SIXTH AMENDMENT
TO
PERMIT AND LICENSE AGREEMENT

(REVOCABLE LICENSE)

THIS IS A SIXTH AMENDMENT to the Revocable License and is entered into this 21st day of September, 2021 by and between:

> **CITY OF FORT LAUDERDALE**, a Florida municipal corporation, 100 North Andrews Avenue, Fort Lauderdale, Florida 33301, hereinafter, "CITY";
>
> and
>
> **B-Cycle, LLC,** a Delaware Limited Liability Company, authorized to do business in the State of Florida, FEI/EIN # 26-3412945, whose principal address is 801 West Madison Street, Waterloo, WI 53594, hereinafter "LICENSEE".

WHEREAS, the CITY granted LICENSEE a Revocable License on July 6, 2011, for the implementation, installation, operation, maintenance, repair and replacement, from time to time of the Bicycle-Sharing Stations on City owned property described in the Revocable License; and

WHEREAS, on August 21, 2012, the CITY and LICENSEE entered into a First Addendum to the Revocable License which provided for the expansion of the B-Cycle Sharing Stations; and

WHEREAS, on January 7, 2014, the CITY and LICENSEE entered into a Second Amendment to the Revocable License which provided for the expansion of the B-Cycle Sharing Stations; and

WHEREAS, on April 15, 2014, the CITY and LICENSEE entered into a Third Amendment to the Revocable License to allow for the relocation of the D.C. Alexander Park bike station; and

WHEREAS, on February 3, 2015, the CITY and LICENSEE entered into the Fourth Amendment to the Revocable License to authorize the expansion of the B-Cycle Sharing Stations; and

WHEREAS, on June 21, 2016, the CITY and LICENSEE entered into a Fifth Amendment to the Revocable License to authorize the installation of an additional Sharing Station in South Beach Lot #2, approximately fifty (50) feet East from the North point of the B-Ocean Property located on the North side of the parking lot wall; and

WHEREAS, B-Cycle wishes to install a B-Cycle Sharing Station at the Northwest corner of East Las Olas Boulevard and S.E. 9th Avenue, in order to replace the existing B-Cycle Sharing Station located at East Las Olas Boulevard and S.E. 10th Terrace which was previously authorized under the Revocable License with the CITY; and

WHEREAS, LICENSEE acknowledges that the B-Cycle Sharing Station is being installed near utilities located at East Las Olas Boulevard and S.E. 9th Avenue and the CITY may need to periodically maintain or repair the utilities in this area; and

WHEREAS, the CITY and LICENSEE have agreed to add a provision to the Revocable License that will protect the CITY from liability for any damage to property owned by LICENSEE in light of the B-Cycle Sharing Station's close proximately to the utilities in this location; and

WHEREAS, the City Commission finds that amending the Revocable License to provide for the installation of a B-Cycle Sharing station at East Las Olas Boulevard and S.E. 9th Avenue that will replace another Sharing Station located at East Las Olas Boulevard and S.E. 10th Terrace serves a valid municipal purpose; and

WHEREAS, the City Commission by Motion adopted on September 21, 2021, has authorized the execution of this Sixth Amendment to the Revocable License by the proper City officials.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained in this Sixth Amendment to the Revocable License, and other good and valuable conditions, the receipt and adequacy of which are hereby acknowledged, the parties agree to amend the Revocable License as follows:

1. Recitals. The foregoing recitals are true and correct and are hereby ratified, confirmed and incorporated herein.

2. Section 2, entitled *Defined Terms* is hereby amended to read as follows:

> **2. Defined Terms**. The following terms, as used and referred to herein, shall have the meanings set forth below, unless the context indicates otherwise:
>
> **. . .**

License Area(s) means those areas shown in the attached Composite Exhibits A-1 through A-11 as set forth in that Permit and License Agreement (Revocable License) dated July 2, 2011, and Exhibits A-12 and A-13 as set forth in the First Addendum to Revocable License, dated August 21, 2012 and Exhibits A-14, A-15 & A-16, as set forth in this Second Amendment to Permit and License Agreement (Revocable License) dated January 7, 2014, all where Project Improvements will be constructed, installed, operated, repaired, replaced, from time to time and maintained. The areas shown within the License Areas identified as in the Third Amendment as Composite Exhibits A-1 through A-17 are within City owned real property or upon public rights-of-way within the CITY's jurisdiction under the Florida Transportation Code. The area shown within License Area A-20 in the Fourth Amendment to the Revocable License (East Sunrise Boulevard, South side, approximately 750 feet East of Bayview Drive) is within the roadway jurisdiction of the State of Florida Department of Transportation and therefore does not require the issuance of Engineering Permits by the City of Fort Lauderdale. Composite Exhibit A-20 is being presented herein for information purposes only. The areas shown within the License Area identified in the Fifth Amendment as Composite Exhibit A-21 are within CITY owned real property or upon public rights-of-way within the CITY's jurisdiction under the Florida Transportation Code. <u>The area shown within the License Area identified in this Sixth Amendment as Composite Exhibit A-18 is within CITY owned real property or upon public rights-of-way within the CITY's jurisdiction under the Florida Transportation Code.</u>

3. Section 4, entitled License Areas; General Locations, is amended to relocate License Area <u>A-</u>18 B-Cycle Station as more particularly set forth below and as attached hereto:

4. Project Site Plan Approval Process. The License Areas are generally located as set forth in the following Composite Exhibits:

A-1 Seventeenth Street Causeway - West Underdeck
A-2 Galt Ocean Mile - Beach Community Center
A-3 S.E. Fifth Street adjacent to D.C Alexander Park
A-4 Earl Lifshey Ocean Park
A-5 Esplanade Park (Alternate "A")
A-6 George English Park
A-7 Art Serve Library at Holiday Park
A-8 Las Olas Marina
A-9 CRA Property abutting Las Olas Circle & East Las Olas Blvd. (Option #1)
A-10 Sebastian Street Parking Lot
A-11 Willingham Park

A-12 Expanded Sebastian Street Parking Lot
A-13 Expanded Willingham Park
A-14 Fort Lauderdale Beach South (640 Seabreeze Boulevard)
A-15 Oceanside Parking Lot
A-16 Northwest Quadrant of the intersection of Bayshore Drive and State Road A-1-A
A-17 D.C. Alexander Park on S.E. 5th Street
A-18 East Las Olas Boulevard & S.E. ~~10th Terrace~~9th Avenue
A-19 Fort Lauderdale Beach Park (f/k/a South Beach Municipal Parking Lot)
A-20 E. Sunrise Boulevard, South side approximately 750 feet South of Bayview Drive.
A-21 South Beach Lot #2 (f/k/a South Beach Municipal Parking Lot) approximately 50 feet East from the North point of the B-Ocean (f/k/a Yankee Clipper) property, located on the North side of the parking lot wall.

N.B.#1 The location of A-20 is within the State of Florida, Department of Transportation ("FDOT") roadway jurisdiction. Accordingly, A-20 is not subject to City of Fort Lauderdale Engineering Permits. Permitting for A-20 is the responsibility of FDOT."

N.B.#2 As a condition of A-21, South Beach Lot #2, all bikes shall be removed from the station during special outdoor events in the area. Special outdoor events in the area refer to every event approved by the City Commission in the vicinity of South Beach Lot #2 and Fort Lauderdale Beach Park Area. Special outdoor events subject to this condition shall also include events approved by the Director of Parks and Recreation or his/her designee. Such events include, but are not limited to:

- Outdoor concerts
- Athletic events
- January – Swatch Volleyball
- February – Pride Fort Lauderdale
- March – Fort Lauderdale Aids Walk & Music Festival
- April – Tortuga Festival; Easter Sunrise Service
- May – EVP Volleyball; Lauderdale Air Show
- July – July 4th on the beach; Dig the Beach Volleyball
- November – Fort LauderdaleBaot Show
- December – Rip Tide Music Festival

4. It is acknowledged that B-Cycle is relocating the existing B-Cycle Sharing Station located East Las Olas Boulevard and S.E. 10th Terrace strictly on its own volition

to a new location at the northwest corner of East Las Olas Boulevard and S.E. 9th Avenue, which is in close proximity to existing City-owned utilities. B-Cycle hereby acknowledges that the CITY will need to periodically maintain, repair or replace utilities in this area and that B-Cycle's property may be damaged or destroyed by excavation, boring operations, forces generated by equipment and vehicles, other construction activities, and any other acts by the CITY or its contractors associated with the maintenance, repair, or replacement of City-owned utilities. Accordingly, B-Cycle assumes all associated risks and agrees that the CITY and its contractors shall not be liable for any loss or damages to any property owned by B-Cycle located at East Las Olas Boulevard and S.E. 9th Avenue. The CITY and its contractors shall not be liable for any loss or interruption of B-Cycle service or any claim(s) for damages for any property owned by B-Cycle located at East Las Olas Boulevard and S.E. 9th Avenue.

5. The Effective Date of this Sixth Amendment to the Revocable License shall be the date that the Agreement is fully executed by all of the parties.

6. This Sixth Amendment to the Revocable License shall be recorded by LICENSEE at its sole cost and expense in the Public Records of Broward County, Florida and a copy thereof shall be filed by LICENSEE with the City Clerk's Office and theContract Administrator.

7. In the event and to the extent of conflict between the terms and conditions of this Sixth Amendment and the terms and conditions of the underlying Revocable License, as previously amended by the previous Amendments and Addendum, then, to the extent of such conflict the terms and conditions of this Sixth Amendment shall supersede and prevail over the terms and conditions of the underlying Revocable License, as previously amended.

8. This Sixth Amendment to the Revocable License may be fully executed in multiple copies by the parties each of which, bearing original signatures, shall have the full force and effect of an original document.

9. The terms and conditions of the Revocable License shall remain in full force and effect, except as specifically amended by the First Addendum, Second Amendment, Third Amendment, Fourth Amendment, Fifth Amendment and this Sixth Amendment.

[THE BALANCE OF THIS PAGE REMAINS INTENTIONALLY BLANK.]

IN WITNESS OF THE FOREGOING, the parties have set their hands and seals the day and year first above written.

WITNESSES:

_____

_____
[Witness type or print name]

_____

_____
[Witness type or print name]

(CORPORATE SEAL)

CITY OF FORT LAUDERDALE

By: _____
Dean J. Trantalis, Mayor

By: _____
Christopher J. Lagerbloom, ICMA-CM
City Manager

ATTEST:

_____
Jeffrey A. Modarelli, City Clerk

Approved as to form:

_____
Shari C. Wallen, Esq.
Assistant City Attorney

STATE OF FLORIDA:
COUNTY OF BROWARD:

The foregoing instrument was acknowledged before me, by means of ☐ physical presence or ☐ online notarization this _____ day of _____, 2021 by **Dean J. Trantalis,** Mayor of the City of Fort Lauderdale, a municipal corporation of Florida. He is personally known to me and did not take an oath.

(SEAL)

_____
Notary Public, State of Florida
(Signature of Notary taking Acknowledgment)

_____
Name of Notary Typed, Printed or Stamped

My Commission Expires: _____
Commission Number:_____

STATE OF FLORIDA:
COUNTY OF BROWARD:

The foregoing instrument was acknowledged before me, by means of ☐ physical presence or ☐ online notarization this ____ day of _____, 2021 by **Christopher J. Lagerbloom**, City Manager of the City of Fort Lauderdale, a municipal corporation of Florida. He is personally known to me and did not take an oath.

(SEAL)

_____
Notary Public, State of Florida
(Signature of Notary taking Acknowledgment)

_____
Name of Notary Typed, Printed or Stamped

My Commission Expires: _____
Commission Number: _____

LICENSEE:

WITNESSES:

_____

_____
[Witness print or type name]

_____

_____
[Witness print or type name]

B-Cycle, LLC, a Delaware Limited Liability Company authorized to do business in the State of Florida

By: _____
Brian Conger, Director of Operations

STATE OF _____:
COUNTY OF _____:

The foregoing instrument was acknowledged before me, by means of ☐ physical presence or ☐ online notarization this ___ day of _____, 2021, by BRIAN CONGER, as Director of Operations of B-Cycle,LLC, a Delaware Limited Liability Company. They are personally known to me or have produced _____ as identification and did not take an oath.

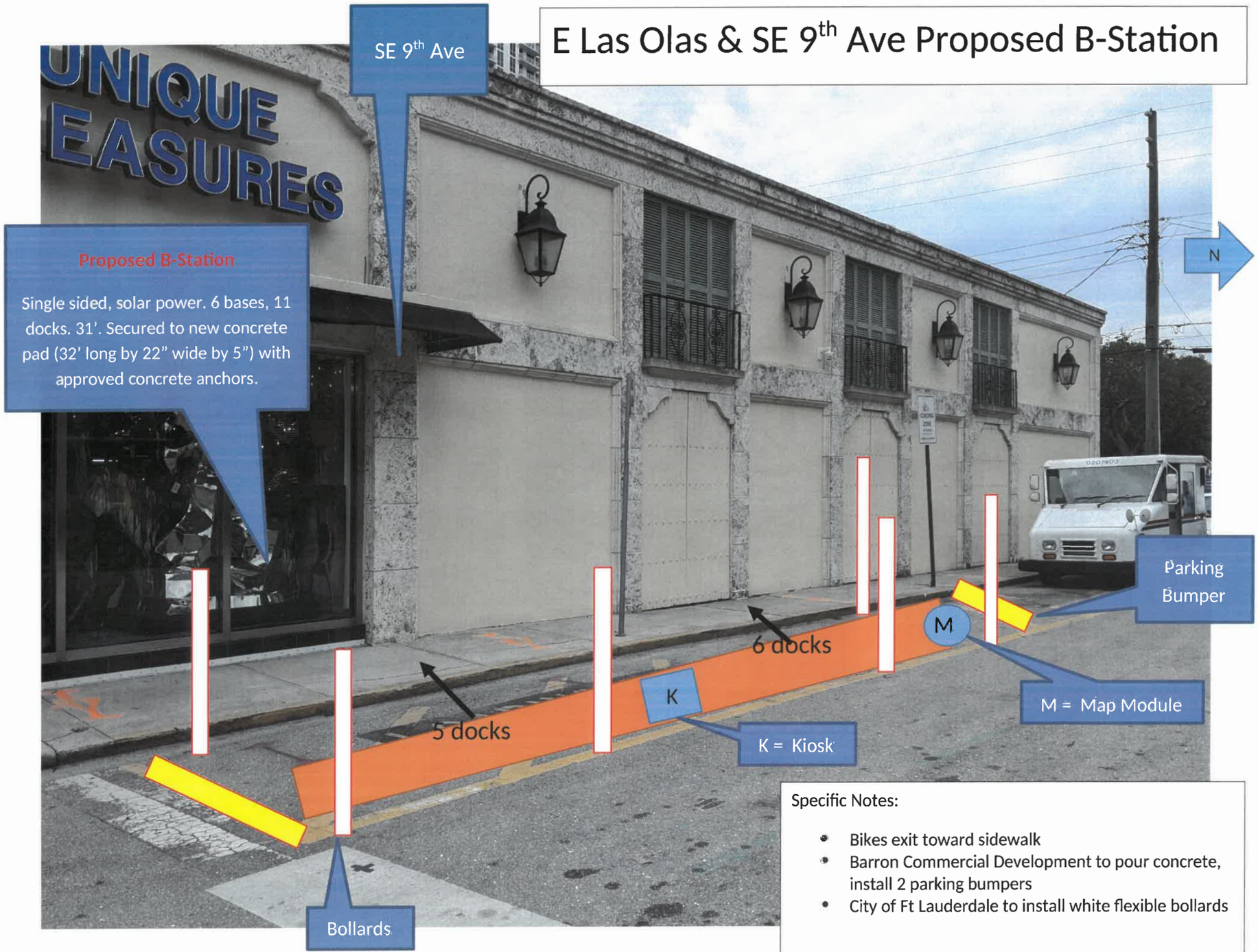
(SEAL)

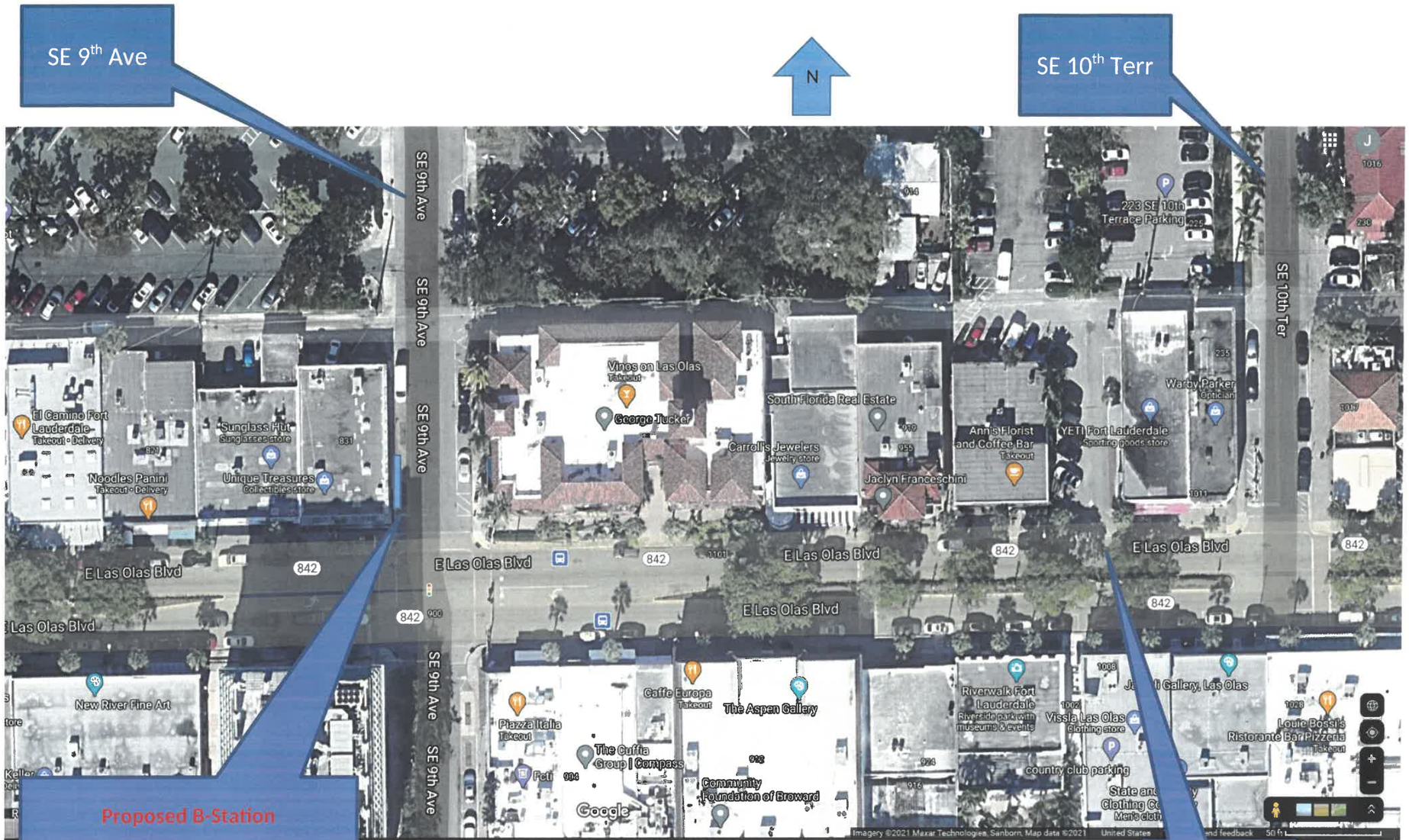
_____
Notary Public, State of _____
(Signature of Notary taking Acknowledgment)

_____
Name of Notary Typed, Printed or Stamped

My Commission Expires: _____
Commission Number: _____

COMPOSITE EXHIBIT "A-18"

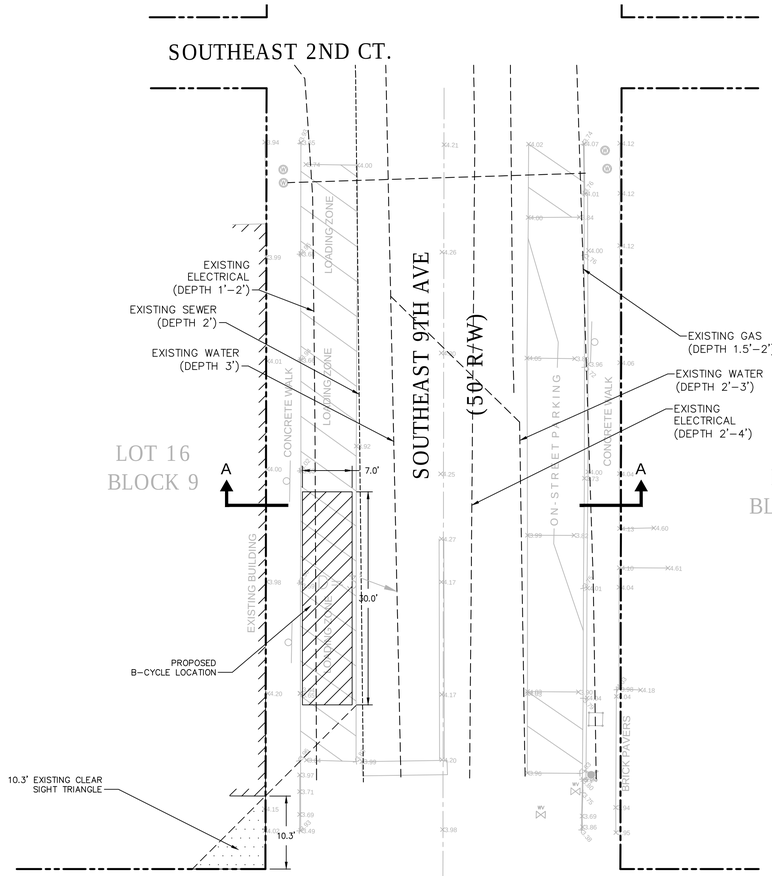


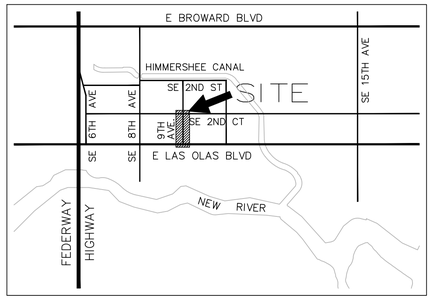


Proposed B-Station

Single sided, solar power. 6 bases, 11 docks. 31'. Secured to new concrete pad (32' long by 22" wide by 5") with approved concrete anchors.

E Las Olas Blvd



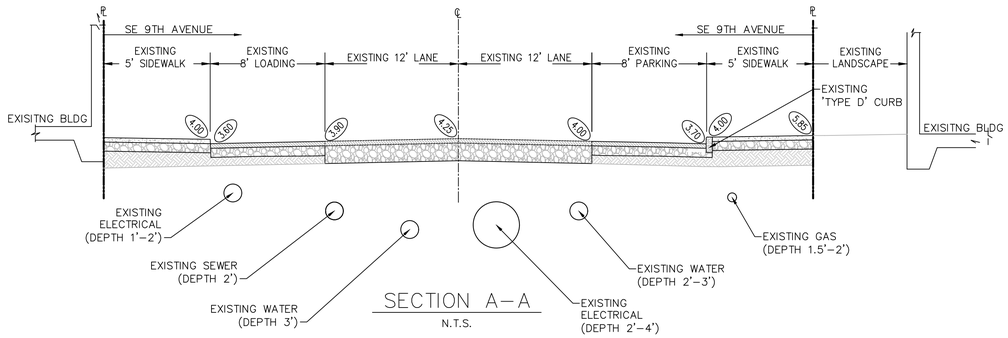


LOCATION MAP
NTS

NORTH

LEGEND:

- PROPOSED ELEVATION (NAVD)
- EXISTING ELEVATION (NAVD)
- PROPOSED CATCH BASIN
- PROPOSED PLUG
- TEE
- WATER METER
- DOUBLE DETECTOR CHECK W/ WAFER CHECK VALVE ON DOWNSTREAM SIDE
- REDUCED PRESSURE BACKFLOW PREVENTOR
- DIRECTIONAL FLOW ARROW AND GRAVITY SEWER
- PROPOSED MANHOLE
- WATER MAIN
- SANITARY FORCE MAIN
- VALVE
- FIRE HYDRANT
- SIAMESE CONNECTION
- CLEANOUT
- EDGE OF PROPOSED PAVEMENT (ASPHALT)
- DIRECTION OF SURFACE DRAINAGE
- SAMPLE POINT
- EXIST. WATER MAIN
- EXIST. UTILITY LINE TO BE ABANDONED IN PLACE



SECTION A–A
N.T.S.

DENNIS R. SHULTZ LICENSE No. 56159 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY DENNIS R. SHULTZ, P.E. ON Jul 19, 2021

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

CALL 48 HOURS BEFORE YOU DIG IN FLORIDA

IT'S THE LAW!
811
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

VERTICAL DATUM CONVERSION

GRADING SHOWN UTILIZES N.A.V.D. 88

N.G.V.D. 29
1.5'
N.A.V.D. 88

N.A.V.D. 88 = N.G.V.D. 29 – 1.5'
N.G.V.D. 29 = N.A.V.D. 88 + 1.5'

FLYNN ENGINEERING
241 COMMERCIAL BLVD, LAUDERDALE-BY-THE-SEA, FL 33308
PHONE (954) 522-1004 | WWW.FLYNNENGINEERING.COM
EB# 6578

Sheet Title: SITE PLAN

Job Title: B-CYCLE RELOCATION EXHIBIT
SE 9TH AVENUE & E LAS OLAS BLVD.
FORT LAUDERDALE, FLORIDA 33301

NORTH

Revisions

1	06/01/21	REV PER CITY ENGR
2	07/09/21	ADD GPR INFO
3	07/14/21	REV PER CITY ENGR
4	07/19/21	REV PER CITY ENGR

Phase:
PERMIT
DOCUMENTS

SEAL

Scale: 1"=10'	Date 05/11/21
Job No. 17–1364.01	Plot Date 07/19/21
Drawn by BMK	Sheet No. X1
Proj. Mgr. BMK	
Appr. by DRS	1 of 1

m.D.O.K.

"EXHIBIT A"
SKETCH & DESCRIPTION
REVOCABLE LICENSE AREA

LEGAL DESCRIPTION:

A 7.00 FOOT WIDE STRIP OF LAND LYING WITHIN A PORTION OF SOUTHEAST 9TH AVENUE (AVENUE 'B' PER PLAT), COLEE HAMMOCK, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 1, PAGE 17 OF THE PUBLIC RECORDS OF BROWARD COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF LOT 16, BLOCK 9 OF THE AFORESAID PLAT; THENCE NORTH 00°05'00" EAST ALONG THE EAST LINE OF SAID LOT 16 AND THE WEST RIGHT-OF-WAY LINE OF SOUTHEAST 9TH AVENUE, A DISTANCE OF 23.14 FEET; THENCE SOUTH 89°55'00" EAST, A DISTANCE OF 5.18 FEET TO THE POINT OF BEGINNING; THENCE NORTH 00°00'00" EAST , A DISTANCE OF 30.00 FEET; THENCE SOUTH 90°00'00" EAST, A DISTANCE OF 7.00 FEET; THENCE SOUTH 00°00'00" WEST, A DISTANCE OF 30.00 FEET; THENCE NORTH 90°00'00" WEST, A DISTANCE OF 7.00 FEET TO THE POINT OF BEGINNING.

SAID LANDS SITUATE LYING AND BEING IN THE CITY OF FORT LAUDERDALE, BROWARD COUNTY, FLORIDA, CONTAINING 210 SQUARE FEET MORE OR LESS.

NOTES:

1. THIS IS NOT A MAP OF BOUNDARY SURVEY, BUT IS A GRAPHIC DEPICTION OF THE DESCRIPTION SHOWN HEREON.
2. NO MONUMENTATION WAS SET DURING THE PREPARATION OF THIS INSTRUMENT.
3. THE UNDERSIGNED & DJS SURVEYORS, INC., MAKE NO REPRESENTATIONS OR GUARANTEES AS TO THE INFORMATION REFLECTED HEREON PERTAINING TO EASEMENTS, RIGHTS-OF-WAY, SETBACK LINES, AGREEMENTS AND OTHER MATTERS, AND FURTHER, THIS INSTRUMENT IS NOT INTENDED TO REFLECT OR SET FORTH SUCH MATTERS. SUCH INFORMATION SHOULD BE OBTAINED AND CONFIRMED BY OTHERS THROUGH APPROPRIATE TITLE VERIFICATION. LANDS SHOWN HEREON WERE NOT ABSTRACTED FOR RIGHTS-OF-WAY AND/OR EASEMENTS RECORD.
4. BEARINGS SHOWN HEREON ARE BASED ON THE EAST LINE OF LOT 16, BLOCK 9 WITH AN ASSUMED BEARING OF N 00°05'00" E.
5. THIS SKETCH AND DESCRIPTION CONSISTS OF TWO (2) SHEETS AND IS NOT COMPLETE WITHOUT ALL SHEETS.
6. THE SKETCH AND DESCRIPTION IS NOT VALID UNLESS IT BEARS THE SIGNATURE AND SEAL OF THE CERTIFYING SURVEYOR.

REVISIONS	DATE	BY	CHKD	F.B./PG.

DJS SURVEYORS, INC.
PROFESSIONAL SURVEYORS AND MAPPERS
20283 STATE ROAD 7, SUITE 200
BOCA RATON, FL 33498
PH. 561.883.0470, FX. 561.883.0480
CERTIFICATE OF AUTHORIZATION NO. LB 7870
www.djssurveyors.com

NOT VALID WITHOUT THE SIGNATURE AND STAMPED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

DONALD J. SULLIVAN LIS. SURVEYOR NO. 6422 STATE OF FLORIDA

DONALD J. SULLIVAN STATE OF FLORIDA
PROFESSIONAL SURVEYOR & MAPPER
FLORIDA REGISTRATION NO. 6422

DATED: 09/07/2021

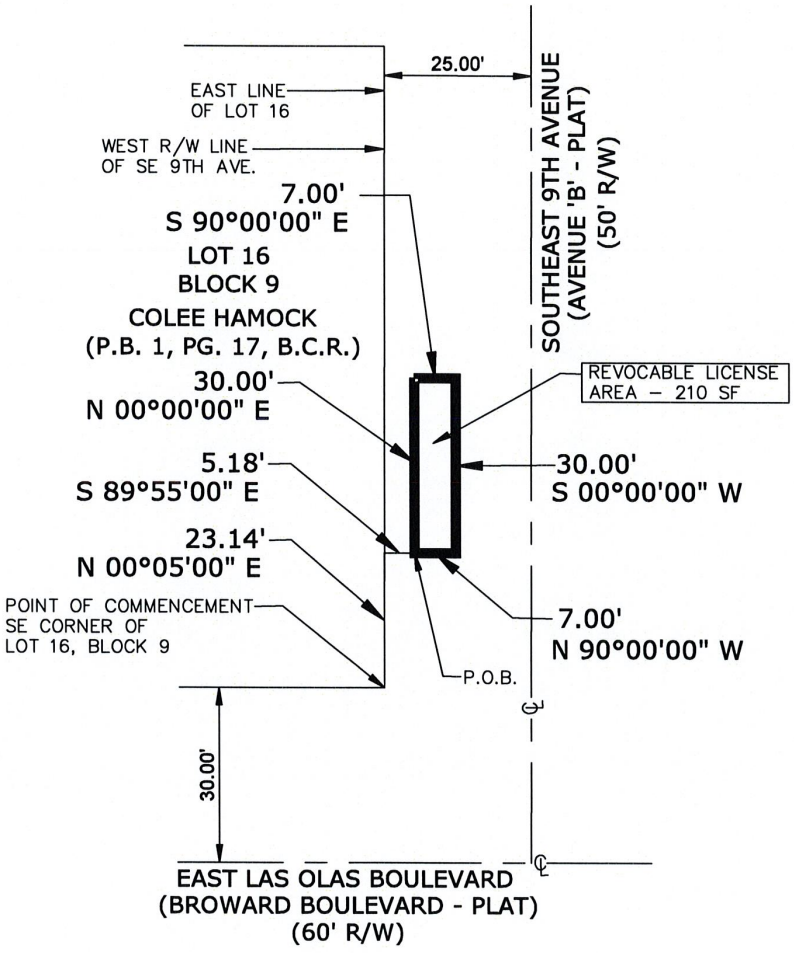
JOB No: 21-150-10

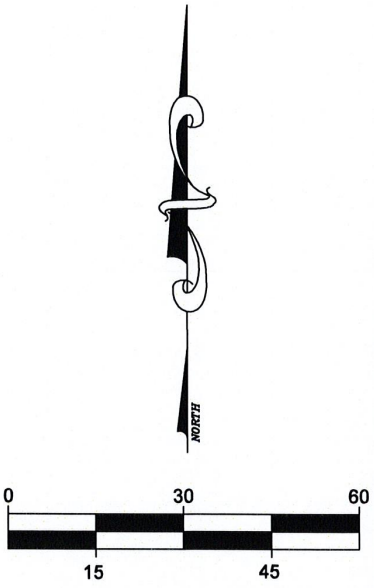
FB/PG: 00/00
DRAWN BY: RM
CKD. BY: NM
SCALE: N/A

SHEET No: 1/2

M.D.O.K.

"EXHIBIT A"
SKETCH & DESCRIPTION
REVOCABLE LICENSE AREA





SCALE: 1"=30'

LEGEND:

B. C. R.	BROWARD COUNTY RECORDS
P. B.	PLAT BOOK
PG.	PAGE
℄	CENTERLINE
R/W	RIGHT-OF-WAY
P. O. B.	POINT OF BEGINNING

REVISIONS	DATE	BY	CHKD	F.B./PG.

DJS SURVEYORS, INC.
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PH. 561.883.0470, FX. 561.883.0480
CERTIFICATE OF AUTHORIZATION NO. LB 7870
www.djssurveyors.com

JOB No: 21-150-10

FB/PG: 00/00

DRAWN BY: RM

CKD. BY: NM

SCALE: 1" = 30'

SHEET No: 2/2

B cycle™

B CYCLE STATION STRUCTURAL DRAWINGS FOR MULTIPLE LOCATIONS THROUGHOUT MIAMI-DADE AND BROWARD COUNTIES.

PREPARED BY: bcc engineering
7300 North Kendall Drive, Suite 400
Miami, Florida 33156
Tel : 305.670.2350 Fax : 305.670.2351
Certificate of Authorization No. 7184
www.bcceng.com

INDEX OF DRAWINGS:

DATE: JULY 14, 2011
REVISION No. 1: SEPTEMBER 26, 2011
REVISION No. 2: NOVEMBER 12, 2012

GENERAL NOTES:

1. THE GOVERNING CODE FOR THIS PROJECT IS THE FLORIDA BUILDING CODE, 2010 EDITION. THIS CODE PRESCRIBES WHICH EDITION OF EACH REFERENCED STANDARD APPLIES TO THIS PROJECT.

2. TO THE BEST OF OUR KNOWLEDGE, THE STRUCTURAL DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE GOVERNING BUILDING CODE.

3. CONSTRUCTION IS TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING BUILDING CODE AND ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL CODES, STANDARDS, REGULATIONS AND LAWS.

4. THE STRUCTURAL DOCUMENTS ARE TO BE USED IN CONJUNCTION WITH THE PRODUCT DOCUMENTS.

5. CONTRACTORS WHO DISCOVER DISCREPANCIES, OMISSIONS OR VARIATIONS IN THE CONTRACT DOCUMENTS DURING BIDDING SHALL IMMEDIATELY NOTIFY THE ARCHITECT. THE ARCHITECT WILL RESOLVE THE CONDITION AND ISSUE A WRITTEN CLARIFICATION.

6. THE GENERAL CONTRACTOR SHALL COORDINATE ALL CONTRACT DOCUMENTS WITH FIELD CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.

7. THE CONTRACTOR SHALL PROTECT ADJACENT PROPERTY, HIS OWN WORK AND THE PUBLIC FROM HARM. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND JOBSITE SAFETY INCLUDING ALL OSHA REQUIREMENTS.

8. DESIGN WIND LOADS

GOVERNING CODE	ASCE 7-10
BASIC WIND SPEED	V = 165 MPH
RISK CATEGORY	I
DIRECTIONALITY FACTOR	Kd = 0.85
EXPOSURE	D

9. MAXIMUM ALLOWABLE SOIL BEARING PRESSURES ARE PRESUMED TO BE 2000 PSF.

EXPANSION ANCHORS:

1. USE GALVANIZED WEDGE-TYPE EXPANSION ANCHORS SUCH AS THE HILTI KWIK BOLT III, ITW RAMSET RED HEAD TRUBOLT WEDGE, SIMPSON STRONG-TIE WEDGE-ALL OR EQUIVALENT. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR USE AND INSTALLATION.

2. PROVIDE ANCHOR EMBEDMENT, SPACING AND EDGE DISTANCE AS SHOWN ON THE DRAWINGS.

bcc engineering
Certificate of Authorization No. 7164
7300 North Kendall Drive, Suite 400
Miami, Florida 33156
Tel: 305.670.2350 Fax: 305.670.2351
www.bcceng.com

To the best of my knowledge these plans and specifications comply with the applicable minimum building codes.
STEVEN GOLDSTEIN, P.E.
Florida License No. 44423

Submittals / Revisions

2	11-16-12	FBC 2010

Drawn: CA
Checked: FD
Reviewed: SG

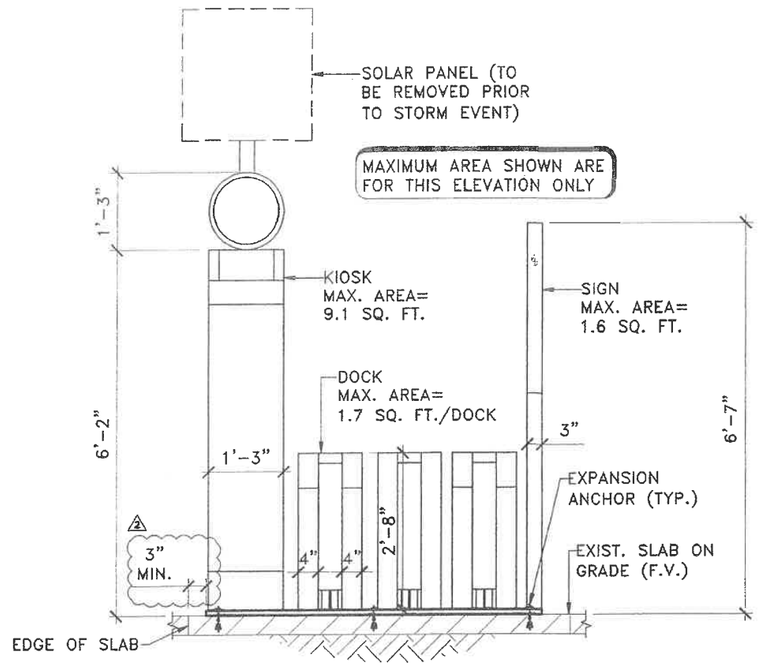
BCC Project No.: 100571.00

Date: 07-14-11

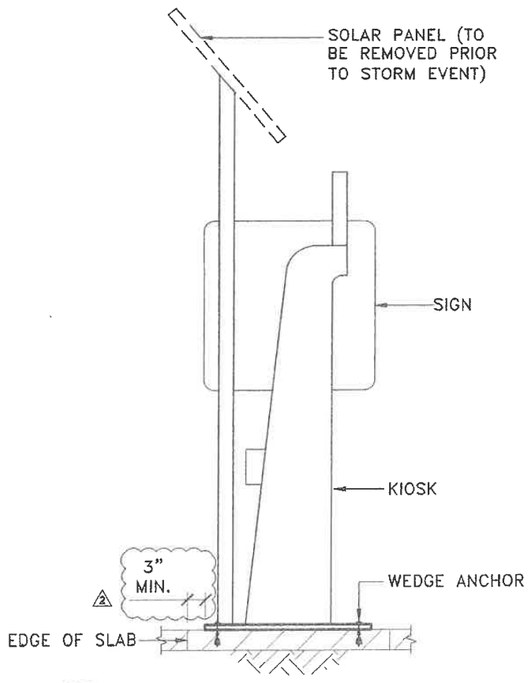
B cycle

GENERAL NOTES

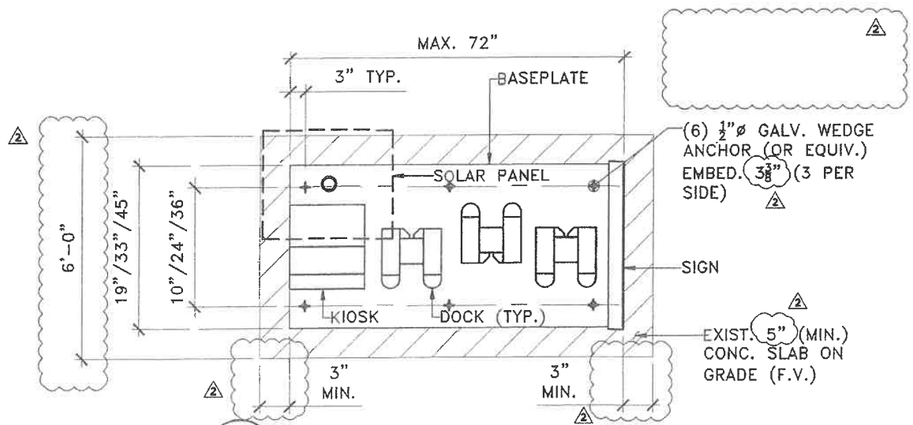
S-1.0



B CYCLE STATION FRONT ELEVATION
3 DOCK CONFIGURATION - 19"/33"/45" WIDE BASE
SCALE: 1/2" = 1'-0"



B CYCLE STATION SIDE ELEVATION
3 DOCK CONFIGURATION - 19"/33"/45" WIDE BASE
SCALE: 1/2" = 1'-0"



B CYCLE STATION PLAN
3 DOCK CONFIGURATION - 19"/33"/45" WIDE BASE
SCALE: 1/2" = 1'-0"

bcc engineering
Certificate of Authorization No. 7184
7300 North Kendall Drive, Suite 400
Miami, Florida 33156
Tel: 305.670.2350 Fax: 305.670.2351
www.bcceng.com

STEVEN MARK GOLDSTEIN LICENSE NO. 44423 STATE OF FLORIDA PROFESSIONAL ENGINEER

To the best of my knowledge these plans and specifications comply with the applicable minimum building codes.

2 STEVEN GOLDSTEIN, P.E.
Florida License No. 44423

Submittals / Revisions

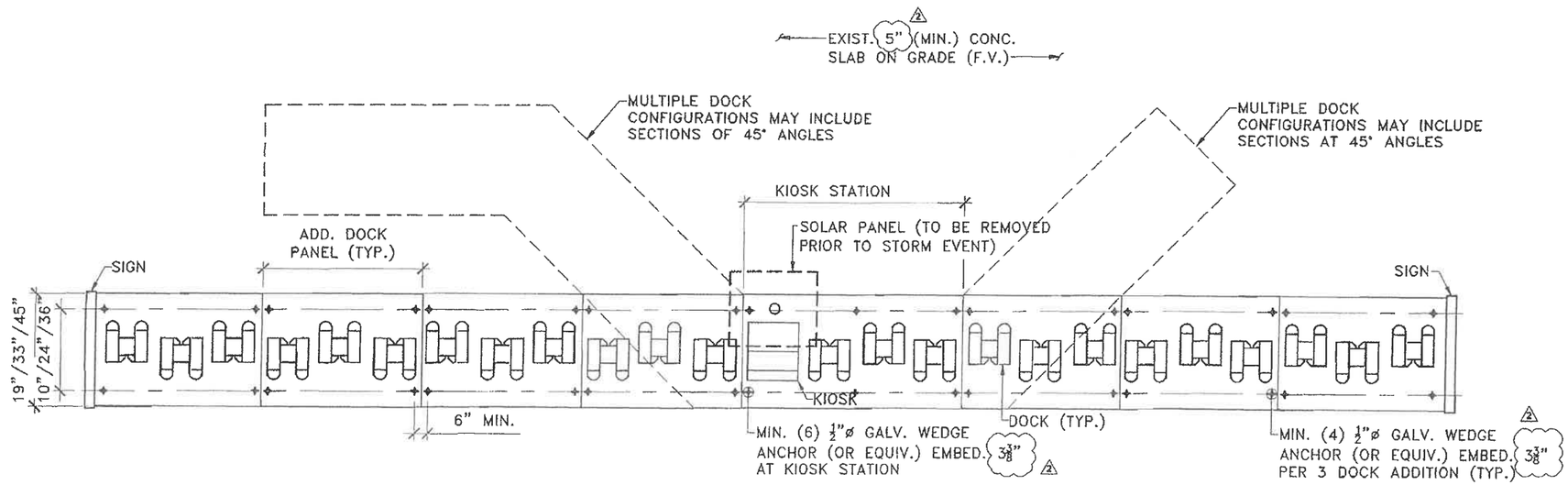
1	09-26-11	OWNER REV.
2	11-16-12	FBC 2010

Drawn: CA
Checked: FD
Reviewed: SG 2
BCC Project No.: 100571.00
Date: 07-14-11

B cycle

STATION PLAN AND ELEVATION (3 DOCK)

S-2.0



B CYCLE STATION PLAN
UP TO 21 DOCK CONFIGURATION - 19"/33"/45° WIDE BASE
SCALE: 3/8" = 1'-0"

bcc engineering
Certificate of Authorization No. 7184
7300 North Kendall Drive, Suite 400
Miami, Florida 33156
Tel: 305.670.2350 Fax: 305.670.2351
www.bcceng.com

STEVEN MARK GOLDSTEIN LICENSE No. 44423 STATE OF FLORIDA PROFESSIONAL ENGINEER

To the best of my knowledge these plans and specifications comply with the applicable minimum building codes.

2 STEVEN GOLDSTEIN, P.E.
Florida License No. 44423

Submittals / Revisions

1	09-26-11	OWNER REV.
2	11-16-12	FBC 2010

Drawn: CA
Checked: FD
Reviewed: SG 2

BCC Project No.: 100571.00

Date: 07-14-11

B cycle™

STATION PLAN (MULTIPLE DOCK LAYOUT)

S-2.1

REVISED STRUCTURAL CALCULATIONS

FOR

Bicycle

Stations throughout
Miami-Dade and Broward County

Prepared by:

engineering

BCC Engineering, Inc.
Certificate of Authorization No. 7184
November 16, 2012- Revision 2

Calculations have been prepared by the undersigned engineer assuming responsibility for manual and computer generated information.

STEVEN MARK GOLDSTEIN LICENSE No. 44423 STATE OF FLORIDA PROFESSIONAL ENGINEER

7-12-13

Steven Goldstein, PE
Florida License No. 44423

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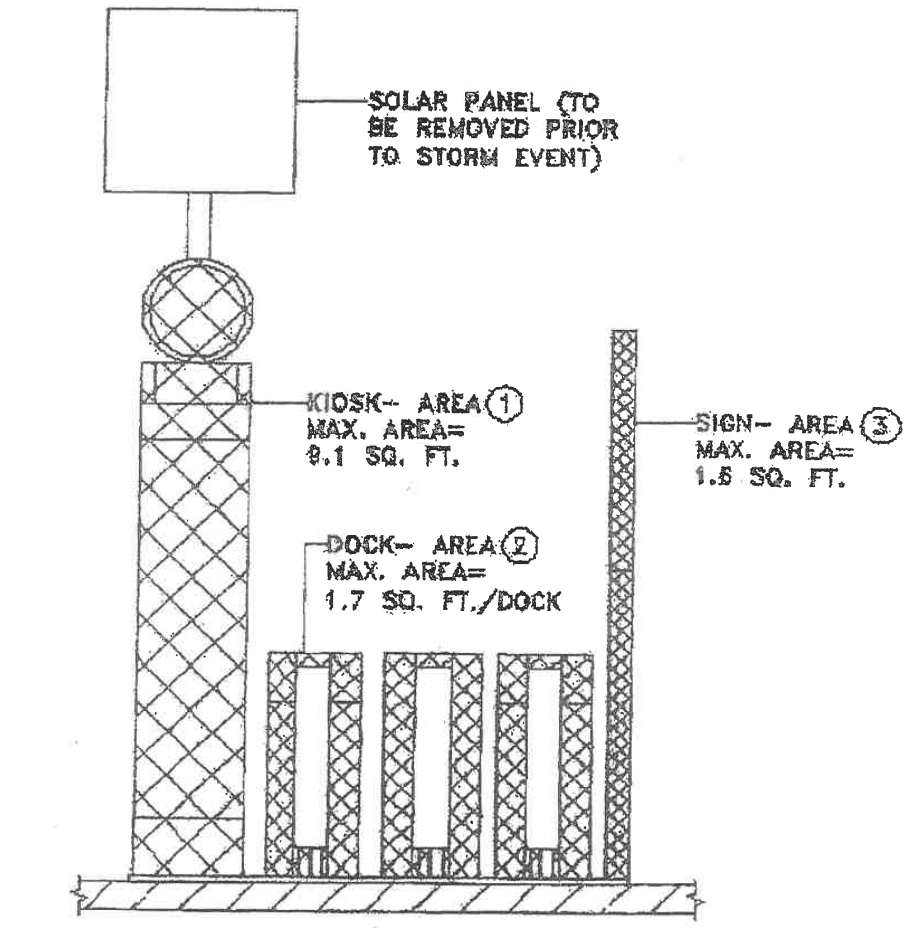
JOB B CYCLE WIND ANALYSIS
SHEET No. ____ OF ____ JOB No. 100571.00
CALCULATED BY JJF DRAWN BY ____
SCALE ____ DATE 11/10



B CYCLE STATION FRONT ELEVATION
3 DOCK CONFIGURATION - 33°/45° WIDE BASE

B Cycle stations have multiple configurations from 3 to 21 docks in linear or variations of 45 deg. angle layouts. Of all configurations, the one shown above is the controlling case (single 3 dock station).

P:\100571.00-B Cycle\Calcs\Excel\B CYCLE WIND AREAS

JOB# 0100571.00 SHEET No ____ OF 2
PROJECT NAME B Cycle
SUBJECT Foundation slab
CALCULATED BY SG DATE 11/12/12
CHECKED BY ____ DATE ____

Governing Code: FBC 2010
Governing Wind Load Standard: 7-10

Risk Category I

Location: Miami-Dade or Broward County
Design for worst case - Miami-Dade County
V = 165 MPH

Exposure = C or D depending on location
Design for worst case - Exposure D

$K_{zt} = 1.0$

Height = 7'-5" < 15' $\Rightarrow K_z = 1.03$

Load case A: Wind in short direction (wind acts on kiosk, 3 docks & narrow face of sign)
Load case B: Wind in long direction (wind acts on kiosk, 3 docks & broad face of sign)

Wind load for load case B slightly higher than for load case A, but by inspection, foundation loading much more critical for load case A due to much narrower base resisting overturning moment

Consider kiosk, docks and narrow face of sign as "Chimneys, Tanks, Similar Structures" (square) $\rightarrow K_d = 0.90$

$q_z = (.00256)(1.03)(1.0)(0.90)(165)^2 = 64.6$ psf

$G = 0.85$

$h/D_{kiosk} = 7.42/1.25 = 5.9 \quad C_f = 1.38$
$h/D_{sign} = 6.58/1.25 = 26 \quad C_f = 2.0$
$h/D_{dock} = 2.67/0.33 = 8 \quad C_f = 1.43$

JOB# 0100571.00 SHEET No ____ OF 3
PROJECT NAME B Cycle
SUBJECT Foundation Slab
CALCULATED BY SG DATE 11/12/12
CHECKED BY ____ DATE ____

Wind pressure
Kiosk: (64.6)(0.85)(1.38) = 75.8 psf
Sign: (64.6)(.85)(2.0) = 110 psf
Dock: (64.6)(.85)(1.43) = 78.5 psf

Total shear
$(9.1)(75.8) + (1.6)(110) + (3)(1.7)(78.5) = 690 + 176 + 401 = 1267$ lb

Overturning moment = $(690)(\frac{7.42}{3}) + 176(\frac{6.58}{2}) + 401(\frac{2.67}{2}) = 3672$ ft-lb

For allowable stress design use 0.6 load factor
$M_{0.7} = 0.6(3672) = 2203$ ft-lb $V = (1767)(0.6) = 760$ lb

Weight
Kiosk 170 lb
Dock 3.58 = 174 lb
Base 95 lb
439 lb

For 19" base $M_{resisting} = 439 \times \frac{19}{12}/2 = 347$ ft-lb $\times 0.6 = 209$ ft-lb
Net overturning moment to be resisted by anchors = 2203 - 209 = 1994 ft-lb

Use 3 anchors per side (6 total) spaced at 10", edge distance = 6" min.
Shear per anchor = 760/6 = 127 lb
Tension per anchor = 1994/(3)(0.83) = 798 lb

Assume existing concrete f'_c = 2000 psi (conservative)
Use ½" dia wedge anchors (Wedge-All) by Simpson, or equivalent

Allowable tension = 1510 lb
Allowable shear = 1675 lb
No spacing or edge distance factors required
} See attached catalog tables

Interaction: $\frac{798}{1510} + \frac{127}{1675} = 0.60 < 1$ O.K

engineering

JOB# 0100571.00 SHEET No ____ OF 4
PROJECT NAME B Cycle
SUBJECT Foundation slab
CALCULATED BY SG DATE 11/12/12
CHECKED BY ____ DATE ____

At stations without kiosk

Total shear = (1.6)(110) + 3(47)(78.5) = 176 + 401 = 577 lb

Overturning moment = 176 $(\frac{65.8}{2})$ + 401 $(\frac{2.67}{2})$ = 1114 ft-lb

For allowable stress design
M_{by} = 0.6(1114) = 668 ft-lb V = (577)(0.6) = 347 lb

Weight = 174+95 = 269 lb

$M_{resisting}$ = 269 × $\frac{19}{12}$ / 2 = 212 ft-lb × 0.6 = 127 ft-lb

Net overturning moment to be resisted by anchors = 668 − 127 = 541 ft-lb

Shear per anchor = 347/4 = 87 lb
Tension per anchor = 541 / 2(0.83) = 324 lb

Forces less critical than for station with kiosk

SIMPSON Strong-Tie®

Tension Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm) [1]	Critical Spacing in. (mm)	Tension Load: $f'_c \geq 2000$ psi (13.8 MPa) Concrete — Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	$f'_c \geq 3000$ psi (20.7 MPa) Concrete — Allowable lbs. (kN)	$f'_c \geq 4000$ psi (27.6 MPa) Concrete — Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	Install. Torque ft.-lbs. (N-m)
¼ (6.4)	1⅛ (29)	2½ (64)	1½ (41)	680 (3.0)	167 (0.7)	170 (0.8)	205 (0.9)	960 (4.3)	233 (1.0)	240 (1.1)	8 (10.8)
	2¼ (57)	2½ (64)	3⅛ (79)	1,920 (8.5)	286 (1.3)	480 (2.1)	530 (2.4)	2,320 (10.3)	105 (0.5)	580 (2.6)	
⅜ (9.5)	1¾ (44)	3¾ (95)	2⅜ (60)	1,580 (6.9)	261 (1.2)	390 (1.7)	555 (2.5)	2,480 (12.9)	585 (2.6)	720 (3.2)	30 (40.7)
	2½ (67)	3¾ (95)	3⅝ (92)	3,380 (14.9)	464 (2.1)	840 (3.7)	1,100 (4.9)	5,440 (24.2)	563 (2.5)	1,360 (6.0)	
	3⅜ (86)	3¾ (95)	4¾ (121)	3,580 (15.4)	585 (2.6)	920 (4.1)	1,340 (5.1)	5,440 (24.2)	316 (1.4)	1,360 (6.0)	
½ (12.7)	2¼ (57)	5 (127)	3⅛ (79)	3,280 (14.6)	871 (3.9)	820 (3.6)	1,070 (4.8)	5,280 (23.5)	849 (3.8)	1,320 (5.9)	60 (81.3)
	3⅜ (86)	5 (127)	4¾ (121)	6,040 (26.9)	654 (2.9)	1,510 (6.7)	1,985 (8.8)	9,840 (43.8)	1,303 (5.8)	2,460 (10.9)	
	4½ (114)	5 (127)	6¼ (159)	6,960 (31.0)	839 (3.7)	1,740 (7.7)	2,350 (10.5)	11,840 (52.7)	2,462 (11.0)	2,960 (13.2)	
⅝ (15.9)	2¾ (70)	6¼ (159)	3⅞ (98)	4,520 (20.1)	120 (0.5)	1,130 (5.0)	1,640 (7.3)	8,680 (38.6)	729 (3.2)	2,170 (9.6)	50 (122.0)
	4½ (114)	6¼ (159)	6¼ (159)	8,200 (36.5)	612 (2.7)	2,050 (9.1)	2,890 (13.3)	15,720 (69.9)	1,224 (5.4)	3,930 (17.6)	
	5⅝ (140)	6¼ (159)	7¾ (197)	8,200 (36.6)	659 (2.9)	2,050 (9.1)	2,890 (13.3)	15,720 (69.9)	1,116 (5.0)	3,930 (17.5)	
¾ (19.1)	3⅜ (86)	7½ (191)	4¾ (121)	6,760 (30.1)	1,452 (6.5)	1,690 (7.5)	2,090 (9.3)	9,960 (44.3)	1,324 (5.9)	2,490 (11.1)	150 (203.4)
	5 (127)	7½ (191)	7 (178)	10,040 (44.7)	544 (2.4)	2,510 (11.2)	3,225 (14.3)	15,760 (70.1)	1,550 (6.9)	3,940 (17.5)	
	6¾ (171)	7½ (191)	9½ (241)	10,040 (44.7)	1,588 (7.1)	2,510 (11.2)	3,360 (15.0)	17,000 (75.6)	1,668 (7.4)	4,250 (18.9)	
⅞ (22.2)	3¾ (98)	8¾ (222)	5¾ (137)	7,480 (33.3)	821 (3.7)	1,870 (8.3)	2,275 (10.1)	10,720 (47.7)	1,253 (5.6)	2,680 (11.9)	200 (271.2)
	7¾ (200)	8¾ (222)	11 (279)	17,040 (75.8)	1,566 (7.0)	4,260 (18.9)	4,570 (20.3)	20,320 (90.4)	2,401 (10.7)	5,080 (22.6)	
1 (25.4)	4½ (114)	10 (254)	6¾ (159)	15,400 (68.5)	2,440 (10.9)	3,850 (17.1)	3,885 (17.3)	15,680 (69.7)	1,876 (8.3)	3,920 (17.4)	300 (406.7)
	9 (229)	10 (254)	12⅝ (321)	20,760 (92.3)	3,116 (13.9)	5,190 (23.1)	6,355 (28.3)	30,080 (133.8)	1,612 (7.2)	7,520 (33.5)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	15,760 (67.4)	1,346 (6.0)	3,750 (16.7)	4,080 (27.2)	24,760 (110.1)	626 (2.8)	6,190 (27.5)	400 (542.3)
	9½ (241)	12½ (318)	13¾ (337)	20,160 (89.7)	3,250 (14.5)	5,040 (22.4)	8,035 (35.7)	46,920 (217.6)	1,060 (4.7)	12,230 (54.4)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Refer to allowable load-adjustment factors for edge distance and spacing on pages 141 and 143.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. Allowable loads for ¼-inch size at 1⅛-inch embedment apply to both the Wedge-All® and Tie-Wire anchors. Installation torque does not apply to the Tie-Wire anchor.
6. The minimum concrete thickness is 1½ times the embedment depth.

*See page 13 for an explanation of the load table icons

Shear Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Shear Load: $f'_c \geq 2000$ psi (13.8 MPa) Concrete: Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)[1]	$f'_c \geq 3000$ psi (20.7 MPa) Concrete: Allowable lbs. (kN)	$f'_c \geq 4000$ psi (27.6 MPa) Concrete: Allowable lbs. (kN)	Install. Torque ft-lbs (N-m)
¼ (6.4)	1⅛ (29)	2½ (64)	1⅝ (41)	920 (4.1)	47 (0.2)	230 (1.0)	230 (1.0)	230 (1.0)	8 (10.8)
	2¼ (57)	2½ (64)	3⅛ (79)	•	•	230 (1.0)	230 (1.0)	230 (1.0)	
⅜ (9.5)	1¾ (44)	3¾ (95)	2⅜ (60)	2,280 (10.1)	96 (0.4)	570 (2.5)	570 (2.5)	570 (2.5)	30 (40.7)
	2⅝ (67)	3¾ (95)	3⅝ (92)	4,220 (18.8)	384 (1.7)	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
	3¾ (86)	3¾ (95)	4¾ (121)	•	•	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
½ (12.7)	2¼ (57)	5 (127)	3⅛ (79)	6,560 (29.2)	850 (3.8)	1,345 (6.0)	1,485 (6.6)	1,625 (7.2)	60 (81.3)
	3⅜ (86)	5 (127)	4¾ (121)	8,160 (36.3)	880 (3.9)	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
	4½ (114)	5 (127)	6¼ (159)	•	•	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
⅝ (15.9)	2¾ (70)	6¼ (159)	3⅞ (98)	8,720 (38.8)	1,689 (7.5)	1,620 (7.2)	1,990 (8.9)	2,160 (9.7)	90 (122.0)
	4¼ (114)	6¼ (159)	6¼ (159)	12,570 (55.9)	396 (1.8)	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
	5⅝ (140)	6¼ (159)	7⅝ (197)	•	•	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
¾ (19.1)	3¾ (86)	7½ (191)	4¾ (121)	11,360 (50.5)	792 (3.5)	2,840 (12.6)	2,840 (12.6)	2,840 (12.6)	150 (203.4)
	5 (127)	7½ (191)	7 (178)	18,430 (82.0)	1,921 (8.5)	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
	6¾ (171)	7½ (191)	9½ (241)	•	•	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
⅞ (22.2)	3¾ (99)	8⅝ (222)	5⅜ (137)	13,760 (61.2)	2,059 (9.2)	3,440 (15.3)	3,440 (15.3)	3,440 (15.3)	200 (271.2)
	7⅞ (200)	8⅝ (222)	11 (279)	22,300 (99.2)	477 (2.1)	5,575 (24.8)	5,575 (24.8)	5,575 (24.8)	
1 (25.4)	4½ (114)	10 (254)	6¼ (159)	22,519 (100.2)	1,156 (5.1)	5,730 (25.5)	5,730 (25.5)	5,730 (25.5)	300 (406.7)
	9 (229)	10 (254)	12⅝ (321)	25,380 (112.9)	729 (3.2)	6,345 (28.2)	6,345 (28.2)	6,345 (28.2)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	29,329 (130.5)	2,009 (9.3)	7,330 (32.6)	7,330 (32.6)	7,330 (32.6)	400 (542.3)
	9⅞ (251)	12½ (318)	13⅞ (352)	•	•	7,330 (32.6)	7,330 (32.6)	7,330 (32.6)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Refer to allowable load-adjustment factors for spacing and edge distance on pages 141, 142 and 144.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. Allowable loads for ¼-inch size at 1 ¼-inch embedment apply to both the Wedge-All® and Tie-Wire anchors. Installation torque does not apply to the Tie-Wire anchor.
6. The minimum concrete thickness is 1 ½ times the embedment depth.

*See page 13 for an explanation of the load table icons

Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All® Anchors in Normal-Weight Concrete: Edge Distance, Tension and Shear Loads

How to use these charts:

1. The following tables are for reduced edge distance.
2. Locate the anchor size to be used for either a tension and/or shear load application.
3. Locate the edge distance (C_{act}) at which the anchor is to be installed.
4. The load adjustment factor (f_c) is the intersection of the row and column.
5. Multiply the allowable load by the applicable load adjustment factor.
6. Reduction factors for multiple edges are multiplied together.

Edge Distance Tension (f_c)

*See page 13 for an explanation of the load table icons

Edge Dist. C_{act} (in.)	Size	¼	⅜	½	⅝	¾	⅞	1	1¼
	C_{cr}	2½	3¾	5	6¼	7½	8¾	10	12½
	C_{min}	1	1½	2	2½	3	3½	4	5
	f_{cmin}	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
1		0.70							
1½		0.80	0.70						
2		0.90	0.77	0.70					
2½		1.00	0.83	0.75	0.70				
3			0.90	0.80	0.74	0.70			
3½			0.97	0.85	0.78	0.73	0.70		
3¾			1.00	0.88	0.80	0.75	0.71		
4				0.90	0.82	0.77	0.73	0.70	
4½				0.95	0.86	0.80	0.76	0.73	
5				1.00	0.90	0.83	0.79	0.75	0.70
5½					0.94	0.87	0.81	0.78	0.72
6					0.98	0.90	0.84	0.80	0.74
6¼					1.00	0.92	0.86	0.81	0.75
6½						0.93	0.87	0.83	0.76
7						0.97	0.90	0.85	0.78
7½						1.00	0.93	0.88	0.80
8							0.96	0.90	0.82
8½							0.99	0.93	0.84
8¾							1.00	0.94	0.85
10								1.00	0.90
12½									1.00
15									

See Notes Below

Edge Distance Shear (f_c) (Shear Applied Perpendicular to Edge)

Edge Dist. C_{act} (in.)	Size	⅛	⅜	½	⅝	¾	⅞	1	1¼
	C_{cr}	2½	3¾	5	6¼	7½	8¾	10	12½
	C_{min}	1	1½	2	2½	3	3½	4	5
	f_{cmin}	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
1		0.30							
1½		0.53	0.30						
2		0.77	0.46	0.30					
2½		1.00	0.61	0.42	0.30				
3			0.77	0.53	0.39	0.30			
3½			0.92	0.65	0.49	0.38	0.30		
3¾			1.00	0.71	0.53	0.42	0.33		
4				0.77	0.58	0.46	0.37	0.30	
4½				0.88	0.67	0.53	0.43	0.36	
5				1.00	0.77	0.61	0.50	0.42	0.30
5½					0.86	0.69	0.57	0.48	0.35
6					0.95	0.77	0.63	0.53	0.39
6¼					1.00	0.81	0.67	0.56	0.42
6½						0.84	0.70	0.59	0.44
7						0.92	0.77	0.65	0.49
7½						1.00	0.83	0.71	0.53
8							0.90	0.77	0.58
8½							0.97	0.83	0.63
8¾							1.00	0.85	0.65
10								1.00	0.77
12½									1.00
15									

1. C_{act} = actual edge distance at which anchor is installed (inches).
2. C_{cr} = critical edge distance for 100% load (inches).
3. C_{min} = minimum edge distance for reduced load (inches).
4. f_c = adjustment factor for allowable load at actual edge distance.
5. f_{ccr} = adjustment factor for allowable load at critical edge distance. f_{ccr} is always = 1.00.
6. f_{cmin} = adjustment factor for allowable load at minimum edge distance.
7. $f_c = f_{cmin} + [(1 - f_{cmin}) (C_{act} - C_{min}) / (C_{cr} - C_{min})]$.

Load-Adjustment Factors for Reduced Spacing:

Critical spacing is listed in the load tables. No adjustment in load is required when the anchors are spaced at critical spacing.
No additional testing has been performed to determine the adjustment factors for spacing dimensions less than those listed in the load tables.

Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All® Anchors in Normal-Weight Concrete: Spacing, Tension Loads

How to use these charts:

1. The following tables are for reduced spacing.
2. Locate the anchor size to be used for a tension load application.
3. Locate the anchor embedment (E) used for a tension load application.
4. Locate the spacing (S_{act}) at which the anchor is to be installed.
5. The load adjustment factor (f_s) is the intersection of the row and column.
6. Multiply the allowable load by the applicable load adjustment factor.
7. Reduction factors for multiple spacings are multiplied together.

Spacing Tension (f_s)

*See page 13 for an explanation of the load table icons

S_{act} (in.)	Dia.	¼		⅜			½			⅝		
	E	1½	2¼	1¾	2½	3⅜	2¼	3⅜	4½	2¾	4½	5½
	S_{cr}	1⅝	3⅛	2⅝	3⅝	4⅝	3⅛	4⅝	6¼	3⅞	6¼	7¾
	S_{min}	⅝	1⅛	⅞	1¾	1¾	1⅛	1¾	2¼	1⅜	2¼	2¾
	f_{smin}	0.43	0.70	0.43	0.43	0.70	0.43	0.43	0.70	0.43	0.43	0.70
¾		0.50										
1		0.64		0.48								
1¼		0.79	0.72	0.57			0.47					
1½		0.93	0.76	0.67	0.46		0.54			0.46		
1¾		1.00	0.79	0.76	0.53	0.70	0.61	0.43		0.52		
2			0.83	0.86	0.59	0.73	0.68	0.48		0.57		
2¼			0.87	0.95	0.65	0.75	0.75	0.53	0.70	0.63	0.43	
2½			0.91	1.00	0.72	0.78	0.82	0.57	0.72	0.69	0.47	
2¾			0.94		0.78	0.80	0.89	0.62	0.74	0.74	0.50	0.70
3			0.98		0.84	0.83	0.96	0.67	0.76	0.80	0.54	0.72
3½			1.00		0.97	0.88	1.00	0.76	0.79	0.91	0.61	0.75
4					1.00	0.93		0.86	0.83	1.00	0.68	0.78
4½						0.98		0.95	0.87		0.75	0.81
5						1.00		1.00	0.91		0.82	0.84
6									0.98		0.96	0.90
7									1.00		1.00	0.96
> 8												1.00

See Notes Below

Spacing Tension (f_s)

S_{act} (in.)	Dia.	¾			⅞		1		1¼	
	E	3¾	5	6¾	3⅞	7⅞	4½	9	5⅝	9½
	S_{cr}	4⅜	7	9½	5⅝	11	6¼	12⅝	7⅞	13¼
	S_{min}	1¾	2½	3⅜	2	4	2¼	4½	2⅞	4¾
	f_{smin}	0.43	0.43	0.70	0.43	0.70	0.43	0.70	0.43	0.70
2		0.48			0.43					
3		0.67	0.49		0.60		0.54		0.46	
4		0.86	0.62	0.73	0.77	0.70	0.68		0.57	
5		1.00	0.75	0.78	0.94	0.74	0.82	0.72	0.68	0.71
6			0.87	0.83	1.00	0.79	0.96	0.76	0.79	0.74
7			1.00	0.88		0.83	1.00	0.79	0.90	0.78
8				0.93		0.87		0.83	1.00	0.81
9				0.98		0.91		0.87		0.85
10				1.00		0.96		0.90		0.89
11						1.00		0.94		0.92
12								0.98		0.96
13								1.00		0.99
14										1.00

1. E = Embedment depth (inches).
2. S_{act} = actual spacing distance at which anchors are installed (inches).
3. S_{cr} = critical spacing distance for 100% load (inches).
4. S_{min} = minimum spacing distance for reduced load (inches).
5. f_s = adjustment factor for allowable load at actual spacing distance.
6. f_{scr} = adjustment factor for allowable load at critical spacing distance. f_{scr} is always = 1.00.
7. f_{smin} = adjustment factor for allowable load at minimum spacing distance.
8. $f_s = f_{smin} + [(1 - f_{smin}) (S_{act} - S_{min}) / (S_{cr} - S_{min})]$.

SIMPSON Strong-Tie®

Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All® Anchors in Normal-Weight Concrete: Spacing, Shear Loads

How to use these charts:

1. The following tables are for reduced spacing.
2. Locate the anchor size to be used for a shear load application.
3. Locate the anchor embedment (E) used for a shear load application.
4. Locate the spacing (S_{act}) at which the anchor is to be installed.
5. The load adjustment factor (f_s) is the intersection of the row and column.
6. Multiply the allowable load by the applicable load adjustment factor.
7. Reduction factors for multiple spacings are multiplied together.

Spacing Shear (f_s)

*See page 13 for an explanation of the load table icons

S_{act} (in.)	Dia.	¼		⅜			½			⅝		
	E	1⅛	2⅛	1¾	2½	3⅜	2¼	3⅜	4½	2¾	4½	5½
	S_{cr}	1⅝	3⅛	2⅝	3⅝	4⅝	3⅛	4¾	6¼	3⅞	6¼	7⅝
	S_{min}	⅝	1⅛	⅞	1⅜	1¾	1⅛	1¾	2¼	1⅜	2¼	2¾
	f_{smin}	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
¾		0.82										
1		0.87		0.81								
1¼		0.92	0.80	0.84			0.80					
1½		0.97	0.83	0.88	0.80		0.83			0.80		
1¾		1.00	0.86	0.91	0.83	0.79	0.86	0.79		0.82		
2			0.88	0.95	0.85	0.81	0.88	0.81		0.84		
2¼			0.91	0.98	0.87	0.83	0.91	0.83	0.79	0.86	0.79	
2½			0.93	1.00	0.90	0.84	0.93	0.84	0.80	0.88	0.80	
2¾			0.96		0.92	0.86	0.96	0.86	0.82	0.91	0.82	0.79
3			0.99		0.94	0.88	0.99	0.88	0.83	0.93	0.83	0.80
3½			1.00		0.99	0.91	1.00	0.91	0.86	0.97	0.86	0.82
4					1.00	0.95		0.95	0.88	1.00	0.88	0.84
4½						0.98		0.98	0.91		0.91	0.86
5						1.00		1.00	0.93		0.93	0.88
6									0.99		0.99	0.93
7									1.00		1.00	0.97
> 8												1.00

See Notes Below

Spacing Shear (f_s)

S_{act} (in.)	Dia.	¾			⅞		1		1¼	
	E	3⅜	5	6¼	3⅞	7⅛	4½	9	5⅝	9½
	S_{cr}	4¾	7	9½	5⅝	11	6¼	12⅝	7⅛	13⅛
	S_{min}	1⅜	2½	3⅜	2	4	2¼	4½	2⅞	4¾
	f_{smin}	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
2		0.81			0.79					
3		0.88	0.81		0.85		0.83		0.80	
4		0.95	0.86	0.81	0.91	0.79	0.88		0.84	
5		1.00	0.91	0.85	0.98	0.82	0.93	0.80	0.88	0.80
6			0.95	0.88	1.00	0.85	0.99	0.83	0.92	0.82
7			1.00	0.91		0.88	1.00	0.85	0.96	0.85
8				0.95		0.91		0.88	1.00	0.87
9				0.98		0.94		0.91		0.90
10				1.00		0.97		0.93		0.92
11						1.00		0.96		0.94
12								0.98		0.97
13								1.00		0.99
14										1.00

1. E = Embedment depth (inches).
2. S_{act} = actual spacing distance at which anchors are installed (inches).
3. S_{cr} = critical spacing distance for 100% load (inches).
4. S_{min} = minimum spacing distance for reduced load (inches).
5. f_s = adjustment factor for allowable load at actual spacing distance.
6. f_{scr} = adjustment factor for allowable load at critical spacing distance. f_{scr} is always = 1.00.
7. f_{smin} = adjustment factor for allowable load at minimum spacing distance.
8. $f_s = f_{smin} + [(1 - f_{smin}) (S_{act} - S_{min}) / (S_{cr} - S_{min})]$.

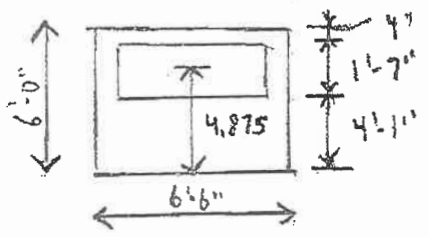
JOB# 0100571.00 SHEET No ____ OF 10
PROJECT NAME BCycle
SUBJECT Foundation slab
CALCULATED BY SG DATE 11/12/12
CHECKED BY ____ DATE ____

Slab overturning - 6'-0" x 6'-6" x 5" slab

M_{OT} = 2203 ft-lb

$M_{resisting}$ = (0.6)(150)(6)(6.5)(0.42)(6/2) = 4388 ft-lb O.K

Check flexure in unreinforced slab. Assume station is placed eccentrically on slab



M_{OT} = 2203 ft-lb (wind) + 439 lb (1.875) (gravity) = 3026 ft-lb (Service)

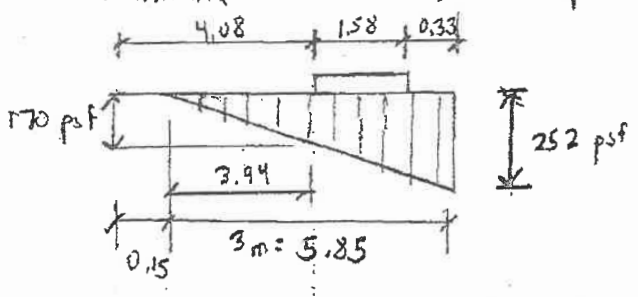
P = (150)(6)(6.5)(0.42) = 2438 lb (footing) + 439 lb (station) = 2877 lb

e = M/P = 3026/2877 = 1.05 ft → outside of middle third

m = 3 - 1.05 = 1.95'

f_b = 2P/3bm = 2(2877)/3(6.5)(1.95) = 151 psf ≪ 2000 psf O.K

$f_{b\ ultimate}$ = 151/0.6 = 252 psf



At face of support $f_{a\ gross}$ = 170 psf, $f_{a\ net}$ = 170 - 1.2(62.5) = 95 psf

M_u = (.095)(6.5)(3.94/2)(3.94/3) = 1.60 k-ft

ϕM_n = (0.65)(5)(1)($\sqrt{3000}$)$\frac{(78)(5-2)^2}{6}$ / 12000 = 1.74 k-ft $M_u < \phi M_n$