Commission for cultural Centers and Historic Preservation
901 S. Stewart Street, Suite, 5004
Carson City, NV 89701

Dear Commissioners,

The White Pine Community Choir is writing to request assistance with our CCCHP 21-10 grant.

When planning the budget for the project, we contacted engineering firms and contractors for cost estimates. We worked with K2 Engineering who had some familiarity with the building through their work with Mercedes de la Garza, our architect for the ADA project. They made projections based on their knowledge of the building and the 2019 building assessment completed by Parallel Lines Architects and Shen Engineering. Madole Construction gave us cost estimates based on the design for 8 helical piers to support the foundation.

In spring 2023, once we had approvals to move forward with work under the grant, we contacted K2 to complete the design. On May 31, 2023, we received the design plans. We had questions since the plans seemed more extensive than originally proposed. We held a conference call with the lead engineer from K2 and representatives from Madole Construction to clarify the plans. WPCCA members were told that due to wear on the building and harsh weather conditions, the restoration needs were more extensive than originally thought. Instead of being limited to the southwest corner with the 8 piers, supporting the entire south and west sides of the building requires 26 helical piers.

Our concern was whether this assessment was correct considering the previous building assessment. Both K2 and Madole Construction staff made additional on-site visits to the building. They both had copies of the 2019 assessment. Both agreed we were not wrong to rely on the 2019 assessment but stated that conditions during the four ensuing years had caused more damage. Ray Madole stated the previous winter's record setting snowfall and moisture had been especially hard on the building.

As a result, the budget for the construction portion of the work has more than doubled. Grants funds of $68,800 are no longer sufficient to cover the quoted price of $149,259.81. This leaves a shortfall of $80,459.81. Mr. Madole stated he sees our building as being in an emergency situation. By "emergency" he indicated that he worries about the building's ability to make it through another wet winter without further severe deterioration.

Mr. Madole encouraged us to seek additional funding from whatever source possible.

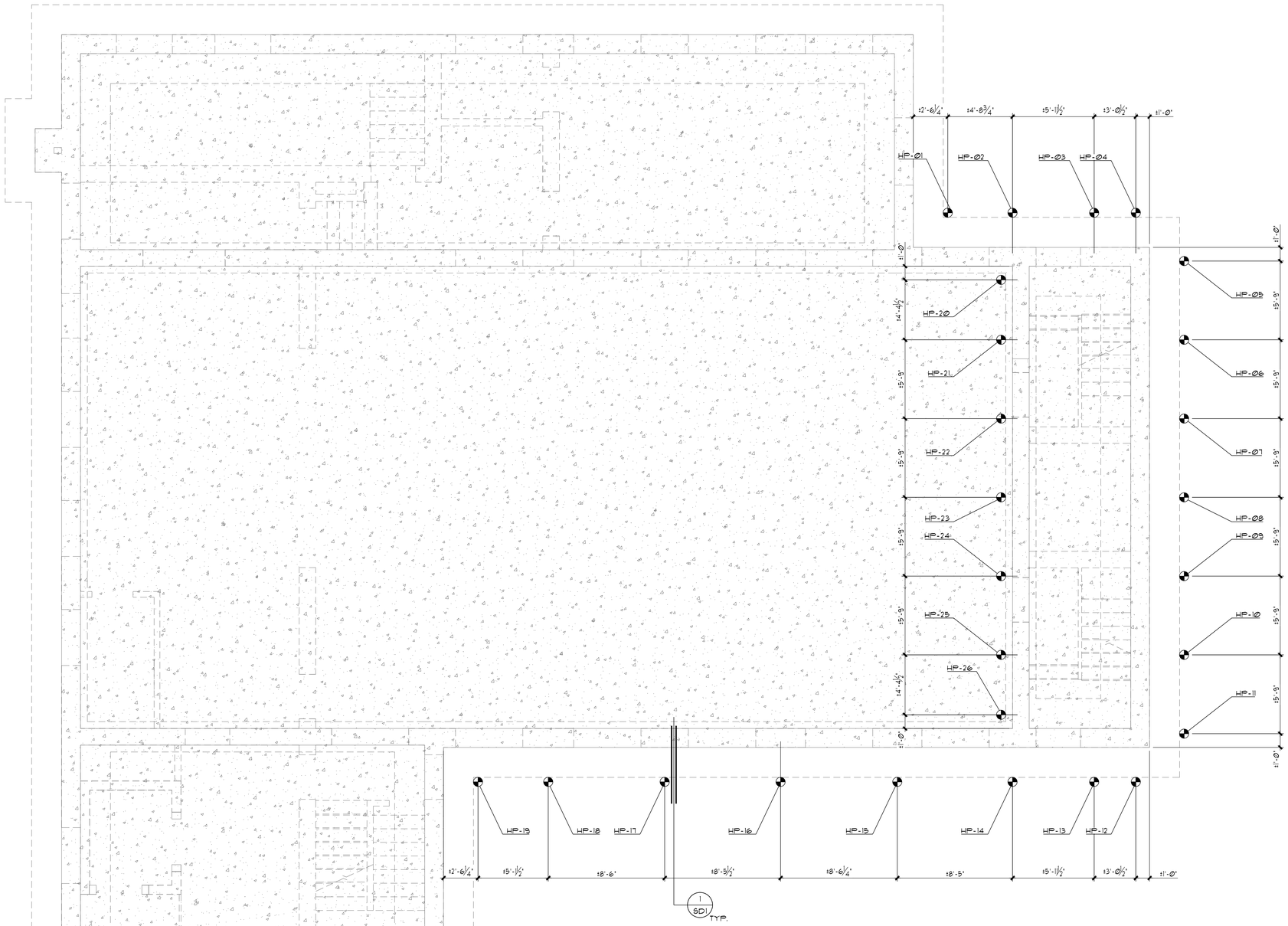
The WPCCA is asking for your guidance and suggestions. We are hoping work can proceed on the foundation as soon as possible. Now that we have the engineering plans, the project is shovel-ready except for the funding shortfall.

We are requesting any assistance possible to help bridge this shortfall.

Sincerely,

Mary Eldridge

Grants Director



FOUNDATION PLAN
SCALE ¼" = 1'-0"

SUPPORTWORKS PILE LEGEND

- HELICAL PILE HP350
  - HP350B2 BRACKET
  - 14'-0" MIN. BELOW FINISHED GRADE
  - HELIX 14-12-10 CONFIGURATION

HELICAL PILE FIELD PRESSURE REQUIREMENTS

PILE NO.	MIN. TORQUE (FT-LB.)	MIN. PRESSURE (PSI)
1, 4, 12, 19	3300	1500
2-3 & 13-18	6400	2600
5 & 11	2800	1200
6-10	5500	2200
20 & 26	4100	1800
21-25	8200	3400

CONTRACTOR NOTES

1. FULL OWNER OCCUPANCY WILL EXIST DURING ENTIRE PERIOD OF CONSTRUCTION. CONTRACTOR SHALL COOPERATE FULLY WITH THE OWNER OR HIS REPRESENTATIVE DURING CONSTRUCTION TO MINIMIZE CONFLICTS AND TO FACILITATE OWNER USAGE.
2. CONTRACTOR SHALL TAKE GREAT CARE DURING CONSTRUCTION TO PROVIDE DUST CONTROL, PROPER EXITING, AND IN GENERAL, THE SAFETY AND WELL BEING OF THE OCCUPANTS AND GENERAL PUBLIC TO KEEP BUSINESS OPERATIONAL.
3. ALL REQUIRED SHORING AND SAFETY OF THE BUILDING STRUCTURE DURING THE DEMOLITION AND/OR CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. EXERCISE DUE CAUTION TO PREVENT ACCIDENTAL OR INCIDENTAL POWER LOSS, OR DISRUPTION OF UTILITIES.
5. CONTRACTOR SHALL PROVIDE FOR FIRE SAFETY AT ALL TIMES DURING CONSTRUCTION. ANY OPERATIONS UTILIZING TORCHES OR OTHER HEAT PRODUCING EQUIPMENT SHALL HAVE FIRE EXTINGUISHER PRESENT AT ALL TIMES.
6. ALL ARCHITECTURAL FEATURES TO BE REMOVED AND REPLACED W/ EXACT PROPERTIES AS EXISTING. THE USE OF ALTERNATIVE MATERIALS IS NOT ALLOWED.
7. SPECIAL INSPECTION REQUIRED FOR VERIFICATION OF HELICAL PILE TORQUE VALUES.
8. ALL PIER DIMENSIONS TO BE VERIFIED IN THE FIELD. IF THE CONTRACTOR SHOULD FIND ANY SIGNIFICANT DISCREPANCIES OR ISSUES AT THE TIME OF CONSTRUCTION, HE IS TO NOTIFY THE E.O.R. IMMEDIATELY.
9. HELIX SIZE AND CONFIGURATION MAY VARY IN ORDER TO ACHIEVE MINIMUM PILE EMBEDMENT DEPTH AND TORQUE VALUE (CAPACITY) AS SPECIFIED BY E.O.R. MICRO-PILES MAY NEED TO BE SUBSTITUTED FOR HELICALS IF MINIMUM VALUES CANNOT BE ACHIEVED. CONTACT E.O.R. FOR ADDITIONAL DESIGN.

SPECIAL INSPECTIONS

CONTRACTOR TO PROVIDE SPECIAL INSPECTION PER I.B.C. CHAPTER 17 FOR THE FOLLOWING ITEMS:

- HELICAL PILE PLACEMENT

NOTE:

IF FOUNDATION @ PIERS 6-10 IS ACCESSIBLE FROM INTERIOR WALL, OK TO MOVE HELICAL PLACEMENT TO INTERIOR.

SCOPE OF WORK:

THE STRUCTURE HAS EXPERIENCED MODERATE SETTLEMENT AT THE SOUTHERN ⅓ TO ½ OF THE BUILDING. THE ATTACHED DESIGN IS FOR INSTALLATION OF THE HELICAL PIERS TO PERMANENTLY STABILIZE THE STRUCTURE. LIFTING AND LEVELING MAY NOT BE FEASIBLE. ONCE THE CONTRACTOR HAS MOBILIZED AND INSPECTED THE STRUCTURE, A FLOOR LEVEL SURVEY SHOULD BE CONDUCTED AND FORWARDED TO THE EOR's OFFICE FOR REVIEW. AT THAT TIME, THE EOR WILL DISCUSS WITH THE CONTRACTOR THE FEASIBILITY OF LIFTING AND LEVELING THE STRUCTURE OR ONLY STABILIZING

K2 ENGINEERING AND STRUCTURAL DESIGN
860 Maestro Dr., Ste. A
Reno, NV 89511
P: (775) 355-0505
F: (775) 355-0566
www.K2eng.net

Centennial Fine Arts Foundation Repair

900 E. Aultman St. Ely, NV 89301
A.P.N.: 002-058-01

Brandt T. Kennedy, P.E.
Jared A. Krupa, P.E.

PROFESSIONAL ENGINEER STATE OF NEVADA
BRANDT T. KENNEDY
Exp: 6-30-23
CIVIL
No. 16872

5/22/2023

Revisions

Date	5/22/2023
Drawn	AH
Checked	TD/BK
Project No.	22-436

Foundation Plan

S-1

Project Structural Notes

K2 ENGINEERING ASSUMES THAT THE GENERAL CONTRACTOR AND ALL INVOLVED PARTIES HAVE READ AND UNDERSTAND NOTES LISTED IN PLANS.

GENERAL

1. ALL WORK, DETAILS OF DESIGN, WORKMANSHIP, AND MATERIALS SHALL CONFORM TO REQUIREMENTS OF THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) OF THE INTERNATIONAL CODE COUNCIL AND THE APPLICABLE COUNTY/CITY BUILDING CODES.
2. K2 ENGINEERING EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED, OR COPIED IN ANY MATTER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO A THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT OF K2 ENGINEERING. IN THE EVENT OF UNAUTHORIZED REUSE OF THESE PLANS BY A THIRD PARTY, THE THIRD PARTY SHALL HOLD K2 ENGINEERING HARMLESS.
3. K2 ENGINEERING RESERVES THE RIGHT TO PERFORM OBSERVATION VISITS TO THE SITE AT ANY TIME. OBSERVATIONS ARE PERFORMED SOLELY FOR THE PURPOSE OF DETERMINING IF THE CONTRACTOR UNDERSTANDS DESIGN INTENT CONVEYED IN THE PLANS. OBSERVATIONS DO NOT GUARANTEE CONTACTOR'S PERFORMANCE AND ARE NOT TO BE CONSTRUED AS SUPERVISION OF THE PROJECT.
4. IN THE EVENT THAT CERTAIN EXISTING DIMENSIONS AND/OR CONDITIONS ARE FOUND TO BE DIFFERENT FROM THOSE SHOWN ON THE PLANS AND DETAILS, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED SO THAT THE PROPER REVISIONS CAN BE MADE IF NECESSARY. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY ERRORS, DISCREPANCIES, OR OMISSIONS WHICH THE CONTRACTOR FAILED TO NOTIFY K2 ENGINEERING OF BEFORE CONSTRUCTION AND/OR FABRICATION OF THE WORK.
5. K2 ENGINEERING IS RESPONSIBLE FOR THE STRUCTURAL ITEMS IN THE PLANS ONLY. SHOULD ANY CHANGES BE MADE, OR SHOULD THE RESULTS OF THESE CALCULATIONS NOT BE FULLY OR PROPERLY TRANSFERRED TO THE PLANS, K2 ENGINEERING ASSUMES NO RESPONSIBILITY FOR THE STRUCTURE.
6. THE DETAILS SHOWN ON THE DRAWINGS ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS. NO DEVIATIONS FROM STRUCTURAL DETAILS SHALL BE MADE WITHOUT THE PRIOR WRITTEN APPROVAL OF K2 ENGINEERING.
7. THE CALCULATIONS ARE BASED UPON A COMPLETE STRUCTURE. TEMPORARY SUPPORTS, ETC., ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HAVE NOT BEEN CONSIDERED BY K2 ENGINEERING. SHOULD AN UNFINISHED STRUCTURE BE SUBJECT TO LOADS, K2 ENGINEERING SHOULD BE CONSULTED FOR AN INTERIM DESIGN OR IF NOT, WILL ASSUME NO LIABILITY.
8. ALL NOTES ARE TYPICAL UNLESS NOTED OTHERWISE ON THE PLANS. ALL HARDWARE AND FRAMING MEMBERS SPECIFIED IN THE CALCULATIONS AND/OR PLANS ARE MINIMUMS AND LARGER MEMBERS OF EQUAL OR BETTER GRADE MAY BE SUBSTITUTED.

SITE WORK

1. K2 ENGINEERING HAS NOT MADE A GEOTECHNICAL REVIEW OF THE BUILDING SITE AND IS NOT RESPONSIBLE FOR GENERAL SITE STABILITY OR SOIL SUITABILITY FOR THE PROPOSED PROJECT. K2 ENGINEERING RECOMMENDS A REVIEW OF THE SITE BY A GEOLOGICAL ENGINEER OR A QUALIFIED CIVIL ENGINEER TO DETERMINE GENERAL SITE STABILITY AND SOIL SUITABILITY FOR THE PROJECT.
2. BUILDING SITES ARE ASSUMED TO BE DRAINED AND FREE OF CLAY OR EXPANSIVE SOIL. ALL FOOTINGS SHALL BE LEVEL OR STEPPED AND BEAR ON FIRM, STABLE, NATURAL, UNDISTURBED SOIL OR AN APPROVED COMPACTED FILL.
3. PERIMETER OR EXTERIOR FOOTING DEPTHS MUST EXTEND BELOW FROSTLINE (18" OR 24" AS PER LOCAL CODE REQUIREMENTS.) ALL OTHER FOOTINGS (INTERIOR) SHALL BOTTOM 12" MINIMUM BELOW NATURAL UNDISTURBED GRADE.
4. BUILDING PADS SHALL BE GRADED 2% TOWARD APPROVED DRAINAGE FACILITIES AND PROVISIONS SHALL BE MADE TO CONTROL AND DRAIN SURFACE WATER AROUND BUILDING.
5. ASSUME CLASS D SOILS WITH ALLOWABLE SOIL BEARING PRESSURE OF 1500 PSF WITH A CONSTANT EXPANSION INDEX LESS THAN 20. SOIL BEARING PRESSURE HAS BEEN DETERMINED IN ACCORDANCE WITH IBC TABLE 1806.2.

FILL AND BACKFILL

1. FILL MATERIAL SHALL BE FREE FROM DEBRIS, VEGETATION, AND OTHER FOREIGN SUBSTANCES.
2. BACKFILL TRENCHES SHALL BE COMPACTED TO 90% DENSITY PER ASTM 1557 TO WITHIN 12" OF FINISHED GRADE. THE TOP 12" SHALL BE LANDSCAPE FILL.
3. BACKFILL AT PIPE TRENCHES SHALL BE COMPACTED ON BOTH SIDES OF PIPE IN 6" LIFTS.
4. WATERPROOF EXTERIOR FACES OF ALL FOUNDATION WALLS ADJACENT TO USABLE SPACES. WATERPROOFING OF ALL FOUNDATION AND RETAINING WALLS TO BE THE RESPONSIBILITY OF THE OWNER AND/OR CONTRACTOR.
5. ALL BACKFILL AGAINST FOUNDATION WALLS MUST BE COMPACTED TO 90% RELATIVE DENSITY.
6. PROVIDE A 4" DIAMETER PVC PERFORATED DRAINPIPE AT GRADE SIDE OF ALL RETAINING WALLS. SLOPE PIPE TO DRAIN TO DAYLIGHT AND DRYWELL.

CONCRETE

1. REINFORCED CONCRETE WORK SHALL CONFORM TO APPLICABLE REQUIREMENTS OF THE IBC AND ACI STANDARD 318-11.
2. AGGREGATE SHALL CONFORM TO ASTM C33 FOR STONE CONCRETE.
3. CONCRETE STOOPS TO BE MACHINED MIXED AND PLACED IN ACCORDANCE WITH THE IBC.
4. COMPRESSION STRENGTH OF ALL REINFORCED CONCRETE SHALL NOT BE LESS THAN 3000 PSI AT 28 DAYS.
5. STRUCTURAL DESIGN BASED ON F'c = 2500 PSI (SPECIAL INSPECTION NOT REQUIRED).
6. USE NORMAL WEIGHT CONCRETE (145 PCF) FOR ALL CONCRETE. USE TYPE II CEMENT TYPICAL. IF SOIL CONTAINS SULFATE CONCENTRATIONS OF 2% OR MORE, USE TYPE V CEMENT.
7. THE MAXIMUM SLUMP SHALL NOT EXCEED 3". PLASTICIZERS MAY BE USED TO INCREASE SLUMP TO 8" MAXIMUM PROVIDED THEY DO NOT INCREASE SHRINKAGE.
8. MAXIMUM WATER/CEMENT RATIO SHALL BE .55 FOR 3000 PSI CONCRETE.
9. EXTERIOR SLABS ON GRADE SHALL CONTAIN NOT LESS THAN 5% NOR MORE THAN 6% ENTRAINED AIR.
10. FOLLOW RECOMMENDED PRACTICES FOR HOT AND COLD WEATHER CONCRETING BY OBSERVING ACI 305 AND ACI 306 GUIDELINES.
11. PROVIDE STANDARD CRACK CONTROL JOINTS IN ALL SLABS ON GRADE USING MAXIMUM DIMENSION OF 10 FEET FOR 4" SLABS AND 12 FEET FOR 6" SLABS. JOINT DEPTH SHALL NOT EXCEED ONE-FOURTH OF SLAB DEPTH.
12. TOP OF CONCRETE SLABS SHALL BE MINIMUM 6" ABOVE FINISHED GRADE.
13. PIPES MAY PASS THROUGH STRUCTURAL CONCRETE IN SLEEVES, BUT SHALL NOT BE EMBEDDED THEREIN. PIPES OR DUCTS EXCEEDING ONE-THIRD THE SLAB OR WALL THICKNESS SHALL NOT BE PLACED IN STRUCTURAL CONCRETE.
14. DO NOT PLACE CONCRETE UNTIL ALL REINFORCEMENT, CONDUIT, OUTLET BOXES, ANCHORS, HANGERS, SLEEVES, BOLTS, HOLDDOWNS, ANCHOR BOLTS OR OTHER EMBEDDED MATERIALS AND ITEMS ARE SECURELY AND PROPERLY FASTENED IN THEIR PROPER PLACES AND POSITIONS.

REINFORCING STEEL

1. REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO THE REQUIREMENTS OF ASTM A615 GRADE 60 FOR ALL #5 AND LARGER BARS AND GRADE 40 FOR ALL #4 AND SMALLER BARS.
2. ALL DETAILS OF FABRICATION AND INSTALLATION OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH THE ACI MANUAL OF STANDARD PRACTICE.
3. WELDED FABRIC (MESH) SHALL CONFORM TO LATEST REVISED ASTM A185 AND BE FURNISHED IN FLAT SHEETS. SMOOTH WIRE FABRIC SHALL CONFORM TO ASTM A-85 HAVING A YIELD STRENGTH OF 60 KSI.
4. WELDING OF REINFORCING STEEL SHALL CONFORM TO AWS D12.1 USING LOW HYDROGEN ELECTRODES.
5. ALL BARS SHALL BE LAPPED WITH A MINIMUM OF 40 BAR DIAMETERS (2' MINIMUM) AT ALL SPLICES.
6. SPLICES OF HORIZONTAL REBAR IN WALLS AND FOOTINGS SHALL BE STAGGERED 4' MINIMUM.
7. DOWELS FOR WALLS AND COLUMNS SHALL BE THE SAME SIZE AND SPACING AS THE WALL/COLUMN REINFORCING.
8. ALL REINFORCING STEEL SHALL BE ACCURATELY LOCATED AND ADEQUATELY SECURED IN POSITION BEFORE AND DURING PLACEMENT OF CONCRETE.
9. MASONRY REINFORCEMENT, BOLTS, ETC. SHALL HAVE MINIMUM GROUT COVERAGE OF THREE-FOURTHS OF AN INCH.
10. REINFORCEMENT COVER IN CAST-N-PLACE CONCRETE SHALL BE AS FOLLOWS:
    A. 3" - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH
    B. 2" - FORMED SURFACES EXPOSED TO GROUND OR WEATHER

STRUCTURAL STEEL

1. STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL CONFORM TO ASTM A-36.
2. W SECTIONS SHALL CONFORM TO ASTM A992, GRADE 50.
3. STEEL PIPE COLUMNS SHALL CONFORM TO ASTM A-53, TYPE E OR S, GRADE B.
4. STEEL TUBE SECTIONS SHALL CONFORM TO ASTM A500, GRADE B.
5. STEEL PLATES SHALL CONFORM TO ASTM A-283, GRADE "A".
6. ALL DETAILING SHALL CONFORM TO CURRENT AISC SPECIFICATIONS.
7. ALL WELDING SHALL CONFORM TO CURRENT AISC AND AWS 1.1 SPECIFICATIONS, AND SHALL BE PERFORMED BY CERTIFIED WELDERS APPROVED BY THE LOCAL BUILDING AUTHORITY. ALL SHOP WELDING SHALL BE IN AN APPROVED FABRICATORS SHOP AUTHORIZED BY THE BUILDING AUTHORITY OR SPECIFIC INSPECTION PER IBC.
8. ALL COMPLETE JOINT PENETRATION WELDS REQUIRE SPECIAL INSPECTION AND UT TESTING.
9. ALL WELDING ELECTRODES SHALL BE E70XX OR SHIELDED WIRES WITH FY GREATER THAN OR EQUAL TO 70 KSI.
10. BOLTS, NUTS, AND SCREWS SHALL CONFORM TO ASTM A307 GRADE "A".
11. ALL STRUCTURAL STEEL AND MISCELLANEOUS IRON NOT ENCASED IN CONCRETE SHALL RECEIVE ONE SHOP COAT OF APPROVED PRIMER PAINT.
12. ALL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION OR OTHER APPROVED WEATHER PROOFING METHOD HAVING EQUIVALENT RESULTS MAY BE USED.
13. ALL GROUT UNDER STEEL BEARING PLATES SHALL BE SOLID DRYPACK OR NON-SHRINK GROUT PLACED AS DIRECTED BY THE MANUFACTURER.
14. PROVIDE WELDER'S CERTIFICATE FOR ALL SINGLE-PASS FILLET WELDS NOT EXCEEDING 5/16" IN SIZE, OR PROVIDE THE CERTIFICATE OF COMPLIANCE THAT THE WORK WAS PERFORMED IN AN APPROVED FABRICATOR'S SHOP.

Design Parameters

CODE:	2018 IBC AND LOCAL DESIGN CRITERIA
PROJECT ELEVATION:	6241'
SITE CLASS:	D
WIND SPEED:	115 MPH (3 SECOND GUST)
WIND EXPOSURE:	C

DESIGN INCLUDES SNOW LOAD FOR DRIFT AND UNBALANCED LOADING.

LOADING AND EARTHQUAKE DESIGN DATA:

1. LOADING:
   FLOOR LOADS: LIVE = 100 PSF : DEAD = 15 PSF
   ROOF LOADS: SNOW = 42 PSF : DEAD = 30 PSF
2. EARTHQUAKE DESIGN DATA:
   S_S = Ø.372, S1 = Ø.125, S_{DS} = Ø.373, S_{D1} = Ø.195
   SEISMIC DESIGN CATEGORY: D
   BASE SHEAR V = C_SW = (1.2S_{DS}/(14/R))W
   R = 1.5 (ORDINARY PLAIN CONCRETE SHEAR WALLS)

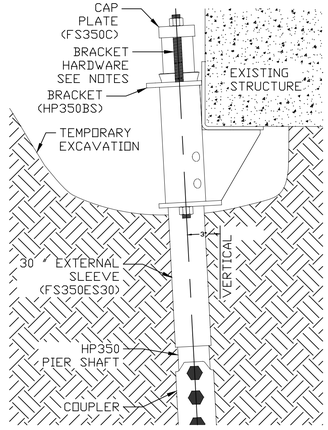
SPECIAL INSPECTIONS

CONTRACTOR TO PROVIDE SPECIAL INSPECTION PER I.B.C. CHAPTER 17 FOR THE FOLLOWING ITEMS:

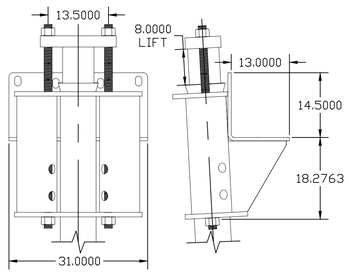
- HELICAL PILE INSTALLATION

NOTES:

1. MINIMUM MATERIAL REQUIREMENTS:
   BRACKET WELDMENT - ASTM A572 GRADE 50
   PLATE AND ASTM A500 GRADE C PIPE
   EXTERNAL SLEEVE - Fy = 50 ksi, Fu = 62 ksi
   CAP PLATE - ASTM A572 GRADE 50
   BRACKET HARDWARE -
   (2) - Ø⅞" x 18" LONG GRADE B7 - Fu = 125 ksi
   ALL-THREAD ROD WITH NUTS
   (HWTR-S210-Z-088-18 & HWH8N-Z-088)
2. ALL WELDING TO BE IN ACCORDANCE WITH AWS D1.1 LATEST ISSUE WITH E70-XX MIN ELECTRODE.
3. BRACKETS, CAPS, AND SLEEVES ARE AVAILABLE AS EITHER PLAIN STEEL OR HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. A "-G" IS ADDED TO THE END OF THE PART NUMBER TO DESIGNATE PART AS HOT-DIP GALVANIZED.
4. BRACKET HARDWARE IS PROVIDED AS ELECTROZINC PLATED IN ACCORDANCE WITH ASTM B633.
5. THIS DOCUMENT IS MEANT TO SERVE AS A GENERAL DESCRIPTION FOR THE PRODUCTS SHOWN FOR SUBMITTAL PURPOSES. MORE DETAILED MANUFACTURING DRAWINGS ARE AVAILABLE UPON REQUEST.



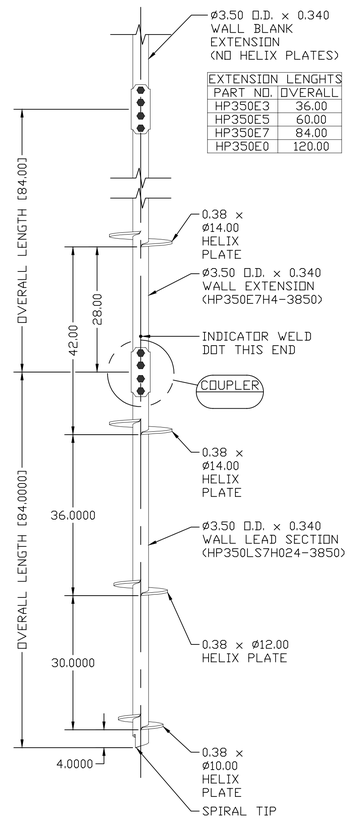
PROJECT DETAIL



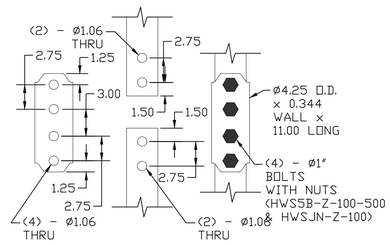
BRACKET DETAIL

NOTES:

1. MINIMUM MATERIAL REQUIREMENTS:
   SHAFTS - Fy = 65 ksi, Fu = 75 ksi
   COUPLERS - Fy = 70 ksi, Fu = 80 ksi
   HELIX PLATES - ASTM A572 Gr.50
   SHAFT COUPLING HARDWARE - (4) - Ø 1"
   GRADE 5 BOLTS WITH NUTS
2. ALL WELDING TO BE IN ACCORDANCE WITH AWS D1.1 LATEST ISSUE WITH E70-XX MIN ELECTRODE.
3. HELIX PLATES HAVE A NOMINAL 3" PITCH WITH LEADING AND TRAILING EDGES BEING NO MORE THAN ¼" OUT OF PARALLEL.
4. LEADS AND EXTENSIONS ARE AVAILABLE AS EITHER PLAIN STEEL OR HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. A "-G" IS ADDED TO THE END OF THE PART NUMBER TO DESIGNATE PART AS HOT-DIP GALVANIZED.
5. SHAFT COUPLING HARDWARE IS PROVIDED AS ELECTROZINC PLATED IN ACCORDANCE WITH ASTM B633.
6. THE SAME HELIX PLATE CONFIGURATION WITH LONGER OR SHORTER SHAFT LENGTHS MAY BE POSSIBLE WITH OTHER COMMONLY STOCKED OR CUSTOM FABRICATED PARTS BASED ON THE PROJECT SPECIFIC REQUIREMENTS.
7. SOME HELIX PLATE CONFIGURATIONS REQUIRE THE USE OF CUSTOM FABRICATED PARTS IN ORDER TO ACHIEVE THE REQUIRED GEOMETRY INCLUDING THE SPACING OF THE HELIX PLATES. THESE CUSTOM PARTS TYPICALLY DO NOT REQUIRE MORE THAN A FEW EXTRA DAYS OF LEAD TIME.
8. THIS DOCUMENT IS MEANT TO SERVE AS A GENERAL DESCRIPTION FOR THE PRODUCTS SHOWN FOR SUBMITTAL PURPOSES. MORE DETAILED MANUFACTURING DRAWINGS ARE AVAILABLE UPON REQUEST.



EXTENSION LENGHTS	
PART NO.	OVERALL
HP350E3	36.00
HP350E5	60.00
HP350E7	84.00
HP350E0	120.00



COUPLER ASSEMBLY DETAIL

FOUNDATION SUPPORTWORKS®
12330 Cary Circle, Omaha, NE 68128
Phone: 800-281-8545

All dimensions are in inches and are for reference only.
Scale: N.T.S.

1 Helical Pile HP350 w/ HP350BS Bracket Installation Details

K2 ENGINEERING AND STRUCTURAL DESIGN
860 Maestro Dr., Ste. A
Reno, NV 89511
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Brandt T. Kennedy, P.E.
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PROFESSIONAL ENGINEER STATE OF NEVADA
BRANDT T. KENNEDY
Exp: 6-30-23
CIVIL
No. 16872

5/22/2023

Revisions

Date	5/22/2023
Drawn	AH
Checked	TD/BK
Project No.	22-436

Structural Notes & Schedules

SD-1

STRUCTURAL CALCULATIONS FOR:

Centennial Arts Foundation Repair
22-436

900 E. Aultman St
Ely, NV
APN: 002-058-01

May 16, 2023

5/16/2023

Brandt T. Kennedy P.E.
Jared A. Krupa P.E.

CONTENTS:

DESIGN PARAMETERS:

Code:	2018 IBC	Soil Site Class:	D
Wind Speed:	120 mph (3 second gust)	Soil Bearing Pressure:	1500 psf
Wind Exposure:	C	Seismic Design Category:	D

Tawni J. DePaoli

K2 Engineering and Structural Design

Structural Calculations

Job. No. 22-436 Initials: TJD Date: 4/18/23

Job Name: **Centennial Arts Foundation Repair**
Architect: **N/A**
Job Address: **900 E. Aultman St**
Ely, NV
APN: 002-058-01
Description: **Helical Piers for Two_Story Commercial Building**

Wood:

Douglas Fir-Larch (G = 0.5) Moisture content not to exceed 19%	Size Classification	Bending Fb (PSI)	Tension Parallel to Grain (PSI)	Shear Parallel to Grain Fv (PSI)	Compression Perpendicular to Grain	Compression Parallel to Grain	Modulus of Elasticity (PSI)
4X or Less							
#2	2" and Wider	900	575	180	625	1350	1600000
Stud Grade		525	450	180	625	775	1400000
6X or Greater							
#1		1350	675	170	625	925	1600000
Microllam LVL							
	1-3/4" Wide	2600		285	750	2310	1900000
Parallam PSL							
		2900		290	650	2900	2000000
Glu-Lam Beams							
Unbalanced Dry Use	24F-V4 DF/DF	2400	1150	190	650	1650	1800000
Balanced for Cont.	24F-V8 DF/DF	2400	1150	190	650	1650	1800000
or Cantilevered							

Code: **I.B.C. 2018 Edition**
Steel: **Anchor Bolts - A307, Threaded Rods - A307, Rebar - f's=40ksi or better**
Structural Wide Flange - Fy=50 ksi, Structural Tubes - Fy=46 ksi
Steel Moment Frames - A992 Grade 50 Steel - special inspection and UT testing required
Concrete: **f'c=2,500 psi for all slabs, continuous foundations and spread footings - no inspection required.**
f'c=3,000 psi for all structural grade beams - inspection required.
Masonry: **f'm=1,500 psi - inspection required, f'm=750 psi - no inspection required**

NOTES:

GENERAL

a) All work shall conform to the 2018 IBC and applicable local codes.
b) Where applicable allowable stresses have been increased 15% (Except Alpine and Placer Counties) for short duration and 60% for seismic and wind loading.
c) K2 Engineering, LLC. is responsible for the structural items in the plans only. Should any changes be made, or should the results of these calculations not be fully or properly transferred to the plans, K2 Engineering, LLC. assumes no responsibility for the structure.
d) All codes and standards shall be the most current edition as of the date of the calculations.
e) The details shown on the drawings are typical. Similar details apply to similar conditions.
f) The calculations are based upon a complete structure. Should an unfinished structure be subjected to loads, K2 Engineering, LLC. should be consulted for an interim design or if not, will assume no liability.
g) Engineer shall be notified of existing conditions that differ from those shown on these details and plans.

SITE WORK

a) Building sites are assumed to be drained and free of clay or expansive soil. Any other conditions should be brought to the attention of K2 Engineering, LLC.
b) These calculations assume stable, undisturbed soils and level or stepped footings. Any other conditions should be reported to K2 Engineering, LLC.
c) All footings shall bear on undisturbed soil or compacted structural fill.
d) All finish grade shall slope away from foundation for a minimum of 10'-0".
e) An assumed soil bearing pressure is determined and will be increased in accordance with IBC Table 1806.2.
f) No snow or water is to be allowed to collect around foundation during construction. It is the contractor's responsibility to ensure that the building site drains freely, and that any standing water or snow is removed immediately.

FILL AND BACKFILL

a) Fill material shall be free from debris, vegetation, and other foreign substances.
b) Backfill trenches shall be compacted to 90% relative density per ASTM D1557 to within 12" of finished grade. The top 12" shall be landscape fill.
c) Backfill at pipe trenches shall be compacted on both sides of pipe in 6" lifts.
d) Waterproof exterior faces of all foundation walls adjacent to usable spaces. Waterproofing of all foundation and retaining walls to be the responsibility of the owner and/ or contractor.
e) All backfill against foundation walls must be compacted to 90% relative density, unless otherwise directed by a soils report.
f) Perforated pipe sub-drain typical behind all retaining walls. Use 4" ϕ PVC except where noted otherwise. Slope pipe to drain to daylight and drywell.

CONCRETE

a) All concrete shall have a minimum 28-day compressive strength of 3000 psi for footings and 3000 psi for retaining walls, U.N.O.
b) Structural design based on compressive strength of 2500 psi (special inspection not required).
c) Concrete shall be air-entrained to 5% ± 1%.
d) Reinforcement shall be ASTM A615, grade 60 ksi, U.N.O.
e) Lap reinforcing a minimum of 40 bar diameters at all splices, U.N.O.

NOTES (continued)

f) All slabs on grade (SOG) shall have a minimum thickness of 4" and be reinforced with WWF 6x6 – W10xW10 as per ASTM A185, or with Fibermesh as per manufacturer's specifications equivalent to mesh specified above, U.N.O. All SOG have been designed assuming an f'_c of 2500 psi, but shall be constructed with 3500 psi concrete.
g) Waterproofing of foundations and retaining walls is the responsibility of the owner.
h) Reinforcement cover in cast-in-place concrete shall be as follows:

3" - Concrete cast against and permanently exposed to earth.
1-1/2" - Concrete exposed to earth or weather with #5 bars or smaller.
1-1/2" - Concrete not exposed to weather or in contact with ground, #11 bars and smaller.
1-1/2" - Beams, columns, and pilaster, cover over ties.
1-1/2" - Clear to top for reinforcement in slabs on grade.

i) Provide slab control joints (saw cut or plastic inserts) at 10'-0" maximum spacing each way for 4" slabs and 12'-0" maximum for 6" slabs U.N.O. Joint depth to be 1/4 of slab depth.

MASONRY

a) All masonry units shall conform to ASTM C90 grade N units, U.N.O.
b) All masonry cells are to be solid grouted with mortar conforming to ASTM C279, type S, with a 28 day compressive strength of 2000 psi, minimum, U.N.O.
c) Vertical steel placement in masonry stem walls to be #4 bars at 16" o.c. maximum spacing, U.N.O.
d) Horizontal steel placement in masonry stem walls to be #4 bars at 24" o.c. maximum spacing, U.N.O.

LUMBER/FRAMING

a) All lumber framing shall be Douglas Fir Larch with moisture content < 19%, U.N.O.
b) Glu-Lams used for simple spans shall be 24F-V4, U.N.O. Glu-lams used for continuous spans, or for cantilevered conditions, shall be 24F-V8, U.N.O. Glu-Lams exposed to weather shall be rated for exterior use by manufacturer or approved protection from exposure to be provided.
c) All plywood shall conform to APA PS 1. All shear plywood shall be C-D, C-C, 303 (T1-11), or approved equal. (i.e. - Masonite Omniwood or LPI Inner-Seal vertical groove siding).
d) Where multiple trimmers or studs are specified, those trimmers are to be stacked in all wall framing and solid blocking to be provided at all floors down to the foundation.
e) Where posts with column caps, straps, or bearing plates are called for, the load is to be transferred to the foundation with posts as specified in the plans and solid vertical grain blocking at all floors.
f) All 6x framing members to be DF #1 or better, U.N.O.
g) All 4x framing members to be DF #2 or better, U.N.O.
h) All studs to be stud grade or better, U.N.O. In no instance shall a stud wall be used to resist lateral pressures due to snow or soil. It is the owner and/or contractors responsibility to eliminate snow and/or soil to stud wall contact.
i) All laminated veneer lumber (LVL) and parallel strand lumber (PSL) specified shall have the following minimum design strengths:

1-3/4" wide: F_b=2600 psi, F_v=220 psi, E=1,800,000 psi.
2-11/16 wide and greater: F_b=2900 psi, F_v=290 psi, E=2,000,000 psi.

j) All multiple-ply LVL members to be attached with (3) rows of 16d common nails at 12" o.c. for entire length of member. For a three-piece member the nailing is from each side.
k) Foundation sill plates, nailers, and ledgers in direct contact with concrete and within 6" of ground to be preservative treated Douglas Fir.

NOTES (continued)

l) All framing members specified in these calculations and/or plans are minimums, and larger members of equal or better grade may be substituted.
m) No green lumber shall be used on this project.

HARDWARE / STRUCTURAL STEEL

a) All hardware called for shall be Simpson Strong-Tie Co. and installed per the manufacturers specifications, U.N.O.
b) Structural steel shall conform to ASTM A992 grade 50. Steel pipe columns shall conform to ASTM A53, Type E or S. Steel tube sections shall conform ASTM A500, Grade B.
c) All welding shall conform to the American Welding Society specifications. Certified welders approved by the local building authority shall perform all welding. All shop welding shall be in an approved fabricators shop authorized by the local building authority or specific inspection per IBC Section 1704.
d) All welding electrodes shall be E70XX or shielded wires with $F_y \geq 70$ ksi.
e) All nails specified are common nails. No substitutions unless approved in writing by K2 Engineering, LLC. or specifically addressed in these calculations or the plans. All nails exposed to weather shall be galvanized.
f) The minimum nailing for all framing shall conform to IBC Table 2304.10.1.
g) All bolts specified must meet ASTM A307. Bolt holes to be 1/32" to 1/16" larger than specified bolt. Washers shall be used at each bolt head and nut next to wood. All washers to be not less than standard cut washers.

Ground Snow Loads Northern Nevada

For:

Centennial Arts Foundation Repair

Project Region:	East of U.S. Hwy 395
Project Elevation:	6241'

Ground Snow Load, p_g =	**60 psf**

1. Drift load design in the 30-psf zones may utilize ASCE 7-10 table C7-1 ground snow values

2. The final roof design snow loads shall not be less than 20 psf after all reductions are factored, except for Lyon and Story Counties

3. Intermediate values may be interpolated by proportion

Snow Loads

Pitch = 4 :12

1608.3 FLAT ROOF SNOW l C (see Section 1609.4)

Flat-roof sn Fully Exposed

Ground sn Structures kept just above freezing and others with cold, ventilated roofs in w ng Official

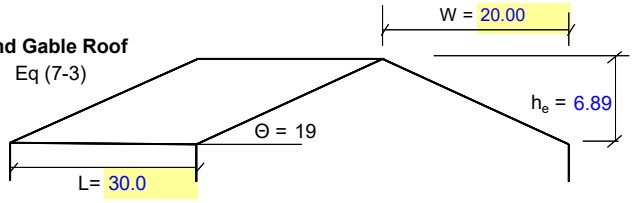
Terrain Category =			
Exposure of Roof =			
Thermal Condition =			
Snow load importance factor, I_s =	1		Table 1604.5, ASCE Table 11.5-1
Snow exposure factor, C_e =	0.9		ASCE Table 7-2
Thermal factor, C_t =	1.1		ASCE Table 7-3
Flat-roof snow load, p_f =	All Other Surfaces		
Min p_f =	20	psf	
Design p_f =	41.58	psf	

1608.4 SLOPE ROOF SNOW LOAD (slope > 5°)

p_s =	$C_s p_f$		Eq. 7-2
Design p_f =	41.58	psf	
Slope Θ =	19	°	
C_t =	1.1		
Slope factor C_s =	1.00		7.4.1, 7.4.2, 7.4.3 Figure 7.2a,b and c
p_s =	41.58	psf	

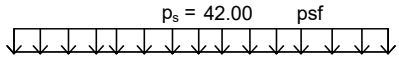
Balanced and Unbalanced Snow Load for Hip and Gable Roof

Snow Density γ =	$.13p_g + 14 \le 30$ pcf		Eq (7-3)
=	21.80	pcf	
L/W =	1.50		
β =	0.58		
Θ >	$275\beta p_f/\gamma W$ = 15.22		



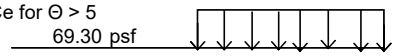
See Figure 7.3 for Curved Roof
See Figure 7.4 for Cont Beam
See Figure 7-6 for Sawtooth Roof
See Figure 7-8 for Snow Drifts

BALANCED

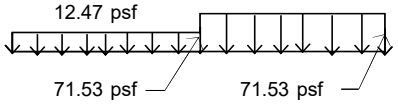


=1.5ps/Ce for Θ > 5

UNBALANCED W ≤ 20



UNBALANCED W > 20 N/A
Θ >275βpf/γW



DESIGN LIVE AND DEAD LOADS

ROOF DEAD LOAD:

Roofing Material (Conc. Tile)	=	12.0	PSF
Roof Felt (Assume 5-ply)	=	2.5	PSF
Roof Sheathing (Assume 5/8")	=	1.6	PSF
Roof Trusses @ 24" O.C.	=	4.0	PSF
Gypsum Board (Assume 5/8")	=	3.0	PSF
Insulation	=	1.5	PSF
Mech., Elec., Sprinklers	=	3.5	PSF
SUB-TOTAL	=	28.1	PSF
Slope Correction "X:12"	4.00	1.05	PSF
Miscellaneous	=	29.2	PSF
ROOF DEAD LOAD	=	30	PSF
ROOF LIVE/SNOW LOAD	=	42	PSF
TOTAL ROOF LOAD	=	72	PSF

EXTERIOR WALL LOADS:

Concrete with Brick Façade	=	144.0	PSF
Wall Sheathing (Assume 15/32")	=	1.5	PSF
Wall Studs (Assume 2x6's at 16" o.c.)	=	1.0	PSF
Insulation	=	0.5	PSF
Gypsum Board (Assume 1/2")	=	2.5	PSF
Miscellaneous	=	0.5	PSF
SUB-TOTAL	=	150.0	PSF
TOTAL EXTERIOR WALL	=	150	PSF

INTERIOR WALL LOADS:

Finishes	=	0.5	PSF
Gypsum Board (Assume 1/2")	=	2.5	PSF
Wall Studs (Assume 2x6's at 16" o.c.)	=	1.0	PSF
Miscellaneous	=	3.0	PSF
SUB-TOTAL	=	7.0	PSF
TOTAL INTERIOR WALL	=	10	PSF

FLOOR DEAD LOAD:

Floor Finish	=	4.0	PSF
Floor Sheathing (Assume 3/4")	=	2.5	PSF
Floor Joists	=	5.0	PSF
Insulation	=	1.0	PSF
Mech., Elec., Sprinklers	=	2.0	PSF
SUB-TOTAL	=	14.5	PSF
FLOOR DEAD LOAD	=	15	PSF
FLOOR LIVE LOAD	=	100	PSF

DECK LOADS:

Finishes	=	4.0	PSF
Floor Sheathing (Assume 3/4")	=	2.0	PSF
Floor Joists	=	4.0	PSF
SUB-TOTAL	=	10.0	PSF
DECK DEAD LOAD		10	PSF
DECK LIVE LOAD	=	60	PSF

WIND LOADS

WIND LOADS:

Wind Speed (V_{ult}):	=	115	MPH	IBC Figure 1609A,B,C; Ultimate Design Wind Speeds
Wind Speed (V_{ASD}):	=	89	MPH	IBC Eq. 16-33 Nominal Design Wind Speed
Exposure Category:	=	C		IBC 1609.4 Exposure Category
Risk Category:	=	II		IBC Table 1604.5
Topographic Factor (Kzt):	=	1.0		ASCE 7-10 FIG. 26.8-1
Internal Pressure Coefficient:	=	+/- 0.18		ASCE 7-10 Table 26.11-1
Components & Cladding Press. Wall	=	35.1	PSF	ASCE 7-10 FIG. 30.5-1 50ft²
Components & Cladding Press. Roof	=	17.9	PSF	ASCE 7-10 FIG. 30.5-1 50ft²

ASCE 7-10 Low Rise Building Method Ch. 28

Velocity Pressure $q_z = 0.00256\ K_z K_{zt} K_d V^2$ (Eq. 28.3-1)

ASCE 7-10 Low Rise Buildings Simplified Ch. 30

Components and Cladding $p_{net} = \lambda K^{zt} p_{net30}$ (Eq. 30.5-1)

SOILS DATA

SOILS REPORT : None Provided - Assume Code Minimums

GEOTECHNICAL ENGINEER : N/A

DATE OF REPORT : N/A

BASIC BEARING PRESSURE:

PADS & CONT. FNDT. = Qa	=	1,500	PSF	***USE SOIL BEARING PRESSURE***	=	1,500	PSF
INCREASE FOR WIDTH	=	N/A	%				
INCREASE FOR DEPTH	=	N/A	%				
MAX. SOIL PRESSURE - Qa	=	N/A	PSF				
ALLOW PASSIVE PRESSURE	=	135.0	PCF	***EQUIV. FLUID PRESSURE***	=	35.0	PCF

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Concrete Beam

Lic. # : KW-06003125 — Licensee : K2 ENGINEERING AND STRUCTURAL DESIGN

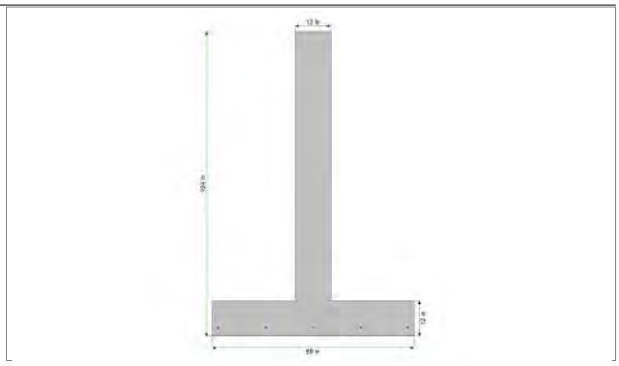
Description : East/West Existing Foundation Evaluation

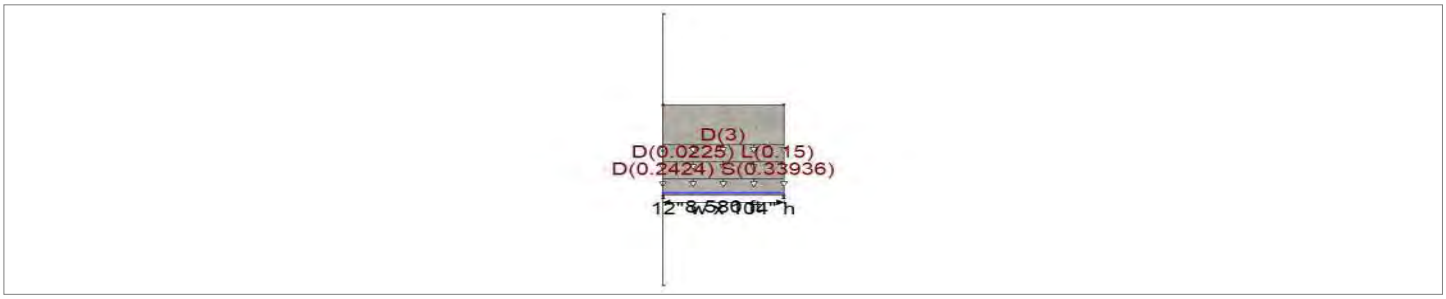
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

f'c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
fr = f'c$^{1/2}$ * 7.50	=	410.792 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups		40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #		3
			Number of Resisting Legs Per Stirrup	=	2





Cross Section & Reinforcing Details

Inverted Tee Section, Stem Width = 12.0 in, Total Height = 104.0 in, Top Flange Width = 69.0 in, Flange Thickness = 12.0 in
Span #1 Reinforcing....
5-#6 at 3.0 in from Bottom, from 0.0 to 8.580 ft in this span

Applied Loads

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

Load for Span Number 1
Uniform Load : D = 0.030, S = 0.0420 ksf, Tributary Width = 8.080 ft, (Roof Loads)

Uniform Load : D = 0.0150, L = 0.10 ksf, Tributary Width = 1.50 ft, (Floor Load)

Uniform Load : D = 0.150 ksf, Tributary Width = 20.0 ft, (Wall Load)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.043** : 1	Maximum Deflection			
Section used for this span		**Typical Section**	Max Downward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mu : Applied		42.429 k-ft	Max Upward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mn * Phi : Allowable		978.55 k-ft	Max Downward Total Deflection	0.000 in	Ratio =	0 <180.0
Location of maximum on span		4.298 ft	Max Upward Total Deflection	0.000 in	Ratio =	0 <180.0
Span # where maximum occurs		Span # 1				

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Overall MAXimum	15.581	15.581
Overall MINimum	0.643	0.644
+D+H	14.006	14.006
+D+L+H	14.650	14.650
+D+Lr+H	14.006	14.006
+D+S+H	15.462	15.462
+D+0.750Lr+0.750L+H	14.489	14.489
+D+0.750L+0.750S+H	15.581	15.581

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Concrete Beam

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Description : East/West Existing Foundation Evaluation

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.60W+H	14.006	14.006
+D+0.750Lr+0.450W+H	14.006	14.006
+D+0.750S+0.450W+H	15.098	15.098
+0.60D+0.60W+0.60H	8.404	8.404
+D+0.70E+0.60H	14.006	14.006
+D+0.750L+0.750S+0.5250E+H	15.581	15.581
+0.60D+0.70E+H	8.404	8.404
D Only	14.006	14.006
Lr Only		
L Only	0.643	0.644
S Only	1.456	1.456
W Only		
E Only		
H Only		

Shear Stirrup Requirements

Entire Beam Span Length : Vu < PhiVc/2, Req'd Vs = Not Reqd 9.6.3.1, use #3 stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	8.580	42.43	978.55	0.04
+1.40D+1.60H					
Span # 1	1	8.580	42.06	978.55	0.04
+1.20D+0.50Lr+1.60L+1.60H					
Span # 1	1	8.580	38.26	978.55	0.04
+1.20D+1.60L+0.50S+1.60H					
Span # 1	1	8.580	39.82	978.55	0.04
+1.20D+1.60Lr+L+1.60H					
Span # 1	1	8.580	37.43	978.55	0.04
+1.20D+1.60Lr+0.50W+1.60H					
Span # 1	1	8.580	36.05	978.55	0.04
+1.20D+L+1.60S+1.60H					
Span # 1	1	8.580	42.43	978.55	0.04
+1.20D+1.60S+0.50W+1.60H					
Span # 1	1	8.580	41.05	978.55	0.04
+1.20D+0.50Lr+L+W+1.60H					
Span # 1	1	8.580	37.43	978.55	0.04
+1.20D+L+0.50S+W+1.60H					
Span # 1	1	8.580	38.99	978.55	0.04
+0.90D+W+1.60H					
Span # 1	1	8.580	27.04	978.55	0.03
+1.20D+L+0.20S+E+1.90H					
Span # 1	1	8.580	38.06	978.55	0.04
+0.90D+E+0.90H					
Span # 1	1	8.580	27.04	978.55	0.03

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+0.750L+0.750S+0.5250E+H	1	0.0001	4.290		0.0000	0.000

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Concrete Beam

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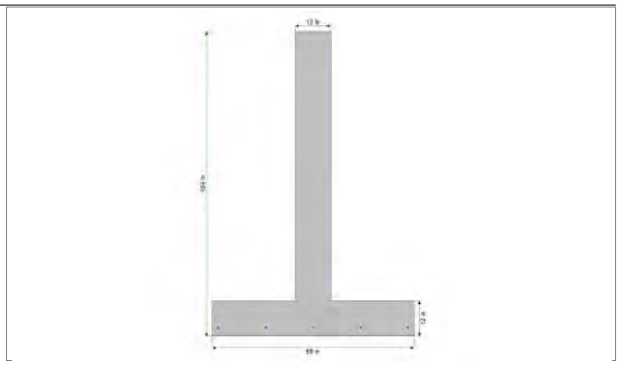
Description : South Existing Exterior Foundation Evaluation

CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

f'c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
fr = f'c$^{1/2}$ * 7.50	=	410.792 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups		40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #		3
			Number of Resisting Legs Per Stirrup	=	2



Cross Section & Reinforcing Details

Inverted Tee Section, Stem Width = 12.0 in, Total Height = 104.0 in, Top Flange Width = 69.0 in, Flange Thickness = 12.0 in
Span #1 Reinforcing....
5-#6 at 3.0 in from Bottom, from 0.0 to 5.750 ft in this span

Applied Loads

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

Load for Span Number 1
Uniform Load : D = 0.030, S = 0.0420 ksf, Tributary Width = 2.0 ft, (Roof Loads)

Uniform Load : D = 0.0150, L = 0.10 ksf, Tributary Width = 5.0 ft, (Floor Load)

Uniform Load : D = 0.150 ksf, Tributary Width = 20.0 ft, (Wall Load)

Uniform Load : D = 0.010, L = 0.10 ksf, Tributary Width = 8.50 ft, (Stair Load)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.026** : 1	Maximum Deflection			
Section used for this span		**Typical Section**	Max Downward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mu : Applied		25.070 k-ft	Max Upward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mn * Phi : Allowable		978.55 k-ft	Max Downward Total Deflection	0.000 in	Ratio =	0 <180.0
Location of maximum on span		2.880 ft	Max Upward Total Deflection	0.000 in	Ratio =	0 <180.0
Span # where maximum occurs		Span # 1				

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Overall MAXimum	13.139	13.139
Overall MINimum	0.241	0.241
+D+H	9.257	9.257
+D+L+H	13.139	13.139
+D+Lr+H	9.257	9.257

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Concrete Beam

Lic. # : KW-06003125 **Licensee : K2 ENGINEERING AND STRUCTURAL DESIGN**

Description : South Existing Exterior Foundation Evaluation

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+S+H	9.499	9.499
+D+0.750Lr+0.750L+H	12.168	12.168
+D+0.750L+0.750S+H	12.350	12.350
+D+0.60W+H	9.257	9.257
+D+0.750Lr+0.450W+H	9.257	9.257
+D+0.750S+0.450W+H	9.439	9.439
+0.60D+0.60W+0.60H	5.554	5.554
+D+0.70E+0.60H	9.257	9.257
+D+0.750L+0.750S+0.5250E+H	12.350	12.350
+0.60D+0.70E+H	5.554	5.554
D Only	9.257	9.257
Lr Only		
L Only	3.881	3.881
S Only	0.241	0.241
W Only		
E Only		
H Only		

Shear Stirrup Requirements

Entire Beam Span Length : Vu < PhiVc/2, Req'd Vs = Not Reqd 9.6.3.1, use #3 stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	5.750	25.07	978.55	0.03
+1.40D+1.60H					
Span # 1	1	5.750	18.63	978.55	0.02
+1.20D+0.50Lr+1.60L+1.60H					
Span # 1	1	5.750	24.90	978.55	0.03
+1.20D+1.60L+0.50S+1.60H					
Span # 1	1	5.750	25.07	978.55	0.03
+1.20D+1.60Lr+L+1.60H					
Span # 1	1	5.750	21.55	978.55	0.02
+1.20D+1.60Lr+0.50W+1.60H					
Span # 1	1	5.750	15.97	978.55	0.02
+1.20D+L+1.60S+1.60H					
Span # 1	1	5.750	22.10	978.55	0.02
+1.20D+1.60S+0.50W+1.60H					
Span # 1	1	5.750	16.52	978.55	0.02
+1.20D+0.50Lr+L+W+1.60H					
Span # 1	1	5.750	21.55	978.55	0.02
+1.20D+L+0.50S+W+1.60H					
Span # 1	1	5.750	21.72	978.55	0.02
+0.90D+W+1.60H					
Span # 1	1	5.750	11.98	978.55	0.01
+1.20D+L+0.20S+E+1.90H					
Span # 1	1	5.750	21.62	978.55	0.02
+0.90D+E+0.90H					
Span # 1	1	5.750	11.98	978.55	0.01

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+L+H	1	0.0000	2.875		0.0000	0.000

K2 Engineering & Structural Design
860 Maestro Dr., Suite A
Reno, NV 89511
P: (775) 355-0505 F: (775) 355-0566

Concrete Beam

Lic. # : KW-06003125 — Licensee : K2 ENGINEERING AND STRUCTURAL DESIGN

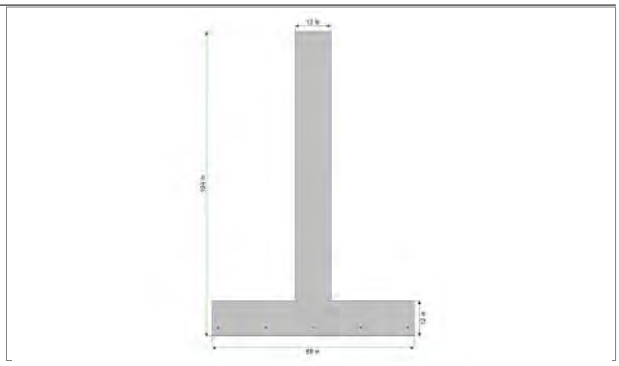
Description : South Existing Interior Foundation Evaluation

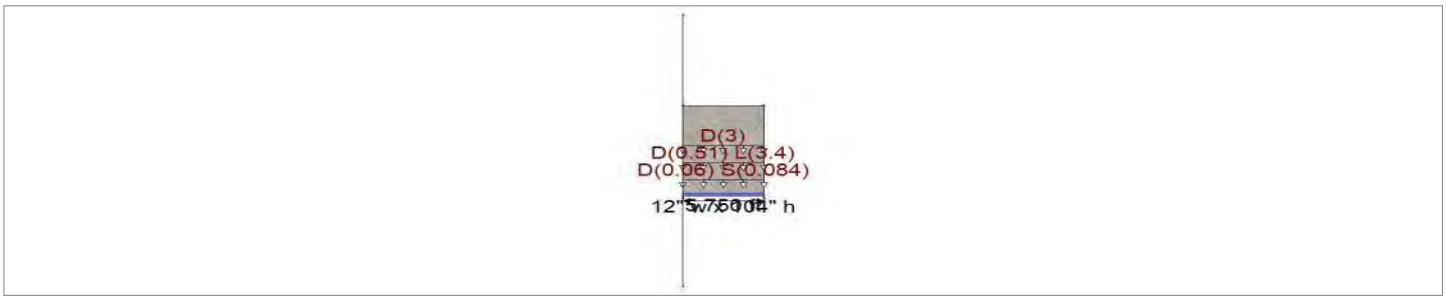
CODE REFERENCES

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

f'c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
fr = f'c$^{1/2}$ * 7.50	=	410.792 psi		Shear :	0.750
ψ Density	=	145.0 pcf	β_1	=	0.850
λ LtWt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi	Fy - Stirrups		40.0 ksi
fy - Main Rebar	=	60.0 ksi	E - Stirrups	=	29,000.0 ksi
E - Main Rebar	=	29,000.0 ksi	Stirrup Bar Size #		3
			Number of Resisting Legs Per Stirrup =		2





Cross Section & Reinforcing Details

Inverted Tee Section, Stem Width = 12.0 in, Total Height = 104.0 in, Top Flange Width = 69.0 in, Flange Thickness = 12.0 in
Span #1 Reinforcing....
5-#6 at 3.0 in from Bottom, from 0.0 to 5.750 ft in this span

Applied Loads

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

Load for Span Number 1
Uniform Load : D = 0.030, S = 0.0420 ksf, Tributary Width = 2.0 ft, (Roof Loads)

Uniform Load : D = 0.0150, L = 0.10 ksf, Tributary Width = 34.0 ft, (Floor Load)

Uniform Load : D = 0.150 ksf, Tributary Width = 20.0 ft, (Wall Load)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.041** : 1	Maximum Deflection			
Section used for this span		**Typical Section**	Max Downward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mu : Applied		40.361 k-ft	Max Upward Transient Deflection	0.000 in	Ratio =	0 <360.0
Mn * Phi : Allowable		978.55 k-ft	Max Downward Total Deflection	0.000 in	Ratio =	0 <180.0
Location of maximum on span		2.880 ft	Max Upward Total Deflection	0.000 in	Ratio =	0 <180.0
Span # where maximum occurs		Span # 1				

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
Overall MAXimum	20.039	20.039
Overall MINimum	0.241	0.241
+D+H	10.264	10.264
+D+L+H	20.039	20.039
+D+Lr+H	10.264	10.264
+D+S+H	10.505	10.505
+D+0.750Lr+0.750L+H	17.595	17.595
+D+0.750L+0.750S+H	17.776	17.776

K2 Engineering & Structural Design
860 Maestro Dr., Suite A
Reno, NV 89511
P: (775) 355-0505 F: (775) 355-0566

Concrete Beam

Lic. # : KW-06003125 **Licensee : K2 ENGINEERING AND STRUCTURAL DESIGN**

Description : South Existing Interior Foundation Evaluation

Vertical Reactions

Support notation : Far left is #1

Load Combination	Support 1	Support 2
+D+0.60W+H	10.264	10.264
+D+0.750Lr+0.450W+H	10.264	10.264
+D+0.750S+0.450W+H	10.445	10.445
+0.60D+0.60W+0.60H	6.158	6.158
+D+0.70E+0.60H	10.264	10.264
+D+0.750L+0.750S+0.5250E+H	17.776	17.776
+0.60D+0.70E+H	6.158	6.158
D Only	10.264	10.264
Lr Only		
L Only	9.775	9.775
S Only	0.241	0.241
W Only		
E Only		
H Only		

Shear Stirrup Requirements

Entire Beam Span Length : Vu < PhiVc/2, Req'd Vs = Not Reqd 9.6.3.1, use #3 stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment	Span #	Location (ft) along Beam	Bending Stress Results (k-ft) Mu : Max	Phi*Mnx	Stress Ratio
MAXimum BENDING Envelope					
Span # 1	1	5.750	40.36	978.55	0.04
+1.40D+1.60H					
Span # 1	1	5.750	20.66	978.55	0.02
+1.20D+0.50Lr+1.60L+1.60H					
Span # 1	1	5.750	40.19	978.55	0.04
+1.20D+1.60L+0.50S+1.60H					
Span # 1	1	5.750	40.36	978.55	0.04
+1.20D+1.60Lr+L+1.60H					
Span # 1	1	5.750	31.76	978.55	0.03
+1.20D+1.60Lr+0.50W+1.60H					
Span # 1	1	5.750	17.70	978.55	0.02
+1.20D+L+1.60S+1.60H					
Span # 1	1	5.750	32.31	978.55	0.03
+1.20D+1.60S+0.50W+1.60H					
Span # 1	1	5.750	18.26	978.55	0.02
+1.20D+0.50Lr+L+W+1.60H					
Span # 1	1	5.750	31.76	978.55	0.03
+1.20D+L+0.50S+W+1.60H					
Span # 1	1	5.750	31.93	978.55	0.03
+0.90D+W+1.60H					
Span # 1	1	5.750	13.28	978.55	0.01
+1.20D+L+0.20S+E+1.90H					
Span # 1	1	5.750	31.83	978.55	0.03
+0.90D+E+0.90H					
Span # 1	1	5.750	13.28	978.55	0.01

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl (in)	Location in Span (ft)	Load Combination	Max. "+" Defl (in)	Location in Span (ft)
+D+L+H	1	0.0000	2.875		0.0000	0.000

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 1, 4, 12, 19

Givens:		
Maximum Existing Footing Reaction =	15,581.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	31162	lbs
Minimum Torque =	3116.2	ft-lbs
Minimum Pressure =	1206.89	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 2,3, & 13-18

Givens:		
Maximum Existing Footing Reaction =	31,162.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	62324	lbs
Minimum Torque =	6232.4	ft-lbs
Minimum Pressure =	2413.79	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 5 & 11

Givens:		
Maximum Existing Footing Reaction =	13,139.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	26278	lbs
Minimum Torque =	2627.8	ft-lbs
Minimum Pressure =	1017.74	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 6-10

Givens:		
Maximum Existing Footing Reaction =	26,278.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	52556	lbs
Minimum Torque =	5255.6	ft-lbs
Minimum Pressure =	2035.48	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 20 & 26

Givens:		
Maximum Existing Footing Reaction =	20,039.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	40078	lbs
Minimum Torque =	4007.8	ft-lbs
Minimum Pressure =	1552.21	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

Helical Pier Structural Calculations	
Job:	Centennial Arts Foundation Repair
Job #:	22-436
Address:	900 E. Aultman St
APN:	APN: 002-058-01
Prepared by:	TJD
Date:	4/18/2023

Helicals: 21-25

Givens:		
Maximum Existing Footing Reaction =	40,078.0	lbs
Factor of Safety =	2.0	
Material Diameter =	3-1/2	in.
K_T =	10	
PSI / Torque Factor =	2.582	

Find:		
P_{DESIGN} =	80156	lbs
Minimum Torque =	8015.6	ft-lbs
Minimum Pressure =	3104.42	psi

$$P_{DESIGN} = R_{FOOTING} \cdot (F.o.S)$$

$$t_{MINIMUM} = \frac{P_{DESIGN}}{K_T}$$

$$p_{MINIMUM} = \frac{t_{MINIMUM}}{PSI/TorqueFactor}$$

HP350 Shaft Specifications & Capacities

Shaft Material:
Ø3.500" x 0.340" wall
ASTM A500 Grade B or C
Yield strength = 65 ksi (min)
Tensile strength = 75 ksi (min)

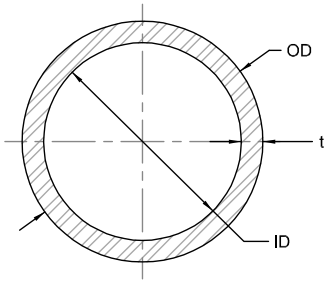
Shaft Coupler Material:
Ø4.250" x 0.344" wall
ASTM A513 Type 5 Grade 1026
Yield strength = 70 ksi (min)
Tensile strength = 80 ksi (min)

Helix Plates:
ASTM A572 Grade 50
⅜" thick (standard)
½" thick (available)
Helix plate geometry conforming to ICC-ES AC358

Shaft Coupling Hardware:
(4) - Ø1" Grade 5 bolts with nuts
Electrozinc plated per ASTM B633

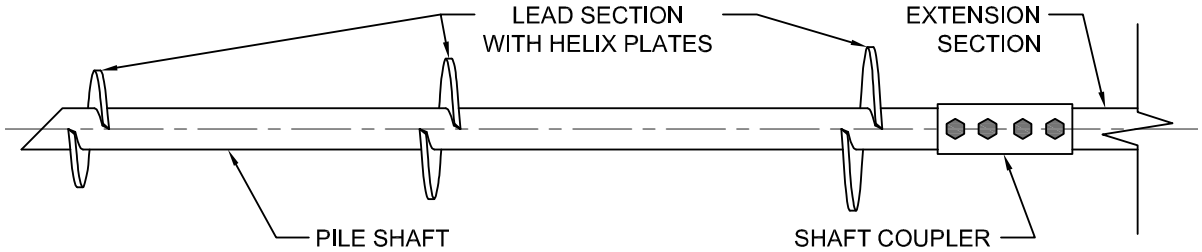
Surface Finish of Shaft Segments:
Available plain or hot-dip galvanized(2)

Nominal Thickness	**0.340 (in)**
Design Thickness(3)	**0.316 (in)**



	Plain	Plain Corroded(1)	Galvanized Corroded(1,2)
OD (in)	3.500	3.464	3.490
t (in)	0.316	0.280	0.306
ID (in)	2.868	2.904	2.876
A (in²)	3.16	2.80	3.06
I (in⁴)	4.05	3.58	3.91
S (in³)	2.31	2.07	2.24
Z (in³)	3.21	2.85	3.11
r (in)	1.13	1.13	1.13
Shaft Max Allowable Compression Capacity(4,5) P_n/Ω (kips)	**118.5**	**105.0**	**114.8**
Shaft Max Allowable Tension Capacity(5) P_n/Ω (kips)	**73.0**	**62.8**	**69.1**

Max Load =40 Kips



Default Torque Correlation Factor(6) K_t = 7 (ft^{-1})	**Maximum Ultimate Soil Capacity(7) Q_u = 122.5 (kips)**
Maximum Installation Torque T = 17,500 (ft-lb)	**Maximum Allowable Soil Capacity(7) Q_a = 60.0 (kips) FOS = 2.04**

(1) Corroded properties and capacities include a 50-year scheduled sacrificial loss in thickness per ICC-ES AC358.

(2) Hot-dip galvanized coating in accordance with ASTM A123.

(3) Design thickness for HSS and Pipe based on 93% of nominal thickness per AISC.

(4) Allowable mechanical compression capacities consider continuous lateral soil confinement in soils with SPT N-values ≥ 4. Piles with exposed unbraced lengths or piles placed in weaker or fluid soils should be evaluated on a case-by-case basis by the project engineer.

(5) Listed mechanical capacities are for the shaft and coupled connections only. System capacity should also not exceed the installed allowable torque-correlated soil capacity or the allowable capacity of the respective bracket (see additional bracket tables).

(6) Default K_t factor is consistent with that listed in ICC-ES AC358. This value is generally conservative. Site-specific K_t factors can be determined for a given project with full-scale load testing.

(7) Soil capacities listed are at maximum installation torque. Ultimate soil capacity is based on the equation $Q_u = K_t \times T$. Allowable soil capacity is obtained by dividing the ultimate capacity by an appropriate factor of safety ($Q_a = Q_u$ / FOS), but should not exceed 60 kips per AC358. Although a factor of safety of 2.0 is commonly used, a higher or lower factor of safety may be considered at the discretion of the helical pile designer or as dictated by local code requirements. System capacity should also not exceed the mechanical capacity of the shaft or those listed in the respective bracket capacity tables.

FS350B2 Bracket Specifications & Capacities when used with the HP350 Helical Pile System

Bracket:
Weldment manufactured from ¼", ⅜", and ½"
ASTM A572 Grade 50 plate and Ø4.50" x 0.337"
wall AS7M A500 Grade C pipe

External Sleeve:
Ø4.000" x 0.226" wall x 30" long
with trumpet flare at one end
ASTM A500 Grade B or C
Yield strength = 50 ksi (min)
Tensile strength = 62 ksi (min)

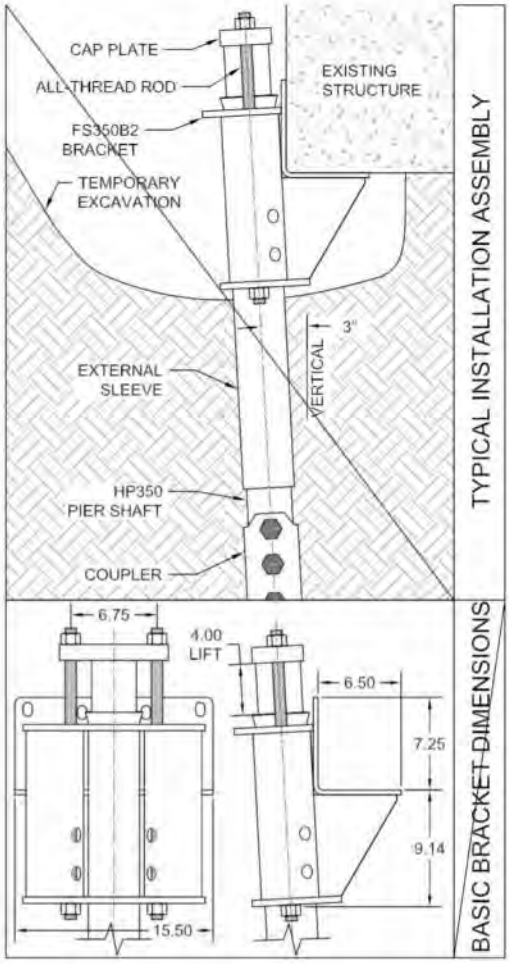
Cap Plate:
1¼" x 4.00" x 8.50" ASTM A572 Grade 50

Bracket Hardware[3]**:**
(2) - Ø⅞" x 24" long all-thread rod Grade B7
Tensile strength = 125 ksi (min)
Electrozinc plated per ASTM B633

Bracket Finish:
Available plain or hot-dip galvanized[2]

	Allowable Bracket Capacity[4,5,6,7] R_a/Ω (kips)
Plain	54.9
Plain Corroded[1]	49.2
Galvanized Corroded[1,2]	53.2

Max Load = 40 kips



(1) Corroded capacities include a 50-year scheduled sacrificial loss in thickness per ICC-ES AC358

(2) Hot-dip galvanized coating in accordance with ASTM A123.

(3) Optional hardware utilizes similar sized contour (coil) thread made from AISI 1045, tensile strength = 120 ksi. Slightly lower tensile strength material does not govern the listed capacities.

(4) Brackets shall be used for support of structures that are considered to be fixed from translation. Structures that are not fixed from translation shall be braced in some manner prior to installing retrofit bracket systems.

(5) Allowable capacities consider continuous lateral soil confinement in soils with SPT ≥ 4. Piles with exposed unbraced lengths or piles placed in weaker or fluid soils should be evaluated on a case-by-case basis by the project engineer.

(6) Concrete bearing assumes a minimum compressive strength (f'_c) of 2,500 psi. Local concrete bending and other local design checks should be evaluated on a case-by-case basis by the project engineer.

(7) Listed allowable capacities are for the specific shaft/bracket combination shown. System capacity should also not exceed the installed torque-correlated soil capacity (See Shaft Specifications & Capacities).

K2 ENGINEERING AND STRUCTURAL DESIGN

Prepared by: TJD Date: 4/18/2023

Job No: 22-436 Sheet No: 1

Check Helix Plate Configuration (worst case):

$$A_h = \frac{Q_u}{q' \cdot N_q}$$

Vertical overburden stress @ 19.3ft:

$$q' = (110 lb/ft^3)(10ft) + ((115-62.4) lb/ft^3)(3ft) + ((130-62.4) lb/ft^3)(6.3ft)$$

$$= 1,683 lb/ft^2$$

$Q_u = 40,078 lbs \times F.O.S.(2) = 80,156 lbs$

$N_q = 1 + 0.56(12\Phi)^{\Phi/54} = 42.6$

$$A_h = \frac{80,156 lbs}{(1,683 lb/ft^2)(42.6)}$$

$A_h = 1.12 ft^2$

Use 10-12-14 Helix Configuration

10 = 0.48 ft²
12 = 0.72 ft²
14 = 1.00 ft²

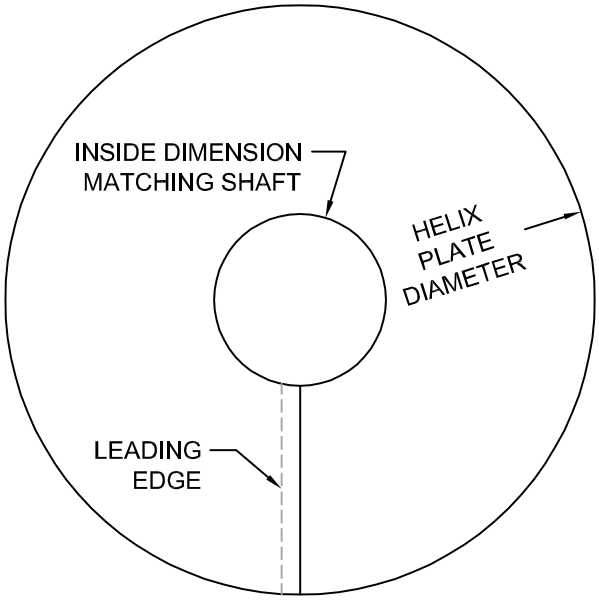
Total helix area = 2.2 ft² > 1.12 ft² ✓ OK

∴ use 10-12-14 helix configuration

HP350 Helix Plate Net Bearing Areas

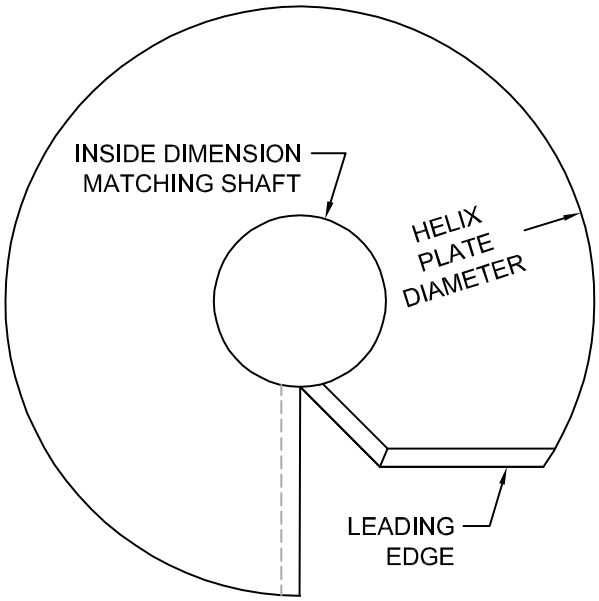
H-Style Plates

Plate Diameter (inches)	Area (ft^2)
6	0.13
8	0.28
10	0.48
12	0.72
14	1.00
16	1.33



V-Style Plates(1)

Plate Diameter (inches)	Area (ft^2)
6*	0.12
8	0.26
10	0.43
12	0.65
14	0.89
16	1.18



(1) V-Style plates feature a special cut on the leading edge (or cutting edge). This edge is cut at two successive 45° angles to roughly simulate a spiral. This is in addition to the 45° bevel on the leading edge which is a standard feature for helix plates of both styles. V-Style plates are appropriate for use in applications where rocky or rubble-filled soils are anticipated, or where very dense layers need to be penetrated. Some smaller plate diameters indicated by an asterisk (*), are not typically available in a V-Style.

Madole Construction
18300 Joy Lake Rd Washoe Valley, NV 89704
Contact: Jessica Crockett
Cell: 707-800-2061
Email: jessica@madoleconstruction.com
Fax:775-737-4415
www.renotahoefoundationrepair.com

SUBMITTED TO:

White Pine Community Choir Association
910 Aultman Street
Ely, NV 89301

Susan Wetmore

Email: sywetmore@gmail.com

BID SUMMARY

Project Name: Centennial Fine Arts Foundation Repair

Project Location: 300 East Aultman Street APN 002-058-01 Ely, NV 89301

Bid Date: July 09, 2023

BID AMOUNT
$149,259.81

SCOPE OF WORK

This bid submittal includes all labor, materials, equipment and site supervision required to install Helical Piles/PolyLEVEL as specified for the above referenced project. Proposal is based on K2 Engineering plan set dated 5/222023 and specification sections included on plans set.

PRODUCTS

(26) HP350 Helical Piles (Galvanized)

(26) Underpinning Bracket w/ 30" Sleeve
(26) HP350 7' Lead - 10"-12"-14"
(26) HP350 7' Extension

PolyLEVEL

INSTALLATION

HP350 Helical Piles (Galvanized)

- Helical piles will be installed with a hydraulic-powered, rotary-torque drive unit. Shaft extensions will be added to reach design torque/depth and coupled with manufacturers supplied hardware.
- Install helical piles to 57.4 kips or as specified with an approximate depth of 14 feet. Any additional depth beyond 14 feet will be at an additional cost.
- Monitor and document installation torque for each pile and provide data, including correlation of torque to capacity, to the client.
- Provide access excavation for the pier and bracket installation, backfill upon completion.

PolyLEVEL

- Layout and mark injection locations, drill 5/8" holes through slab and install injection ports.
- Inject PolyLEVEL material at rates necessary to fill voids, stabilize and lift slabs as necessary.
- Remove injection ports and fill access holes with suitable grout material, and clean up work area.
- Monitor slab movement during installation to ensure slab stabilization and accurate lifting.

Madole Construction
18300 Joy Lake Rd Washoe Valley, NV 89704
Contact: Jessica Crockett
Cell: 707-800-2061
Email: jessica@madoleconstruction.com
Fax:775-737-4415
www.renotahoefoundationrepair.com

SUBMITTED TO:

White Pine Community Choir Association
910 Aultman Street
Ely, NV 89301

Susan Wetmore

Email: sywetmore@gmail.com

BID SUMMARY

Project Name: Centennial Fine Arts Foundation Repair

Project Location: 300 East Aultman Street APN 002-058-01 Ely, NV 89301

Bid Date: July 09, 2023

BID AMOUNT
$149,259.81

QUALIFICATIONS

HP350 Helical Piles (Galvanized)

- An additional charge of $210.00 per foot will be added if piles must be installed to a depth more than 14 feet below finish grade.

PolyLEVEL

- A pumping unit capable of injecting high density polyurethane material beneath the slab will be utilized. The pumping unit will be capable of controlling the rate of flow of material as required to lift the slabs in a gradual and controlled manner.
- The pumping unit will be equipped with a stroke counter that determines pounds of material used.
- The General Contractor/Owner is responsible for providing necessary lighting for proper installation.
- Proposal is based upon a site inspection without extensive information or knowledge of original construction or previous repairs. At times we encounter various obstacles or attempted repairs that impede our progress. These repairs may or may not be known to the Owner. We will do what is necessary to avoid such obstacles, however, if extra work involving additional manpower or trades are required, we will contact the Owner immediately to discuss how the work shall progress.

Other Qualifications

- The general contractor is responsible for providing proper access for Madole Construction's installation equipment.
- Due to the lack of proper soil information, Madole Construction reserves the right to change the pile configuration and associated costs based upon actual site conditions in order to achieve the required pile capacities.
- Lead time for crew & product is three weeks after signed contract and approved drawings.
- Progress invoices will be submitted monthly until the project is complete.
- Payment terms are 2% 10 days, Net 30 .

EXCLUSIONS

- Damage to underground utilities or mechanical and electrical ductwork/conduits.
- Special Inspections.
- Structural or cosmetic damages due to the installation process.
- Prevailing wages.

Madole Construction

SIGNATURE: _____

DATE: _____

Acceptance of Proposal - The prices proposed, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. We jointly and severally agree to pay you upon completion of the job, and will further pay your sevice charge of 1-1/3% per month (16% annum) if our account is 30 or more days past due, and your attorney's fees and costs to collect or enforce this contract. **My signature indicates that I accept the terms of this Proposal.

SIGNATURE: _____

DATE: _____

Madole Construction Co., Inc.
18300 Joy Lake Rd.
Washoe Valley, NV 89704
Po Box 893
Sparks NV 89432
Office: 775-737-4414
Fax: 775-737-4415

NCL# 0020657
CSLB# 615116ABC-12
Thursday, July 27, 2023

Re: 900 E. Aultman Street Ely NV 89301

Madole Construction inspected this property on June 8th, 2023, We also reviewed the plans prepared by K2 engineering, and reviewing the building assessment and recommendations that was completed by Parallel Lines in 2019 it is apparent the structure has shifted and the condition of the brick has deteriorated since the 2019 report.

The cracks throughout the building indicate the structure is experiencing movement at the foundation level. The wet weather experienced over the past season in our region has accelerated the damage to the building.

The proposed plans provided by K2 Engineering with the helical piers at the perimeter of the structure will secure and stabilize the building. We recommend polyurethane foam injection through the slab to fill the voids, lift, and stabilize the slab on grade floor in the basement.

We recommend proceeding with the K2 repair plan as soon as possible to mitigate further damage, and additional repair costs.

Ray Madole
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ray@madoleconstruction.com
www.madoleconstruction.com