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IN THE CIRCUIT COURT OF THE ELEVENTH JUDICIAL CIRCUIT IN AND FOR MIAMI-DADE COUNTY, FLORIDA

CASE NO: 2021-015089-CA-01
SECTION: CA43
JUDGE: Michael Hanzman

In re:

Champlain Towers South Collapse Litigation
_______________________________________/

RECEIVER'S EMERGENCY MOTION FOR ENTRY OF ORDER AUTHORIZING RECEIVER TO SIGN PERMIT APPLICATION REQUESTED BY MIAMI-DADE COUNTY AUTHORIZING BOFAM CONSTRUCTION COMPANY, INC. TO UNDERTAKE EMERGENCY WORK TO BRACE THE WEST RETAINMENT WALL AT THE PROPERTY

Michael I. Goldberg (the "Receiver"), pursuant to Rule 4 of the Complex Business Litigation Rules, seeks entry, on an emergency basis, of an order authorizing the Receiver to sign a permit application requested by the Miami-Dade County Department of Regulatory and Economic Resources (the "County") authorizing Bofam Construction Company, Inc. ("Bofam") to undertake emergency work to brace the west retainment wall at the former site of the Champlain Tower South Condominium located at 8777 Collins Avenue, Surfside, Florida 33154 (the "Property"), so that additional lanes of Collins Avenue adjacent to the west side of the Property can safely be opened.[1] In support of this Motion, the Receiver states as follows:[2]

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[1] The relief sought in this Motion is directly related to the relief sought in a prior motion filed by the Receiver (Filing # 132119264) on August 5, 2021 seeking entry of an order authorizing him to sign a permit application requested by the County authorizing Bofam to undertake emergency work to brace all of the retainment walls at the former site of the Property (the "**Initial Motion**"). The instant Motion also concerns the bracing of retainment walls at the former site of the Property, but is focused solely on bracing the west retaining wall so that additional lanes of Collins Avenue adjacent to the west side of the Property can safely be opened.

[2] The County has also requested the Receiver to execute a permit application for "dewatering" work on the Property. It is the Receiver's understanding that certain pipes will be placed on top of the foundation that will continually remove water from the Property. The Receiver was hoping to file the motion to authorize him to execute the "dewatering" permit application simultaneously herewith, however, the County has not yet received approval from DOT to pump the water into DOT controlled storm drains which is part of the plan. It is expected that a motion to authorize the Receiver to execute the dewatering permit application will be filed in the near future.

1. At a hearing conducted on July 2, 2021 the Court ordered the appointment of Michael I. Goldberg as receiver for the Champlain Tower South Condominium Association.

2. This receivership is the result of multiple lawsuits that were filed after the tragic collapse of the Champlain Tower Condominium previously built on the Property.

3. The County maintains control over the Property as the County and NIST investigate the circumstances leading up to the collapse of the Champlain Tower South Condominium. The County has notified the Receiver that it believes that the west retaining wall at the Property needs to be buttressed so that additional lanes of Collins Avenue adjacent to the west side of the Property can safely be opened.

4. To that end, the County has hired Bofam to perform the necessary work to buttress the west retaining wall. The work Bofam intends to perform is more fully set forth in the engineering plans attached to this Motion as **Composite Exhibit "A".**

5. In connection with the work to be performed, Bofam commissioned and obtained a safety report (the "Safety Report") from Calc Engineering, LLC ("Calc"). A copy of the Safety Report is attached hereto as **Exhibit "B"**. [3] As depicted in pictures on page 25 and 26 and discussed on page 7 of the Safety Report, rebar is sticking out of the western retaining wall in a haphazard manner and there is also some loose concrete hanging from the west retaining wall. Pursuant to the Safety Report, in order for Bofam to safely be able to undertake the work necessary to buttress the west retaining wall, Calc is recommending that the rebar on the west retaining wall

[3] The Safety Report was obtained by the County in early August in connection with the original intended scope of work which was to buttress all the retaining walls and was contemplated in the permit application which was the subject of the Initial Motion. The current permit application the County has requested the Receiver to execute which is the subject of the instant motion seeks only to buttress the western retaining wall adjacent to Collins Avenue. Accordingly, the scope of the Safety Report is much broader than the requirement to make the Property safe for Bofam to buttress the western retaining wall.

be cut and that the loose concrete on the west retaining wall be removed prior to Bofam undertaking work to buttress the west retaining wall.

6. The Receiver is unsure as to whether or not the rebar and loose concrete that the County seeks permission to remove have evidentiary value.[4] The Receiver requested the County to ask Bofam if the work could be performed without cutting or in any way altering the rebar or loose concrete and the County has informed the Receiver that it is not possible.

7. The County has assured the Receiver that the work to be undertaken is necessary for life-safety reasons and will be undertaken in a manner best designed to preserve the evidence in accordance with this Court's prior orders. The Receiver is not an engineering expert and is relying on the County and its experts that the work to be undertaken is necessary and will preserve the evidentiary value of the Property as best as possible under the exigent circumstances.

8. The Receiver is technically the "owner" of the Property even though the Property is currently under the County's control. Accordingly, the County has requested the Receiver to execute the Permit Application filed by Bofam. A true and correct copy of the Permit Application is attached hereto as **Exhibit "C"**. The Permit Application identifies the Applicant, provides the Applicant's Contractor and Qualifier Numbers and a $362,685 estimate for the emergency shoring work to be performed. Bofam seeks issuance of a new permit authorizing it to perform emergency shoring work in respect of the Property.

9. The Receiver has informed the County that he will not execute the permit application unless and until he receives Court authorization to do so, and only after notice and a

[4] The County has represented to the Receiver that the only rebar or cement that will be removed or otherwise altered is the rebar and loose concrete associated with the western retaining wall of the Property and rebar and loose cement approximately 20 feet inward on the side walls (north and south) adjoining the west wall.

hearing in which all parties in interest have an opportunity to consider the Motion and express their position to the Court with respect to the intended work and its potential impact on the Property.

10. The Receiver has conferred with lead counsel for the Plaintiffs who, in turn, has conferred with his group, and Plaintiffs have no objection to the relief requested in this Motion.

11. The Receiver and the County are well aware that some parties in interest may strenuously object to the work intended to be done by Bofam—especially the cutting of rebar and the removal of loose cement along the west retaining wall and the small portion of the adjoining walls prior to them having a chance to view the west retaining wall in its current state. To that end, the Receiver and the County have discussed the possibility of granting parties in interest the opportunity, with the Court's authorization, to enter the Property prior to Bofam commencing work to view and/or film the west retaining wall in its current state. The Receiver and the County are understandably concerned that the current state of the exposed rebar and lose cement is extremely dangerous and people may get hurt if granted access prior to Bofam completing its work.[5] Notwithstanding, the County agrees to permit parties in interest who are pre-approved by the Court to access the Property for the limited purpose of viewing and/or filming the west retaining wall prior to Bofam commencing work if: (i) the Court's order permitting access to such persons makes it clear that neither the County nor the Receiver shall have any liability whatsoever in the event a person is injured while on the Property; (ii) each person who enters the Property executes a release and hold harmless agreement prior to entering the Property releasing the Receiver and County from any and all claims that may arise by virtue of them entering the Property; (iii) the party in interest who requests access to the Property provides the Receiver and County with an insurance policy in the amount of $2 million naming both the County and the

[5] In fact, it is the Receiver's understanding that certain areas of the Property are considered so dangerous that even NIST was not able to safely access them.

Receiver as additional insureds under such policy; and (iv) the party in interest agrees to be bound by the Access Protocol (once finalized)[6] with respect to it or its agents entering the Property; and (v) each person who enters the Property shall be required to wear a N95 or equivalent mask, steel toe construction boots, a helmet and a reflective vest.[7]

WHEREFORE, the Receiver respectfully requests that the Court enter an Order authorizing him to approve or sign-off on the Permit Application, to the extent necessary, and grant such other, further and related relief as may be appropriate under the circumstances.

Dated: August 31, 2021

Respectfully submitted,

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[6] To the extent there is a conflict between the Access Protocol and the Order emanating out of this Motion, the terms of the Order shall take priority with respect to the access being granted to view and film the west retaining wall.

[7] The County has graciously agreed to provide a dozen helmets and reflective vests. To the extent more than a dozen people request permission to enter the Property, the Receiver shall coordinate access to the property is separate groups of 12 or less.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on August 31, 2021, a copy of the foregoing was electronically filed with the Clerk of Court by using the Florida Courts E-Filing Portal, which served a copy of same to all counsel of record through the Florida Court's E-Filing Portal. I further certify that a true and correct copy of the foregoing was served by electronic transmission and first class, U.S. Mail on August 31, 2021, upon all parties on the attached Service List.

By: *s/ Paul Steven Singerman*
Paul Steven Singerman

SERVICE LIST

Austin Akinrin, President
Bofam Construction Co., Inc.
1600 NW 3rd Avenue
Miami, FL 33136
austin@bofaminc.com

<u>COMPOSITE EXHIBIT "A"</u>

CODES:

1. FLORIDA BUILDING CODE, FBC 2020, 7TH EDITION
2. AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318-14 ("ACI")
3. AMERICAN FOREST AND PAPER ASSOCIATION "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", NDS-2018 ("AF & PA")
4. AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" ACI 530-13 ("ACI 530")
5. AMERICAN CONCRETE INSTITUTE "GUIDE FOR SHORING/RESHORING OF CONCRETE MULTISTORY BUILDINGS" ACI 347.2R-05
6. AMERICAN SOCIETY OF CIVIL ENGINEERS "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES" ASCE 7-16
7. AMERICAN INSTITUTE OF STEEL CONSTRUCTION AISC (ASD 14TH EDITION)

GENERAL NOTES

THESE DRAWINGS SHOW THE APPLICATION OF SHORING PRODUCTS TO THIS SPECIFIC PROJECT, BUILDING OR STRUCTURE AND ARE BASED ON INFORMATION CONTAINED IN PROJECT CON-STRUCTION DRAWINGS SUPPLIED TO RC GROUP LLC BY THE CUSTOMER. THESE DRAWINGS DO NOT SHOW ALL SPECIFIC CONSTRUCTION SITE DETAILS. ENGINEERING SPECIFIC ON-SITE DESIGN DETAILS UNIQUE TO THIS APPLICATION ARE THE RESPONSIBILITY OF THE CUSTOMER.

1. ALL DIMENSIONS AND DETAILS SHOWN ON THIS LAYOUT MUST BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH ANY WORK.
2. THE APPROXIMATE AMOUNT OF SCREW JACK EXTENSIONS HAVE BEEN SHOWN. THESE EXTENSIONS MAY HAVE TO BE ADJUSTED DUE TO FIELD CONDITIONS. HOWEVER, THE MAXIMUM SCREW JACK EXTENSION FOR THIS LAYOUT IS LIMITED TO 12 INCHES TOP AND 12 INCHES BOTTOM.
3. SUITABLE SILLS MUST BE PROVIDED TO PROPERLY DISTRIBUTE THE IMPOSED SHORING LOADS OVER THE GROUND OR SUPPORTING FOUNDATION TO ASSURE ADEQUATE STABILITY FOR ALL SHORING LEGS. USE COMPOSITE SECTION BY USING CONSTRUCTION ADHESIVE LN-907 BY LIQUID NAILS OR EQUIV. WITH 32 ROWS OF CONTINUOUS ½" BEADS EQUALLY SPACED TO COVER ENTIRE PLYWOOD CONTACT LAYER SURFACE. NAIL TOGETHER THE 3 LAYERS, USING 8D RING-SHANK NAILS @ 12" O.C. EA. WAY.
4. ALL STRINGERS, LEDGERS OR OTHER MEMBERS RESTING ON EQUIPMENT MUST BE CENTERED DIRECTLY OVER THE SHORING LEGS.
5. IN SETTING ELEVATIONS, ALLOW FOR COMPRESSION OF LUMBER.
6. THE SHORING EQUIPMENT DEPICTED ON THIS AND THE ATTACHED DRAWINGS MUST BE ERECTED SO AS TO CONFORM TO ALL CURRENT RC GROUP LLC "SAFETY GUIDELINES" AND TO ALL FEDERAL, STATE AND LOCAL REGULATIONS.
7. ALL STEEL BEAM LEDGERS OR STRINGERS MUST BE SECURED TO U-HEADS BY ONE (1) JUNIOR BEAM CLAMP PER U-HEAD ON ALTERNATE SIDES (SEE DETAIL "A" ON THIS DRAWING). ALL ALUMINUM BEAM LEDGERS OR STRINGERS MUST BE SECURED TO U-HEADS BY ONE (1) ALUMINUM BEAM CLAMP.
8. AT THE TIME THE LEDGER OR STRINGER IS PLACED IN THE U-HEAD, IT MUST BE IMMEDIATELY SECURED TO THE U-HEAD. WOOD LEDGERS OR STRINGERS ARE NAILED DIRECTLY TO THE U-HEAD (PREVIOUS NOTE FOR SECURING STEEL OR ALUMINUM BEAM LEDGERS OR STRINGERS).
9. ALL LOWER FRAMES OF A TOWER MUST BE PLUMB AND LEVEL BEFORE ERECTING THE REMAINDER OF THE TOWER.
10. THE RESHORING IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHOULD BE THOROUGHLY CHECKED BY THE ARCHITECT/ENGINEER TO DETERMINE THAT IT IS PROPERLY PLACED AND THAT IT HAS THE LOAD CAPACITY TO SUPPORT THE AREAS THAT ARE BEING RESHORED.
11. TOWER LEG LOADING SHOULD BE AS UNIFORMLY DISTRIBUTED AS POSSIBLE. NEVER LOAD ONLY ONE LEG OF A FRAME OR ONE FRAME OF A TOWER.
12. ALL DRAWINGS THAT INCORPORATE HORIZONTAL SHORING BEAMS OTHER THAN SHORING COMPANY'S MUST BE INSTALLED ACCORDING TO THE MANUFAC- TURER'S ERECTION INSTRUCTIONS. THERE- FORE, THIS LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY AND SHOULD BE CHECKED BY THE MANUFACTURER AND/OR SUPPLIER FOR CONFORMANCE WITH THEIR SPECIFICATIONS.
13. WHEN TOWERS ARE DIAGONALLY BRACED TO GRADE OR SOME OTHER POINT, BY GUYING OR OTHER MEANS, THE VERTICAL COMPONENT OF THE DIAGONAL LOAD MUST BE INCLUDED IN THE ALLOWABLE TOWER LEG LOAD.
14. DO NOT CLIMB ON LACING AND BRACING.
15. SHORE FRAMES AND COMPONENTS WERE DESIGNED AS AN INTEGRAL SYSTEM AND SHALL NOT BE INTERMIXED WITH OTHER MANUFACTURERS COMPONENTS.

SAFETY GUIDELINES:

SHORING FOR CONCRETE FORMWORK SHORING SAFETY IS EVERYONE'S RESPONSIBILITY!

EVERYONE'S SAFETY DEPENDS UPON THE PROPER ERECTION AND SAFE USE OF SHORING.
INSPECT YOUR SHORING BEFORE EACH USE TO SEE THAT THE ASSEMBLY HAS NOT BEEN ALTERED AND IS SAFE FOR YOUR USE.

POST THESE SHORING SAFETY RULES IN A CONSPICUOUS PLACE AND BE SURE THAT ALL PERSONS WHO ERECT, USE, OR DISMANTLE SHORING ARE AWARE OF THEM.

FOLLOW ALL STATE, LOCAL AND FEDERAL CODES, ORDINANCES AND REGULATIONS PERTAINING TO SHORING.

INSPECT ALL EQUIPMENT BEFORE USING. NEVER USE ANY EQUIPMENT THAT IS DAMAGED, SEVERELY RUSTED, OR IS MISSING LOCKING DEVICES. ANY COMPONENT WHICH CANNOT BE BROUGHT INTO PROPER ALIGNMENT OR CONTACT WITH THE COMPONENT INTO OR ONTO WHICH IT IS INTENDED TO FIT SHALL BE REMOVED AND REPLACED.

A SHORING LAYOUT SHALL BE AVAILABLE AND USED ON THE JOB SITE AT ALL TIMES.

INSPECT ERECTED SHORING AND FORMING FOR CONFORMITY WITH LAYOUT AND SAFETY PRACTICES PRIOR TO POUR, DURING POUR, AND AFTER POUR UNTIL CONCRETE IS SET.

CONSULT YOUR SHORING COMPANY REPRESENTATIVE WHEN IN DOUBT. SHORING IS OUR BUSINESS. NEVER TAKE CHANCES.

!WARNING!
SERIOUS INJURY OR DEATH CAN RESULT FROM YOUR FAILURE TO FAMILIARIZE YOURSELF AND COMPLY WITH ALL APPLICABLE SAFETY REQUIREMENTS OF FEDERAL, STATE AND LOCAL REGULATIONS. UNDERSTAND THESE SAFETY GUIDELINES BEFORE ERECTING, USING, OR DISMANTLING THIS SHORING.

I.PRIOR TO THE POUR

A. GENERAL

1. USE SHORING COMPANY'S RECOMMENDED SAFE WORKING LOADS AND PROCEDURES FOR:
A. SPAN, SPACING AND TYPES OF SHORING MEMBERS
B. TYPES, SIZES, HEIGHTS AND SPACING OF VERTICAL SHORING SUPPORTS.
2. PROVIDE PROPER FOUNDATION (SILLS, BEAMS, OR CRIBBING) BELOW BASE PLATES FOR THE DISTRIBUTION OF LET LOADS TO CONCRETE SLABS OR GROUND. EXISTING GROUND SHALL BE LEVEL AND THOROUGHLY COMPACT PRIOR TO ERECTION OF SHORING TO PREVENT SETTLEMENT. CONSIDERATION MUST BE GIVEN TO POTENTIAL ADVERSE WEATHER CONDITIONS THROUGHOUT THE POUR CYCLE SUCH AS WASHOUTS, FREEZING AND THAWING OF GROUND, ETC. CONSULT A QUALIFIED SOILS ENGINEER TO DETERMINE THE PROPER SIZE FOUNDATION REQUIRED FOR EXISTING GROUND CONDITIONS.
3. DO NOT MAKE UNAUTHORIZED CHANGES OR SUBSTITUTION OF EQUIPMENT. ALWAYS CONSULT YOUR SHORING COMPANY SUPPLIER PRIOR TO MAKING CHANGES NECESSITATED BY JOB SITE CONDITIONS.
4. ACCESS MUST BE PROVIDED TO ALL FORMING DECK LEVELS. IF IT IS NOT AVAILABLE FROM THE STRUCTURE, ACCESS LADDERS OR STAIR TOWERS MUST BE PROVIDED. ACCESS LADDERS MUST EXTEND AT LEAST THREE (3) FEET ABOVE FORMWORK.

!WARNING!
FALL ARREST EQUIPMENT ATTACHED TO SHORING MAY NOT PREVENT SERIOUS INJURY OR DEATH IF FALL OCCURS.

5. FASTEN ALL BRACES SECURELY.
6. CHECK TO SEE THAT ALL CLAMPS, SCREWS, PINS AND ALL OTHER COMPONENTS ARE IN A CLOSED OR ENGAGED POSITION.
7. MAKE CERTAIN THAT ALL BASE PLATES AND SHORE HEADS ARE IN FIRM CONTACT WITH THE FOUNDATION AND FORMING MATERIAL.
8. USE SPECIAL PRECAUTIONS WHEN SHORING TO OR FROM SLOPED SURFACES.
9. AVOID ECCENTRIC LOADS ON U-HEADS AND TOP PLACES BY CENTERING STRINGERS ON THESE MEMBERS.
10. AVOID SHOCK OR IMPACT LOADS FOR WHICH THE SHORING WAS NOT DESIGNED.
11. THE COMPLETED SHORING SETUP SHALL HAVE THE SPECIFIED BRACING TO GIVE IT LATERAL STABILITY.
12. THE ERECTION OF SHORING SHOULD BE UNDER THE SUPERVISION OF AN EXPERIENCED AND COMPETENT PERSON.

B. FRAME SHORING

1. FOLLOW THE SHORING LAYOUT DRAWING AND DO NOT OMIT REQUIRED COMPONENTS.
2. DO NOT EXCEED THE SHORE FRAME SPACINGS OR TOWER HEIGHTS AS SHOWN ON THE SHORING LAYOUT.
3. SHORING LOAD MUST BE CARRIED ON ALL LEGS.
4. PLUMB AND LEVEL ALL SHORING FRAMES AS THE ERECTION PROCEEDS, AND CHECK PLUMB AND LEVEL OF SHORING TOWERS JUST PRIOR TO POURING.
5. DO NOT FORCE BRACES ON FRAMES TO FIT LEVEL THE SHORING TOWERS UNTIL PROPER FIT CAN BE MADE EASILY.
6. TIE HIGH TOWERS OF SHORING FRAMES TOGETHER WITH SUFFICIENT BRACES TO MAKE A RIGID, SOLID UNIT (CONSULT YOUR SHORING COMPANY REPRESENTATIVE FOR RECOMMENDATIONS). SHORING MUST ALWAYS BE SECURED WHEN THE HEIGHT OF THE SHORING TOWERS EXCEED FOUR (4) TIMES THE MINIMUM BASEWIDTH. SEE NOTE 1.
7. EXERCISE CAUTION IN ERECTING OR DISMANTLING FREE STANDING SHORING TOWERS TO PREVENT TIPPING.
8. DO NOT CLIMB CROSS BRACES.

C. SCREW JACKS

1. USE SCREW JACKS TO ADJUST FOR UNEVEN GRADE CONDITIONS, TO LEVEL AND ACCURATELY POSITION THE FALSEWORK AND FOR EASY STRIPPING.
2. DO NOT EXCEED SHORING COMPANY'S RECOMMENDED MAXIMUM EXTENSION OF SCREW JACKS. KEEP SCREW JACK EXTENSIONS TO A MINIMUM FOR MAXIMUM LOAD CARRYING CAPACITY.
3. MAKE CERTAIN THAT ALL SCREW JACKS ARE FIRMLY IN CONTACT WITH THE FOUNDATION AND FRAME LEGS.

K. HORIZONTAL SHORING

1. SPECIAL CONSIDERATION MUST BE GIVEN TO THE INSTALLATION OF HORIZONTAL SHORING:
A. WHEN SLOPED OR SUPPORTED BY SLOPING LEDGERS (STRINGERS).
B. WHEN LEDGER (STRINGER) HEIGHT/WIDTH RATIO EXCEEDS 2.5 TO 1.
C. WHEN ECCENTRIC LOADING CONDITIONS EXIST.
D. WHEN LEDGER (STRINGER) CONSISTS OF MULTIPLE MEMBERS (I.E., DOUBLE 2x6, 2x8, ETC.)
E. WHEN HORIZONTAL SHORES ARE PLACED OTHER THAN AT RIGHT ANGLES TO THEIR SUPPORTS.
2. ASSURE THAT BEARING ENDS OF SHORING BEAMS ARE PROPERLY SUPPORTED AND THAT LOCKING DEVICES ARE PROPERLY ENGAGED BEFORE PLACING ANY LOADS ON BEAMS.
3. HORIZONTAL SHORING BEAMS SHOULD NOT BE SUPPORTED OTHER THAN AT THE BEARING PRONGS UNLESS RECOMMENDED BY YOUR SHORING COMPANY SUPPLIER. CANTILEVER "MALE END" OF SHORING COMPANY HORIZONTAL BEAMS ONLY. CANTILEVER SHALL NOT EXCEED 24".
4. DO NOT NAIL BEAM BEARING ENDS TO LEDGER.
5. PROVIDE AND MAINTAIN ADEQUATE SUPPORT TO PROPERLY DISTRIBUTE SHORING LOADS. WHEN SUPPORTING HORIZONTAL SHORING BEAMS ON:
A) MASONRY WALL - INSURE THAT MASONRY UNITS HAVE ADEQUATE STRENGTH. BRACE WALLS AS NECESSARY.
B) LEDGERS - SUPPORTED BY WALLS USING BOLTS, OR OTHER MEANS, SHOULD BE PROPERLY DESIGNED AN INSTALLED PER RECOMMENDATION OF SUPPLIER OR JOB ARCHITECT/ENGINEER.
C) FORMWORK - SHORING BEAMS SHOULD BE DESIGNED FOR THE ADDITIONAL LOADS IMPOSED BY THE FORMWORK.
D) STRUCTURAL STEEL FRAMEWORK - THE ABILITY OF THE STEEL TO SUPPORT ALL LOADING SHOULD BE CHECKED AND APPROVED BY THE RESPONSIBLE PROJECT ARCHITECT/ENGINEER.
E) STEEL HANGERS - BE SURE THE BEARING ENDS FULLY ENGAGE ON THE HANGERS. THE HANGERS SHALL BE DESIGNED TO CONFORM TO THE BEARING END AND SHALL HAVE A RATED STRENGTH TO SAFELY SUPPORT THE SHORING LOADS IMPOSED. HANGERS MUST BE PLATE SADDLE RATHER THAN WIRE TYPE. CHECK WITH MANUFACTURER OF HANGERS FOR SPECIFIC APPLICATION. (FOLLOW HANGER MANUFACTURE'S RECOMMENDATIONS)

A. FINAL INSPECTION

BE SURE THAT:

1. THERE IS SOUND FOUNDATION UNDER EVERY LEG.
2. ALL BASE PLATES AND SCREW JACKS ARE IN FIRM CONTACT WITH FOUNDATION.
3. EVERY COMPONENT (INCLUDING EXTERIOR BRACING) AGREES WITH THE SHORING LAYOUTS AS TO TYPE, SPAN, NUMBER, LOCATION AND SIZE.
4. ALL SHORE PINS ARE PROPERLY INSTALLED AND FULLY SEATED.
5. ALL FRAMES ARE PLUMB AND BRACED TO FORM TOWERS AND/OR ALL POSTS ARE PLUMB AND BRACED AS REQUIRED BY USER INSTRUCTIONS.
6. ALL FORMWORK FOLLOWS FORMING LAYOUT AND HORIZONTAL BEAMS FULLY BEAR ON THEIR SUPPORTS.
7. ALL CLAMPS, SCREWS, PINS AND OTHER FASTENERS (INCLUDING LOCKING DEVICES ON ADJUSTABLE BEAMS) ARE CLOSED, TIGHTENED, OR ENGAGED.

II. DURING CONSTRUCTION

1. IN HURRICANE SEASON (FROM JUNE 1 THRU 30 NOVEMBER) IF A STORM HIT THE AREA OF WORK, RE-INSPECTIONS IS REQUIRE AT CONTRACTOR EXPENSES.

!WARNING!
DO NOT POSITION WORKERS BELOW FORMWORK WHILE CONCRETE IS BEING PLACED.

III. REMOVAL

LOADED SHORING EQUIPMENT SHALL NOT BE RELEASED OR REMOVED, INCLUDING CROSS BRACES, UNTIL THE APPROVAL OF A QUALIFIED ENGINEER HAS BEEN RECEIVED. PREMATURE RELEASING OR STRIPPING OF FORMS CAN CAUSE FAILURE. A QUALIFIED ENGINEER MUST DECIDED WHEN AND HOW STRIPPING IS TO PROCEED. WEATHER CONDITIONS, VARIATIONS IN DIFFERENT PARTS OF THE STRUCTURE AN THE SETTING QUALITIES OF THE CONCRETE ALL AFFECT THE STRIPPING.

IV. RESHORING
DEFINITION: RESHORING MEANS THE CONSTRUCTION OPERATION IN WHICH SHORING EQUIPMENT IS PLACED, AS THE ORIGINAL FORMS AND SHORES ARE REMOVED, IN ORDER TO SUPPORT PARTIALLY CURED CONCRETE AND CONSTRUCTION LOADS.

1. RESHORING IS ONE OF THE MOST CRITICAL OPERATIONS IN FORMWORK. CONSEQUENTLY, RESHORING PROCEDURE MUST BE DESIGNED AND PLANNED IN ADVANCE BY A QUALIFIED STRUCTURAL ENGINEER AND APPROVED BY THE PROJECT ARCHITECT/ENGINEER.
2. SLABS OR BEAMS WHICH ARE TO BE RESHORED SHOULD BE ALLOWED TO TAKE THEIR PERMANENT DEFLECTION BEFORE FINAL ADJUSTMENT OF RESHORING EQUIPMENT IS MADE.
3. THE RESHORING SHALL BE THOROUGHLY CHECKED BY THE ARCHITECT/ENGINEER TO DETERMINE THAT IT IS PROPERLY PLACED AND THAT IT HAS THE ALLOWABLE LOAD CAPACITY TO SUPPORT THE AREAS THAT ARE BEING RESHORED.
4. EQUIPMENT TO BE LEFT IN POSITION FOR RESHORING SHOULD BE CHECKED THOROUGHLY BY A QUALIFIED ENGINEER. HORIZONTAL SHORING SHOULD NEVER BE USED AS A PART OF RESHORING SYSTEM. EXTREME CARE MUST BE TAKEN TO RELEASE THE ADJUSTMENT SCREWS TO A POINT WHERE THE SLAB TAKES ITS PERMANENT DEFLECTION. THE ADJUSTMENT SCREWS SHOULD THEN BE TIGHTENED UNTIL CONTACT IS AGAIN MADE WITH THE UNDERSIDE OF THE SLAB. IN THIS MANNER THE FRAME RESHORING BELOW WILL NOT BE CARRYING THE LOAD OF THE SLAB THAT IT HAD PREVIOUSLY SHORED.

NOTE 1:
HEIGHT-TO-MINIMUM BASE WIDTH RATIO OF THREE TO ONE (3:1). REFER TO THE GOVERNING CODES FOR YOUR JOB LOCATION.

SHORING EQUIPMENT SPECIFIED IN THESE DRAWINGS AND CALCULATIONS ARE DESIGNED, TESTED AND MANUFACTURED BY OTHERS. SHORING EQUIPMENT MANUFACTURERS ARE RESPONSIBLE FOR DEMONSTRATING THEIR PRODUCT CAPACITY TABLES ACCURACY AND COMPLIANCE TO F.B.C. AND OSHA REQUIREMENTS. SHORING EQUIPMENT MANUFACTURERS ARE RESPONSIBLE FOR RESPONDING TO ANY PROJECT AUTHORITY REQUESTS FOR FL. P.E. SIGNED AND SEALED SHORING EQUIPMENT COPIES OF ACTUAL TESTS DATA AND CORROBORATING CALCULATIONS.

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO START OF WORK AND NOTIFY ENGINEER OF ANY DISCREPANCY IN THE DRAWINGS AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH WORK.
2. CONTRACTOR TO FURNISH ALL LABOR, MATERIALS, SERVICES AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
3. DO NOT SCALE DRAWINGS. DIMENSIONS GOVERN.
4. ENGINEER'S VISITS AT THE SITE DURING CONSTRUCTION SHALL BE SCHEDULED WITH CONTRACTOR BEFORE COMMENCING OF WORK AND DURING CONSTRUCTION SHALL BE COORDINATED WITHIN 24 HOURS IN ADVANCE PRIOR TO INSPECTION.
5. DO NOT SUBSTITUTE MATERIALS, EQUIPMENTS OR METHODS OF CONSTRUCTION UNLESS SUCH SUBSTITUTIONS OR CHANGES HAVE BEEN APPROVED IN WRITING BY THE ENGINEER.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION, AND FOR THE SEQUENCES AND PROCEDURES TO BE USED.
7. THESE DWGS. ARE NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE STRUCTURAL ENGINEER.
8. THESE DWGS. ARE ONLY VALID FOR THE ADDRESS LISTED IN THE TITLE BLOCK OF [illegible]
9. AT THIS TIME, WE PERFORMED A VISUAL OBSERVATION OF THE CONDITION THE EXISTING CONCRETE STRUCTURAL ELEMENTS UNDER THE POOL DECK, AS SHOWN ON THESE DRAWINGS. BASED ON OUR ENGINEERING JUDGEMENT AND EXPERIENCE, THIS BUILDING REQUIRES IMMEDIATE HIRING OF A PROFESSIONAL STRUCTURAL ENGINEER SPECIALIZED IN EXISTING CONCRETE BUILDING ASSESSMENT AND CONCRETE RESTORATION DESIGN AND INSPECTIONS, AS WELL AS WITH RE-SHORING OF AREAS SHOWN ON THESE DRAWINGS. AS A ROUTINE MATTER, IN ORDER TO AVOID POSSIBLE MISUNDERSTANDINGS, NOTHING IN THIS DRAWINGS SHOULD BE CONSTRUED, DIRECTLY OR INDIRECTLY, AS A GUARANTEE FOR PORTIONS OF THE STRUCTURE NOT COVERED BY HEREIN RC GROUP, LLC VISUAL OBSERVATION. TO THE BEST OF MY KNOWLEDGE AND ABILITY, THIS STATEMENT REPRESENTS AN ACCURATE APPRAISAL OF THE PRESENT CONDITION OF THE ABOVE MENTIONED PORTION OF THE STRUCTURE BASED UPON CAREFUL EVALUATION OF OBSERVED CONDITIONS, TO THE EXTENT REASONABLY POSSIBLE. TO SUM UP, OWNERSHIP SHALL TAKE IMMEDIATE ACTION AND ADDRESS ABOVE MENTIONED STRUCTURAL CONCRETE DAMAGE.

DESIGN CRITERIAL:

1. BASEMENT SHEET PILLING WALL WILL TO CARRY LOADS WHEN TEMPORARY BRACING RESTORES ORIGINAL WALL TOP LATERAL SUPPORT CONDITION. ANY LOOSE CONCRETE COVER SHALL BE REMOVED AND BRACING TOP PLATE SHALL BE ATTACHED DIRECTLY TO SHEET PILLING.
2. BASED ON EXISTING STRUCTURAL DRAWINGS BASEMENT WALL CONSTRUCTION, OUR SITE VISITS AND OUR ENGINEERING JUDGEMENT, EXISTING BASEMENT WALL WILL BE ADEQUATE FOR TRANSFERRING THE TOP OF WALL LOADS TO BRACES, SINCE THE BRACES ARE SPACED AT SUCH CLOSED DISTANCE THAT WILL RESEMBLE THE CONTINUOUS SUPPORT PROVIDED BY THE DEMOLISHED FIRST ELEVATED CONCRETE SLAB.
3. EXISTING FIRST ELEVATED CONCRETE SLAB'S REMAINING STEEL REINFORCEMENT HANGING AT TOP OF EXISTING BASEMENT WALL SHALL BE AVOIDED AND/OR REMOVED TO GIVE WAY TO BRACING SYSTEM TOP ATTACHMENTS.
4. ROAD BARRIERS WILL BE INSTALLED (MOT), BY OTHERS, AT A DISTANCE SHOWN ON OUR PLANS FOR REFERENCE, THAT WILL PREVENT ROADWAY USERS FROM FALLING INTO OPEN BASEMENT AND TO COMPLY WITH SAFETY PLAN PROVIDED BY OTHERS.
5. WE WILL USE A LIVE LOAD VEHICULAR TRAFFIC SURFACE HORIZONTAL SURCHARGED LOAD, AGAINST EXISTING BACK OF BASEMENT WALL, BASED ON ASHTO 3.11.6.1, FORMULA 3.11.6.4-1 AND TABLE 3.11.6.4-2.
6. BRACING AND RE-SHORING WILL BE DESIGNED FOR ALL APPLICABLE CODE LOADS FOR THE PRESENT CONDITION OF MENTIONED, INSTALLED IN THIS SITE. WE WILL USE CODE LOADS FOR PERMANENT THE REMAINING STRUCTURE ABOVE DUE TO THE LENGTH OF TIME THAT THIS EQUIPMENT WILL BE STRUCTURES.
7. EXISTING CONCRETE STRUCTURAL BASEMENT SLAB WILL BE USED TO SUPPORT TEMPORARY BRACING SYSTEM HORIZONTAL AND VERTICAL REACTION. DILAPIDATED AND/OR SPALLED SURFACES SHALL BE AVOIDED.
8. AS PER EXISTING STRUCTURAL PLANS, EXISTING CONCRETE STRUCTURAL SLAB IS 6" THICK. THIS VALUE IS CONSISTANT WITH THE AVERAGE VALUE MEASURED ON THE FIELD. BASED ON OUR VISUAL FIELD OBSERVATIONS, THIS STRUCTURAL SLAB APPEARS TO BE IN GOOD CONDITION AND SUPPORTED DEBRIS FROM ENTIRE BUILDING AFTER COLLAPSING.
9. NO STAGNANT WATER AT EXISTING CONCRETE STRUCTURAL BASEMENT SLAB. WATER REMOVAL BY OTHERS.
10. MINIMUM BRACING SPACING WILL BE CALCULATED AND SHOWN ON PLANS.
11. EXISTING ROADWAY DRAINAGE PRE-FABRICATED

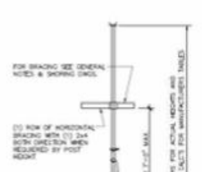
DESIGN LOADS:

1. WIND LOADS, BASEMENT WALLS = 48.36PSF
2. BACKFILL SOIL, UNIFORM HORIZONTAL TRIANGULAR DISTRIBUTION ON BACK SURFACE OF THE BASEMENT WALL, SATURATED SOIL PRESSURE AT TOP IS 0.0PLF AND A BASE OF BASEMENT WALL = 99PSF.
3. STREET LIVE LOAD TRUCK SURCHARGE FOR BASEMENT WALLS PARALLEL TO HIGHWAY (COLLINS AVE. TRAFFIC CONTROL), AS PER AASHTO 3.11.6.1, FORMULA 3.11.6.4-1 AND TABLE 3.11.6.4-2, UNIFORMLY DISTRIBUTED HORIZONTAL SURFACE LOAD = 30PSF.

TEMPORARY LATERAL WALL BRACING DRAWINGS INDEX

NOTE:

FOR DIMENSIONS AND SCAFFOLD CONFIGURATION, REFER TO MANUFACTURER SPECIFICATION



TYPICAL STEEL POST SHORES

EDUARDO JOSE CANTO
LICENSE
No. 56845
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Digitally signed by Eduardo J Canto
Date: 2021.08.23

RESERVED FOR CITY STAMP AREA

REVISIONS

EDUARDO J. CANTO P.E.
STRUCTURAL ENGINEER
P.E. No. 56845

RC GROUP, LLC.

PROJECT: CHAMPLAIN TOWER SOUTH
8777 COLLINS AVENUE
SURFSIDE, FL 33154

DWG. TITLE: TEMPORARY LATERAL WALL BRACING
GENERAL NOTES

DATE: 08.09.2021
SCALE: AS-SHOWN
DWN. BY: E.C.
CHKD. BY: E.C.
PROJECT NO.: 2108249
DRAWING: SH-00
Sheet 1 of 3

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO START OF WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCY IN THE DRAWINGS AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH WORK.
2. THIS WORK REQUIRES A BUILDING PERMIT. DO NOT BEGIN WORKING UNTIL A BUILDING PERMIT IS OBTAINED.
3. CONTRACTOR TO FURNISH ALL LABOR, MATERIALS, SERVICES AND EQUIPMENT NECESSARY TO COMPLETE ALL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
4. DO NOT SCALE DRAWINGS, DIMENSIONS GOVERN.
5. ENGINEER'S VISITS AT THE SITE DURING CONSTRUCTION SHALL BE SCHEDULED WITH CONTRACTOR BEFORE COMMENCING OF WORK AND DURING CONSTRUCTION SHALL BE COORDINATED WITHIN 24 HOURS IN ADVANCE PRIOR TO INSPECTION.
6. THE CONTRACTOR SHALL NOT PROCEED WITH ANY ADDITIONAL SERVICES OR WORK WITHOUT PRIOR NOTIFICATION TO THE OWNER, FOLLOWED BY A CHANGE ORDER.
7. THE CONTRACTOR SHALL MAKE REQUIRED ARRANGEMENTS, SECURE AND PAY FOR ALL SANITARY FACILITIES, BARRICADES, ENCLOSURES, AND FENCING AS NEEDED FOR AND DURING THE PROGRESS OF CONSTRUCTION. CONTRACTOR SHALL PROTECT ADJACENT PROPERTIES.
8. DO NOT SUBSTITUTE MATERIALS, EQUIPMENTS OR METHODS OF CONSTRUCTION UNLESS SUCH SUBSTITUTIONS OR CHANGES HAVE BEEN APPROVED IN WRITING BY THE OWNER/ARCHITECT/ENGINEER.
9. CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF CHANGE ORDERS AND VARIATIONS THROUGHOUT THE PROGRESS OF THE WORK. USE ONE SET OF DOCUMENTS EXCLUSIVELY FOR THIS JOB. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING HIS CONSTRUCTION DOCUMENTS WITH ANY REVISED DRAWINGS AND SPECIFICATIONS, FIELD ORDERS, CHANGE ORDERS, AND CLARIFICATION SKETCHES ISSUED DURING THE COURSE OF CONSTRUCTION.
10. CONTRACTOR SHALL DELIVER THE ANNOTATED JOB RECORD SET TO THE OWNER UPON COMPLETION OF THE WORK, AS A CONDITION OF ACCEPTANCE.
11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION, AND FOR THE SEQUENCES AND PROCEDURES TO BE USED.
12. THESE DWGS. ARE NOT VALID WITHOUT THE SIGNATURE AND RAISED SEAL OF THE STRUCTURAL ENGINEER.
13. THESE DWGS. ARE ONLY VALID FOR THE ADDRESS LISTED IN THE TITLE BLOCK OF RC GROUP LLC.

NOTE B:

1. FOR LOCATION AREA REFER TO ARCHITECTURAL/STRUCTURAL DRAWINGS BY OTHERS.
2. ALL EQUIPMENT SHALL MATCH PROPOSED CAPACITY BY RC GROUP, LLC DRAWINGS AND CALCULATIONS.

STEEL BRACE

SEE GENERAL NOTES FOR PERTINENT INFORMATION

1) THIS BRACE IS DESIGNED FOR USE WITH MOST SUPPLIERS EQUIPMENT. THE CONTRACTOR SHOULD FOLLOW THE SUPPLIERS RECOMMENDATIONS FOR SAFETY AND ERECTION OF THEIR EQUIPMENT, AND IS RESPONSIBLE FOR INSURING THE SUITABILITY OF THE EQUIPMENT AND LAYOUT TO THIS PROJECT PRIOR TO COMMENCEMENT.
2) CONTRACTOR SHALL SET A PERIODIC INSPECTION PROGRAM FOR ALL BRACING AND POST SHORE EQUIPMENT. ONE INSPECTION EVERY MONTH IS RECOMENDED.
3) LOCATION OF BRACE MAY VARY PLUS OR MINUS 6", DUE TO FIELD CONDITIONS. RC GROUP LLC MUST BE NOTIFIED IF THE LOCATION OF A BRACE IS MORE THAN 6" FROM THAT SHOWN ON THE PLAN.
4) ALL BRACE AND EQUIPMENT MUST BE IN GOOD CONDITION, FREE OF DELETERIOUS RUST, DENTS, OR OTHER MAJOR DEFECTS.
5) BRACES AND POST SHORES MUST BE INSPECTED BY RC GROUP, LLC AFTER INSTALLATION.
6) MAXIMUM CALCULATED BY KICKER LOAD IS SHOWN ON CALCULATIONS, PROCURE BRACES BASED ON SCHEDULES PROVIDED ON THESE DRAWINGS.

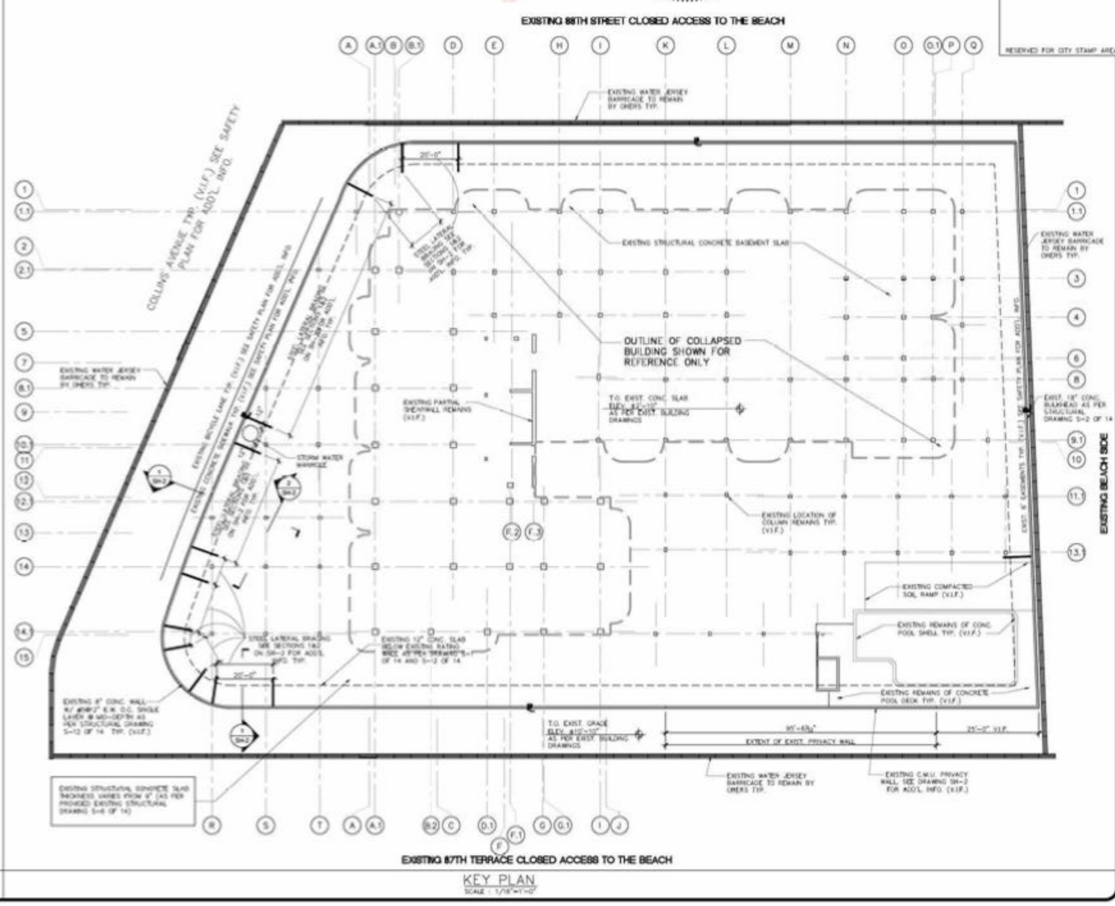
NOTE A:

RC GROUP, LLC. DID NOT PERFORM A STUDY TO DETERMINE EXISTING CONCRETE CONDITIONS. CONCRETE RESTORATION STUDY AND SPEC'S WERE PROVIDED TO CONTRACTOR BY AGENCY THIRD PARTY GENERAL CONTRACTOR TO FOLLOW THIRD PARTY AGENCY STUDY.

RC GROUP LLC IS NOT RESPONSIBLE FOR ANY EXISTING CONCRETE SLAB CRACKING THAT MAY OCCUR.

Digitally signed by Eduardo J Canto
DN: c=US, o=RC GROUP LLC, ou=A01410D000001753248A71300006A79, cn=Eduardo J Canto
Date: 2021.08.23 12:10:08 -04'00'

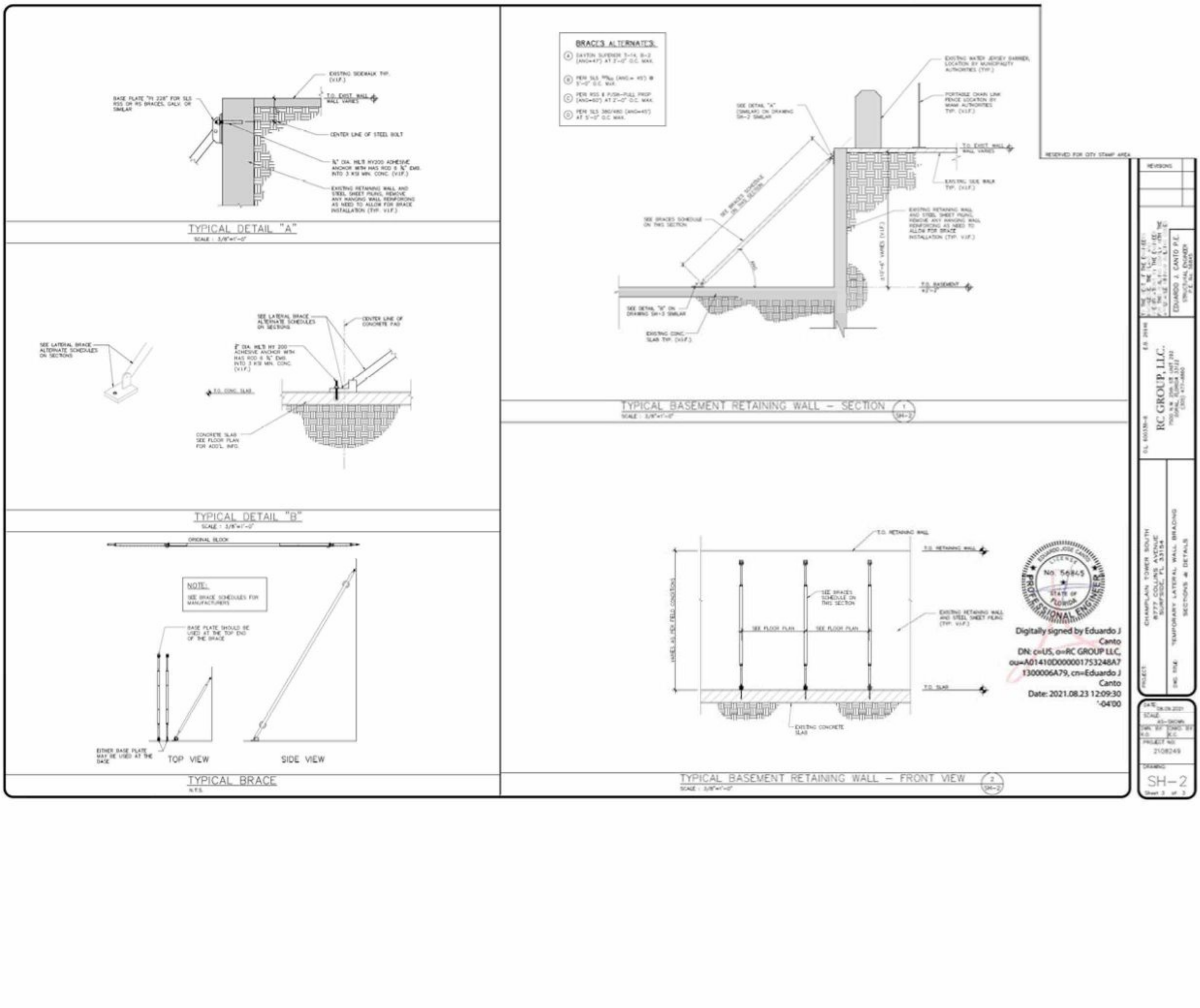
EDUARDO JOSE CANTO LICENSE No. 56845 STATE OF FLORIDA PROFESSIONAL ENGINEER



KEY PLAN
SCALE : 1/16"=1'-0"

RESERVED FOR CITY STAMP AREA

REVISIONS	
EDUARDO J. CANTO P.E. STRUCTURAL ENGINEER P.E. No. 56845	
RC GROUP, LLC. 7500 N.W. 25th ST. UNIT 292 DORAL, FLORIDA 33122 (305) 477-8860	Q.L. 600339-6 / E.B. 26946
PROJECT:	CHAMPLAIN TOWER SOUTH 8777 COLLINS AVENUE SURFSIDE, FL 33154
DWG. TITLE:	TEMPORARY LATERAL WALL BRACING FLOOR PLAN, NOTES AND DETAILS
DATE:	08.09.2021
SCALE:	AS-SHOWN
DWN. BY: R.O.	CHKD. BY: E.C.
PROJECT NO:	2108249
DRAWING:	SH-1
Sheet 2 of 3	



BRACES ALTERNATES:
EXISTING SIDEWALK TYP. (V.I.F.)
T.O. EXIST. WALL
WALL VARIES
CENTER LINE OF STEEL BOLT
EXISTING RETAINING WALL AND STEEL SHEET PILING, REMOVE ANY HANGING WALL REINFORCING AS NEED TO ALLOW FOR BRACE INSTALLATION (TYP. V.I.F.)
TYPICAL DETAIL "A"
SCALE : 3/8"=1'-0"
SEE LATERAL BRACE ALTERNATE SCHEDULES ON SECTIONS
CENTER LINE OF CONCRETE PAD
T.O. CONC. SLAB
CONCRETE SLAB SEE FLOOR PLAN FOR ADD'L. INFO.
TYPICAL DETAIL "B"
SCALE : 3/8"=1'-0"
ORIGINAL BLOCK
NOTE:
SEE BRACE SCHEDULES FOR MANUFACTURERS
BASE PLATE SHOULD BE USED AT THE TOP END OF THE BRACE
EITHER BASE PLATE MAY BE USED AT THE BASE
TOP VIEW
SIDE VIEW
TYPICAL BRACE
N.T.S.
PORTABLE CHAIN LINK FENCE LOCATION BY MIAMI AUTHORITIES TYP. (V.I.F.)
EXISTING SIDE WALK TYP. (V.I.F.)
SEE BRACES SCHEDULE ON THIS SECTION
SEE DETAIL "B" ON DRAWING SH-2 SIMILAR
EXISTING CONC. SLAB TYP. (V.I.F.)
T.O. BASEMENT
TYPICAL BASEMENT RETAINING WALL – SECTION
SCALE : 3/8"=1'-0"
SH-2
RESERVED FOR CITY STAMP AREA
T.O. RETAINING WALL
SEE BRACES SCHEDULE ON THIS SECTION
SEE FLOOR PLAN
EXISTING RETAINING WALL AND STEEL SHEET PILING (TYP. V.I.F.)
T.O. SLAB
EXISTING CONCRETE SLAB
TYPICAL BASEMENT RETAINING WALL – FRONT VIEW
SCALE : 3/8"=1'-0"
SH-2
No. 56845
STATE OF FLORIDA
PROFESSIONAL ENGINEER
Digitally signed by Eduardo J Canto
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Date: 2021.08.23 12:09:30 -04'00
REVISIONS
EDUARDO J. CANTO P.E.
STRUCTURAL ENGINEER
RC GROUP, LLC.
PROJECT:
CHAMPLAIN TOWER SOUTH
8777 COLLINS AVENUE
SURFSIDE, FL 33154
DWG TITLE:
TEMPORARY LATERAL WALL BRACING
SECTIONS & DETAILS
SCALE: AS-SHOWN
PROJECT NO. 2108249
DRAWING:
SH-2

RC GROUP, LLC
Structural & Shoring Consulting Engineers

PROJECT:	Champlain Towers South
	8777 Collins Ave.
	Surfside, FL 33184
RC No.:	2108249

Temporary Structure Structural Calculations

DESCRIPTION:	Temporary Re-shoring & Lateral Bracing Members Evaluation
DATE:	August 23, 2021
No. OF PAGES:	Cover + 36

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'Date: 2021.08.23 12:08:08 -04'00

EDUARDO JOSE CANTO
LICENSE
No. 56845
STATE OF FLORIDA
PROFESSIONAL ENGINEER

O.L.#:600338-8
E.B.#: 26946

Eduardo Canto, P.E.
Structural Engineer
FL. No.: 56845

Codes:	Materials:
(1) FBC 2020, 7th Edition (2) ACI 318-14 (3) ACI 530-13 (4) ASCE 7-16 (5) AISC (ASD 14th Ed.) (6) NDS 2018 (7) ACI 347.2R-05. Guide for Shoring/Re-shoring of Concrete Multistory Buildings (8) ADM 1-2015	(1) Concrete, f'c = 3,000 psi (U.O.N., Minimum) (2) Reinforcing Steel, fy = 60,000 psi – ASTM A 615, Grade 60 (U.O.N.) (3) Structural Steel, Fy = 50,000 psi – ASTM A 992, Grade 50 (U.O.N.) (4) Plywood, Structural Grade 1 (As per APA table 3, attached): Fb = 1,190 psi (U.O.N.) Load Duration Factor: Fb=1,488 psi (U.O.N.) (5) Wood, Southern Pine No.2 (Typical for all members): Single Member: Fb = 1,100 psi (U.O.N.) (6) Anchor Rods, ASTM A 307 (U.O.N.) (7) Bolting Materials, ASTM A 325 or A 490 (U.O.N.)

Table of Content:

Code Search

Code: ASCE 7 - 16

Occupancy:

Occupancy Group = B Business

Risk Category & Importance Factors:

Risk Category =	II
Wind factor =	1.00
Snow factor =	1.00
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	0.00 / 12	0.0 deg
Building length	95.5 ft	
Least width	0.0 ft	
Mean Roof Ht (h)	10.5 ft	
Parapet ht above grd	10.5 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

Roof	0 to 200 sf:	20 psf
	200 to 600 sf:	24 - 0.02Area, but not less than 12 psf
	over 600 sf:	12 psf

Floor:

Typical Floor	40 psf
Partitions	15 psf
Lobbies & first floor corridors	100 psf
Corridors above first floor	80 psf
Balconies (1.5 times live load)	60 psf

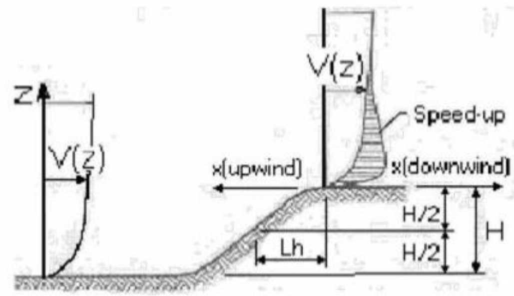
Wind Loads : ASCE 7- 16

Ultimate Wind Speed	175 mph
Nominal Wind Speed	135.6 mph
Risk Category	II
Exposure Category	D
Enclosure Classif.	Open Building
Internal pressure	+/-0.00
Directionality (Kd)	0.85
Kh case 1	1.030
Kh case 2	1.030
Type of roof	Monoslope

Topographic Factor (Kzt)

Topography	Flat
Hill Height (H)	0.0 ft
Half Hill Length (Lh)	0.0 ft
Actual H/Lh =	0.00
Use H/Lh =	0.00
Modified Lh =	0.0 ft
From top of crest: x =	0.0 ft
Bldg up/down wind?	downwind

H< 15ft;exp D
∴ Kzt=1.0

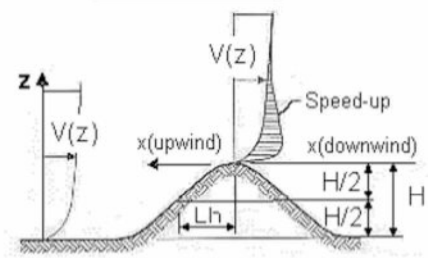


ESCARPMENT

H/Lh= 0.00	K_1 = 0.000
x/Lh = 0.00	K_2 = 0.000
z/Lh = 0.00	K_3 = 1.000

At Mean Roof Ht:

$K_{zt} = (1+K_1K_2K_3)^2 = 1.00$



2D RIDGE or 3D AXISYMMETRICAL HILL

Gust Effect Factor

h =	10.5 ft
B =	0.0 ft
/z (0.6h) =	7.0 ft

Flexible structure if natural frequency < 1 Hz (T > 1 second).
If building h/B>4 then may be flexible and should be investigated.
h/B = #DIV/0! #DIV/0!

G = 0.85 Using rigid structure default

Rigid Structure

ē =	0.13
ℓ =	650 ft
z_{min} =	7 ft
c =	0.13
g_Q, g_v =	3.4
L_z =	535.5 ft
Q =	0.97
I_z =	0.16
G =	0.91 use G = 0.85

Flexible or Dynamically Sensitive Structure

34 ıcy (η_1) =	0.0 Hz				
Damping ratio (β) =	0				
/b =	0.80				
/α =	0.11				
Vz =	172.8				
N_1 =	0.00				
K_n =	0.000				
R_h =	28.282	η =	0.000	h =	10.5 ft
R_B =	28.282	η =	0.000		
R_L =	28.282	η =	0.000		
g_R =	0.000				
R =	0.000				
Gf =	0.000				

RC GROUP, LLC
7500 NW 25th ST
Miami, FL 33155
305-477-8860

JOB TITLE	Basement Wall Wind calculations		
JOB NO.	2108249	**SHEET NO.**	
CALCULATED BY		**DATE**	8/23/21
CHECKED BY		**DATE**	

Enclosure Classification

Test for Enclosed Building: Ao < 0.01Ag or 4 sf, whichever is smaller

Test for Open Building: All walls are at least 80% open.
Ao ≥ 0.8Ag

Test for Partially Enclosed Building: Predominately open on one side only

	Input			Test	
Ao	500.0	sf	Ao ≥ 1.1Aoi	NO	
Ag	600.0	sf	Ao > 4' or 0.01Ag	YES	
Aoi	1000.0	sf	Aoi / Agi ≤ 0.20	YES	Building is NOT Partially Enclosed
Agi	10000.0	sf			

Conditions to qualify as Partially Enclosed Building. Must satisfy all of the following:
- Ao ≥ 1.1Aoi
- Ao > smaller of 4' or 0.01 Ag
- Aoi / Agi ≤ 0.20

Where:
Ao = the total area of openings in a wall that receives positive external pressure.
Ag = the gross area of that wall in which Ao is identified.
Aoi = the sum of the areas of openings in the building envelope (walls and roof) not including Ao.
Agi = the sum of the gross surface areas of the building envelope (walls and roof) not including Ag.

Test for Partially Open Building: A building that does not qualify as open, enclosed or partially enclosed.
(This type building will have same wind pressures as an enclosed building.

Reduction Factor for large volume partially enclosed buildings (Ri) :

If the partially enclosed building contains a single room that is unpartitioned , the internal pressure coefficient may be multiplied by the reduction factor Ri.

Total area of all wall & roof openings (Aog):		0 sf
Unpartitioned internal volume (Vi) :		0 cf
	Ri =	1.00

Ground Elevation Factor (Ke)

Grd level above sea level =	0.0 ft			Ke =	1.0000
Constant =	0.00256	Adj Constant =	0.00256		

RC GROUP, LLC
7500 NW 25th ST
Miami, FL 33155
305-477-8860

JOB TITLE	Basement Wall Wind calculations		
JOB NO.	2108249	SHEET NO.	
CALCULATED BY		DATE	8/23/21
CHECKED BY		DATE	

Wind Loads - Other Structures: ASCE 7- 16 — Ultimate Wind Pressures

Wind Factor =	1.00		
Gust Effect Factor (G) =	0.85	Ultimate Wind Speed =	175 mph
Kzt =	1.00	Exposure =	D

A. Solid Freestanding Walls & Solid Signs (& open signs with less than 30% open)

		s/h =	1.00	**Case A & B**	
Dist to sign top (h)	10.5 ft	B/s =	9.10	C_f =	1.31
Height (s)	10.5 ft	Lr/s =	0.00	F = qz G Cf As =	**76.4 As**
Width (B)	95.5 ft	Kz =	1.030	As =	0.0 sf
Wall Return (Lr) =		qz =	68.7 psf	F =	0 lbs
Directionality (Kd)	0.85				
Percent of open area to gross area	0.0%	Open reduction factor =	1.00		

CaseC

Horiz dist from windward edge	Cf	F=qzGCfAs (psf)
0 to s	2.93	170.8 **As**
s to 2s	1.89	110.2 **As**
2s to 3s	1.41	82.1 **As**
3s to 10s	0.80	46.5 **As**

Case C reduction factors	
Factor if s/h>0.8 =	0.80
Wall return factor for Cf at 0 to s =	1.00

B. Open Signs & Single-Plane Open Frames (openings 30% or more of gross area)

Height to centroid of Af (z)	0.0 ft			Kz =	1.030
				Base pressure (qz) =	68.7 psf
Width (zero if round)	1.0 ft				
Diameter (zero if rect)	0.0 ft			$F = q_z G C_f A_f$ =	**0.0 Af**
Percent of open area		I =	0	Solid Area: A_f =	10.0 sf
to gross area	0.0%	C_f =	2	F =	0 lbs
Directionality (Kd)	0.85			Design sign as solid sign	

3. Where soil has a very low friction coefficient, or for some clay subsoils where cohesion is low or unreliable, and the required depth of key is impracticable, the base may be supported on battered piles.

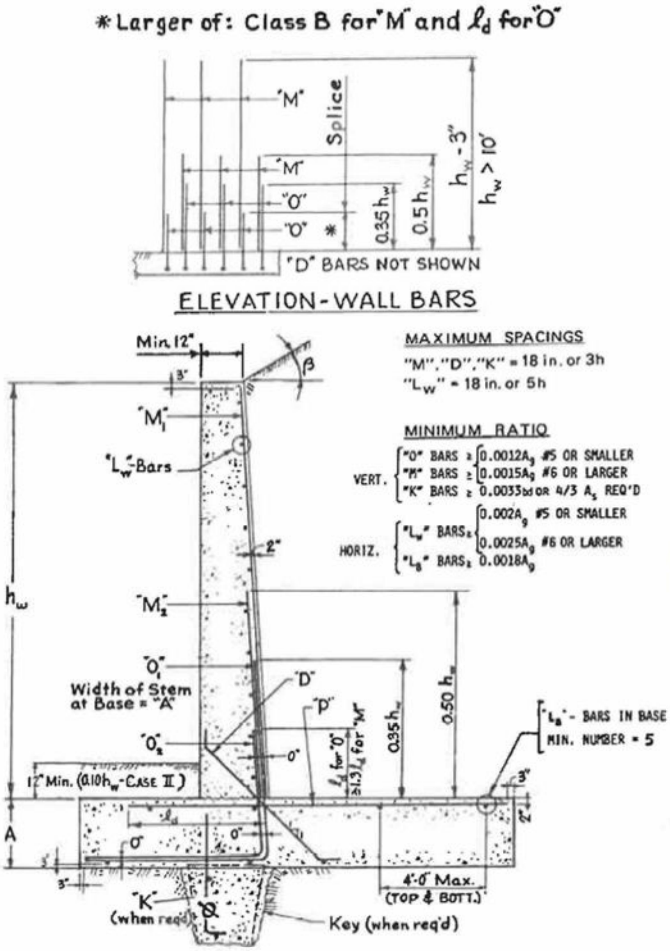


Fig. 14-2 Notation for Dimensions and Structural Reinforcement for Wall Heights > 10′

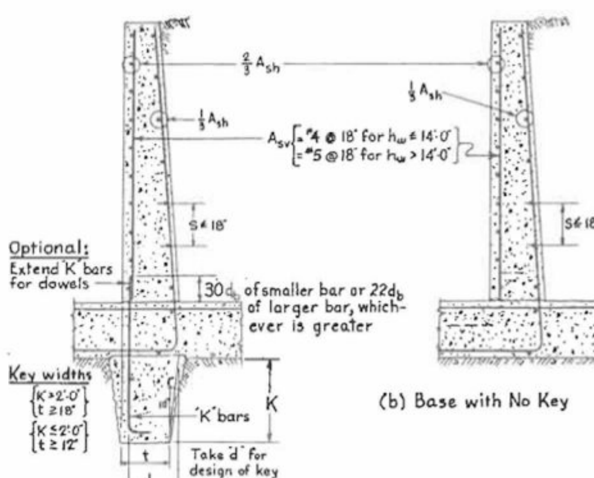


Fig. 14-3 Shrinkage and Temperature Bars in Exposed Face (When Used)

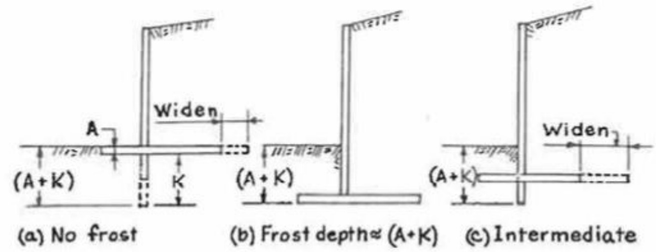


Fig. 14-4 Designs to Prevent Horizontal Sliding

Soil Data and Assumed Properties. Three classes of soil are considered as backfill and bearing. See Table 14-1. *Class A* would qualify as nearly ideal backfill – easily drained and creating least lateral pressure, 30h (psf), where *h* is height, in feet, below top of wall. *Class B*, 45h (psf), includes many more naturally occurring combinations of soils suitable for engineering purposes. *Class C* level backfill is equivalent to water pressure, 62.5h (psf). It may include mixtures of various compositions of actual soils in place or even allow for partial height water tables in Class A or Class B backfills.

$K_a = \tan^2(45° - \phi/2) = 0.30$ 0.33

$K_p = \frac{1}{K_a} = 3.4$ 3.0

Class of Soil	γ Max. wt. psf	ϕ Internal Friction	μ Friction for Sliding	Horizontal Pressure Active psf	Horizontal Pressure Passive psf	Sloping Rockfill* Active Horiz. Comp.	Sloping Rockfill* Active Vert. Comp.	Sloping Rockfill* Slope Angle β	Sloping Rockfill* Slope Coten
A	105	≥33°-45′	0.55	30h	368h	60h	30h	33°-41′	1½:1
B	135	≥30°	0.55	45h	405h	70h	40h	29°-45′	1¾:1
C	132	≥20°-56°	0.45	62.5h	279h	90h	45h	18°-26′	3:1

$\phi = 33°$

$\phi = 30°$

Table 14-1 Soil Properties Used for Design

Class A includes clean sand, gravel, broken stone, free of fines that might obstruct free drainage.

Class B includes granular soils, mixed grain sizes, dense enough to cause low permeability.

Class C includes fine, silty sands; granular soils with some clay; some glacial tills. Note that the basic horizontal pressure is liquid pressure. Class C backfill designs will also suffice for some combinations of Class A or Class B soils, with partial height water table, thus extending applicability of these designs.

COST CONSIDERATIONS IN WALL DESIGN

Less Thickness – More Flexural Steel. Use of the minimum thickness structurally possible for walls principally reinforced for bending in one direction seldom achieves overall economy. The cost of reinforcing steel is a major item in the total cost. With the larger cover required for sanitary structures and even with single curtains of reinforcing steel in both directions, wall thicknesses less than 8 inches are likely to make concrete placing difficult and consolidation without honeycomb uncertain. Suggested designs here show 8 inches thicknesses for minor walls with heights, h_w, up to 7′. As walls become higher or more heavily loaded, greater thicknesses become economical, achieving reduction in weight of flexural steel directly proportional to increases in effective

*"Sloping Backfill" designs are conservatively based upon values from the AREA Manual chart. See Figure 14-5.

From table 14-1 CRSI, Class of soil, see the ka calc's bellow:

For this project, south Florida sandy soils, Soil class B

$\phi_1 := 30\text{deg}$ $\qquad$ $k_{a1} := \tan\left(45\text{deg} - \frac{\phi_1}{2}\right)^2 = 0.33$

Class of Soil	γ Max. wt. psf	ϕ Internal Friction	μ Friction for Sliding	Horizontal Pressure		Sloping Rockfill *			
				Active psf	Passive psf	Active Horiz. Comp.	Active Vert. Comp.	Slope Angle β	Slope Cotan
A	105	≥33°-45′	0.55	30h	368h	60h	30h	33°-41′	1½:1
B	135	≥30°	0.55	45h	405h	70h	40h	29°-45′	1¾:1
C	132	≥20°-56°	0.45	62.5h	279h	90h	45h	18°-26′	3:1

Table 14-1 Soil Properties Used for Design

Class A includes clean sand, gravel, broken stone, free of fines that might obstruct free drainage.

Class B includes granular soils, mixed grain sizes, dense enough to cause low permeability.

Class C includes fine, silty sands; granular soils with some clay; some glacial tills. Note that the basic horizontal pressure is liquid pressure. Class C backfill designs will also suffice for some combinations of Class A or Class B soils, with partial height water table, thus extending applicability of these designs.

$$\Delta_p = k\gamma_s h_{eq} \qquad (3.11.6.4\text{-}1)$$

where:

Δ_p = constant horizontal earth pressure due to live load surcharge (ksf)
γ_s = total unit weight of soil (kcf)
k = coefficient of lateral earth pressure
h_{eq} = equivalent height of soil for vehicular load (ft)

Equivalent heights of soil, h_{eq}, for highway loadings on abutments and retaining walls may be taken from Tables 3.11.6.4-1 and 3.11.6.4-2. Linear interpolation shall be used for intermediate wall heights.

The wall height shall be taken as the distance between the surface of the backfill and the bottom of the footing along the pressure surface being considered.

Abutments

Table 3.11.6.4-1—Equivalent Height of Soil for Vehicular Loading on Abutments Perpendicular to Traffic

Abutment Height (ft)	h_{eq} (ft)
5.0	4.0
10.0	3.0
≥20.0	2.0

Retaining Walls

Table 3.11.6.4-2—Equivalent Height of Soil for Vehicular Loading on Retaining Walls Parallel to Traffic

Retaining Wall Height (ft)	h_{eq} (ft) Distance from wall backface to edge of traffic	
	0.0 ft	1.0 ft or Further
5.0	5.0	2.0
10.0	3.5	2.0
≥20.0	2.0	2.0

The load factor for both vertical and horizontal components of live load surcharge shall be taken as specified in Table 3.4.1-1 for live load surcharge.

3.11.6.5—Reduction of Surcharge

If the vehicular loading is transmitted through a structural slab, which is also supported by means other than earth, a corresponding reduction in the surcharge loads may be permitted.

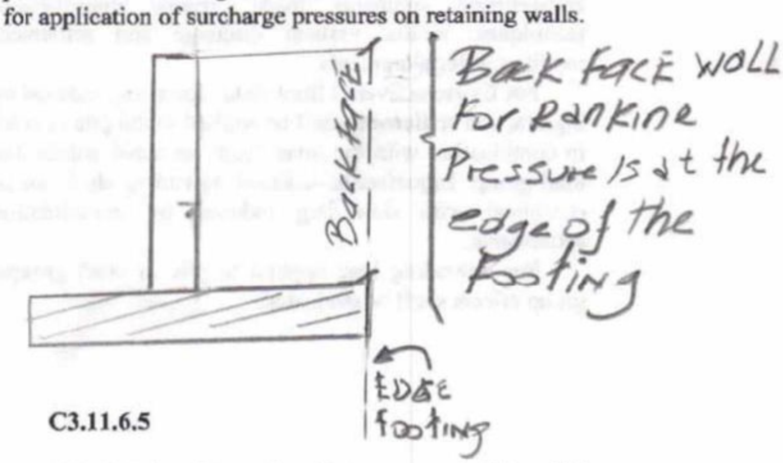
- Poisson's ratio for the pavement and subgrade materials are 0.2 and 0.4, respectively
- Wheel loads were modeled as a finite number of point loads distributed across the tire area to produce an equivalent tire contact stress
- The process for equating wall moments resulting from the elastic solution with the equivalent surcharge method used a wall height increment of 0.25 ft.

The value of the coefficient of lateral earth pressure k is taken as k_o, specified in Article 3.11.5.2, for walls that do not deflect or move, or k_a, specified in Articles 3.11.5.3, 3.11.5.6 and 3.11.5.7, for walls that deflect or move sufficiently to reach minimum active conditions.

The analyses used to develop Tables 3.11.6.4-1 and 3.11.6.4-2 are presented in Kim and Barker (1998).

The values for h_{eq} given in Tables 3.11.6.4-1 and 3.11.6.4-2 are generally greater than the traditional 2.0 ft of earth load historically used in the AASHTO specifications, but less than those prescribed in previous editions (i.e., before 1998) of this specification. The traditional value corresponds to a 20.0-kip single unit truck formerly known as an H10 truck, Peck et al. (1974). This partially explains the increase in h_{eq} in previous editions of this specification. Subsequent analyses, i.e., Kim and Barker (1998) show the importance of the direction of traffic, i.e., parallel for a wall and perpendicular for an abutment on the magnitude of h_{eq}. The magnitude of h_{eq} is greater for an abutment than for a wall due to the proximity and closer spacing of wheel loads to the back of an abutment compared to a wall.

The backface of the wall should be taken as the pressure surface being considered. Refer to Article C11.5.5 for application of surcharge pressures on retaining walls.



C3.11.6.5

This Article relates primarily to approach slabs which are supported at one edge by the backwall of an abutment, thus transmitting load directly thereto.

¡TRUCKS!

LIVE LOAD SURCHARGE, *LS* (3.11.6.1): $\boxed{LS}$ = LIVE LOAD Surcharge

- If vehicular load is expected on the surface of the backfill within a distance equal to one half the wall height behind the back face of wall, a live load surcharge must be applied. HWALL/2 = DISTANCE LIVE LOAD Surcharge
- The horizontal pressure due to live load surcharge, $\mathbf{\Delta_p}$ (ksf), can be estimated using Equation 3.11.6.4-1 as:

$$\boxed{\Delta_p = k\gamma_s h_{eq}} \quad (KSF)$$

$\boldsymbol{k}$ = Coefficient of lateral earth pressure

$\boldsymbol{\gamma_s}$ = Unit weight of soil (kcf)

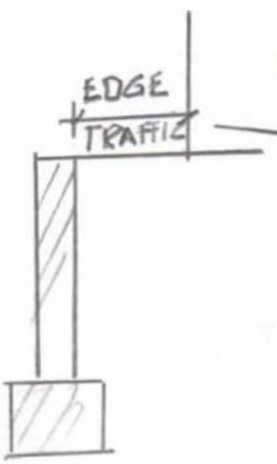
$\boldsymbol{h_{eq}}$ = Equivalent height of soil for vehicular load (ft)

Table 3.11.6.4-1: Equivalent Height of Soil for Vehicular Loading on Abutments perpendicular to Traffic PERPENDICULAR TRAFFIC

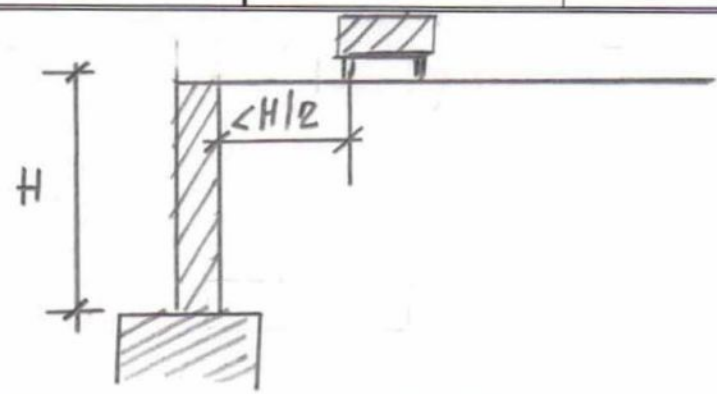
$$\boxed{\Delta_p = k\gamma_s h_{eq}}$$

Abutment height (ft)	h_{eq} (ft)
5.0	4.0
10.0	3.0
≥ 20.0	~~5.0~~ 2.00

Table 3.11.6.4-2: Equivalent Height of Soil for Vehicular Loading on Retaining Walls parallel to Traffic PARALLEL TRAFICO



Retaining Wall Height (ft)	h_{eq} (ft) Distance from wall back face to edge of traffic 0.0 ft	≥ 1.0
5.0	5.0	2.0
10.0	3.5	2.0
≥ 20.0	2.0	2.0



Street live load truck surcharge for wall parallel to highway load, for collins avenue basement walls.
By inpection,loading along Collins Ave. will control check since the other three side streets have local traffic accessing building notrh and south of the site.

As per AASHTO formula 3.11.6.4-1, and Table 3.11.6.4-2, the highway live surcahrge load is

3-130

$$\Delta_p = k\gamma_s h_{eq} \qquad (3.11.6.4\text{-}1)$$

where:

Δ_p = constant horizontal earth pressure due to live load surcharge (ksf)
γ_s = total unit weight of soil (kcf)
k = coefficient of lateral earth pressure
h_{eq} = equivalent height of soil for vehicular load (ft)

Equivalent heights of soil, h_{eq}, for highway loadings on abutments and retaining walls may be taken from Tables 3.11.6.4-1 and 3.11.6.4-2. Linear interpolation shall be used for intermediate wall heights.

The wall height shall be taken as the distance between the surface of the backfill and the bottom of the footing along the pressure surface being considered.

Soil class C, conservative, see previous pages

$\gamma_{SoilMax} := 135pcf$

$\phi := 30deg$ $\qquad k_a := \tan\left(45deg - \frac{\phi}{2}\right)^2 = 0.33$

$k_a = 0.33$

Table 3.11.6.4-2—Equivalent Height of Soil for Vehicular Loading on Retaining Walls Parallel to Traffic

Retaining Wall Height (ft)	h_{eq} (ft) Distance from wall backface to edge of traffic 0.0 ft	1.0 ft or Further
5.0	5.0	2.0
10.0	3.5	2.0
≥20.0	2.0	2.0

as per table to the left, it is conservative to say that the truck wheels will fall adjacent to the sidewalk gutter which is approximately 6ft away from the wall's back side.

$h_{eq} := 2$

$\Delta_p := k_a \cdot \gamma_{SoilMax} \cdot h_{eq} \cdot (1ft) = 90\,psf$ $\qquad \Delta_p = 0.09\,ksf$ per linear foot

PRESUMPTIVE SOIL (SO. FLORIDA)

ϕ

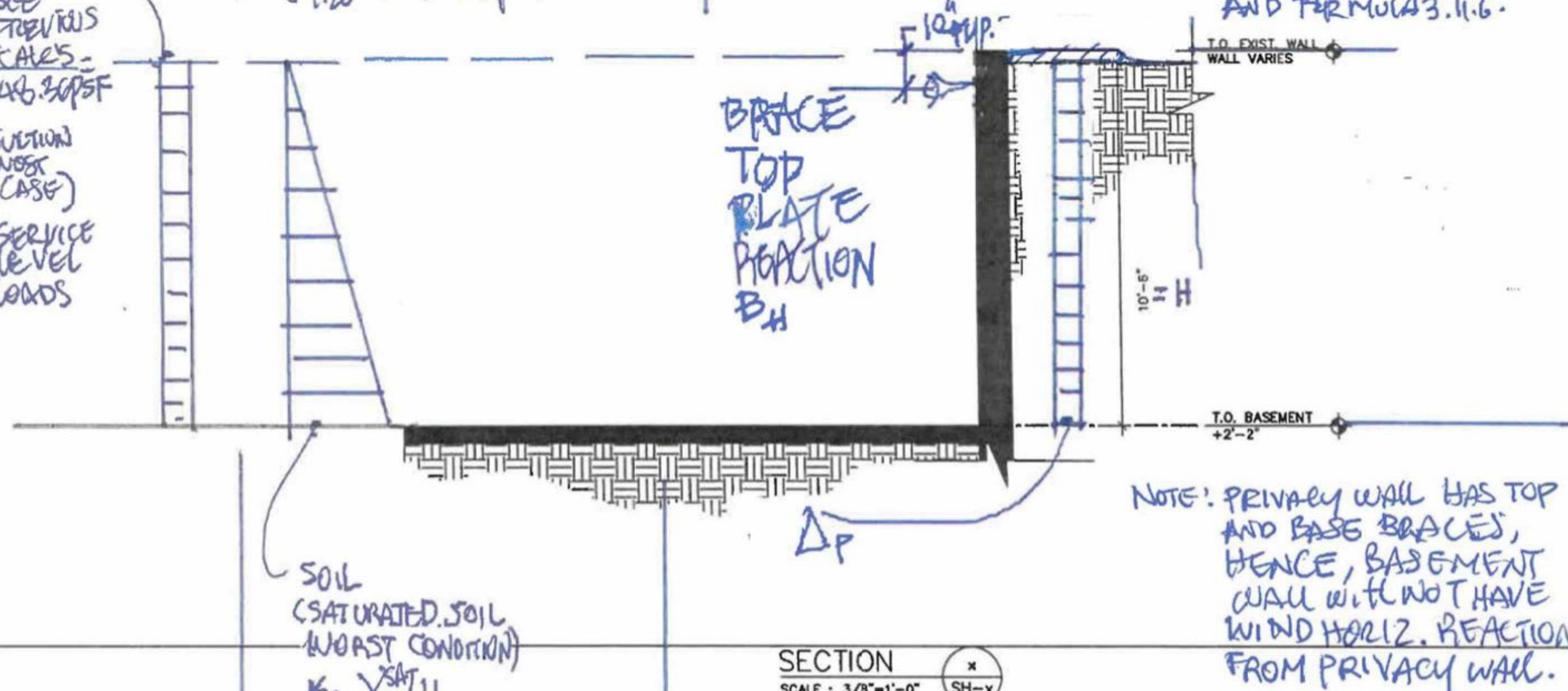
$K_a = \tan^2(45° - \phi/2)$

SEE ATTACHED CRSI TABLE AND CALC'S. IT IS CONSERVATIVE BASED ON MY ENG JUDGEMENT, SEE PREVIOUS PAGES.

γ_{soil} Max

$\gamma_{H_2O} = 62.4$ pcF

Δ_P, SEE PREVIOUS PAGE FOR CALC'S BASED ON AASHTO 3.11.6.1, AND FORMULA 3.11.6.



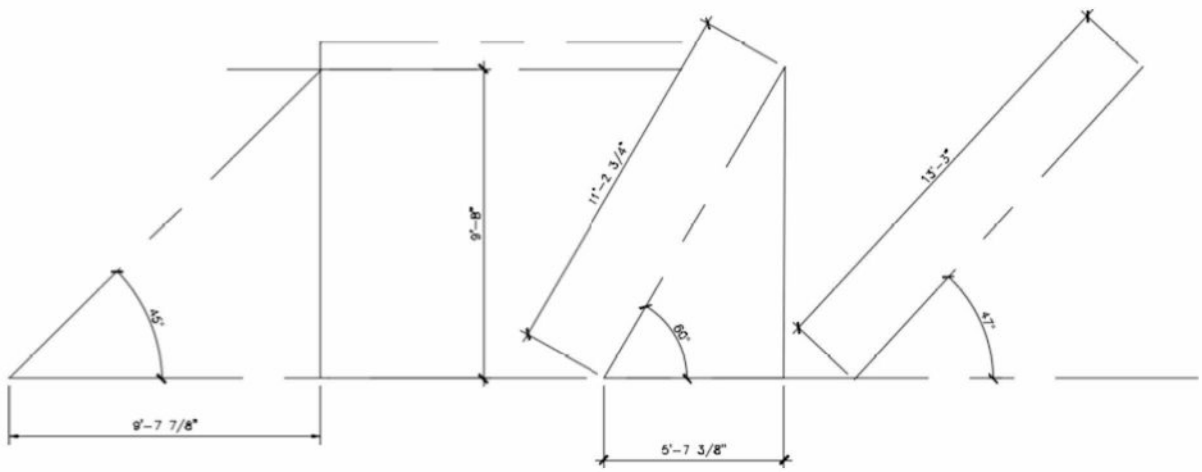
SOIL (SATURATED SOIL WORST CONDITION)

$K_a \gamma_s^{SAT} H$

$\gamma_s^{SAT} = \gamma_{sat} \gamma_{H_2O}$

NOTE: PRIVACY WALL HAS TOP AND BASE BRACES, HENCE, BASEMENT WALL WILL NOT HAVE WIND HORIZ. REACTION FROM PRIVACY WALL.

LATERAL BRACESßIELD GEOMETRY:



DESIGN CRITERIA:

1. BASEMENT SHEET PILLING WALL WILL TO CARRY LOADS WHEN TEMPORARY BRACING RESTORES ORIGINAL WALL TOP LATERAL SUPPORT CONDITION. ANY LOOSE CONCRETE COVER SHALL BE REMOVED AND BRACING TOP PLATE SHALL BE ATTACHED DIRECTLY TO SHEET PILLING

2. BASED ON EXISTING STRUCTURAL DRAWINGS BASEMENT WALL CONSTRUCTION, OUR SITE VISITS AND OUR ENGINEERING JUDGEMENT, EXISTING BASEMENT WALL WILL BE ADEQUATE FOR TRANSFERRING THE TOP OF WALL LOADS TO BRACES, SINCE THE BRACES ARE SPACED AT SUCH CLOSED DISTANCE THAT WILL RESEMBLE THE CONTINUOUS SUPPORT PROVIDED BY THE DEMOLISHED FIRST ELEVATED CONCRETE SLAB.

3. EXISTING FIRST ELEVATED CONCRETE SLAB'S REMAINING STEEL REINFORCEMENT HANGING AT TOP OF EXISTING BASEMENT WALL SHALL BE AVOIDED AND/OR REMOVED TO GIVE WAY TO BRACING SYSTEM TOP ATTACHMENTS.

4. ROAD BARRIERS WILL BE INSTALLED (MOT), BY OTHERS, AT A DISTANCE SHOWN ON OUR PLANS FOR REFERENCE, THAT WILL PREVENT ROADWAY USERS FROM FALLING INTO OPEN BASEMENT AND TO COMPLY WITH SAFETY PLAN PROVIDED BY OTHERS.

5. WE WILL USE A LIVE LOAD VEHICULAR TRAFFIC SURFACE HORIZONTAL SURCHARGED LOAD, AGAINST EXISTING BACK OF BASEMENT WALL, BASED ON ASHTO 3.11.6.1, FORMULA 3.11.6.4-1 AND TABLE 3.11.6.4-2.

6. BRACING AND RE-SHORING WILL BE DESIGNED FOR ALL APPLICABLE CODE LOADS FOR THE PRESENT CONDITION OF THE REMAINING STRUCTURE ABOVE MENTIONED. DUE TO THE LENGTH OF TIME THAT THIS EQUIPMENT WILL BE INSTALLED IN THIS SITE, WE WILL USE CODE LOADS FOR PERMANENT STRUCTURES.

7. EXISTING CONCRETE STRUCTURAL BASEMENT SLAB WILL BE USED TO SUPPORT TEMPORARY BRACING SYSTEM HORIZONTAL AND VERTICAL REACTION. DILAPIDATED AND/OR SPALLED SURFACES SHALL BE AVOIDED.

8. AS PER EXISTING STRUCTURAL PLANS, EXISTING CONCRETE STRUCTURAL SLAB IS 9" THICK. THIS VALUE IS CONSISTANT WITH THE AVERAGE VALUE MEASURED ON THE FIELD. BASED ON OUR VISUAL FIELD OBSERVATIONS, THIS STRUCTURAL SLAB APPEARS TO BE IN GOOD CONDITION AND SUPPORTED DEBRIS FROM ENTIRE BUILDING AFTER COLLAPSING.

9. NO STAGNANT WATER AT EXISTING CONCRETE STRUCTURAL BASEMENT SLAB, WATER REMOVAL BY OTHERS.

10. MAXIMUM BRACING SPACING WILL BE CALCULATED AND SHOWN ON PLANS.

11. EXISTING ROADWAY DRAINAGE PRE-FABRICATED PRE-ENGINEERED CATCH BASIN BOX WILL BE BYPASSED.

Existing wall height (average V.I.F.): $H := 10.5\text{ft}$

For loading diagrams see previous pages for basement wall.

Basement Wall Braces loading along Collins Ave. by inspection, controls brace check:

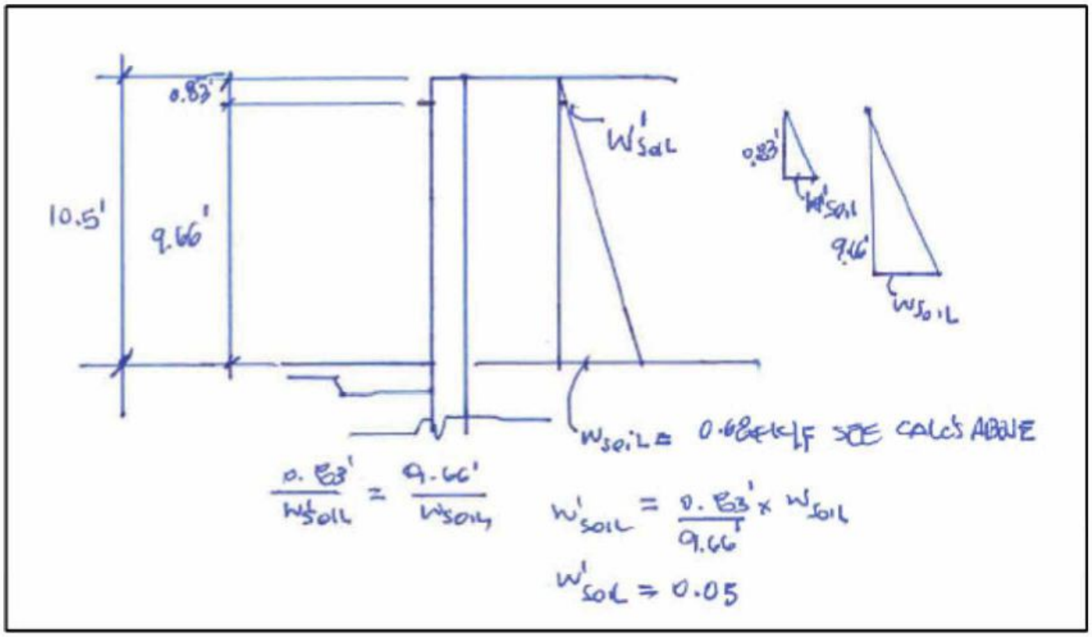
Wind load:

$\text{Wind} := 48.36\text{psf}$ $\quad w_{wind} := \text{Wind}\cdot 1\text{ft} = 0.048\cdot\text{klf}$ per foot of wall

Soil load:

$\gamma_{soil} := 135\text{pcf}$ $\quad \gamma_{H2O} := 62.4\text{pcf}$ $\quad k_a := 0.33$

$w_{soil} := k_a\cdot(\gamma_{soil} + \gamma_{H2O})\cdot H\cdot 1\text{ft} = 0.684\cdot\text{klf}$ per foot of wall. Triangular load distribution, value at base



AASTHO live load vehicular loading paralle to wall, which is our typical condition:

$\Delta_p := 90\text{psf}$ $\quad \Delta_p\cdot 1\text{ft} = 0.09\,\text{klf}$ See previous pages

From ENERCALC print out, top total line load on braces is:

$B_H := 1.221\,\text{klf}$ see page 15.

General Beam Analysis

192.168.10.10\data1\Engineering\2021\2108249-CHAMPLAIN TOWER-MIAMI POLICE-BOFAM\calcs surfside.ec6
ENERCALC, INC. 1983-2017, Build:6.17.3.29, Ver:6.17.3.31

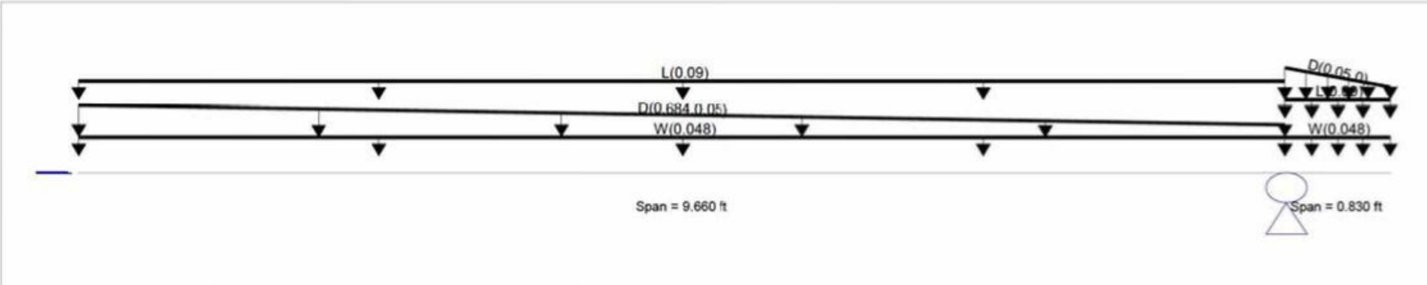
Lic. # : KW-06011462 **Licensee : RC GROUP, LLC**

Description : Controlling case - Brace top plate Reaction - Along Colins ave.

General Beam Properties

Elastic Modulus 29,000.0 ksi

Span #1	Span Length = 9.660 ft	Area = 100.0 in^2	Moment of Inertia =	1,000.0 in^4
Span #2	Span Length = 0.830 ft	Area = 100.0 in^2	Moment of Inertia =	1,000.0 in^4



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
- Uniform Load : W = 0.0480 k/ft, Tributary Width = 1.0 ft, (wind)
- Varying Uniform Load : D(S,E) = 0.6840->0.050 k/ft, Extent = 0.0 -->> 9.660 ft, Trib Width = 1.0 ft, (Soil)
- Uniform Load : L = 0.090 k/ft, Tributary Width = 1.0 ft, (LL Vehicular)

Load for Span Number 2
- Uniform Load : W = 0.0480 k/ft, Tributary Width = 1.0 ft, (wind)
- Uniform Load : L = 0.090 k/ft, Tributary Width = 1.0 ft, (LL Vehicular)
- Varying Uniform Load : D(S,E) = 0.050->0.0 k/ft, Extent = 0.0 -->> 0.830 ft, Trib Width = 1.0 ft, (LL vehicular)

DESIGN SUMMARY

Maximum Bending =	5.559 k-ft	Maximum Shear =	3.289 k
Load Combination	+D+L+H	Load Combination	+D+L+H
Location of maximum on span	0.000 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.000 in	0
Max Upward Transient Deflection	0.000 in	0
Max Downward Total Deflection	0.001 in	99078
Max Upward Total Deflection	-0.000 in	55206

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
Overall MAXimum Envelope													
Dsgn. L = 9.66 ft	1			2.65	-5.56	5.56					3.29		
Dsgn. L = 0.83 ft	2				-0.04	0.04					0.10		
+D+H													
Dsgn. L = 9.66 ft	1			2.08	-4.52	4.52					2.75		
Dsgn. L = 0.83 ft	2				-0.01	0.01					0.02		
+D+L+H													
Dsgn. L = 9.66 ft	1			2.65	-5.56	5.56					3.29		
Dsgn. L = 0.83 ft	2				-0.04	0.04					0.10		
+D+Lr+H													
Dsgn. L = 9.66 ft	1			2.08	-4.52	4.52					2.75		
Dsgn. L = 0.83 ft	2				-0.01	0.01					0.02		
+D+S+H													
Dsgn. L = 9.66 ft	1			2.08	-4.52	4.52					2.75		
Dsgn. L = 0.83 ft	2				-0.01	0.01					0.02		
+D+0.750Lr+0.750L+H													
Dsgn. L = 9.66 ft	1			2.50	-5.30	5.30					3.15		
Dsgn. L = 0.83 ft	2				-0.03	0.03					0.08		
+D+0.750L+0.750S+H													
Dsgn. L = 9.66 ft	1			2.50	-5.30	5.30					3.15		
Dsgn. L = 0.83 ft	2				-0.03	0.03					0.08		
+D+0.60W+H													
Dsgn. L = 9.66 ft	1			2.26	-4.86	4.86					2.92		
Dsgn. L = 0.83 ft	2				-0.02	0.02					0.04		
+D+0.70E+H													
Dsgn. L = 9.66 ft	1			2.08	-4.52	4.52					2.75		

General Beam Analysis

Description : Controlling case - Brace top plate Reaction - Along Colins ave.

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Mmax +	Mmax -	Ma - Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 0.83 ft	2				-0.01	0.01					0.02		
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 9.66 ft	1			2.64	-5.55	5.55					3.28		
Dsgn. L = 0.83 ft	2				-0.04	0.04					0.09		
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 9.66 ft	1			2.64	-5.55	5.55					3.28		
Dsgn. L = 0.83 ft	2				-0.04	0.04					0.09		
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 9.66 ft	1			2.50	-5.30	5.30					3.15		
Dsgn. L = 0.83 ft	2				-0.03	0.03					0.08		
+0.60D+0.60W+0.60H													
Dsgn. L = 9.66 ft	1			1.43	-3.05	3.05					1.82		
Dsgn. L = 0.83 ft	2				-0.01	0.01					0.04		
+0.60D+0.70E+0.60H													
Dsgn. L = 9.66 ft	1			1.25	-2.71	2.71					1.65		
Dsgn. L = 0.83 ft	2				-0.00	0.00					0.01		

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0012	5.424		0.0000	0.000
	2	0.0000	5.424	+D+L+H	-0.0004	0.830

Vertical Reactions

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	3.289	1.221	
Overall MINimum	0.287	0.216	
+D+H	2.751	0.815	
+D+L+H	3.289	1.221	
+D+Lr+H	2.751	0.815	
+D+S+H	2.751	0.815	
+D+0.750Lr+0.750L+H	3.155	1.119	
+D+0.750L+0.750S+H	3.155	1.119	
+D+0.60W+H	2.923	0.945	
+D+0.70E+H	2.751	0.815	
+D+0.750Lr+0.750L+0.450W+H	3.284	1.217	
+D+0.750L+0.750S+0.450W+H	3.284	1.217	
+D+0.750L+0.750S+0.5250E+H	3.155	1.119	
+0.60D+0.60W+0.60H	1.823	0.619	
+0.60D+0.70E+0.60H	1.650	0.489	
D Only	2.751	0.815	
Lr Only			
L Only	0.539	0.406	
S Only			
W Only	0.287	0.216	
E Only			
H Only			

MEADOW BURKE WALL BRACES - BASEMENT

Brace length and safe working loads, using steel braces, see attached capacity table and spec's:

Top brace information $D_{toppanelelevation} := 10.5ft$

$W_{walltielocation} := D_{toppanelelevation} - 10in = 9.667\ ft$

$h_{wall} := 10.5ft$ wall actual height

$\theta := 47deg$

$$h := \frac{W_{walltielocation}}{\sin(\theta)} = 13.22\ ft$$ maximum

Allowable Safe Axial (tension/compression) Working Load, MB 8-14

See attached brace capacity table,

$$A_{brace} := \frac{518.4}{13.22^{1.74}} \cdot k \cdot \frac{1}{1.50} = 3.869 \cdot k$$

Horizontal force on this top of wall

$$\boxed{F_H := 1221plf}$$

$$F_{axial} := \frac{F_H}{\cos(\theta)} = 1790.327 \frac{lb}{ft}$$ total wind horizontal force on all braces

Check brace:

we are using $n_{bracesquantity} := 1$

$$F'_{braceAxialL} := \frac{F_{axial}}{n_{bracesquantity}} = 1790.327 \frac{lb}{ft}$$

$BraceSpacing := 2ft$

$F'_{braceAxial} := F'_{braceAxialL} \cdot BraceSpacing = 3.581 \cdot k$ per brace

$$\boxed{Check\left(A_{brace}, F'_{braceAxial}\right) = \text{"OK"}}$$

PERI WALL BRACES - BASEMENT

Brace length and safe working loads, using steel braces, see attached capacity table and spec's:

Top brace information $D_{toppanelelevation} := 10.5\text{ft}$

$W_{walltielocation} := D_{toppanelelevation} - 10\text{in} = 9.667\text{ ft}$ $h_{wall} := 10.5\text{ft}$ wall actual height

$\theta := 60\text{deg}$ $h := \dfrac{W_{walltielocation}}{\sin(\theta)} = 11.16\text{ ft}$ maximum $11.16\text{ft} = 3.4\cdot\text{m}$

Allowable Safe Axial (tension/compression) Working Load, RSS II

See attached brace capacity table,

$19\text{kN} = 4.271 \times 10^{3}\text{ lbf}$ $A_{brace} := 4271\text{lb}$

Horizontal force on this top of wall

$\boxed{F_H := 1221\text{plf}}$

$F_{axial} := \dfrac{F_H}{\cos(\theta)} = 2442\,\dfrac{\text{lb}}{\text{ft}}$ total wind horizontal force on all braces

Check brace:

we are using $n_{bracesquantity} := 1$

$F'_{braceAxialL} := \dfrac{F_{axial}}{n_{bracesquantity}} = 2442\,\dfrac{\text{lb}}{\text{ft}}$

$BraceSpacing := 2\text{ft}$

$F'_{braceAxial} := F'_{braceAxialL}\cdot BraceSpacing = 4.884\cdot\text{k}$ per brace

$\boxed{\text{Check}\left(A_{brace}, F'_{braceAxial}\right) = \text{"OK as per ASCE 7, 1/3 Increased capacity for Load Combo Used"}}$

PERI WALL BRACES - BASEMENT

Brace length and safe working loads, using steel braces, see attached capacity table and spec's:

Top brace information $D_{toppanelelevation} := 10.5ft$

$W_{walltielocation} := D_{toppanelelevation} - 10in = 9.667\ ft$

$h_{wall} := 10.5ft$ wall actual height

$\theta := 45deg$

$$h := \frac{W_{walltielocation}}{\sin(\theta)} = 13.67\ ft$$ maximum

$h = 4.167 \cdot m$

Allowable Safe Axial (tension/compression) Working Load, SLS 320/420

See attached brace capacity table,

$57.65kN = 12960.236\ lbf$

$A_{brace} := 12960.236lb$

Horizontal force on this top of wall

$\boxed{F_H := 1221plf}$

$$F_{axial} := \frac{F_H}{\cos(\theta)} = 1726.755\ \frac{lb}{ft}$$ total wind horizontal force on all braces

Check brace: we are using $n_{bracesquantity} := 1$

$$F'_{braceAxialL} := \frac{F_{axial}}{n_{bracesquantity}} = 1726.755\ \frac{lb}{ft}$$

$BraceSpacing := 5ft$

$F'_{braceAxial} := F'_{braceAxialL} \cdot BraceSpacing = 8.634 \cdot k$

per brace

$\boxed{Check(A_{brace}, F'_{braceAxial}) = \text{"OK"}}$

CONTROLLING ANCHOR BOLTS LOADING:
After carefull review of braces end forces reactions (load on anchors) this particular brace assembly reactions controls anchor bolts check. The loads are shown below.

$(F_{axial}) \cdot \sin(\theta) \cdot BraceSpacing = 6.105 \cdot k$ Vertical load per brace.

$(F_{axial}) \cdot \cos(\theta) \cdot BraceSpacing = 6.105 \cdot k$ Horizontal load per brace.

PERI WALL BRACES - BASEMENT

Brace length and safe working loads, using steel braces, see attached capacity table and spec's:

Top brace information $D_{toppanelelevation} := 10.5ft$

$W_{walltielocation} := D_{toppanelelevation} - 10in = 9.667\ ft$ $h_{wall} := 10.5ft$ wall actual height

$\theta := 45deg$ $h := \dfrac{W_{walltielocation}}{\sin(\theta)} = 13.67\ ft$ maximum $h = 4.167 \cdot m$

Allowable Safe Axial (tension/compression) Working Load, SLS 380/480

See attached brace capacity table,

$67.6kN = 15197.085\ lbf$ $A_{brace} := 15197lb$

Horizontal force on this top of wall $\boxed{F_H := 1221plf}$

$F_{axial} := \dfrac{F_H}{\cos(\theta)} = 1726.755 \dfrac{lb}{ft}$ total wind horizontal force on all braces

Check brace: we are using $n_{bracesquantity} := 1$ $F'_{braceAxialL} := \dfrac{F_{axial}}{n_{bracesquantity}} = 1726.755 \dfrac{lb}{ft}$

$BraceSpacing := 5ft$

$F'_{braceAxial} := F'_{braceAxialL} \cdot BraceSpacing = 8.634 \cdot k$ per brace

$\boxed{Check(A_{brace}, F'_{braceAxial}) = \text{"OK"}}$

CONTROLLING ANCHOR BOLTS LOADING:
After carefull review of braces end forces reactions (load on anchors) this particular brace assembly reactions controls anchor bolts check. The loads are shown below.

$(F_{axial}) \cdot \sin(\theta) \cdot BraceSpacing = 6.105 \cdot k$ Vertical load per brace.

$(F_{axial}) \cdot \cos(\theta) \cdot BraceSpacing = 6.105 \cdot k$ Horizontal load per brace.

3/4" Dia. HILTI HY200 Adhesive Anchor with HAS Rod, with 6 3/4" Embedment, into 3,000 psi (min.) concrete

Quantity of bolts to be used $n_{bolt} := 1$

Loading:
See previous page for controlling brace reactions.

$T_{actual} := 6.105\,k$ Upward on bolt

$Spacing := 6in$ minimum

$V_{perp} := 0lb$ Shear on bolt Perpendicular to Member

$V_{parallel} := 6.105\,k$ Shear on bolt. Parallel to Member. for load calc's see previous page

Connector Capacity:

See attached manufacturer tables.

$EdgeDistance := 10in$

$E := 6in + \frac{0}{8}in \quad E = 6 \cdot in$

$ED := 1.5E \quad ED = 9 \cdot in$

$SD := 1.0 \cdot E \quad SD = 6 \cdot in$

Reduction Factors due to edge distance and spacing:

Spacing (Tension & Shear): $R_s := if\left(\frac{Spacing}{SD} < 1.0, \frac{Spacing}{SD}, 1.0\right) = 1$

Edge distance (Tension): $R_{et} := if\left(\frac{EdgeDistance}{ED} < 1.0, \frac{EdgeDistance}{ED}, 1.0\right) = 1$

Edge distance (Shear): $R_{ev} := if\left(\frac{EdgeDistance}{ED} < 1.0, \frac{EdgeDistance}{ED}, 1.0\right) = 1$

Field condition:
At one area of the basement wall, one portion of the top of the wall concrete was pryed-out exposing steel sheet pilling. at this location weld braces top plate to existing sheet piling. See below for weld check.

$P_{weldAllow} := 3.71 \frac{k}{in} \cdot 2in \cdot 2 = 14.84 \cdot k$

$P_{weld} := \sqrt{T_{actual}^2 + V_{parallel}^2} = 8.634 \cdot k$

$\boxed{Check(P_{weldAllow}, P_{weld}) = "OK"}$

HY200 Adhesive Anchor:

$\alpha_{ASD} := 1.2 \cdot 0.20 + 1.6 \cdot 0.80 = 1.52$ As per Hilti manual section 2.4.6 using worst case possible of DL and LL loads distribution.

$N_{des} := 10615\text{lb}$ $V_{des} := 22860\text{lb}$ cracked

Tension $N_{desASD} := \dfrac{N_{des}}{\alpha_{ASD}} = 6983.553\text{ lb}$

Shear $V_{desASD} := \dfrac{V_{des}}{\alpha_{ASD}} = 15039.474\text{ lb}$

$T_c := N_{desASD} \cdot R_s \cdot R_{et} \cdot n_{bolt}$ $T_c = 6983.55 \cdot \text{lb}$

$V_{c\_perp} := V_{desASD} \cdot (R_s \cdot R_{ev}) \cdot n_{bolt}$ $V_{c\_perp} = 15039\text{ lb}$

$V_{c\_parallel} := V_{desASD} \cdot (R_s \cdot R_{ev}) \cdot n_{bolt}$ $V_{c\_parallel} = 15039.47\text{ lb}$

Using Parabola equation aproach:

$$UC := \left(\frac{T_{actual}}{T_c}\right)^{\frac{5}{3}} + \left(\frac{V_{perp}}{V_{c\_perp}}\right)^{\frac{5}{3}} + \left(\frac{V_{parallel}}{V_{c\_parallel}}\right)^{\frac{5}{3}} \quad UC = 1.02$$

Check(1.0, UC) = "Close Enough (+/- 2.5%)"

Brace Load Table

Brace Type	Brace Length [ft.] Min. / Max.	Ultimate Brace Buckling Load [kips]	Ultimate Brace Shoe Load [kips]
B / C / D	14.50 / 20.93	$3{,}470 / L^{2.439}$	9.60
B / C / D [w/single knee brace & cross lace]	14.50 / 29.59	$6{,}940 / L^{2.439}$	9.60
Little "G"	14.50 / 20.21	$26{,}300 / L^{2.963}$	7.80
Standard "G"	22.50 / 28.87	$1{,}540{,}000 / L^{4.118}$	7.80
STD. "G" [w/single knee brace & cross lace]	22.50 / 28.87	$2{,}350 / L^{1.759}$	7.80
Big "G"	24.00 / 38.25	$27{,}700{,}000 / L^{4.81}$	7.80
Big "G" [w/single knee brace & cross lace]	24.00 / 38.25	$8{,}250 / L^{1.944}$	7.80
Big "G" [w/double knee brace & cross lace]	24.00 / 38.25	$4{,}290 / L^{1.659}$	7.80
MB Precast Brace - (45218HD)	8.00 / 14.00	$518.54 / L^{1.74}$	9.5
MB Precast Brace - HD (45218EHD)	8.00 / 14.00	48.75 – 3L	13.5
Super 17	17.00	13.00	13.00
Super 22	22.00	11.00	11.00
Super 22 + 5' Extension	27.00	8.85	11.00
Super 22 + 10' Extension	32.00	5.80	11.00
Super 32	32.00	13.50	13.50
Super 32 + 5' Extension	37.00	10.36	13.50
Super 32 + 10' Extension	42.00	8.042	13.50
Super 32 + 10' & 5' Extensions	47.00	7.037	13.50
Super 32 + 2-10' Extension	52.00	5.778	13.50
Super 42	42.00	16.05	16.05
Super 52	52.00	16.05	16.05

Notes:
1. "L" is the total brace length in feet.
2. The equations above for ultimate buckling loads are based on test results performed on the braces when they were placed at an angle of 60 degrees to horizontal. For brace angles between 45 and 60 degrees to horizontal, multiply the buckling load derived from the equations above by the factor "K".

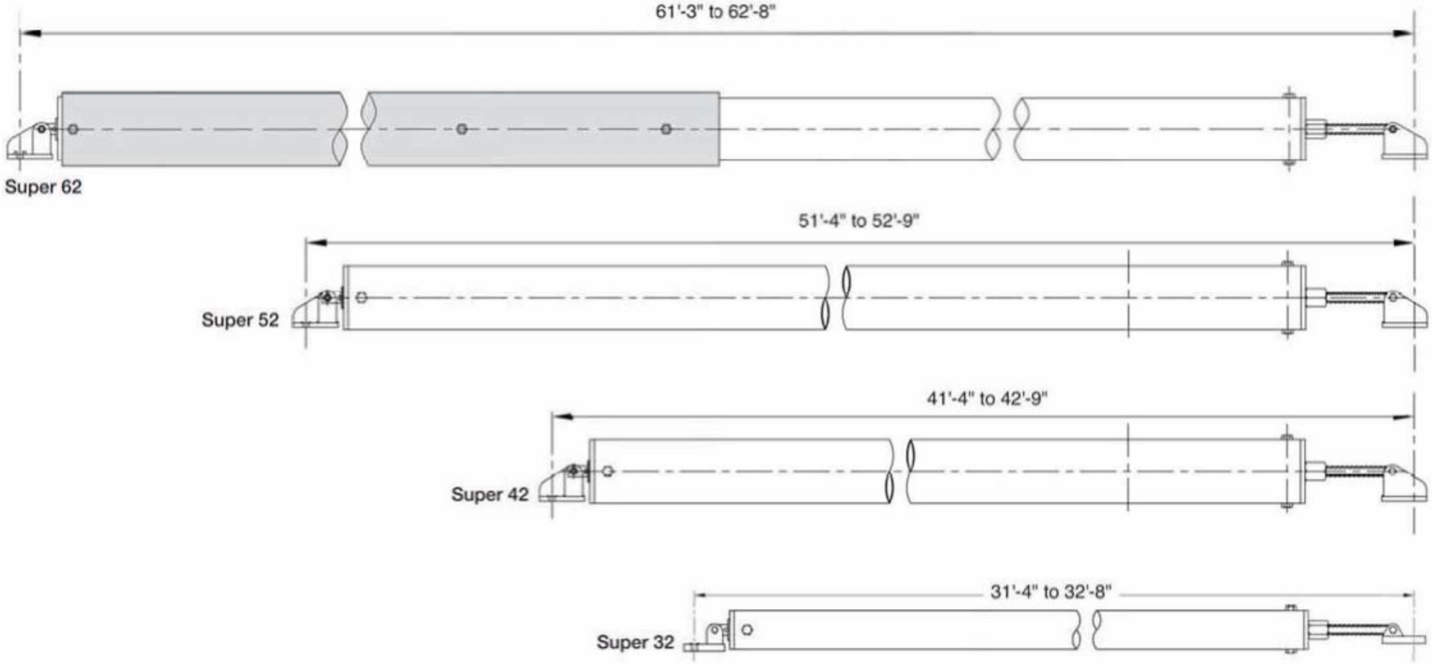
$$K = \frac{(1390 + 47\,Ø)}{4210}$$

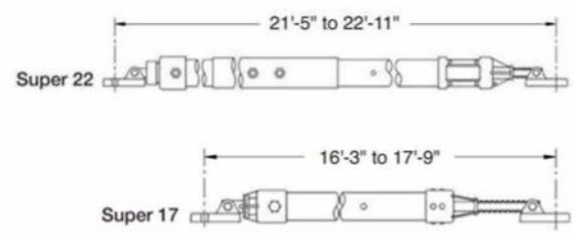
Where Ø = Brace angle to horizontal in degrees.

Exception: K = 1 may be used for all "Super Braces" except for the Super 22 + 10' Extension.

3. Do not use brace loads greater than the ultimate brace shoe loads above. Always use the smaller of the two loads.
4. To determine the concentric brace working load, divide the governing load (brace shoe or buckling load) by the desired safety factor. A 1.5 minimum safety factor is recommended for temporary wind bracing of concrete tilt-up wall panels. Braces when used for other purposes or different types of applied loads may require higher safety factors. Safety factor shall be determined by the user.

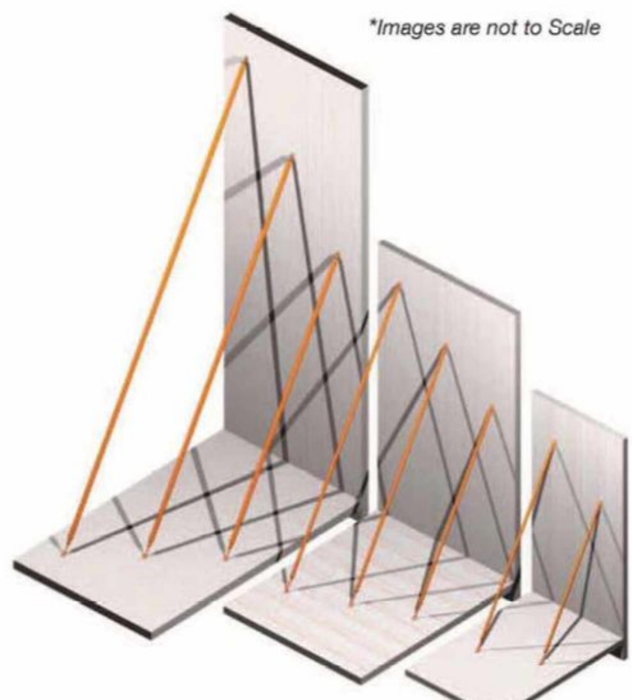
Temporary Panel Bracing – Super 17, 22, 32, 42, 52, 62





Super 17–62 Braces are used to temporarily support concrete panels to resist wind load until a permanent connection is made. The brace is anchored to a concrete floor slab, Deadman or an MB Brace Badger. The top foot attaches via an embedded brace insert.

*Images are not to Scale



Brace Type	Brace Length [ft.]	Brace Buckling Load [kips]	Ultimate Brace Shoe Load [kips]	Weight
Super 62[1]	62.00	16.05	17.87	950 lbs.
Super 52	52.00	16.05	17.87	680 lbs.
Super 42	42.00	17.87	17.87	550 lbs.
Super 32[2]	32.00	13.50	13.50	275 lbs.
Super 22[2]	22.00	11.00	11.00	136 lbs.
Super 17	17.00	13.00	13.00	105 lbs.

1: Super 62 brace requires some extension assembly on site. Installation instructions on back.
2: Super 22 and Super 32 are available with 5ft and 10ft extensions.
NOTE: Use of an extension listed above reduces brace buckling load.

- Variety of sizes to brace panels from 10 ft to 94 ft in height
- Braces can be used on the inside or outside of the structure
- All braces have additional length adjustment to simplify final plumbing
- Complies to ASCE 37-02 and ASCE 7-10 regarding basic wind speeds
- Engineered to be used with Meadow Burke's Badger, Slam Anchor, MB Brace Bolt and Brace Insert.

Call **877.518.7665** or visit **MeadowBurke.com**

MB 8-14 Brace

The MB 8-14 by Meadow Burke features increased strength, requiring fewer braces for your project. The 8' brace extends to 14' and works with panels up to 21' in height. It's durable, long lasting, and an ideal flex-solution.

To learn more, call us at 877.518.7665 or visit us online at MeadowBurke.com

24	12.12	7.00	14.00				7.26
23	12.12	7.00	14.00			8.10	7.81
22	12.12	7.00	14.00			8.79	8.42
21	12.12	7.00	14.00		9.99	9.57	9.10
20	12.12	7.00	14.00	11.5	11.0	10.4	9.88
19	12.12	7.00	14.00	12.8	12.1	11.4	10.7
18	11.33	6.54	13.08	18.9	17.9	16.7	15.7
17	11.33	6.54	13.08	20.0	19.9	18.5	17.2
16	10.54	6.08	12.17	20.0	20.0	20.0	18.9
15	9.74	5.83	11.25	20.0	20.0	20.0	20.0
14	8.94	5.17	10.33	20.0	20.0	20.0	20.0
13	8.16	4.71	9.42	20.0	20.0	20.0	20.0
12	7.36	4.25	8.50	20.0	20.0	20.0	20.0
11	7.36	4.25	8.50	20.0	20.0	20.0	20.0
10	7.36	4.25	8.50	20.0	20.0	20.0	20.0
9	7.36	4.25	8.50	20.0	20.0	20.0	20.0
8	7.00	4.83	8.50	20.0	20.0	20.0	20.0
H	V	X	L	S0	S2	S4	S6
	Installation Dimensions						
	MB Precast TeleBrace (8' to 14')						

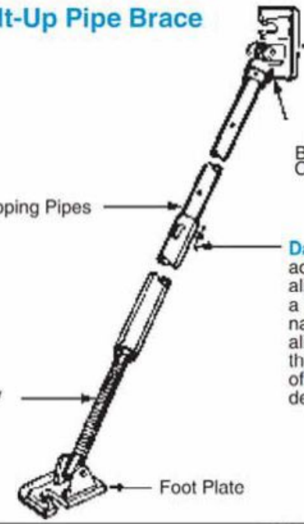
Ultimate load: 48.75-3L KIP
Maximum Tension: 13.5 KIP

MeadowBurke™

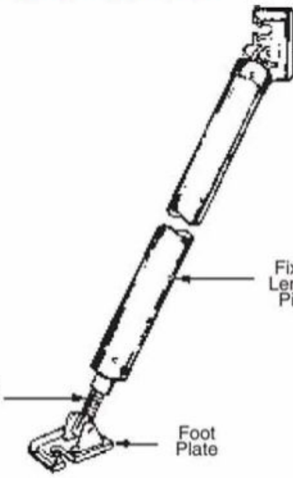
T-14 Tilt-Up Wall Braces

The Dayton Superior T-14 Tilt-Up Wall Braces are all steel, heavy duty wall braces designed to quickly and easily align and brace tilt-up wall panels. Rough adjustment of the T-14 braces is easily accomplished by telescoping the pipes to the nearest incremental hole. Final adjustment is then achieved by simply turning the brace. Dayton Superior wall braces are available in numerous sizes to provide a continuous range of tilt-up panel heights of fifty feet or more. Refer to the chart below for additional information.

T-14 Tilt-Up Pipe Brace



T-14 Tilt-Up Jumbo Brace



T-14 Tilt-Up Pipe Brace Selection Chart

Type	Description	Minimum and Maximum Brace Length
B-1	On-Site Pipe Brace	7'-6" to 8'-10"
B-2	Regular Pipe Brace	13'-0" to 20'-6"
B-4	Heavy Duty Regular Pipe Brace	14'-6" to 23'-6"
B-5	Heavy Duty Long Pipe Brace	22'-6" to 39'-0"
B-6	Short Pipe Brace	10'-0" to 14'-0"
B-7	Short Jumbo Brace	17'-0" Fixed Length
B-8	Jumbo Brace	22'-0" Fixed Length
B-9	Jumbo Brace with 5'-0" Extension	27'-0" Fixed Length
B-10	Jumbo Brace with 10'-0" Extension	32'-0" Fixed Length
B-11	Tru-Itt Brace	25'-6" to 40'-0"
B-12	Jumbo 5-1/2"	32'-0" Fixed Length
B-14*	B-12 Jumbo Brace, 10'-0" Extension	42'-0" Fixed Length
B-15*	B-12 Jumbo Brace, 20'-0" Extension	52'-0" Fixed Length
B-16	B-12 Jumbo Brace, 5'0" Extension	37'-0" Fixed Length

To Order:
Specify: (1) quantity, (2) Name, (3) model.

Example:
200, T-14 Tilt-Up Wall Braces. Model B-8.

* **Note:** Field assembly is required for B-14 and B-15 braces.
B-11 Brace Available West Coast Only

T-15 Pipe Brace Extensions

The Dayton Superior Pipe Brace Extensions are available for the B-8 and B-12 pipe brace models. The T-15 extension for the B-12 model extends the brace five feet or ten feet increments. Extensions for the B-8 brace are available in five feet and ten feet lengths.

To Order:
Specify: (1) quantity, (2) name, (3) model.

Example:
40, T-15 Pipe Brace Extension, 5' extension for B-8 braces.

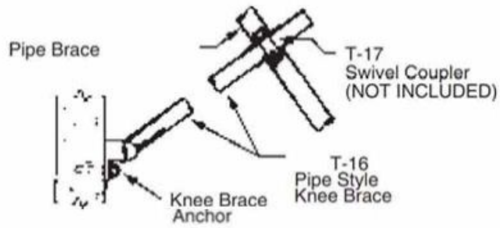
Bracing Information

T-16 Pipe Knee Brace

The Dayton Superior T-16 Pipe Knee Brace is an all steel, 1-1/2" diameter knee brace available in 10'-6" and 14'-6" lengths. The T-16 knee brace is used in conjunction with the T-17 Swivel Coupler to add strength and stability to standard wall braces.

To Order:
Specify: (1) quantity, (2) name, (3) length.

Example:
120, T-16 Pipe Knee Braces, 10'-6" long.



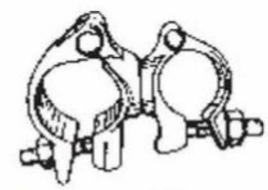
T-16 Pipe Knee Brace

T-17 Swivel Coupler

The Dayton Superior T-17 Swivel Coupler is designed to attach standard 1-1/2" diameter knee braces to 2" or 2-1/2" diameter wall braces.

To Order:
Specify: (1) quantity, (2) name,
(3) wall brace diameter.

Example:
120, T-17 Swivel Couplers for 2" wall braces.



T-17 Swivel Coupler

Brace Length and Safe Working Loads

B-1 On-Site Pipe Brace				
D	W	F	B	Safe Working Load Without Knee Bracing
9'-0"	6'-0"	4'-6"	7'-6"	6,500 lbs.
9'-6"	6'-5"	4'-9"	7'-11"	6,500 lbs.
10'-0"	6'-8"	5'-0"	8'-4"	6,500 lbs.
10'-6"	7'-0"	5'-3"	8'-9"	6,500 lbs.

B-2 Regular Pipe Brace					
				Safe Working Load	
D	**W**	**F**	**B**	**Without Knee Bracing**	**With Knee Bracing**
16'-0"	10'-8"	8'-0"	13'-4"	5,800 lbs.	6,500 lbs.
17'-0"	11'-4"	8'-6"	14'-2"	4,800 lbs.	6,500 lbs.
18'-0"	12'-0"	9'-0"	15'-0"	4,200 lbs.	6,500 lbs.
19'-0"	12'-8"	9'-6"	15'-10"	3,550 lbs.	6,500 lbs.
20'-0"	13'-5"	10'-0"	16'-7"	3,150 lbs.	6,500 lbs.
21'-0"	14'-1"	10'-6"	17'-5"	2,800 lbs.	6,500 lbs.
22'-0"	14'-9"	11'-0"	18'-3"	2,500 lbs.	6,500 lbs.
23'-0"	15'-5"	11'-6"	19'-0"	2,275 lbs.	6,500 lbs.
24'-0"	16'-1"	12'-0"	19'-11"	1,975 lbs.	5,925 lbs.

Note: Depending on panel thickness and height, a double mat of reinforcing steel may be required to resist the bending stresses of temporary wind loads.

SWL provides a minimum factor of safety of 1.5 to 1.

Danger! With knee bracing means that knee, lateral and end bracing must be installed in order to obtain SWL's shown.

DAYTON SUPERIOR

Brace Length and Safe Working Loads

B-4 Heavy Duty Regular Pipe Brace					
				Safe Working Load	
D	W	F	B	Without Knee Bracing	With Knee Bracing
18'-0"	12'-0"	9'-0"	15'-0"	6,500 lbs.	6,500 lbs.
19'-0"	12'-8"	9'-6"	15'-10"	6,500 lbs.	6,500 lbs.
20'-0"	13'-4"	10'-0"	16'-8"	6,500 lbs.	6,500 lbs.
21'-0"	14'-0"	10'-6"	17'-6"	5,925 lbs.	6,500 lbs.
22'-0"	14'-8"	11'-0"	18'-4"	4,800 lbs.	6,500 lbs.
23'-0"	15'-4"	11'-6"	19'-2"	3,925 lbs.	6,500 lbs.
24'-0"	16'-0"	12'-0"	20'-0"	3,575 lbs.	6,500 lbs.
25'-0"	16'-8"	12'-6"	20'-10"	2,975 lbs.	6,500 lbs.
26'-0"	17'-4"	13'-0"	21'-8"	2,500 lbs.	6,500 lbs.
27'-0"	18'-0"	13'-6"	22'-6"	2,275 lbs.	6,500 lbs.
28'-0"	18'-8"	14'-0"	23'-4"	1,950 lbs.	6,500 lbs.

Note: Depending on panel thickness and height, a double mat of reinforcing steel may be required to resist the bending stresses of temporary wind loads.

SWL provides a minimum factor of safety of 1.5 to 1.

Danger! *With knee bracing* means that knee, lateral and end bracing must be installed in order to obtain SWL's shown.

B-5 Heavy Duty Long Pipe Brace					
				Safe Working Load	
D	W	F	B	Without Knee Bracing	With Knee Bracing
27'-0"	18'-0"	13'-6"	22'-6"	5,975 lbs.	6,500 lbs.
28'-0"	18'-8"	14'-0"	23'-4"	5,325 lbs.	6,500 lbs.
29'-0"	19'-4"	14'-6"	24'-2"	4,800 lbs.	6,500 lbs.
30'-0"	20'-0"	15'-0"	25'-0"	4,250 lbs.	6,500 lbs.
31'-0"	20'-8"	15'-6"	25'-10"	3,450 lbs.	6,500 lbs.
32'-0"	21'-4"	16'-0"	26'-8"	2,825 lbs.	6,500 lbs.
33'-0"	22'-0"	16'-6"	27'-6"	2,550 lbs.	6,500 lbs.
34'-0"	22'-8"	17'-0"	28'-4"	2,100 lbs.	6,500 lbs.
35'-0"	23'-4"	17'-6"	29'-2"	1,750 lbs.	6,500 lbs.
36'-0"	24'-0"	18'-0"	30'-0"	1,600 lbs.	6,500 lbs.
37'-0"	24'-8"	18'-6"	30'-10"	1,350 lbs.	6,500 lbs.
38'-0"	25'-4"	19'-0"	31'-8"	Not Recommended	6,300 lbs.
39'-0"	26'-0"	19'-6"	32'-6"	Not Recommended	6,000 lbs.
40'-0"	26'-8"	20'-0"	33'-4"	Not Recommended	5,600 lbs.
41'-0"	27'-4"	20'-6"	34'-2"	Not Recommended	5,200 lbs.
42'-0"	28'-0"	21'-0"	35'-0"	Not Recommended	5,000 lbs.
43'-0"	28'-8"	21'-6"	35'-10"	Not Recommended	4,650 lbs.
44'-0"	29'-4"	22'-0"	36'-8"	Not Recommended	4,325 lbs.
45'-0"	30'-0"	22'-6"	37'-6"	Not Recommended	4,175 lbs.
46'-0"	30'-8"	23'-0"	38'-4"	Not Recommended	3,900 lbs.
47'-0"	31'-4"	23'-6"	39'-0"	Not Recommended	3,775 lbs.

Note: Depending on panel thickness and height, a double mat of reinforcing steel may be required to resist the bending stresses of temporary wind loads.

SWL provides a minimum factor of safety of 1.5 to 1.

Danger! *With knee bracing* means that knee, lateral and end bracing must be installed in order to obtain SWL's shown.

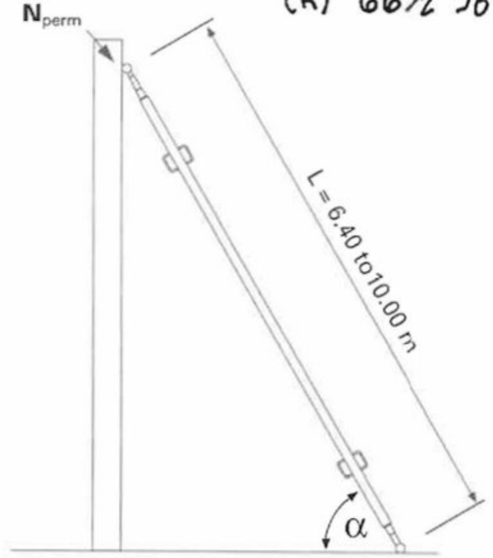
PERI®

Table
RS 1000 Push-Pull Prop
CB 164 - 224 Adjusting Spindle

RS 1000 Push-Pull Prop
L = 6.40 to 10.00 m

Extension length [m]	6.40	7.00	8.00	9.00	10.00
Perm. tension or compr. force **N** [kN] with symmetrical extension of the inner tubes	29.5	26.0	19.6	14.6	11.1

(K) 6632 5845

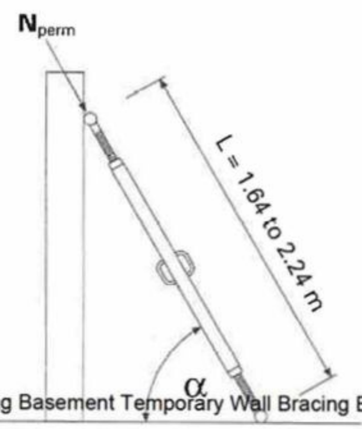


The chart is taken from the Type Inspection of the State Structural Inspectorate, Düsseldorf (Inspection Certificate P31 - 137/90).
It may only be used in conformity with the provisions of this type inspection.

The end connections are to take the form of pin joints shown to be structurally adequate by calculations in each individual case.

CB 164 - 224 Adjusting Spindle
L = 1.64 to 2.24 m

Extension length [m]	1.64	1.80	1.90	2.00	2.10	2.24
Perm. tension or compr. force **N** [kN] with symmetrical extension of the inner tubes	122.0	109.0	101.0	91.0	80.0	68.0
When used as a compression brace	122.0	98.0	84.0	76.0	72.0	68.0



The chart is taken from the Type Inspection of the State Structural Inspectorate, Düsseldorf (Inspection Certificate P31 - 18/90).
It may only be used in conformity with the provisions of this type inspection.

The end connections are to take the form of pin joints shown to be structurally adequate by calculations in each individual case.

Table
RS and RSS Push-Pull Props
AV Kicker

RS I L = 1.80 to 3.00 m
Perm. tension/compr. force = 10 kN

RS II L = 2.50 to 4.30 m
Perm. tension/compr. force = 8 kN

RSS I L = 2.05 to 2.94 m

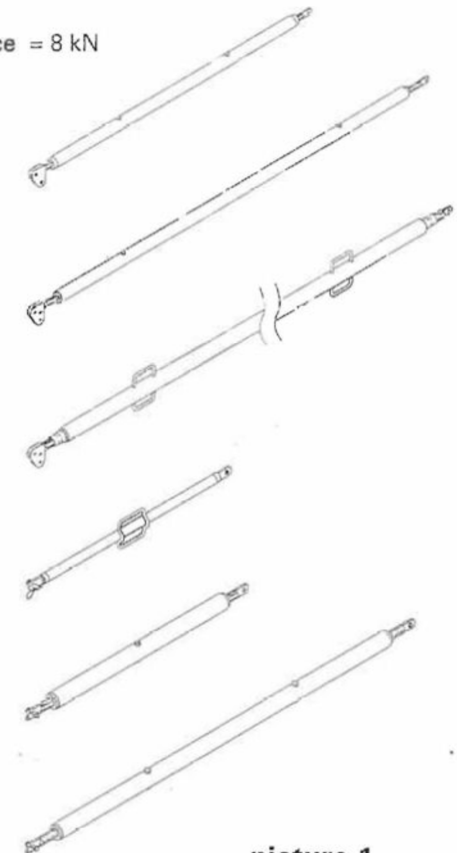
Extension length [m]	2.05	2.25	2.50	2.75	2.94
Perm. tens./compr. force [kN]	30	30	26	19	16

RSS II L = 2.91 to 3.80 m

Extension length [m]	2.91	3.00	3.25	3.50	3.80
Perm. tens./compr. force [kN]	30	30	25	19	13

RSS III L = 4.60 to 6.00 m

Extension length [m]	4.60	5.00	5.30	5.65	6.00
Perm. tens./compr. force [kN]	29	24	20	16	12



AV Kicker L = 1.08 to 1.40 m
Perm. tension/compr. force = 18 kN

AV 190 Kicker L = 1.08 to 1.90 m

Extension length [m]	1.08	1.25	1.50	1.75	1.90
Perm. tens./compr. force [kN]	30	30	27	21	18

AV Kicker for RSS III L = 2.05 to 2.94 m

Extension length [m]	2.05	2.25	2.50	2.75	2.94
Perm. tens./compr. force [kN]	30	30	26	19	16

picture 1

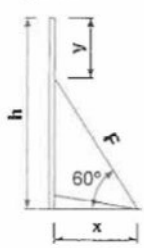
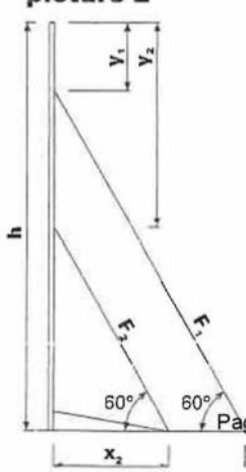


Table for
PERI Push-Pull Props and Kicker Braces

Formwork height **h** [m]	picture 1							picture 2	
	3.0	4.0	5.0	6.0	7.0	8.0		9.0	10.0
Allowable prop spacing [m]	3.53	2.73	2.19	1.82	1.58	1.42		1.32	1.15
Actual prop load at maximum prop spacing [kN]	9.70	9.70	9.80	9.80	9.80	9.60	F_1 F_2	6.40 6.50	7.80 5.90
Actual kicker load at maximum prop spacing [kN]	2.10	2.30	2.20	2.20	2.30	2.60		1.80	1.60
x = Top connection point from top of formwork [m]	1.00	1.20	1.50	1.80	2.00	2.00	y_1 y_2	1.50 4.50	1.80 5.50
y = Dist. of base plate from front face of formwork [m]	1.15	1.62	2.02	2.42	2.89	3.46	x_1 x_2	4.30 2.60	4.73 2.60

picture 2



Maximum pin force for RSS = 11,3 kN
Resulting wind loads: h < 8m = 0.5 kN/m²
8m < h < 20m = 0.8 kN/m²

Up to a formwork height of 8 m, with a wind load differing from 0.5 kN/m², the area of influence can be altered in the relation of the actual wind load to 0.5 kN/m²

INTERPOLATION CALCULATIONS

$AA := 4.1$ $BB := 55.8$

$CC := 4.058$

$DD := 4$ $EE := 60.2$

$$FF := |AA - CC| = 0.04$$

$$GG := |AA - DD| = 0.1$$

$$HH := |BB - EE| = 4.4$$

$$Y := HH \cdot \frac{FF}{GG} = 1.85$$

$\boxed{X := BB + Y = 57.65}$ PERI 320/420 axial capacity

SLS 260/360 L = 2.60 – 3.60 m

Extension Length L [m]	2.60	2.80	3.00	3.10	3.20	3.30	3.40	3.50	3.60
Perm. Compressive Force [kN]	133.4	116.2	99.9	91.9	84.3	77.3	70.6	64.6	59.0
Perm. Tension Force [kN]	105.4								

4.058m

SLS 320/420 L = 3.20 – 4.20 m

Extension Length L [m]	3.20	3.40	3.50	3.60	3.70	3.80	3.90	4.00	4.10	4.20
Perm. Compressive Force [kN]	117.1	101.2	92.8	85.5	78.6	72.1	66.1	60.2	55.8	51.2
Perm. Tension Force [kN]	105.4									

SLS 380/480 L = 3.80 – 4.80 m

Extension Length L [m]	3.80	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80
Perm. Compressive Force [kN]	85.5	80.6	76.1	71.8	67.6	63.7	59.9	55.4	51.3	47.5	43.9
Perm. Tension Force [kN]	105.4										

Heavy-Duty Spindles
SLS and SCS

Permissible load-bearing capacity with a symmetrical extension

SLS 40/80 L = 0.40 – 0.80 m

Extension Length [m]	0.40–0.80
Perm. Compressive Force [kN]	88.0
Perm. Tension Force [kN]	70.8

SLS 80/140 L = 0.80 – 1.40 m

Extension Length L [m]	0.80–1.40
Perm. Compressive Force [kN]	107.1
Perm. Tension Force [kN]	81.6

SLS 100/180 L = 1.00 – 1.80 m

Extension Length L [m]	1.00–1.50	1.60	1.80
Perm. Compressive Force [kN]	107.1	105.5	90.4
Perm. Tension Force [kN]	81.6		

SLS 140/240 L = 1.40 – 2.40 m

Extension Length L [m]	1.40	1.50	1.70	1.90	2.00	2.10	2.20	2.30	2.40
Perm. Compressive Force [kN]	138.4	134.7	122.6	109.6	102.5	95.2	87.8	80.5	73.4
Perm. Tension Force [kN]	105.4								

SLS 200/300 L = 2.00 – 3.00 m

Extension Length L [m]	2.00	2.20	2.40	2.50	2.60	2.70	2.80	2.90	3.00
Perm. Compressive Force [kN]	136.6	123.6	109.3	101.9	94.4	87.2	79.8	72.9	66.4
Perm. Tension Force [kN]	105.4								

SLS 260/360 L = 2.60 – 3.60 m

Extension Length L [m]	2.60	2.80	3.00	3.10	3.20	3.30	3.40	3.50	3.60
Perm. Compressive Force [kN]	133.4	116.2	99.9	91.9	84.3	77.3	70.6	64.6	59.0
Perm. Tension Force [kN]	105.4								

4.058m

SLS 320/420 L = 3.20 – 4.20 m

Extension Length L [m]	3.20	3.40	3.50	3.60	3.70	3.80	3.90	4.00	4.10	4.20
Perm. Compressive Force [kN]	117.1	101.2	92.8	85.5	78.6	72.1	66.1	60.2	55.8	51.2
Perm. Tension Force [kN]	105.4									

SLS 380/480 L = 3.80 – 4.80 m

Extension Length L [m]	3.80	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60	4.70	4.80
Perm. Compressive Force [kN]	85.5	80.6	76.1	71.8	67.6	63.7	59.9	55.4	51.3	47.5	43.9
Perm. Tension Force [kN]	105.4										

Additional information for SLS Spindles:
When using the SLS Spindle with Pin Ø 21 x 120 (Item no. 104031) or Hex. Bolt M20x100-8.8 on the SRU Steel Waler, a maximum load of 70 kN applies.
- values according to Type Test S-N-050528!
- horizontal to vertical applications.
- dead load and wind load on the props considered.
- intermediate values are to be linearly interpolated.
- bearing stress and bolt bending of the connection are to be verified separately.

SCS 198/250 L = 1.98 – 2.50 m

Extension Length L [m]	1.98	2.10	2.20	2.30	2.40	2.50
Perm. Compressive Force [kN]	264	247	233	217	197	175
Perm. Tension Force [kN]	211					

Additional information for SCS Spindles:
- values according to Type Test!
- horizontal to vertical applications.
- dead load and wind load on the props considered.
- intermediate values are to be linearly interpolated.
- bearing stress and bolt bending of the connection are to be verified separately.

Table 7-1
Available Shear Strength of Bolts, kips

Nominal Bolt Diameter, d, in.					$^5/_8$		$^3/_4$		$^7/_8$		1	
Nominal Bolt Area, in.²					0.307		0.442		0.601		0.785	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Loading	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Group A	N	27.0	40.5	S	8.29	12.4	11.9	17.9	16.2	24.3	21.2	31.8
				D	16.6	24.9	23.9	35.8	32.5	48.7	42.4	63.6
	X	34.0	51.0	S	10.4	15.7	15.0	22.5	20.4	30.7	26.7	40.0
				D	20.9	31.3	30.1	45.1	40.9	61.3	53.4	80.1
Group B	N	34.0	51.0	S	10.4	15.7	15.0	22.5	20.4	30.7	26.7	40.0
				D	20.9	31.3	30.1	45.1	40.9	61.3	53.4	80.1
	X	42.0	63.0	S	12.9	19.3	18.6	27.8	25.2	37.9	33.0	49.5
				D	25.8	38.7	37.1	55.7	50.5	75.7	65.9	98.9
A307	–	13.5	20.3	S	4.14	6.23	5.97	8.97	8.11	12.2	10.6	15.9
				D	8.29	12.5	11.9	17.9	16.2	24.4	21.2	31.9

Nominal Bolt Diameter, d, in.					$1^1/_8$		$1^1/_4$		$1^3/_8$		$1^1/_2$	
Nominal Bolt Area, in.²					0.994		1.23		1.48		1.77	
ASTM Desig.	Thread Cond.	F_{nv}/Ω (ksi)	ϕF_{nv} (ksi)	Loading	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
		ASD	LRFD		ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Group A	N	27.0	40.5	S	26.8	40.3	33.2	49.8	40.0	59.9	47.8	71.7
				D	53.7	80.5	66.4	99.6	79.9	120	95.6	143
	X	34.0	51.0	S	33.8	50.7	41.8	62.7	50.3	75.5	60.2	90.3
				D	67.6	101	83.6	125	101	151	120	181
Group B	N	34.0	51.0	S	33.8	50.7	41.8	62.7	50.3	75.5	60.2	90.3
				D	67.6	101	83.6	125	101	151	120	181
	X	42.0	63.0	S	41.7	62.6	51:7	77.5	62.2	93.2	74.3	112
				D	83.5	125	103	155	124	186	149	223
A307	–	13.5	20.3	S	13.4	20.2	16.6	25.0	20.0	30.0	23.9	35.9
				D	26.8	40.4	33.2	49.9	40.0	60.1	47.8	71.9

ASD	LRFD
$\Omega = 2.00$	$\phi = 0.75$

For end loaded connections greater than 38 in., see AISC *Specification* Table J3.2 footnote b.

Table 7-2
Available Tensile Strength of Bolts, kips

Nominal Bolt Diameter, d, in.			$^5/_8$		$^3/_4$		$^7/_8$		1	
Nominal Bolt Area, in.²			0.307		0.442		0.601		0.785	
ASTM Desig.	F_{nt}/Ω (ksi)	ϕF_{nt} (ksi)	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Group A	45.0	67.5	13.8	20.7	19.9	29.8	27.1	40.6	35.3	53.0
Group B	56.5	84.8	17.3	26.0	25.0	37.4	34.0	51.0	44.4	66.6
A307	22.5	33.8	6.90	10.4	9.94	14.9	13.5	20.3	17.7	26.5

Nominal Bolt Diameter, d, in.			$1^1/_8$		$1^1/_4$		$1^3/_8$		$1^1/_2$	
Nominal Bolt Area, in.²			0.994		1.23		1.48		1.77	
ASTM Desig.	F_{nt}/Ω (ksi)	ϕF_{nt} (ksi)	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n	r_n/Ω	ϕr_n
	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD	ASD	LRFD
Group A	45.0	67.5	44.7	67.1	55.2	82.8	66.8	100	79.5	119
Group B	56.5	84.8	56.2	84.2	69.3	104	83.9	126	99.8	150
A307	22.5	33.8	22.4	33.5	27.6	41.4	33.4	50.1	39.8	59.6

ASD	LRFD
$\Omega = 2.00$	$\phi = 0.75$

HIT-HY 200 Adhesive Anchoring System

Table 1 — HIT-HY 200 Design Strength (Factored Resistance) with Concrete/Pullout Failure for HIT-Z(-R) Rods in Uncracked Concrete [1,2,3,4,5,6,7,8,10]

Anchor Diameter in. (mm)	Effective Embed. Depth in. (mm)	Tension — ΦN_n or N_r				Shear — ΦV_n or V_r			
		f'_c = 2500 psi (17.2 Mpa) lb (kN)	f'_c = 3000 psi (20.7 Mpa) lb (kN)	f'_c = 4000 psi (27.6 Mpa) lb (kN)	f'_c = 6000 psi (41.4 Mpa) lb (kN)	f'_c = 2500 psi (17.2 Mpa) lb (kN)	f'_c = 3000 psi (20.7 Mpa) lb (kN)	f'_c = 4000 psi (27.6 Mpa) lb (kN)	f'_c = 6000 psi (41.4 Mpa) lb (kN)
3/8 (9.5)	2-3/8 (60)	2,855 (12.7)	3,125 (13.9)	3,610 (16.1)	4,425 (19.7)	3,075 (13.7)	3,370 (15.0)	3,890 (17.3)	4,765 (21.2)
	3-3/8 (86)	4,835 (21.5)	5,300 (23.6)	5,560 (24.7)	5,560 (24.7)	10,415 (46.3)	11,410 (50.8)	13,175 (58.6)	16,135 (71.8)
	4-1/2 (114)	5,560 (24.7)	5,560 (24.7)	5,560 (24.7)	5,560 (24.7)	16,035 (71.3)	17,570 (78.2)	20,285 (90.2)	24,845 (110.5)
1/2 (12.7)	2-3/4 (70)	3,555 (15.8)	3,895 (17.3)	4,500 (20.0)	5,510 (24.5)	7,660 (34.1)	8,395 (37.3)	9,690 (43.1)	11,870 (52.8)
	4-1/2 (114)	7,445 (33.1)	8,155 (36.3)	8,190 (36.4)	8,190 (36.4)	16,035 (71.3)	17,570 (78.2)	20,285 (90.2)	24,845 (110.5)
	6 (152)	8,190 (36.4)	8,190 (36.4)	8,190 (36.4)	8,190 (36.4)	24,690 (109.8)	27,045 (120.3)	31,230 (138.9)	38,250 (170.1)
5/8 (15.9)	3-3/4 (95)	5,665 (25.2)	6,205 (27.6)	7,165 (31.9)	8,775 (39.0)	12,200 (54.3)	13,365 (59.5)	15,430 (68.6)	18,900 (84.1)
	5-5/8 (143)	10,405 (46.3)	11,400 (50.7)	13,165 (58.6)	14,950 (66.5)	22,415 (99.7)	24,550 (109.2)	28,350 (126.1)	34,720 (154.4)
	7-1/2 (191)	14,950 (66.5)	14,950 (66.5)	14,950 (66.5)	14,950 (66.5)	34,505 (153.5)	37,800 (168.1)	43,650 (194.2)	53,455 (237.8)
3/4 (19.1)	4 (102)	6,240 (27.8)	6,835 (30.4)	7,895 (35.1)	9,665 (43.0)	13,440 (59.8)	14,725 (65.5)	17,000 (75.6)	20,820 (92.6)
	6-3/4 (171)	13,680 (60.9)	14,985 (66.7)	17,305 (77.0)	19,890 (88.5)	29,460 (131.0)	32,275 (143.6)	37,265 (165.8)	45,645 (203.0)
	8-1/2 (216)	19,330 (86.0)	19,890 (88.5)	19,890 (88.5)	19,890 (88.5)	41,635 (185.2)	45,605 (202.9)	52,660 (234.2)	64,500 (286.9)

Table 2 — HIT-HY 200 Design Strength (Factored Resistance) with Concrete/Pullout Failure for HIT-Z(-R) Rods in Cracked Concrete [1,2,3,4,5,6,7,8,9,10]

Anchor Diameter in. (mm)	Effective Embed. Depth in. (mm)	Tension — ΦN_n or N_r				Shear — ΦV_n or V_r			
		f'_c = 2500 psi (17.2 Mpa) lb (kN)	f'_c = 3000 psi (20.7 Mpa) lb (kN)	f'_c = 4000 psi (27.6 Mpa) lb (kN)	f'_c = 6000 psi (41.4 Mpa) lb (kN)	f'_c = 2500 psi (17.2 Mpa) lb (kN)	f'_c = 3000 psi (20.7 Mpa) lb (kN)	f'_c = 4000 psi (27.6 Mpa) lb (kN)	f'_c = 6000 psi (41.4 Mpa) lb (kN)
3/8 (9.5)	2-3/8 (60)	2,020 (9.0)	2,215 (9.9)	2,560 (11.4)	3,135 (13.9)	2,180 (9.7)	2,385 (10.6)	2,755 (12.3)	3,375 (15.0)
	3-3/8 (86)	3,425 (15.2)	3,755 (16.7)	4,335 (19.3)	5,305 (23.6)	7,380 (32.8)	8,085 (36.0)	9,335 (41.5)	11,430 (50.8)
	4-1/2 (114)	5,275 (23.5)	5,560 (24.7)	5,560 (24.7)	5,560 (24.7)	11,360 (50.5)	12,445 (55.4)	14,370 (63.9)	17,600 (78.3)
1/2 (12.7)	2-3/4 (70)	2,520 (11.2)	2,760 (12.3)	3,185 (14.2)	3,905 (17.4)	5,425 (24.1)	5,945 (26.4)	6,865 (30.5)	8,405 (37.4)
	4-1/2 (114)	5,275 (23.5)	5,780 (25.7)	6,670 (29.7)	7,640 (34.0)	11,360 (50.5)	12,445 (55.4)	14,370 (63.9)	17,600 (78.3)
	6 (152)	7,640 (34.0)	7,640 (34.0)	7,640 (34.0)	7,640 (34.0)	17,490 (77.8)	19,160 (85.2)	22,120 (98.4)	27,095 (120.5)
5/8 (15.9)	3-3/4 (95)	4,010 (17.8)	4,395 (19.5)	5,075 (22.6)	6,215 (27.6)	8,640 (38.4)	9,465 (42.1)	10,930 (48.6)	13,390 (59.6)
	5-5/8 (143)	7,370 (32.8)	8,075 (35.9)	9,325 (41.5)	11,420 (50.8)	15,875 (70.6)	17,390 (77.4)	20,080 (89.3)	24,595 (109.4)
	7-1/2 (191)	11,350 (50.5)	12,430 (55.3)	14,355 (63.9)	14,950 (66.5)	24,440 (108.7)	26,775 (119.1)	30,915 (137.5)	37,865 (168.4)
3/4 (19.1)	4 (102)	4,420 (19.7)	4,840 (21.5)	5,590 (24.9)	6,845 (30.4)	9,520 (42.3)	10,430 (46.4)	12,040 (53.6)	14,750 (65.6)
	6-3/4 (171)	9,690 (43.1)	10,615 (47.2)	12,255 (54.5)	15,010 (66.8)	20,870 (92.8)	22,860 (101.7)	26,395 (117.4)	32,330 (143.8)
	8-1/2 (216)	13,690 (60.9)	15,000 (66.7)	17,320 (77.0)	19,535 (86.9)	29,490 (131.2)	32,305 (143.7)	37,300 (165.9)	45,685 (203.2)

1 See Section 2.4 for explanation on development of load values.
2 See Section 2.4.6 to convert design strength (factored resistance) value to ASD value.
3 Linear interpolation between embedment depths and concrete compressive strengths is not permitted.
4 Apply spacing, edge distance, and concrete thickness factors in tables 8 - 15 as necessary. Compare to the steel values in table 3. The lesser of the values is to be used for the design.
5 Data is for temperature range A: Max. short term temperature = 104° F (40° C), max. long term temperature = 75° F (24° C).
For temperature range B: Max. short term temperature = 176° F (80° C), max. long term temperature = 122° F (50° C) multiply above value by 0.86.
For temperature range C: Max. short term temperature = 248° F (120° C), max. long term temperature = 162° F (72° C) multiply above value by 0.70.
Short term elevated concrete temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling. Long term concrete temperatures are roughly constant over significant periods of time.
6 Tabular values are for dry and water saturated concrete conditions.
7 Tabular values are for short term loads only. For sustained loads, see Section 2.4.8.
8 Tabular values are for normal weight concrete only. For lightweight concrete multiply design strength (factored resistance) by λ_a as follows:
For sand-lightweight, λ_a = 0.51. For all-lightweight, λ_a = 0.45.
9 Tabular values are for static loads only. For seismic loads, multiply cracked concrete tabular values by the following reduction factors:
3/8-in diameter - α_{seis} = 0.705
1/2-in to 3/4-in diameter - α_{seis} = 0.75
See Section 2.4.7 for additional information on seismic applications.
10 Diamond core drilling with Hilti HIT-Z(-R) rods is permitted with no reduction in published data above.

HIT-HY 200 Adhesive Anchoring System

The full shear strength can be permitted if:

ACI: $$\frac{N_{ua}}{N_{des}} \leq 0.2$$

CSA: $$\frac{N_f}{N_{des}} \leq 0.2$$

2.4.6 Allowable Stress Design (ASD)

The values of N_{des} and V_{des} developed from Section 2.4.5 are design strengths (factored resistances) and are to be compared to the required strength in tension and shear from factored load combinations of ACI 318 Chapter 9 or CSA A23.3 Chapter 8.

The design strength (factored resistance) can be converted to an ASD value as follows:

$$N_{des,ASD} = \frac{N_{des}}{\alpha_{ASD}}$$

$$V_{des,ASD} = \frac{V_{des}}{\alpha_{ASD}}$$

where:

α_{ASD} = Conversion factor calculated as a weighted average of the load factors for the controlling load combination.

An example for the calculation of α_{ASD} is as follows:

Controlling strength design load combination is 1.2D + 1.6L, % contribution is 30% D, 70% L

α_{ASD} = 1.2 x 0.30 + 1.6 x 0.70 = 1.48

2.4.7 Seismic Design

To determine the seismic design strength (factored resistance) a reduction factor, α_{seis}, is applied to the applicable table values. This value of α_{seis} will be in the footnotes of the relevant design tables.

The value of α_{seis} for concrete / bond / pullout failure is based on 0.75 times a reduction factor determined from testing. The total reduction is footnoted in the tables.

The value of α_{seis} for steel failure is based on testing and is typically only applied for shear. There is no additional 0.75 factor. The reduction is footnoted in the tables.

The factored load and associated seismic load combinations that will be compared to the design strength (factored resistance) can be determined from ACI or CSA provisions and national or local code requirements. An additional value for $\phi_{non\text{-}ductile}$ may be needed based on failure mode or ductility of the attached components.

2.4.8 Sustained Loads and Overhead Use

Sustained loading is calculated by multiplying the value of ΦN_n or N_r by 0.55 and comparing the value to the tension dead load contribution (and any sustained live loads or other loads) of the factored load. Edge, spacing, and concrete thickness influences do not need to be accounted for when evaluating sustained loads.

Consideration of sustained loads is based on ACI 318-11 Appendix D. Since sustained loading is not addressed in CSA A23.3 Annex D, it is reasonable to use this approach for CSA based designs.

2.4.9 Accuracy of the Simplified Tables

Calculations using the Simplified Tables have the potential of providing a design strength (factored resistance) that is exactly what would be calculated using equations from ACI 318 Appendix D or CSA A23.3 Annex D.

The tables for the single anchor design strength (factored resistance) for concrete / bond / pullout failure or steel failure have the same values that will be computed using the provisions of ACI and CSA.

The load adjustment factors for edge distance influences are based on a single anchor near an edge. The load adjustment factors for spacing are determined from the influence of two adjacent anchors. Each reduction factor is calculated for the minimum value of either concrete or bond failure. When more than one edge distance and/or spacing condition exists, the load adjustment factors are multiplied together. This will result in a conservative design when compared to a full calculation based on ACI or CSA. Additionally, if the failure mode in the single anchor tables is controlled by concrete failure, and the reduction factor is controlled by bond failure, this will also give a conservative value (and vice versa).

The following is a general summary of the accuracy of the simplified tables:

- Single anchor tables have values equivalent to a calculation according to ACI or CSA.
- Since the table values, including load adjustment factors, are calculated using equations that are not linear, linear interpolation is not permitted. Use the smaller of the two table values listed. This provides a conservative value if the application falls between concrete compressive strengths, embedment depths, or spacing, edge distance, and concrete thickness.
- For one anchor near one edge, applying the edge distance factor typically provides accurate values

EXHIBIT “B”

Calc Engineering	**Calc Engineering LLC** 2000 NW 89 PL UNIT 102 DORAL FL 33172 Phone: 305-898-9995 www.calceng.com

Site Specific Safety Plan

For Construction of steel braces for concrete retaining wall all around the property to provide structural support for the existing concrete retaining wall

Subject Property:

8777 Collins Ave., Surfside, FL, 33154

TO: BOFMAN CONSTRUCTION CO

PREPARED BY

CALC ENGINEERING LLC

8/5/2021

Calc Engineering LLC
2000 NW 89 PL UNIT 102
DORAL FL 33172
Phone: 305-898-9995
www.calceng.com

Site Specific Safety Plan

For Construction of steel braces for concrete retaining wall all around the property to provide structural support for the existing concrete retaining wall

Subject Property:

8777 Collins Ave., Surfside, FL, 33154

TABLE OF CONTENTS

Site Specific Safety Plan

For Construction of steel braces for concrete retaining wall all around the property to provide structural support for the existing concrete retaining wall.

Address: 8777 Collins Ave., Surfside, FL, 33154

Introduction

The subject property, the collapsed site of the Champlain towers at Surfside, Florida, was visited on Sunday 08/01/2021 and on Thursday 8/5/2021 by Calc Engineering LLC team. Calc Engineering performed visual inspection of walls in order to provide site specific safety plan for the damages and structural issues on remaining concrete walls around the perimeter of the collapsed building before installation of the new steel bracing system.

The Contractor shall have sole and complete responsibility for the implementation of a worksite safety plan and shall take necessary precautions for the health and safety of employees and fully comply with applicable provisions of all sections of 29 CFR 1926-OSHA Construction Industry Safety and Health Standards, 29 CFR 1910-OSHA General Industry Safety and Health Standards, National Fire Protection Association codes, and all standards or codes referred to in the listed document and any other applicable standards.

Due to the changing nature of health and safety regulations, and because new information is constantly becoming available, this plan is subject to change.

Company Policy

Safety and health of the workforce and general public is the top priority of Calc Engineering. In case of potential safety or health threat, all efforts will be made to minimize or eliminate hazards to personnel, processes, equipment, and the general public. No worker should ever perform a task that may endanger their own safety and health or that of others. All workers must report unsafe activities and potential threats to management and management must take adequate precautions.

This SSSP outlines the Environment, Safety, and Health (ES&H) requirements and guidelines developed for construction of steel braces for concrete retaining wall all around the property to provide more structural support for existing concrete retaining wall. These requirements are written to help protect site personnel, visitors, and the general public from exposure to potential hazards on this job site. There are several plans and actions that are included to ensure that we act to protect the environment, the general public, as well as the workforce during the construction phase of this project. This plan shall be updated if there are major changes to project conditions, situations, or exposures. An employee acknowledgement form documents that each employee understands the SSSP and will implement these safety and health requirements on this job site.

Contractor Responsibilities

The contractor, BOFAM Construction Co. must perform safety inspections of their work area and equipment per OSHA requirements, and plan for the safety of the job site by

1- Making periodic inspections and confirm the job site safety
2- Enforce the use of safety equipment and PPE
3- Hold daily meetings to inspect the job site and equipment safety
4- Discuss the hazards with all necessary parties
5- Provide recommendations and address all safety concerns
6- Eliminate potential threats and possibility of accidents and injuries
7- Provide safety orientations and enforce safety rules

All employees must receive a project safety assignment to the project. Topics include but not limited to, Fall Protection, ladder Safety, hazard Communication, lock out/tag out. All employees must complete the contractor's safety orientation and sign the necessary forms. The training records to be maintained electronically and/or on site in the job site office. Should OSHA visit the job site, these training records are one indication of our implementation of an active safety program on this site. Safety meetings to be scheduled to review safety inspections, findings, and corrective actions taken. The project manager should schedule routine meetings in advance or set a regular date/time to be sure that all workers can plan to attend this safety meeting. Records of these meetings should be kept on file in the job site office with attached attendance sheets.

For all observed hazards and provided recommendations, reports must be maintained and submitted to Calc Engineering. If contractor believes there will be delay due to impact of harsh weather conditions, or when the project site is determined to be unworkable, the engineers and site manager shall meet to assess the conditions of construction site. All incidents to be discussed at safety meetings to eliminate the recurrence of such incidents in future. It is the contractor's duty to administer all the common safety procedures and address/manage the safety hazards mentioned in this report.

Contractor shall report all work related injuries, illnesses, first aid cases, near misses, property damage, and environmental incidents such as a spill or release of hazardous materials, regardless of severity, immediately to the Project Superintendent. Contractor shall investigate all incidents and forward copies of the incident report to the Project Superintendent within 4 hours of the incident. An incident report must be provided for: near misses, first aid, recordable injuries, third party property damage or personal injury.

Background and Scope of Work

The subject property, the collapsed site of the Champlain towers at Surfside, Florida, was visited on Sunday 08/01/2021 and on Thursday 8/5/2021 by Calc Engineering LLC team. Calc Engineering performed visual inspection of walls in order to provide site specific safety plan for the damages and structural issues on remaining concrete walls around the perimeter of the collapsed building before installation of the new steel bracing system.

Visual inspections were made of the above described property and photographs were taken for review, and some recommendations were provided to enhance the safety of the workforce against failure of the remaining parts of columns and retaining walls. Calc Engineering cannot say or evaluate those sections that was not visible. Calc engineering only inspected the retaining walls and did not inspect other sections. Calc Engineering believes that after the site is drained completely, the area around the remaining columns needs to be secured, the remaining rebars need to be cut. The hanging concrete parts must be removed. The remaining of the 7' privacy concrete wall need to be completely removed or secured. The ramp access must be extended for safe travel of construction equipment. All the exposed rebars on the concrete floor need to be cut.

Our recommendation in this report is proper and applicable for the time of inspection, and not for future. It is our purpose to provide information on the condition of the structure on the day of the inspection and not to provide discussions or recommendations concerning the future maintenance of the structure.

Safety and Emergency Contacts

Contacts	
Project Manager	Austin G. Akinrin (BOFAM Construction Co.)
Site Name	Champlain Towers
Site Address	8777 Collins Ave., Surfside, FL 33154
Local Police, Ambulance, and Fire Dept.	911
Local Hospital: Mount Sinai Medical Center	Tel: (305) 674-2200 and (305) 396-3219
	Address: 4300 Alton Road, Miami Beach, FL 33140
Local Contractor's Office	1600 NW 3rd Ave, Suite D4, Miami, FL 33136
	Tel: (754) 245-0102

Direction to closest Hospital:

Safety Hazards on Job Site and Considerations

1. At all times during the construction, the area of the work must be dry. After the area is completely dry, contractor needs to confirm there are no slippery areas on the concrete floor before and during the construction period (Figure 1).
2. There are concrete columns in middle of the site with exposed rebars that are structurally unsafe and unsecured. The columns are detached and may collapse, Calc Engineering recommends removing or securing all columns to avoid any incidents (Figure 2).

3. There's a 7' high privacy concrete wall unbraced and unsecured on side of the 87th terrace around the pool area. Multiple large cracks are visible on the structure. Calc Engineering recommends that concrete privacy wall to be removed or engineering plans required to secure the wall. The wall is not safe during hurricane event and may collapse (Figure 3).
4. Ramp access for the construction equipment is not wide enough for travel of construction equipment and is not secured from one side, contractor to extend the width of the ramp or temporary pile sheets to be included in that area (Figure 4).
5. Concrete beams and columns around pool are all damaged. The columns are damaged, with large cracks visible on the structure, the concrete slab is unreinforced and damaged, the pool area is extremely unsafe and must be secured or completely demolished before construction of bracing systems starts. (Figure 5).
6. Rebars hanging from all around of the existing concrete walls to be cut before the construction starts (Figure 6).
7. All hanging broken concrete pieces and debris must be removed before the start of construction of the steel bracing system (Figure 7).
8. The remaining floor/slab on corner of 88 St and the ocean side is unsafe (Northeast corner of the site) needs to be removed or secured (Figure 8) before construction of bracing systems starts.

9. All rebars on the concrete floor to be removed or secured to prevent any incident during the construction (Figure 9).

10. The debris and remaining rubble on top of all walls need to be removed, may fall during the construction.

Calc Engineering recommends demolishing or securing the hazard areas mentioned (Pool area, concrete wall around pool area, the concrete floor on Northeast corner on side of 88 St., all remaining columns, all remaining exposed hanging rebars and broken/damaged concrete pieces and remaining rebars on concrete floor).

All damages on the surface of the concrete wall must be repaired before the construction starts. The structural plans provided by Calc Engineering are temporary and for duration of six months. The condition of steel plate and bracings need to be checked after 6 months.

Since the bracing design is with assumption of having the first lane and walkway of Collins Ave. closed; in case they are opened or any extra load is applied, the structural and safety plans need to be checked.

As mentioned in project prioritization section, the first priority for the construction is the wall on the side of Collins Ave., second priority is the side of 88th St and third is the size of 87 terrace and last is the ocean side.

The figures below display some of the hazards mentioned above.

Pictures

Figure 1: The area must be fully drained

Fig 2(a): view of columns with exposed rebars

Fig 2(b): detached and damaged columns

Fig 2(c) damaged columns with exposed rebars present threat to workers safety.

Figure 2: Columns with exposed rebars to be secured or removed.

Fig 3(a) unbraced and unsafe damaged concrete wall

Fig 3(b): cracks visible on the unbraced wall

Fig 3(c) cracks on the unbraced concrete wall

Figure 3: Unbraced 7' concrete wall on side of 87th Terrace around pool area, large cracks visible (the wall is unbraced and unsecure, may collapse during hurricane).

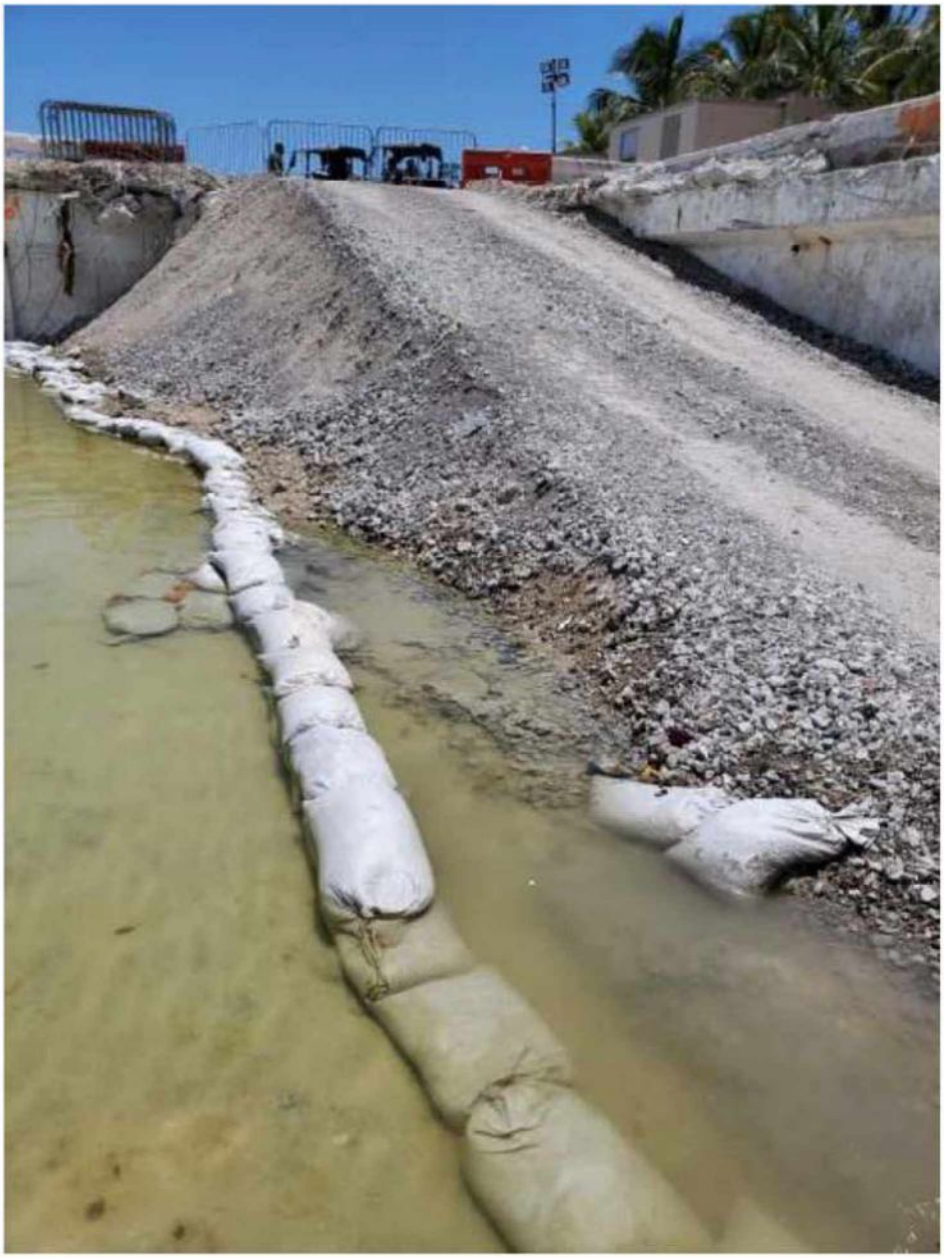


Figure 4: Ramp not wide enough needs to be extended for travelling of future heavy construction equipment.

Figure 5 (a): Pool area must be secured.

Fig 5 (b) Column detached, beam cracked, broken concrete hanging

Fig 5 (c) Cracks under the pool area

Fig 5 (d) Hanging rebars and broken concrete, separation of concrete slab.

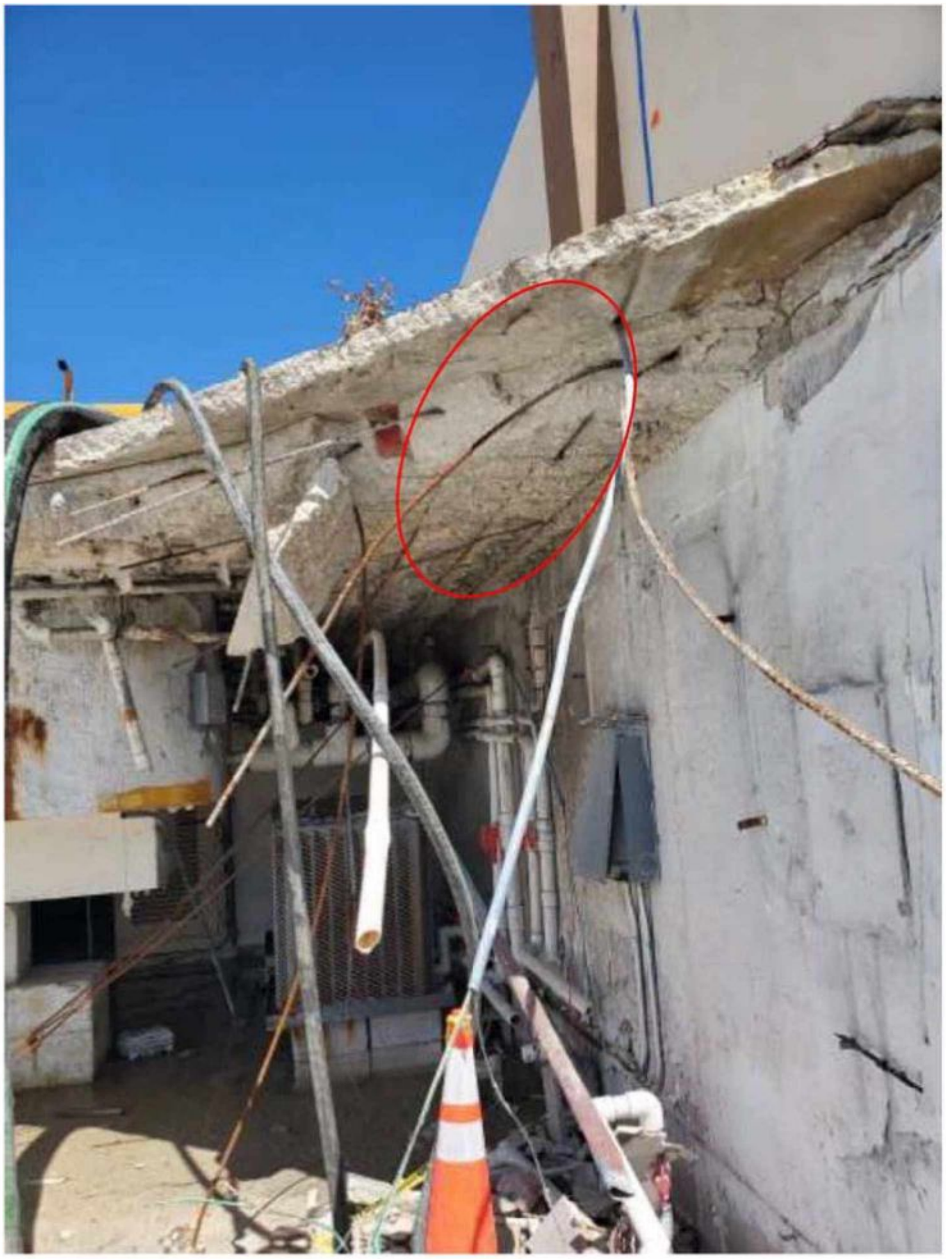


Fig 5(e) Concrete slab is unreinforced and damaged, may collapse

Figure 5: Damaged area under pool. Cracks and spalling, concrete separation and cracks, hanging rebars and broken concrete.

Fig 6 (a) Hanging rebars on side of 87th Terrace

Fig 6 (b) Hanging rebars on side of Collins Ave.

Fig 6 (c) Hanging rebars on side of Collins Ave.

Fig 6 (d) Hanging rebars on side of 88 street.

Fig 6(e) Hanging rebars on ocean/east side.

Figure 6: Hanging rebars on all concrete walls to be removed.

Fig 7 (a) Broken concrete on side on 87th Terrace

Fig 7 (b) Broken concrete on side on 87th Terrace

Fig 7 (c) Broken concrete on side of Collins Ave.

Fig 7 (d) Broken concrete on side of Colins Ave.

Fig 7(e) Broken concrete on side of Collins Ave.

Fig 7(f) Broken concrete to be removed on the ocean/east side.

Fig 7(g) Broken concrete to be removed on the ocean/east side.

Figure 7: Damaged/broken concrete pieces to be removed on all walls.

Figure 8: East corner of 88 St. to be secured or the slab to be removed.

Figure 9: Rebars to be removed from concrete floor

Common Safety Procedures

The contractor is required to follow general safety and health provisions as required by OSHA. It is contractors' responsibility to provide safety training and education, provide first aid and medical attention, prepare ventilation systems when required, provide fire extinguishers, properly dispose of debris and hazardous materials, and record and report the injuries.

Hazard Communication Standard- 29CFR 1910.1200

1. A list of hazardous substances must be available for all employees.
2. Proper training is required for work force to identify the location of hazards, MSDS safety data sheet, protective measures to be taken, and details of hazard communication program.
3. Employees must be aware of all potential hazards and be trained for handling the hazardous materials used in the workplace.
4. All employees must use personal protective equipment.
5. Proper control procedures are to be established for handling of hazardous materials.

Housekeeping- 29 CFR 1910.22 and/or 29 CFR 1926.25

1. All work surfaces must be kept clean, dry and slip resistant.
2. Any spill of hazardous materials, liquid, blood, and infectious materials must be cleaned up properly immediately.
3. Debris and waste must be removed from the worksite properly .

Hand and Power Tools- 29 CFR 1926 Subpart I or 29 CFR 1910 Subpart P

1. All equipment must be provided with appropriate safety guards.
2. Power tools shall be used with proper shields, guards, or attachments, as recommended by the manufacturer.
3. Electrically operated tools and equipment must be grounded.
4. All tools and equipment must be kept in good condition.

Mechanized Equipment- 29 CFR 1926 Subpart O

1. Employees must be trained or be licensed to operate any mechanized equipment.
2. Does the mechanized equipment have a warning horn, whistle, gong, or other device that can be clearly heard above normal noise in the areas where it is operated.
3. If any equipment requires repairs, it should be removed from worksite immediately.

Trenching and Shoring- 29 CFR 1926 Subpart P

1. The safety representative must be present at all times on site.

2. Workers must be protected from cave-ins in all demolition parts by an adequately designed protective system.
3. Work must be done only in areas protected by sloping and benching, a support system, or a shield system.
4. Material and equipment used for protective systems must be the right size and in good condition.
5. The safety inspector checks the site (a) every day before work, (b) after every rainstorm, and (c) as needed, for evidence of possible cave-ins, failure of systems, hazardous atmospheres.

Traffic Control- 29 CFR 1926 Subpart G
1. All passageways must be kept clear and arranged such that the employees operating machineries are kept safe at all times.
2. Exposed rebars, holes and defects in the floor, sidewalk and all walking surfaces must be kept covered and secured.
3. Spilled material must be cleaned immediately.

Fall Protection- 29 CFR 1926 Subpart M and/or 29 CFR 1926 Subpart X
1. Ladders must be kept in good condition, joints between steps and side rails kept tight, all hardware and fittings must be securely attached, and moveable parts should operate freely. Employees are prohibited from using ladders that are broken, missing side rail, and are in any way defective.
2. non-slip safety feet must be provided on each metal or rung ladder. All ladders must be free of grease and oil.
3. All ladders must be inspected for damages.
4. Floor openings must be guarded and secured.

PPE- 29 CFR 1910 Subpart I
1. All employees must wear proper PPE for head, eye, face, hand, and foot protection. Employees must be trained on PPE use procedure, which PPE is required, when to use them and how to properly adjust them.
2. Due to the hazards identified, all employees must wear protective gloves, hard hats, safety glasses, foot protection and safety vest.

Lock-out/ Tag-out- 29 CFR 1910.147
1. All machinery are required to be de-energized or disengaged and blocked or locked out during cleaning, servicing, and adjusting. Ensure control circuit is disconnected and locked out for electrical equipment.

2. The stored energy (mechanical, hydraulic, air, etc.) must be released or blocked before equipment is locked out for repairs.
3. Employees working on locked-out equipment have to be identified (by their locks or accompanying tags).

Hot Work- 29 CFR 1910 Subpart Q

1. Only authorized and trained personnel are permitted to use welding, cutting, or brazing equipment.
2. Signs to be posted reading "DANGER, NO SMOKING, MATCHES, OR OPEN LIGHTS," or the equivalent.
3. Safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions, or burns.
4. Verify that the eye protection, helmets, hand shields and goggles meet appropriate standards.
5. Adequate ventilation required where welding or cutting is performed.
6. Fire extinguishing equipment must be made available in the worksite.

Environmental- 29 CFR 1910 Subpart J

1. Use wet methods and air intakes to eliminate the risk of contaminated air, dust or similar hazards.
2. Employees must be made aware of the hazards involved with the various chemicals they may be exposed to in their work environment, such as ammonia, chlorine, epoxies, caustics.

Occupational Health- 29 CFR 1910 Subpart K

1. Employees are prohibited from smoking or eating in any area where contaminants are present.
2. First aid kits supplied in each work area and periodically being inspected.
3. Emergency phone numbers to be posted.
4. Prepare an eye-wash station or sink for quick drenching or flushing of the eyes and body in areas where corrosive liquids or materials are handled.

Removal of Bonded Asbestos Containing Materials (ACM)

1. Asbestos Containing Material (ACM) means any material, object, product or debris that contains asbestos.

2. ACM related work means any work that involves working on (drilling, cutting, scraping, cleaning, repairing etc), removing or working in close proximity to, installed ACM.

3. Bonded ACM means asbestos containing materials (ACM) containing a bonding compound reinforced with asbestos fibers.

4. Refer to the on-site Building Management Plan (BMP) prior to carrying out any work to determine the type and location of any ACM (eg. asbestos-cement sheeting, vinyl tiles) that may be present. If the on-site Building Management Plan is not available then contact the Regional Safety/Asbestos Coordinator to examine the duplicate copy at the Regional Office to verify the presence/location of ACM.

5. If ACM is suspected (due to the age of the building and/or local knowledge) and there is no Building Management Plan and/or Asbestos Register on site, then an experienced and competent person is to undertake an inspection to identify the presence, type and location of any ACM that may be present prior to any work being carried out. If a competent person is also not available, then any suspect materials/products must be presumed to contain asbestos and is to be removed and disposed of as ACM in accordance with (company name) Standards and Legislative requirements.

6. The need for air monitoring is to be determined and documented by a competent person who is independent of the person responsible for the removal work, prior to any ACM related work being carried out.

7. All work involving ACM (removal, drilling, cutting of penetrations, scraping, repairing and/or clean-up etc.) is to be performed outside the normal operating hours of the facility/building and/or when the facility/building is unoccupied by arrangement with the owner/tenant.

Construction Signage

The contractor is to ensure the placement of signs to prevent the access of unauthorized personnel to the site or hazardous work areas during construction and/or hazardous operations. Barricades/hoardings/fencing are to be of a standard construction that clearly defines and restricts all unauthorized personnel from entering the work area and exclusion zones and are to be erected in accordance with Statutory Authorities and manufacturers requirements. Access points must be kept always closed when personnel are not using them to enter and exit the work area.

1. SITE SAFETY SIGNS

2. CONSTRUCTION ENTRANCE SIGNS

3. CONSTRUCTION EXIT SIGNS

4. CONSTRUCTION AREA SIGNS

5. SIDEWALK SIGNS

6. CAUTION TAPE

The following references have been used in preparation of this report:

1-https://www.osha.gov/

2-https://www.ridemetro.org/

3- https://safetyrisk.net/wp-content/uploads/downloads/2010/06/whs_construc-safe-plan_all.pdf

EXHIBIT "C"

NOTE: ALL SHEETS MUST BE REVIEWED

DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES

Herbert S. Saffir Permitting and Inspection Center

11805 SW 26th Street (Coral Way), • Miami, Florida 33175-2474 • (786) 315-2000

123_01-52 PAGE 1 8/17

PERMIT APPLICATION

IF SUBSIDIARY PROVIDE MASTER PERMIT NUMBER HERE

LOCATION OF IMPROVEMENTS

Job Address 8777 Collins Avenue
Folio 14-2235-025-
Lot ______ Block ______
Subdivision ______ PBpg ______
Metes and bounds ______

CONTRACTOR INFORMATION

Contractor No. CGC062660
Last four (4) digits of Qualifier No. 6086
Contractor Name Bofam Construction Co, Inc
Qualifier Name Gbolahan Austin Akinrin
Address 1600 NW 3rd Avenue
City Miami State FL Zip 33136

TYPE OF IMPROVEMENTS

- [ ] New Construction on Vacant Land
- [ ] Alteration Interior
- [ ] Alteration Exterior
- [ ] Relocation of Structure
- [ ] Short Term Event
- [ ] New Roof
- [ ] Recovery (Roof)
- [ ] Permit by Affidavit
- [ ] Enclosure
- [ ] Repair
- [ ] Repair Due to Fire
- [✓] Demolish
- [ ] Shell Only
- [ ] Addition Attached
- [ ] Addition Detached
- [ ] Re-Roof
- [ ] Foundation Only

Current use of property Vacant
Description of Work Surfside Emergency Shoring
Sq. Ft. ______ Units ______ Floors ______
Value of Work $500,000

PERMIT TYPE

- [✓] Building* Category 015
- [ ] Electrical ______
- [ ] Mechanical ______
- [ ] Plumbing ______
- [ ] LPGX ______

CHANGE TO AN EXISTING PERMIT

- [ ] Chg. Contractor
- [ ] Re-Issue
- [ ] Extension
- [ ] Supplement
- [ ] Reinspection

OWNER'S NAME

Owner Miami Dade County - Police
Address 9105 NW 25 Street
City Doral State FL Zip 33172
Phone ______
Last four (4) digits of Owner's Social Security No. ______

PERSON TO PICK UP PLANS

Name Austin Akinrin
Address 1600 NW 3rd Aveue
City Miami State FL Zip 33136
Phone (754) 245-0102

ARCHITECT ENGINEER

Name Calc Engineering
Address 200 NW 89 Place, Unit 102
City Doral State FL Zip 33172
Phone (305) 898-9995

BONDING

Name ______
Address ______
City ______ State ______ Zip ______
Phone ______

MORTGAGE LENDER

Name ______
Address ______
City ______ State ______ Zip ______
Phone ______

*See reverse side for Building Category

Application is hereby made to obtain a permit to do work and installation as indicated. I certify that all work will be performed to meet the standards of all laws regulating construction in this jurisdiction. I understand that separate permits are required for **ELECTRICAL, PLUMBING, SIGNS, POOLS, MECHANICAL, WINDOW, SHUTTERS** and **ROOFING WORK** and there may be additional permits required for other governmental entities.

OWNER'S/PERMIT APPLICANT AFFIDAVIT I certify that all of the foregoing information is accurate. I certify that I am not a named violator with: unpaid civil penalties; unpaid administrative costs of hearing; unpaid County investigative, enforcement, testing, or monitoring costs; or unpaid liens, any or all of which are owed to MiamiDade County pursuant to the provisions of the Code of Miami-Dade County, Florida.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR ATTORNEY OR LENDER BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

"The issuance of the permit does not relieve the property owner from obtaining homeowner's association approval (if required) prior to beginning any work and in no way authorizes work that is in violation of any association rule or regulation."

Signature of Owner or Owner's Agent ______
PRINT NAME ______
STATE OF FLORIDA COUNTY OF MIAMI-DADE
Sworn to and subscribed before me this ______
day of ______, 20____,
by ______
Signature of Notary Public ______
Print Name ______
(SEAL)
Personally known ______
or Produced Identification ______

Signature of Qualifier GAkinrin
PRINT NAME GBOLAHAN AUSTIN AKINRIN
STATE OF FLORIDA COUNTY OF MIAMI-DADE
Sworn to and subscribed before me this 4th
day of August, 2021,
by Gbolahan Austin Akinrin
Signature of Notary Public
Print Name
(SEAL)
Personally known
or Produced Identification

Sophie Bryan
Commission # GG 952202
Commission Expires 03-27-2024
Bonded Through - Cynanotary
Florida - Notary Public

MIAMI-DADE COUNTY

Department of Regulatory and Economic Resources
Environmental Resources Management
701 NW 1st Court, 6th Floor
Miami, Florida 33136-3912
T 305-372-6567 F 305-372-6407

miamidade.gov

Class V Dewatering Permit Application Form

For Departmental Use Only

Date Received: ____________ Application #: ____________

Fee Received: $____________ Tracking #: ____________

1. Checklist:

☐ Application Fee: Dependent upon duration of dewatering permit (all fees include a 7.5% RER surcharge):

☐ 6 days or less **$520.00+$39.00 = $559.00***

☐ 7-30 days **$635.00+$47.63 = $682.63****

☐ 31-90 days **$980.00+$73.50 = $1053.50****

Note: After-the-Fact Permit applications will be charged a penalty fee amounting to 100% of the original fee, plus departmental administrative enforcement costs.

☐ Complete description of dewatering operation ***

☐ Complete dewatering operation calculations***

☐ Site Plan (site plan shall include project boundaries, location of proposed dewatering activity, sedimentation tanks, turbidity barriers, discharge points, berms, monitoring points, etc.)***

* **Permit issued for less than 30 days, CANNOT BE EXTENDED, a new permit application will be required.**
** **Time extension requests have to file at least thirty calendar days prior to the time of permit expiration.**
*** **Must be signed and sealed by an engineer, architect or land surveyor, licensed in the State of Florida.**

2. Project Information:

Project Name: Surfside Emergency Shoring Folio #: 14-2235-025-

This application is for a(n): ☑ New Permit ☐ After the Fact Permit

Location: 8777 Collins Avenue, Surfside, FL 33154

Section: ________ Township: ________ Range: ________

Municipality: ____________

Proposed starting date: 8/1/2021 Estimated completion date: 8/30/2021

Is the proposed work in a contaminated site? ☑ Yes ☐ No ☐ Unknown

If yes, see Attachment "B"

3. Applicant Information:

This should be the applicant's information for contact purposes.

Name: Austin Akinrin

Company: Bofam Construction Co, Inc

Address: 1600 NW 3rd Avenue

Miami, FL Zip Code: 33136

Phone #: 754-245-0102 Fax: 305-675-9269

Email: Austin@bofaminc.com

4. Applicant's Authorized Permit Agent:

Agent is authorized to process the application, furnish supplemental information relating to the application and bind the applicant to all requirements of the application.

Name: ____________

Company: ____________

Address: ____________

Zip Code: ____________

Phone #: ____________ Fax #: ____________

Email: ____________

5. Contractor Information:

Name: Austin Akinrin License # (County/State): CGC062660

Company: Bofam Construction Co, Inc

Address: 1600 NW 3rd Avenue, Miami, FL Zip Code: 33136

Phone #: 754-245-0102 Fax#: 305-675-9269 Email: Austin@bofaminc.com

6. Performance Bond and/or Mitigation Fee: (to be assessed by Water Control Section)

- This permit may require a performance bond to guarantee that work is accomplished according to plan and that no impact to adjacent properties is generated as a result of the permitted dewatering activity.
- A mitigation fee may be required to compensate for any loss of or impact to natural resources due to the extent and duration of the dewatering activity.

7. APPLICANT AFFIRMATION:

Application is hereby made for a Miami-Dade County Class V permit to authorize the activities described herein. I agree to or affirm the following:

- I possess the authority to authorize the proposed activities at the subject property, and
- I am familiar with the information, date and plans contained in this application, and
- To the best of my knowledge and belief, the information, data and plans submitted are true, complete and accurate, and
- I will apprise the Department of any changes to information provided in this application, and
- I will provide any additional information, evidence or data necessary to provide reasonable assurance that the proposed project will comply with the applicable State and County water quality standards both during construction and after the project is completed, and
- I am authorizing the permit agent listed in Section 4 of this application to process the application, furnish supplemental information relating to this application and bind the applicant to all requirements of this application, and
- I agree to provide entry to the project site to inspectors and authorized representatives of Miami-Dade County, with proper identification or documents as required by law, for the purpose of preliminary analysis, verification, sampling, monitoring, and observation of permitted activities.

A. IF APPLICANT IS AN INDIVIDUAL

Signature of Applicant	Print Applicant's Name	Date

B. IF APPLICANT IS OTHER THAN AN INDIVIDUAL OR NATURAL PERSON
(Examples: Corporation, Partnership, Trust, LLC, LLP, etc.)

Bofam Construction Co, Inc	Corp	
Print Name of Applicant (Enter the complete name as registered)	Type (Corp, LLC LLP, etc.)	State of Registration/Incorporation

Under the penalty of perjury, I certify that I have the authority to sign this application on behalf of the Applicant, to bind the Applicant, and if so required, to authorize the issuance of a bond on behalf of the Applicant. (If asked, you must provide proof of such authority to the Department). Please Note: If additional signatures are required, pursuant to your governing documents, operating agreements, or other applicable agreements or laws, you must attach additional signature pages (ATTACHMENT "A").

A Akinrin	Austin Akinrin	President	8/3/2021
Signature of Authorized Representative	Print Authorized Representative's Name	Title	Date

C. IF APPLICANT IS A JOINT VENTURE Each party must sign below (If more than two members, list on attached page)

Print Name of Applicant (Enter the complete name as registered)	Type (Corp, LLC LLP, etc.)	State of Registration/Incorporation
Print Name of Applicant (Enter the complete name as registered)	Type (Corp, LLC LLP, etc.)	State of Registration/Incorporation

Under the penalty of perjury, I certify that I have the authority to sign this application on behalf of the Applicant, to bind the Applicant, and if so required to authorize the issuance of a bond on behalf of the Applicant. (If asked, you must provide proof of such authority to the Department). Please Note: If additional signatures are required, pursuant to your governing documents, operating agreements, or other applicable agreements or laws, you must attach additional signature pages (ATTACHMENT "A").

Signature of Authorized Representative	Print Authorized Representative's Name	Title	Date
Signature of Authorized Representative	Print Authorized Representative's Name	Title	Date