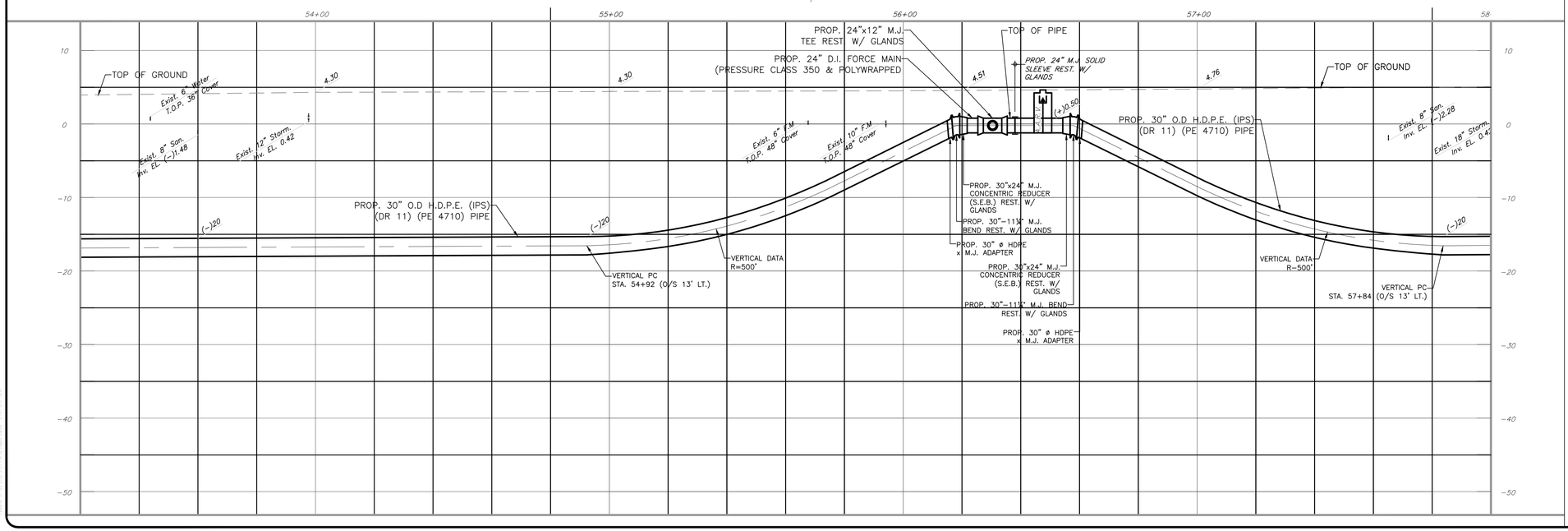
CAD FILE: 12567-C01-PLAN

DRAWING FILE NO. 4-XXX-XX



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



0 20' 40'

NOTES:

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LEGEND:

EXISTING

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ALUCES CORPORATION
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PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: – REG. No: – DATE: – TEL: – FAX: –

DRAWN BY: BV | DESIGNED BY: DB | CHECKED BY: LS | DATE: 10/14/2020 | SCALE: | FIELD BOOK:

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

CITY OF FORT LAUDERDALE
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ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

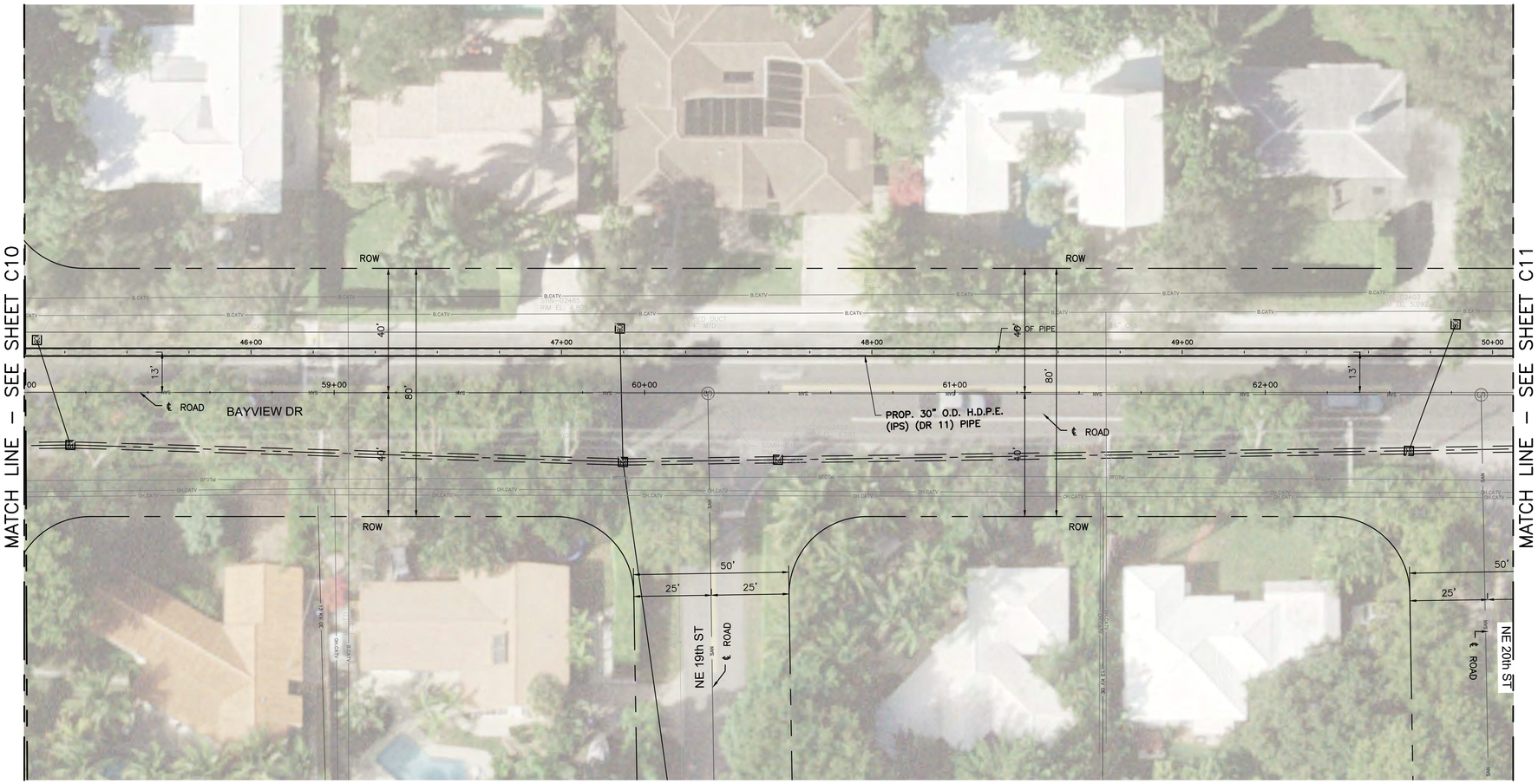
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C10 OF 13

TOTAL: 13

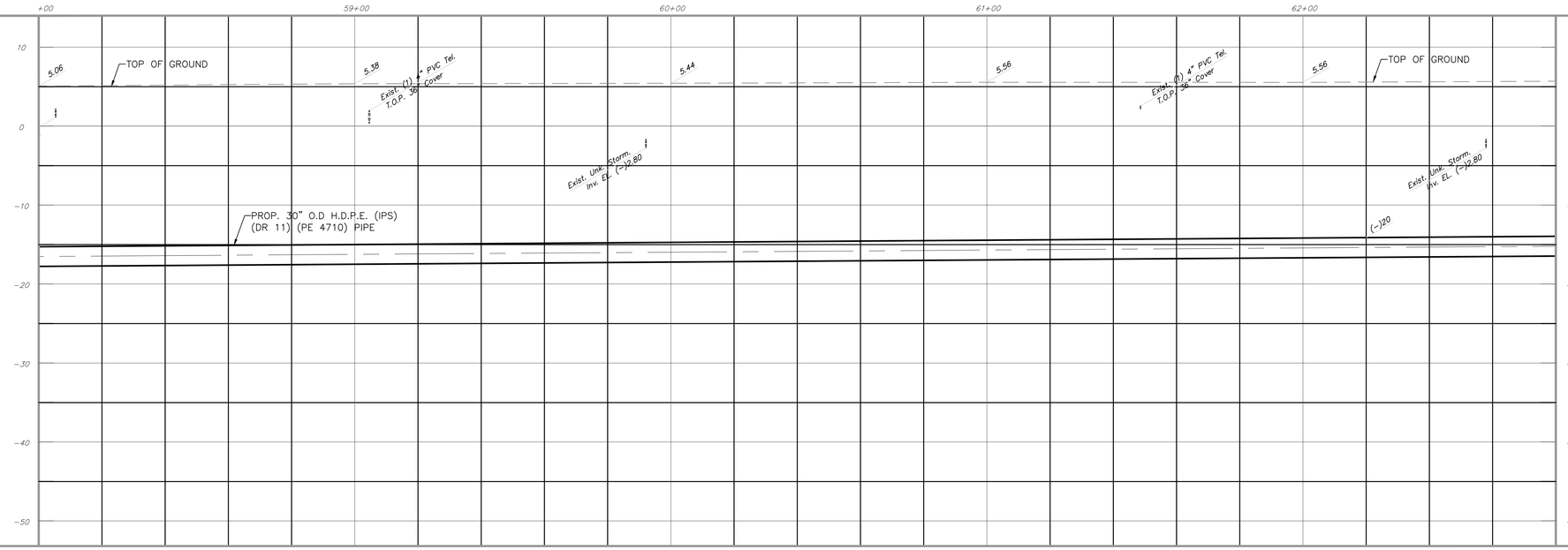
CAD FILE: 12567–C01–PLAN

DRAWING FILE NO. 4–XXX–XX



PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



0 20' 40'

AMICI ENGINEERING CONTRACTORS
10621 SW 139TH ST,
MIAMI, FL 33176
954-650-4699 | CUC1224698

ALUCES CORPORATION
• Consulting Engineers •
14750 SW 26TH ST, SUITE 204
MIAMI, FL 33185
786-505-8665 | CA 30834

NOTES:

1. LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS SHALL BE CONSIDERED APPROXIMATE AND SHOULD BE VERIFIED BY THE DBF PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. STATIONING IS ALONG THE CENTERLINE OF ROAD.
3. ALL ASPHALT/ CONCRETE SHALL BE SAW CUT TO ENSURE CLEAN EDGES

LEGEND:

EXISTING

PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: –
REG. No: –
DATE: –
TEL: –
FAX: –

DRAWN BY:	DATE:
BV	10/14/2020
DESIGNED BY:	SCALE:
DB	
CHECKED BY:	FIELD BOOK:
LS	

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS				
NO.	DATE	BY	CHK'D	DESCRIPTION

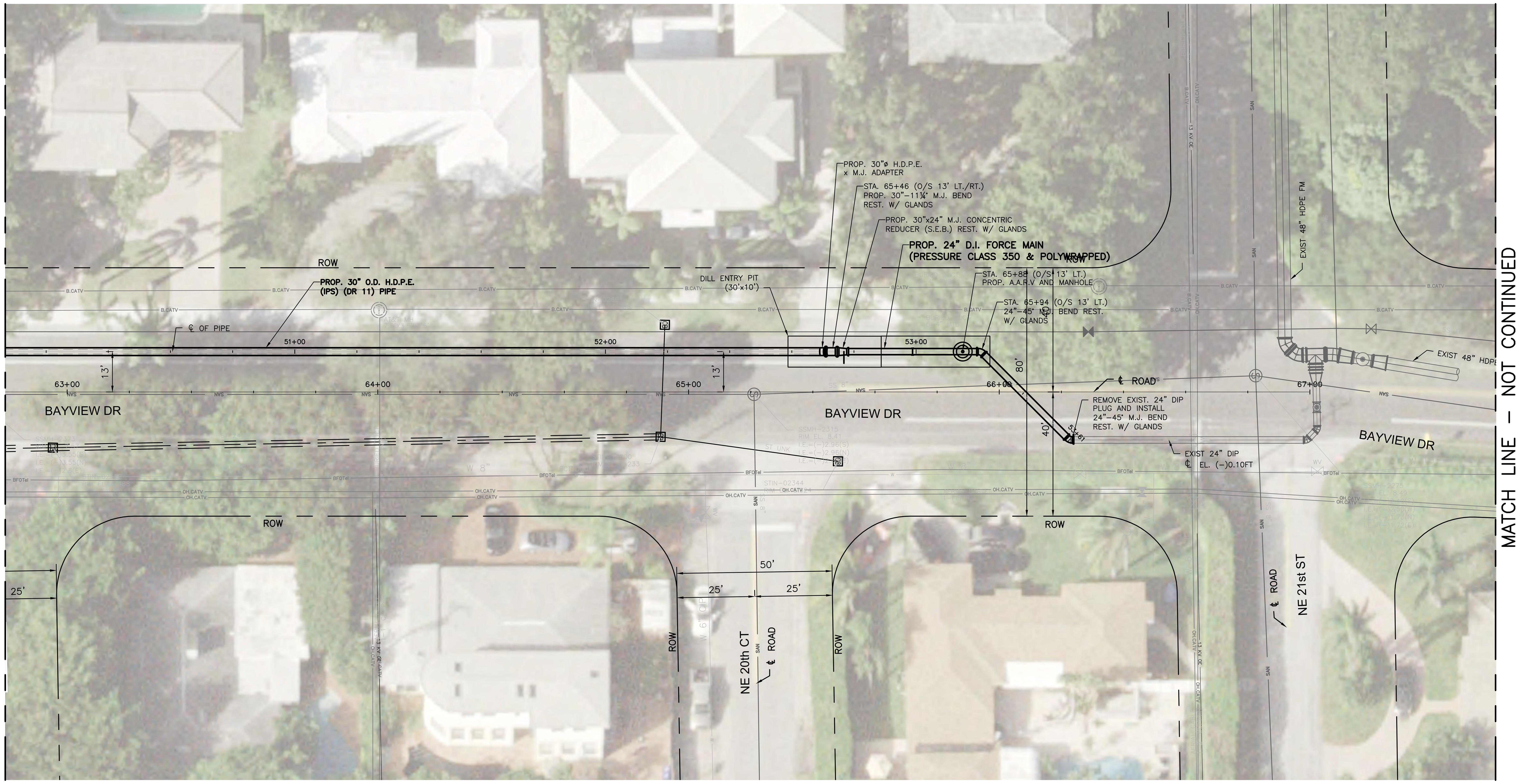
PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

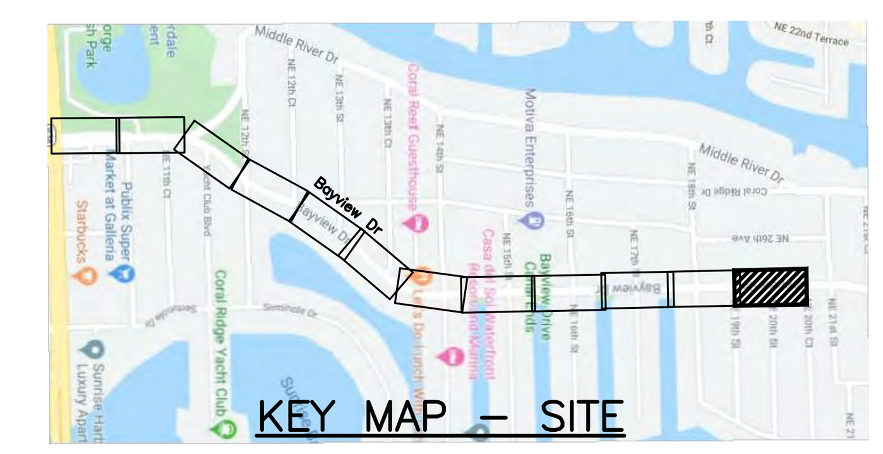
SHEET NO.	OF
C11	13

TOTAL: 13

CAD FILE: 12567-C01-PLAN

DRAWING FILE NO. 4-XXX-XX





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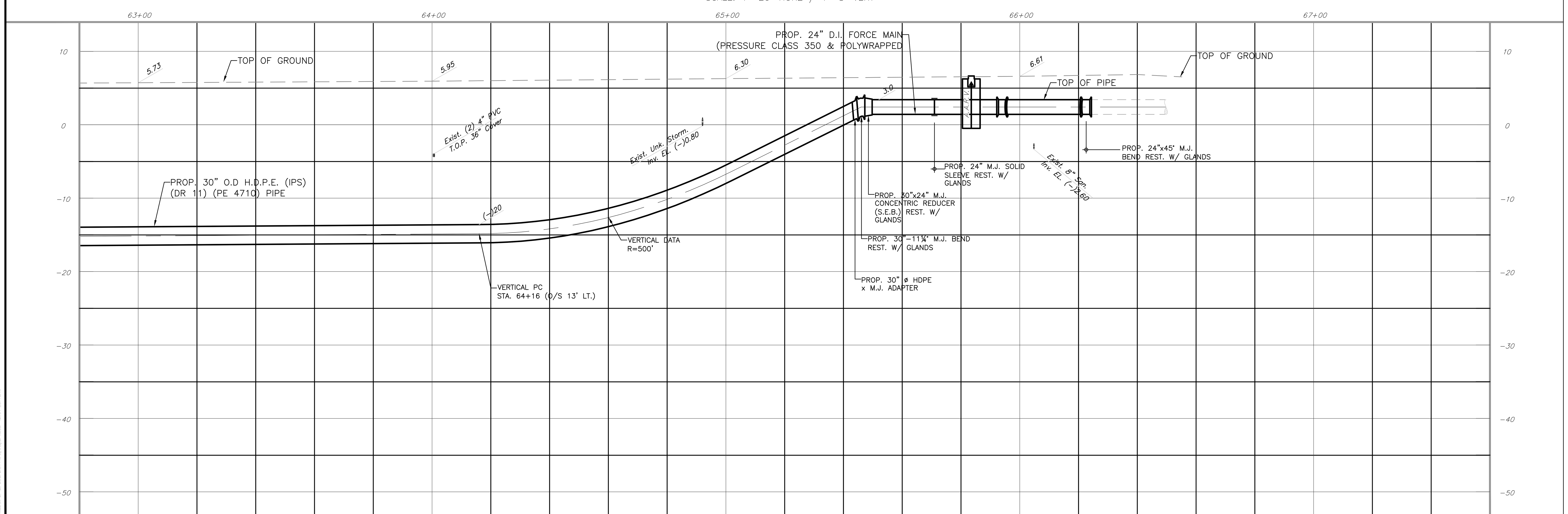
PROPOSED FORCE MAIN PLAN–PROFILE

SCALE: 1"=20' HORZ / 1"=8' VERT



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LEGEND:

EXISTING
PROPOSED

PROPOSAL SET - NOT FOR CONSTRUCTION

ENGINEER: – REG. No: – DATE: – TEL: – FAX: –

DRAWN BY: BV | DATE: 10/14/2020
DESIGNED BY: DB | SCALE:
CHECKED BY: LS
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

PROJECT # P12567
PUMP STATION B-4
REDUNDANT FORCE MAIN
PROPOSED FORCE MAIN
PLAN AND PROFILE

SHEET NO. C12 OF 13
TOTAL: 13
CAD FILE: 12567–C01–PLAN
DRAWING FILE NO. 4–XXX–XX

GENERAL CONDITIONS

Unless otherwise modified in the Projects Special Conditions, the following General Conditions shall be part of the Contract:

GC - 01 - DEFINITIONS - The following words and expressions, or pronouns used in their stead, shall wherever they appear in the Contract and the Contract Documents, be construed as follows:

"Addendum" or "Addenda" - shall mean the additional Contract provisions issued in writing, by the Engineer, prior to the receipt of bids.

"Bid" – shall mean the offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

"Bidder" – shall mean any person, firm, company, corporation or entity submitting a Bid for the Work.

"Bonds" –shall mean bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.

“City” – shall mean the City of Fort Lauderdale, Florida, a Florida municipal corporation. In the event the City exercises its regulatory authority as a government body, the exercise of such regulatory authority and the enforcement of any rules, regulations, codes, laws and ordinances shall be deemed to have occurred pursuant to City’s authority as a governmental body and shall not be attributable in any manner to the City as a party to this Contract. For the purpose of this Contract, “City” without modification shall mean the City Commission, and/or City Manager or his/her designee(s) as applicable.

“Construction Manager” - shall mean the Public Works Director or his/her designee.

“Construction Project Manager” - shall mean the Public Works Director or his/her designee.

"Consultant" – shall mean a person, firm, company, corporation or other entity employed by the City to perform the professional services for the project.

“Contract Work” - shall mean everything expressed or implied to be required to be furnished and furnished by the Contractor by any one or more of the parts of the Contract Documents referred to in the Contract hereof except Extra Work as hereinafter defined, it being understood that, in case of any inconsistency in or between any part or parts of this Contract, the Public Works Director shall determine which shall prevail.

“Design Documents” – shall mean the construction plans and specifications included as part of a Bid/Proposal Solicitation prepared either by the City or by the Consultant under a separate Agreement with the City.

“Engineer” - shall mean the Public Works Director or his/her designee.

"Extra Work" - shall mean work other than that required by the Contract.

"Inspector" – shall mean an authorized representative of the City assigned to make necessary inspections of materials furnished by Contractor and of the Work performed by Contractor.

"Notice" - shall mean written notice sent by certified United States mail, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or via fax or email, or by hand delivery with a request for a written receipt of acknowledgment of delivery and shall be served upon the Contractor either personally or to its place of business listed in the Bid.

“Owner” - shall mean the City of Fort Lauderdale.

“Project Manager” - shall mean the Public Works Director or his/her designee.

"Public Works Director" – shall mean the Public Works Director of the City of Fort Lauderdale, Florida or his/her designee(s).

"Site" - shall mean the area upon or in which the Contractor's operations are carried out and such other areas adjacent thereto as may be designated as such by the Public Works Director.

"Sub-contractor" - shall mean any person, firm, company, corporation or other entity, other than employees of the Contractor, who or which contracts with the contractor, to furnish, or actually furnishes labor and materials, or labor and equipment, or labor, materials and equipment at the site.

"Surety" - shall mean any corporation or entity that executes, as Surety, the Contractor's performance and payment bond securing the performance of this Contract.

GC - 02 - SITE INVESTIGATION AND REPRESENTATION - The Contractor acknowledges that it has satisfied itself as to the nature and location of the Work under the Contract Documents, the general and local conditions of the Site, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, and roads, the conformation and conditions at the ground based on City provided reports, the type of equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under the Contract Documents.

The Contractor acknowledges that it has conducted extensive tests, examinations and investigations and represents and warrants a thorough familiarization with the nature and extent of the Contract Documents, the Work, locality, soil conditions, moisture conditions and all year-round local weather and climate conditions (past and present), and, in reliance on such tests, examination and investigations conducted by Contractor and the Contractor’s experts, has determined that no conditions exist that would in any manner affect the Bid Price and that the project can be completed for the Bid Price submitted.

The Contractor, on its own, has made or caused to be made examinations, investigations, tests and studies of reports and related data in addition to those referred above, as Contractor deemed necessary to perform the Work at the Bid price set by the Contractor, within the contract time and in accordance with the other terms and conditions of the Contract Documents and the bid made by the Contractor; and no additional examinations, investigations, tests, reports or similar data are, or will be, required by Contractor to assure that the Work can be done at the Bid price set by the Contractor.

The Contractor further acknowledges that it has satisfied itself based on any geotechnical reports the City may provide and inspection of the project Site as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information derived from exploratory work that may have been done by the City or included in the Contract Documents and finds and has further determined that no conditions exist that would in any manner affect the Bid price and that the project can be completed for the Bid price submitted.

Any failure by the Contractor to acquaint itself with all the provided information and information obtained by visiting the project Site will not relieve Contractor from responsibility for properly estimating the difficulty or cost thereof under the Contract Documents. In the event that the actual subsurface conditions vary from the actual City provided reports, the Contractor shall notify the City and the Contract amount may be adjusted depending on the conditions, at the approval of the City.

GC - 03 - SUBSTITUTIONS - If the Contractor desires to use materials and/or products of manufacturer's names different from those specified in the Contract Documents, the Bidder requesting the substitution shall make written application as described herein. The burden of proving the equality of the proposed substitution rests on the Bidder making the request. To be acceptable, the proposed substitution shall meet or exceed all expressed requirements of the Contract Documents and shall be submitted upon the Contractor's letterhead, in addition to the "Contractor's Request for Substitution" form provided by the Public Works Director. The following requirements shall be met in order for the substitution to be considered:

1. Requests for substitution shall reach the Public Works Director no less than ten (10) Working Days prior to the date set for opening of Bids; and

2. Requests for substitution shall be accompanied by such technical data, as the party making the request desires to submit. The Public Works Director will consider reports from reputable independent testing laboratories, verified experience records from previous users and other written information valid in the circumstances; and

3. Requests for substitution shall completely and clearly indicate in what respects the materials and/or products differ from those indicated in the Contract Documents; and

4. Requests for substitution shall be accompanied by the manufacturer's printed recommendations clearly describing the installation, use and care, as applicable, of the proposed substitutions; and

5. Requests for substitution shall be accompanied by a complete schedule of changes in the Contract Documents, if any, which must be made to permit the use of the proposed substitution; and

If a proposed substitution is approved by the Public Works Director, an addendum will be issued to prospective bidders not less than three (3) working days prior to the date set for opening of bids. Unless substitutions are received and approved as described above, the successful Bidder shall be responsible for furnishing materials and products in strict accordance with the Contract Documents.

GC - 04 - CONTROL OF THE WORK - The Public Works Director shall have full control and direction of the Work in all respects. The Public Works Director and/or his authorized designee(s) shall, at all times, have the right to inspect the Work and materials. The Contractor shall furnish all reasonable facilities for obtaining such information, as the Public Works Director may desire respecting the quality of the Work and materials and the manner of conducting the Work. Should the Contractor be directed or permitted to perform night Work, or to vary the period which work is ordinarily carried on in the daytime, he shall give ample notice to the Public Works Director so that proper and adequate inspection may be provided. Such Work shall be done only under such regulations as are furnished in writing by the Public Works Director, and no extra compensation shall be allowed to the Contractor therefore. In the event of night work, the Contractor shall furnish such light, satisfactory to the Public Works Director, as will ensure proper inspection. Nothing herein contained shall relieve the Contractor from compliance with any and all City ordinances relating to noise or Work during prohibited hours.

The Contractor shall keep the Public Works Director informed, a reasonable time in advance, as to his need for grades and lines in order that the same may be furnished and all necessary measurements made for records and for payment with the minimum of inconvenience to the Public Works Director or of delay to the Contractor. The Contractor shall submit to the Public Works Director or Inspector on the job a written request outlining the streets, etc., for which the Contractor desires lines and grades. It is the intention not to delay the Work for the giving of lines and grades, but when necessary, work operations shall be suspended for such reasonable time as the Public Works Director may require for this purpose. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale’s Code of Ordinances.

GC - 05 - SUB-CONTRACTOR - The Contractor shall not sublet, in whole or any part of the Work without the written consent and approval of the Public Works Director. Within ten (10) days after official notification of starting date, the Contractor must submit in writing, to the Public Works Director, a list of all Sub-contractors. No Work shall be done by any Sub-contractor until such Subcontractor has been officially approved by the Public Works Director. A sub-contractor not appearing on the original list will not be approved without written request submitted to the Public Works Director and approved by the Public Works Director. In all cases, the Contractor shall give his personal attention to the Work of the Sub-contractors and the Sub-contractor is liable to be discharged by the Contractor, at the direction of the Public Works Director, for neglect of duty, incompetence or misconduct.

Acceptance of any sub-contractor, other person, or organization by the Public Works Director shall not constitute a waiver of any right of Public Works Director to reject defective Work or Work not in conformance with the Contract Documents.

Contractor shall be fully responsible for all acts and omissions of his Sub-contractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between City and any sub-contractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of City to pay or to see to the payment of any moneys due to any sub-contractor or other person, or organization, except as may otherwise be required by law.

GC - 06 - **QUANTITIES** - It is mutually agreed that the proposal shows the approximate amounts only along with the Plans and the general location. It is also mutually agreed that no change will be made involving any departure from the general scheme of the Work and that no such change involving a material change in cost, either to the City or Contractor, shall be made, except upon written permission of the City. However, the Public Works Director shall have the right to make minor alternations in the line, grade, plan, form or materials of the Work herein contemplated any time before the completion of the same. That if such alterations shall diminish the quantity of the Work to be done, such alterations shall not constitute a claim for damages or anticipated profits. That if such alterations increase the amount of the Work to be done, such increase shall be paid for according to the quantity actually performed and at the unit price or prices stipulated therefore in the Contract.

The City shall, in all cases of dispute, determine the amount or quantity of the several kinds of Work which are to be paid for under this Contract, and shall decide all questions relative to the execution of the same, and such estimates and decisions shall be final and binding.

Any Work not herein specified, which might be fairly implied as included in the Contract, of which the City shall judge, shall be done by the Contractor without extra charge. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale's Code of Ordinances.

GC - 07 - NO ORAL CHANGES - Except to the extent expressly set forth in the Contract, no change in, or modification, termination or discharge of the Contract in any form whatsoever, shall be valid or enforceable unless it is in writing and signed by the parties charged, therewith or their duly authorized representative.

GC - 08 - PERMITS AND PROTECTION OF PUBLIC – Permits on file with the City and or those permits to be obtained, shall be considered directive in nature, and will be considered a part of this Contract. A copy of all permits shall be given to the City and become part of the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

The Contractor shall be required to observe all the ordinances in relation to obtaining permits for occupying, excavating, or in any way obstructing the streets and alleys. He shall erect and maintain barricades and sufficient safeguards around all excavations, embankments or obstructions; he shall place sufficient warning lights at or near the Work; keep the same burning from sunset to sunrise, employ watchmen, and strictly obey all laws and ordinances controlling or limiting those engaged in similar work.

Where there are telephones, light or power poles, water mains, conduits, pipes or drains or other construction, either public or private, in or on the streets or alleys, the Work shall be so conducted that no interruption or delay will be caused in the operation or use of the same. Proper written notice shall be given, and all the facilities, afforded the owners of such construction encountered or likely to be encountered, as will enable them to preserve the same from injury.

The Contractor shall not be permitted to interfere with public travel and convenience by grading or tearing up streets indiscriminately, but the Work of constructing the various items in this contract shall proceed in an orderly, systematic and progressive manner.

Contractor shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

Where lifting operations involving the use of specialized cranes are required as part of construction, Contractor must undertake the following investigation and submit the results and documentation to the Engineer prior to commencing any lifting operations: marking a very specific area in the field for the placement of the crane; a drawing showing the limitations of the job operation (i.e. not over adjacent properties or pedestrian and high vehicular traffic areas); underground utility exploration in the vicinity of the crane location, which may include ground penetrating radar to identify voids or old pipe or other subsurface features that could lead to sudden failure; assessment of the underlying soil and roadway materials and a worst case analysis based on entire load being distributed on just one or two outriggers; provision of properly sized pads under the outriggers; loading charts from manufacturer showing allowable configurations/loads; and inspection to make sure crane operation is in accordance with the permit conditions.

GC - 09 - DISEASE REGULATIONS - The Contractor shall enforce all sanitary regulations and take all precautions against infectious diseases as the Public Works Director may deem necessary. Should any infectious or contagious diseases occur among his employees, he shall arrange for the immediate removal of the employee from the Site and isolation of all persons connected with the Work.

GC - 10 - CONTRACTOR TO CHECK PLANS, SPECIFICATIONS, AND DATA - The Contractor shall verify all dimensions, quantities, and details shown on the plans, supplementary drawings, schedules, or other data received from the Public Works Director, and shall notify the Public Works Director of all errors, omissions, conflicts and discrepancies found therein within three (3) working days of discovery. Failure to discover or correct errors, conflictions, or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction, or improper operation resulting therefrom nor from rectifying such condition at its own expense.

GC - 11 - SUPPLEMENTARY DRAWINGS - When, in the opinion of the Public Works Director, it becomes necessary to explain more fully the Work to be done, or to illustrate the work further, or to show any changes which may be required, drawings, known as supplementary drawings, with specifications pertaining thereto, will be prepared by the Public Works Director and copies will be given to the Contractor.

The supplementary drawings shall be binding upon the Contractor with the same force as the original Plans. Where such supplementary drawings require either less or more than the estimated quantities of work, credit to the City or compensations therefore to the Contractor shall be subject to the terms of the Contract.

GC - 12 - MATERIALS AND WORKMANSHIP - All material and workmanship shall, in every respect, be in conformity with approved modern practice and with prevailing standards of performance and quality. In the event of a dispute, the Public Works Director's decision shall be final. Wherever the Plans, Specifications, Contract Documents, or the directions of the Public Works Director are unclear as to what is permissible and/or fail to note the quality of any Work, that interpretation will be made by the Public Works Director, which is in accordance with approved modern practice, to meet the particular requirements of the Contract.

In all cases, new materials shall be used, unless this provision is waived by notice from the City in writing.

GC - 13 - SAFEGUARDING MARKS - The Contractor shall safeguard all points, stakes, grade marks, monuments, and bench marks made or established on the Work, bear the cost of re-establishing same if disturbed, or bear the entire expense of rectifying Work improperly installed due to not maintaining or protecting or for removing without authorization, such established points, stakes and marks. The Contractor shall safeguard all existing and known property corners, monuments and marks not related to the Work and, if required, shall bear the cost of having them re-established by a licensed surveyor if disturbed or destroyed during the course of construction.

GC - 14 - EXISTING UTILITY SERVICE - All existing utility service shall be maintained with a minimum of interruption at the expense of the Contractor.

GC - 15 - JOB DESCRIPTION SIGNS – Contractor, at Contractor's expense, shall furnish, erect, and maintain suitable weatherproof signs on jobs over $100,000 containing the following information:

1. City Seal (in colors)
2. Project or Improvement Number
3. Job Description
4. Estimated Cost
5. Completion Date

Minimum size of sign shall be four feet high, eight feet wide and shall be suitably anchored. The entire sign shall be painted and present a pleasing appearance. Exact location of signs will be determined in the field. Two (2) signs will be required, one at each end of the job. All costs of this work shall be included in other parts of the work.

GC - 16 - FLORIDA EAST COAST RIGHT-OF-WAY - Whenever a City contractor is constructing within the Florida East Coast Railway Company's Right-of-Way, it will be mandatory that the contractor carry bodily injury and property damage insurance in amounts satisfactory to the Florida East Coast Company. This insurance requirement shall be verified by the contractor with the Florida East Coast Company prior to commencing work, and maintained during the life of the Contract.

GC - 17 - ACCIDENTS - The Contractor shall provide such equipment and facilities as are necessary and/or required, in the case of accidents, for first aide services to be provided to a person who may be injured during the project duration. The Contractor shall also comply with the OSHA requirements as defined in the United States Labor Code 29 CFR 1926.50.

In addition, the Contractor must report immediately to the Public Works Director every accident to persons or damage to property, and shall furnish in writing full information, including testimony of witnesses regarding any and all accidents.

GC - 18 - SAFETY PRECAUTIONS - Contractor must adhere to the applicable environmental protection guidelines for the duration of a project. If hazardous waste materials are used, detected or generated at any time, the Project Manager must be immediately notified of each and every occurrence. The Contractor shall comply with all codes, ordinances, rules, orders and other legal requirements of public authorities (including OSHA, EPA, DERM, the City, Broward County, State of Florida, and Florida Building Code), which bear on the performance of the Work.

The Contractor shall take the responsibility to ensure that all Work is performed using adequate safeguards, including but not limited to: proper safe rigging, safety nets, fencing, scaffolding, barricades, chain link fencing, railings, barricades, steel plates, safety lights, and ladders that are necessary for the protection of its employees, as well as the public and City employees. All riggings and scaffolding shall be constructed with good sound materials, of adequate dimensions for their intended use, and substantially braced, tied or secured to ensure absolute safety for those required to use it, as well as those in the vicinity. All riggings, scaffolding, platforms, equipment guards, trenching, shoring, ladders and similar actions or equipment shall be OSHA approved, as applicable, and in accordance with all Federal, State and local regulations.

GC - 19 - DUST PREVENTION - The Contractor shall, by means of a water spray, or temporary asphalt pavement, take all necessary precautions to prevent or abate a dust nuisance arising from dry weather or Work in an incomplete stage. All costs of this Work shall be included in cost of other parts of the Work.

Should the Contractor fail to abate a dust nuisance by the above methods, he will be required to immediately construct temporary patches per City standards.

GC - 20 - PLACING BARRICADES AND WARNING LIGHTS - The Contractor shall furnish and place, at his own expense, all barricades, warning lights, automatic blinker lights and such devices necessary to properly protect the work and vehicular and pedestrian traffic. Should the Contractor fail to erect or

maintain such barricades, warning lights, etc., the Public Works Director may, after 24 hours' notice to the Contractor, proceed to have such barricades and warning lights placed and maintained by City or other forces and all costs incurred thereof charged to the Contractor and may be retained by the City from any monies due, or to become due, to the Contractor.

GC - 21 - TRAFFIC CONTROL - The Contractor shall coordinate all Work and obtain, through the City's Transportation and Mobility Department, Broward County, Florida Department of Transportation, as applicable, any permits required to detour traffic or close any street before starting to work in the road. The following section: Part VI Traffic Controls for Street and Highway Construction and Maintenance Operations, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. Department of Transportation Federal Highway Administration, 2009, or current edition, shall be used as a guide for requirement and placement of traffic control devices, signs and barricades. The Public Works Director shall determine requirements for the above. The above publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. In the event that a Maintenance of Traffic (MOT) Plan is required, the Plan shall be prepared by an A.A.S.T.A. certified technician.

All traffic control devices, flashing lights, signs and barricades shall be maintained in working condition at all times.

GC - 22 - COORDINATION - The Contractor shall notify all utilities, transportation department, etc., in writing, with a copy to the Public Works Director before construction is started and shall coordinate its Work with them. The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal, construction and rearrangement operations in order that services rendered by these parties will not be unnecessarily interrupted.

The Contractor shall arrange its Work and dispose of his materials so as to not interfere with the operation of other contractors engaged upon adjacent work and to join its Work to that of others in a proper manner and to perform its Work in the proper sequence in relation to that of other contractors all as may be directed by the Public Works Director.

Each Contractor shall be responsible for any damage done by it or its agents to the work performed by another contractor.

The Contractor shall contact the Broward County Transportation Department and the Florida Department of Transportation, as applicable, to verify and obtain location of any and all traffic conduits, loops, and street light underground services.

GC - 23 - WATER - Bulk water used for construction, flushing pipelines, and testing shall be obtained from fire hydrants. Contractor shall make payment for hydrant meter at Treasury Billing Office, 1st Floor, City Hall, 100 N. Andrews Avenue. With the paid receipt, contractor can pick up hydrant meter at the utility location office. No connection shall be made to a fire hydrant without a meter connected.

GC - 24 - PROHIBITION AGAINST CONTRACTING WITH SCRUTINIZED COMPANIES - As to any contract for goods or services of $1 million or more and as to the renewal of any contract for goods or services of $1 million or more, subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2013), with regard to the "Cuba Amendment," the Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and that it does not have business operations in Cuba or Syria, as provided in section 287.135, Florida Statutes (2019), as may be amended or revised. As to any contract for goods or services of any amount and as to the renewal of any contract for goods or services of any amount, the Contractor certifies that it is not on the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2019), and that it is not engaged in a boycott of Israel. The City may terminate this Agreement at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2019), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or the Scrutinized Companies that Boycott Israel List created pursuant to Section 215.4725, Florida Statutes (2019), or is engaged in a boycott of Israel or has been

engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2019), as may be amended or revised.

GC - 25 - LOCATION OF UNDERGROUND FACILITIES - If the Proposer, for the purpose of responding to this solicitation, requests the location of underground facilities through the Sunshine State One-Call of Florida, Inc. notification system or through any person or entity providing a facility locating service, and underground facilities are marked with paint, stakes or other markings within the City pursuant to such a request, then the Proposer shall be deemed non-responsive to this solicitation in accordance with Section 2-184(5) of the City of Fort Lauderdale Code of Ordinances.

GC - 26 - USE OF FLORIDA LUMBER TIMBER AND OTHER FOREST PRODUCTS - In accordance with Florida Statute 255.20 (3), the City specifies that lumber, timber, and other forest products used for this Project shall be produced and manufactured in the State of Florida if such products are available and their price, fitness, and quality are equal. This requirement does not apply to plywood specified for monolithic concrete forms, if the structural or service requirements for timber for a particular job cannot be supplied by native species, or if the construction is financed in whole or in part from federal funds with the requirement that there be no restrictions as to species or place of manufacture. The Bidder affirms by submitting a bid response to this solicitation that they will comply with section 255.20 (3) Florida Statutes.

GC - 27 - PUBLIC RECORDS/TRADE SECRETS/COPYRIGHT: The Proposer's response to the Solicitation is a public record pursuant to Florida law, which is subject to disclosure by the City under the State of Florida Public Records Law, Florida Statutes Chapter 119.07 ("Public Records Law"). The City shall permit public access to all documents, papers, letters or other material submitted in connection with this Solicitation and the Contract to be executed for this Solicitation, subject to the provisions of Chapter 119.07 of the Florida Statutes.

Any language contained in the Proposer's response to the Solicitation purporting to require confidentiality of any portion of the Proposer's response to the Solicitation, except to the extent that certain information is in the City's opinion a Trade Secret pursuant to Florida law, shall be void. If a Proposer submits any documents or other information to the City which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Laws"), the Proposer shall clearly designate that it is a Trade Secret and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida Statutes 119.07. The City shall be the final arbiter of whether any information contained in the Proposer's response to the Solicitation constitutes a Trade Secret. The City's determination of whether an exemption applies shall be final, and the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as public records. In addition, the proposer agrees to defend, indemnify, and hold harmless the City and the City's officers, employees, and agents, against any loss or damages incurred by any person or entity as a result of the City's treatment of records as exempt from disclosure or confidential. Proposals purporting to be subject to copyright protection in full or in part will be rejected. The proposer authorizes the City to publish, copy, and reproduce any and all documents submitted to the City bearing copyright symbols or otherwise purporting to be subject to copyright protection.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE SOLICITATION AS PROPRIETARY OR CONFIDENTIAL. DO NOT MARK YOUR RESPONSE TO THE SOLICITATION OR ANY PART THEREOF AS COPYRIGHTED.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT:

Telephone Number: (954) 828-5002

Mailing Address: **City Clerk's Office**
100 N. Andrews Avenue
Fort Lauderdale, Florida 33301-1016

E-mail: **prrcontract@fortlauderdale.gov**

Contractor shall:

1. Keep and maintain public records required by the City in order to perform the service.

2. Upon request from the City's custodian of public records, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2019), as may be amended or revised, or as otherwise provided by law.

3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of this contract if the Contractor does not transfer the records to the City.

4. Upon completion of the Contract, transfer, at no cost, to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of this Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of this Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records, in a format that is compatible with the information technology systems of the City.

Rev. 5/8/2020

NON-COLLUSION STATEMENT:

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g. ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Juan Barreneche Authorized Signature	**Managing Member** Title
Juan Barreneche Name (Printed)	**2/17/2021** Date

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below you agree with these terms.

Please indicate which credit card payment you prefer:

- [ ] MasterCard
- [x] Visa

Amici Engineering Contractors, LLC
Company Name

Juan Barreneche
Name (Printed)

Juan Barreneche
Signature

2/17/2021
Date

Managing Member
Title

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-187(c), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

The Contractor shall not, in any of his/her/its activities, including employment, discriminate against any individual on the basis of race, color, national origin, religion, creed, sex, disability, sexual orientation, gender, gender identity, gender expression, or marital status.

1. The Contractor certifies and represents that he/she/it will comply with Section 2-187, Code of Ordinances of the City of Fort Lauderdale, Florida, as amended by Ordinance C-18-33 (collectively, "Section 2-187").

2. The failure of the Contractor to comply with Section 2-187 shall be deemed to be a material breach of this Agreement, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.

3. The City may terminate this Agreement if the Contractor fails to comply with Section 2-187.

4. The City may retain all monies due or to become due until the Contractor complies with Section 2-187.

5. The Contractor may be subject to debarment or suspension proceedings. Such proceedings will be consistent with the procedures in section 2-183 of the Code of Ordinances of the City of Fort Lauderdale, Florida.

Juan Barreneche
Authorized Signature

Juan Barreneche, Managing Member
Print Name and Title

2/17/2021
Date

TRENCH SAFETY

Bidder acknowledges that included in the appropriate bid items of his bid and in the Total Bid Price are costs for complying with the Florida Trench Safety Act, Florida Statutes 553.60 – 553.64. The bidder further identifies the costs of such compliance to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF/SF)	Unit (Quantity)	Unit Cost	Extended Cost
A. **Steel Plates**	**LS**	**1**	$**2000.00**	$**2000.00**
B.			$	$
C.			$	$
D.			$	$

Total: $**2000.00**

The bidder certifies that all trench excavation done within his control in excess of five feet (5') in depth shall be in accordance with the Occupational Safety and Health Administration's excavation safety standards, C.F.R. s. 1926.650 Subpart P., and the Florida Trench Safety Act, Florida Statutes 553.60-553.64.

Failure to complete the above may result in the bid being declared non-responsive.

DATE: **2/17/21** **Juan Barreneche**
(SIGNATURE)

STATE OF: **Florida**COUNTY OF: **Dade**

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

Juan Barreneche
(Name of Individual Signing)

Juan Barrenechewho, after first being duly sworn by me,
Kelly Lisandrilloaffixed his/her signature in the space provided above on this **17th**day of **February**, 20**21**.

947435
NOTARY PUBLIC

My Commission Expires: **01/14/2024**

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT

MINORITY BUSINESS ENTERPRISE (MBE) - WOMEN BUSINESS ENTERPRISE (WBE)

PRIME CONTRACTOR IDENTIFICATION FORM

In order to assist us in identifying the status of those companies doing business with the City of Fort Lauderdale, this form must be completed and returned with your bid package.

Name of Firm:	**Amici Engineering Contractors, LLC**
Address of Firm:	**10621 SW 139 ST, Miami, FL 33176**
Telephone Number:	**954-650-4699**
Name of Person Completing Form:	**Juan Barreneche**
Title:	**Managing Member**
Signature:	**Juan Barreneche**
Date:	**2/17/2021**
City Project Number:	**RFP# 12443-916**
City Project Description:	**Design-Build Pump Station B-4 Force Main P12567**

Please check the item(s) which properly identify the status of your firm:

- [x] Our firm is not a MBE or WBE.
- [ ] Our firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically disadvantaged individuals.
  - [ ] American Indian [ ] Asian [ ] Black [ ] Hispanic
- [ ] Our firm is a WBE, as at least 51 percent is owned and operated by one or more women.
  - [ ] American Indian [ ] Asian [ ] Black [ ] Hispanic

MBE/WBE CONTRACTOR INFORMATION

The City, in a continuing effort, is encouraging the increased participation of minority and women-owned businesses in Public Works Department related contracts. Along those lines, we are requiring that each firm provide documentation detailing their own programs for utilizing minority and women-owned businesses.

Submit this information as a part of this bid package and refer to the checklist, to ensure that all areas of concern are covered. The low responsive bidder may be contacted to schedule a meeting to discuss these objectives. It is our intention to proceed as quickly as possible with this project, so your cooperation in this matter is appreciated.

CONTRACTOR CHECKLIST

☑ List Previous City of Fort Lauderdale Contracts

None as Amici Engineering Contractors, however, key personnel have experience with Fort Lauderdale. Nelson Liberti with emergency 42" Force Main Repair in 2019.

☑ Number of Employees in your firm **27**
--Percent (**0**%) Women
--Percent (**80**%) Minorities
--Job Classifications of Women and Minorities

Field Personnel and Owner

☑ Use of minority and/or women subcontractors on past projects.

Centerline Direc onal Drilling Services is also Minority Owned and all crew members are hispanic

☑ Nature of the work subcontracted to minority and/or women-owned firms.

Direc onal Drilling, Design, Paving, Concrete Restora on

☑ How are subcontractors notified of available opportunities with your firm?

By email notiofication

☑ Anticipated amount to be subcontracted on this project.

40%

☑ Anticipated amount to be subcontracted to minority and/or women-owned businesses on this project.

$1,100,000

E-VERIFY AFFIRMATION STATEMENT

RFP/Bid /Contract No: **RFP# 12443-916**

Project Description: **RE-BID Design Build Pump Station B-4 Redundant Force Main**

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

(a) all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,

(b) all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Name: **Amici Engineering Contractors, LLC**

Authorized Company Person's Signature: **Juan Barreneche**

Authorized Company Person's Title: **Managing Member**

Date: **2/17/2021**

9/15/2020