HARRIS COUNTY ENGINEERING DEPARTMENT

STANDARD DETAILS FOR JOINT CITY/COUNTY LOW COST AND INNOVATIVE RESIDENTIAL FOUNDATION SYSTEMS FOR ELEVATED HOMES

RODNEY ELLIS
COMMISSIONER — PRECINCT 1

STEVE RADACK
COMMISSIONER — PRECINCT 3

LINA HIDALGO
COUNTY JUDGE

ADRIAN GARCIA
COMMISSIONER — PRECINCT 2

R. JACK CAGLE
COMMISSIONER — PRECINCT 4

MICHAEL POST, CPA
COUNTY AUDITOR

JOHN R. BLOUNT, P.E.
COUNTY ENGINEER

HOUSTON PUBLIC WORKS

APPROVED

MARK SAVASTA, HOUSTON BUILDING OFFICIAL
HOUSTON PERMITTING CENTER

NOTE: COPIES OF THESE STANDARD ELEVATED FOUNDATION DESIGNS WILL BE ACCEPTED FOR CODE COMPLIANT ELEVATED FOUNDATION PLANS WHERE THE FIELD CONSTRUCTION COMPLIES FULLY WITH ALL IDENTIFIED DESIGN SPECIFICATIONS AND LIMITATIONS. COPIES OF THESE STANDARD DRAWINGS SHALL BE SUBMITTED ALONG WITH ALL REQUIRED DOCUMENTS IDENTIFIED IN THE HOUSTON PERMITTING CENTERS APPLICABLE PREREQUISITE CHECKLIST FORMS CE_1301 OR CE_1105 WHEN SUBMITTING FOR PLAN REVIEW AND PERMIT APPROVAL.

AUGUST 2020

Harris County, Texas
Houston, Texas

APPROVED
COUNTY OF HARRIS
OFFICE OF THE COUNTY ENGINEER
JOHN R. BLOUNT, P.E.
COUNTY ENGINEER

\\10.1.10.164\Design\Harris County\Harris County Foundation Details\FINAL - JOINT STANDARD FOUNDATION COH HC.dwg

\\10.1.10.164\Design\Harris County\Harris County Foundation Details\FINAL - JOINT STANDARD FOUNDATION COH HC.dwg

SHEET INDEX

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: SHEET INDEX

DRAWN BY: ZPN | SCALE: NTS

CK'D BY: RDB | JOB NO: | DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
INDEX

1 Story Loading
Per Pile

Gravity

Perimeter
Live Load 2565 LB
Roof Live Load 1350 LB
Dead Load 2400 LB

Interior
Live Load 3730 LB
Roof Live Load 1110 LB
Dead Load 2325 LB

PERIMETER TOTAL[3] = 5340 LB
INTERIOR TOTAL[2] = 6055 LB

Wind Loading (139 MPH Exposure B)
1100 LB at corner

1 Story Loading
Per Square Footer

Gravity

Perimeter
Live Load 2020 LB
Roof Live Load 1065 LB
Dead Load 1890 LB

Interior
Live Load 2935 LB
Roof Live Load 875 LB
Dead Load 1830 LB

PERIMETER TOTAL[3] = 4205 LB
INTERIOR TOTAL[3] = 4690 LB

Wind Loading (139 MPH Exposure B)
1100 LB at corner

2 Story Loading
Per Pile

Gravity

Perimeter
Live Load 3455 LB
Roof Live Load 770 LB
Dead Load 2785 LB

Interior
Live Load 5415 LB
Roof Live Load 1200 LB
Dead Load 3705 LB

PERIMETER TOTAL[2] = 6240 LB
INTERIOR TOTAL[2] = 9120 LB

Wind Loading (139 MPH Exposure B)
1830 LB at corner

2 Story Loading
Per Square Footer

Gravity

Perimeter
Live Load 2800 LB
Roof Live Load 400 LB
Dead Load 1540 LB

Interior
Live Load 3355 LB
Roof Live Load 630 LB
Dead Load 1950 LB

PERIMETER TOTAL[2] = 4340 LB
INTERIOR TOTAL[2] = 5305 LB

Wind Loading (139 MPH Exposure B)
1830 LB at corner

Footing Capacities (Unfactored)

Soil Bearing 1200 PSF
Skin friction 250 PSF

10' Length, 16" diameter, straight shaft
Fiction 9.4 Kips

12' Length, 16" diameter, straight shaft
Friction 10.5 Kips

Square footer 30"X30"
Bearing 7.5 Kips
Uplift 1.0 Kips (No Suction Capacity)

[1]Factored capacity with 0.6 Dead Load
[2]Load case #2 L+D
[3]Load case #3 (L+Lr)*0.75+D

Load Capacity Summary (Factored)

SINGLE STORY
Pile Loading
Pile Load 6.1 Kips
Pile Capacity 10' 9.4 Kips*

Footer Loading
Interior Load 4.7 Kips
Footer Capacity 7.5 Kips

Wind
Maximum Uplift 1.1 Kips
Pile Capacity 10.5 Kips
Square Footer 2.1 Kips

2 STORY
Pile Loading
Pile Load 9.2 Kips
Pile Capacity 10.5 Kips*

Footer Loading
Interior Load 5.3 Kips
Footer Capacity 7.5 Kips

Wind
Maximum Uplift 1.9 Kips
Pile Capacity 10.5 Kips
Square Footer 2.1 Kips

*Per section 18.10.3.3.1.4 frictional resistance and bearing resistance shall not be assumed to act simultaneously. Per this requirement bearing has been excluded from these capacities

LIVE LOAD NOTES

1. UNINHABITABLE ATTICS WITHOUT STORAGE ARE THOSE WHERE THE CLEAR HEIGHT BETWEEN JOISTS AND RAFTERS IS NOT MORE THAN 42 INCHES, OR WHERE THERE ARE NOT TWO OR MORE ADJACENT TRUSSES WITH WEB CONFIGURATIONS CAPABLE OF ACCOMMODATING AN ASSUMED RECTANGLE 42 INCHES IN HEIGHT BY 24 INCHES IN WIDTH, OR GREATER, WITHIN THE PLANE OF THE TRUSSES. THIS LIVE LOAD NEED NOT BE ASSUMED TO ACT CONCURRENTLY WITH ANY OTHER LIVE LOAD REQUIREMENTS.
2. INDIVIDUAL STAIR TREADS SHALL BE DESIGNED FOR THE UNIFORMLY DISTRIBUTED LIVE LOAD OR A 300-POUND CONCENTRATED LOAD ACTING OVER AN AREA OF 4 SQUARE INCHES, WHICHEVER PRODUCES THE GREATER STRESSES.
3. SEE SECTION R507.1 FOR DECKS ATTACHED TO EXTERIOR WALLS.
4. GUARD IN-FILL COMPONENTS (ALL THOSE EXCEPT THE HANDRAIL), BALUSTERS AND PANEL FILLERS SHALL BE DESIGNED TO WITHSTAND A HORIZONTALLY APPLIED NORMAL LOAD OF 50 POUNDS ON AN AREA EQUAL TO 1 SQUARE FOOT. THIS LOAD NEED NOT BE ASSUMED TO ACT CONCURRENTLY WITH ANY OTHER LIVE LOAD REQUIREMENT.
5. UNINHABITABLE ATTICS WITH LIMITED STORAGE ARE THOSE WHERE THE CLEAR HEIGHT BETWEEN JOISTS AND RAFTERS IS 42 INCHES OR GREATER, OR WHERE THERE ARE TWO OR MORE ADJACENT TRUSSES WITH WEB CONFIGURATIONS CAPABLE OF ACCOMMODATING AN ASSUMED RECTANGLE 42 INCHES IN HEIGHT BY 24 INCHES IN WIDTH, OR GREATER, WITHIN THE PLANE OF THE TRUSSES.
6. THE LIVE LOAD NEED ONLY BE APPLIED TO THOSE PORTIONS OF THE JOISTS OR TRUSS BOTTOM CHORDS WHERE ALL OF THE FOLLOWING CONDITIONS ARE MET:
   - 6.1. THE ATTIC AREA IS ACCESSED FROM AN OPENING NOT LESS THAN 20 INCHES IN WIDTH BY 30 INCHES IN LENGTH THAT IS LOCATED WHERE THE CLEAR HEIGHT IN THE ATTIC IS NOT LESS THAN 30 INCHES.
   - 6.2. THE SLOPES OF THE JOISTS OR TRUSS BOTTOM CHORDS ARE NOT GREATER THAN 2 INCHES VERTICAL TO 12 UNITS HORIZONTAL.
   - 6.3. REQUIRED INSULATION DEPTH IS LESS THAN THE JOIST OR TRUSS BOTTOM CHORD MEMBER DEPTH.
7. THE REMAINING PORTIONS OF THE JOISTS OR TRUSS BOTTOM CHORDS SHALL BE DESIGNED FOR A UNIFORMLY DISTRIBUTED CONCURRENT LIVE LOAD OF NOT LESS THAN 10 POUNDS PER SQUARE FOOT.

IRC TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(POUNDS PER SQUARE FOOT)

USE	LIVE LOAD
UNINHABITABLE ATTICS WITHOUT STORAGE	10
UNINHABITABLE ATTICS WITH LIMITED STORAGE	20
HABITABLE ATTICS AND ATTICS SERVED WITH FIXED STAIRS	30
BALCONIES (EXTERIOR) AND DECKS	40
FIRE ESCAPES	40
GUARDRAILS AND HANDRAILS	200
GUARDRAIL IN-FILL COMPONENTS	50
PASSENGER VEHICLE GARAGES	50
ROOMS OTHER THAN SLEEPING ROOM	40
SLEEPING ROOMS	30
STAIRS	40

FOR SI: 1 POUND PER SQUARE FOOT=0.0479 kPa,
1 SQUARE INCH=645 MM2, 1 POUND=4.45 N.

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS
SHEET DESCRIPTION: FOUNDATION LOADS
DRAWN BY: ZPN
CK'D BY: ROB
SCALE: NTS
JOB NO:
DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
C1.0

GENERAL NOTES– SITE WORK

1. SITE PREPARATION SHALL BE IN ACCORDANCE WITH THE SOILS REPORT RECOMMENDATIONS (IF AVAILABLE) AND SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
   - 1.A. STRIP ALL VEGETATION DOWN TO NATURAL SOIL. REMOVE ALL TREES WITHIN 10 FEET OF THE PERIMETER OF THE STRUCTURE WHEN MEASURED TO THE FACE OF THE TRUNK.
   - 1.B. PROOF–ROLL EXPOSED SUBGRADE. BACK FILL AND COMPACT TREE–HOLES OR SOFT POCKETS WITH MATERIAL SIMILAR TO THE EXISTING SITE MATERIALS.
   - 1.C. BRING SUB GRADE TO REQUIRED ELEVATION WITH SELECT FILL MATERIAL. SELECT FILL SHALL BE SANDY CLAY OR SAND, FREE OF ORGANIC MATERIAL, HAVING A PLASTICITY INDEX GREATER THAN 7 BUT LESS THAN 20
   - 1.D. INITIAL SITE GRADING SHALL BE COMPLETED PRIOR TO SETTING FORMS. FINAL GRADE SHALL SLOPE AWAY FROM THE FOUNDATION 1 INCH/FOOT FOR THE FIRST 5 FEET SUCH THAT POSITIVE DRAINAGE AWAY FROM THE SLAB IS ASSURED.
2. DURING CONSTRUCTION A DRAINAGE TRENCH SHALL BE FORMED SUCH THAT ANY WATER WHICH INTRUDES INTO THE FOUNDATION WILL IMMEDIATELY DRAIN OUT OF THE BOTTOM OF CAST FOOTERS.

GENERAL NOTES– CONCRETE

1. CONCRETE SHALL BE SUPPLIED AND CONSTRUCTED IN ACCORDANCE WITH AC1–318 LATEST EDITION AND SHALL HAVE A MINIMUM 28–DAY COMPRESSIVE STRENGTH OF 3000 PSI.
2. WATER SHALL NOT BE ADDED TO CONCRETE AT THE JOB SITE.
3. CONCRETE SHALL NOT BE PLACED AT TEMPERATURES BELOW 40 DEGREES F, IN RAINY WEATHER OR IN OTHER ADVERSE WEATHER CONDITIONS.
4. CURE ALL SLABS WITH CHEMICAL CURING COMPOUND OR KEEP MOIST FOR 7 DAYS AFTER PLACEMENT.
5. BUILDER SHALL VERIFY ALL DIMENSIONS, DROPS, OFFSETS, BRICK LEDGES, INSERTS AND OPENINGS WITH ARCHITECTURAL DRAWINGS.

GENERAL NOTES – REINFORCED STEEL

1. REINFORCING STEEL SHALL BE PER ASTM A615 GRADE 60 WITH DEFORMATION PER ASTM A 305 AND SHALL BE DETAILED AND INSTALLED PER ACI–318 LATEST EDITION

SUBFLOOR

1. ALL LUMBER SHALL BE #2 SOUTHERN YELLOW PINE
2. ALL EXPOSED LUMBER TO BE PRESSURE TREATED
3. DRIVEN PILES SHALL BE TREATED WITH A RATING OF UC4C (0.8 CCA) PER THE AMERICAN WOOD PRESERVATION ASSOCIATION.
4. CONNECTORS AND FASTENERS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH THE IRC 2018

GENERAL NOTES – HELICAL PILES

1. PILE SYSTEM SHALL BE ICC CERTIFIED AND CERTIFICATION DOCUMENTS SHALL BE SUPPLIED TO OWNER PRIOR TO INSTALLATION.
2. BRACKETS, PLATES, CLIPS, ETC. SHALL BE HOT DIPPED GALVANIZED
3. PILE SHALL BE GALVANIZED ABOVE THE SOIL AND 5' BELOW GRADE OR PAST FIRST SECTION WHICHEVER IS GREATER.
4. MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL AND ASSURANCE FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
5. MANUFACTURER SHALL BE ISO CERTIFIED.
6. ALL WELDING IS TO BE DONE BY WELDERS CERTIFIED UNDER SECTION 5 OF THE AWS CODE D1.1.
7. THE CAPACITY OF THE PILING SYSTEM IS A FUNCTION OF MANY INDIVIDUAL ELEMENTS, INCLUDING THE CAPACITY OF THE FOUNDATION, BRACKET, PIER SHAFT, HELICAL PLATE, AND BEARING STRATA, AS WELL AS THE STRENGTH OF THE FOUNDATION BRACKET CONNECTION AND THE QUALITY OF THE INSTALLATION OF THE PILE.
8. TEST PILES SHALL BE INSTALLED TO DETERMINE SOIL CAPACITY PRIOR TO SELECTION OF PILES.
9. SPECIAL INSPECTIONS SHALL BE PERFORMED DURING PILE INSTALLATION BY A QUALIFIED ENGINEER. FIELD DOCUMENTS SHALL BE SUBMITTED TO THE INSPECTING ENGINEER FOR REVIEW.

GENERAL NOTES– MISCELLANEOUS & LIMITATIONS

1. THIS FOUNDATION IS DESIGNED IN ACCORDANCE WITH CURRENT NOREX ENGINEERING PRACTICES AND ADVISES THE BUILDER AND ALL CLIENTS THAT INSPECTION SERVICES ARE AVAILABLE PRIOR TO CONCRETE POUR AND DURING THE POUR. IF THESE INSPECTIONS ARE NOT PERFORMED BY NOREX, THEN NOREX ACCEPTS NO RESPONSIBILITY WHATSOEVER FOR THE PROPER IMPLEMENTATION OF ITS PLANS AND SPECIFICATIONS.
2. SCREEN OR SKIRT DESIGN FOR THE CRAWLSPACE IS NOT PROVIDED/INCLUDED IN THESE DOCUMENTS
3. WARNINGS:
   - 3.A. THE OWNER MUST ENSURE THAT THE MOISTURE CONTENT OF THE SOIL IS MAINTAINED AT A CONSISTENT LEVEL. DRAINAGE SHOULD BE MAINTAINED SUCH THAT THE PONDING OF WATER DOES NOT DEVELOP. IF WATER IS PONDING, THE BUILDER SHOULD BE CONTACTED TO IMPROVE DRAINAGE.
   - 3.B. THE OWNER SHOULD NOT PLANT TREES WITHIN 20 FEET OF THE PERIMETER OF THE STRUCTURE WHEN MEASURED TO THE FACE OF THE TRUNK.

GENERAL NOTES– DESIGN

1. THIS FOUNDATION IS DESIGNED IN ACCORDANCE WITH CURRENT ACCEPTABLE ENGINEERING PRACTICES AND SHALL NOT BE USED FOR PROJECTS OUTSIDE OF THE STATED LIMITATIONS IN THESE DOCUMENTS.
2. THE DESIGN IS BASED ON THE FOLLOWING ASSUMPTIONS:
   - 2.A. FINAL GRADING IS COMPLETED AS OUTLINED IN THE GENERAL NOTES–SITEWORK.
   - 2.B. THE FOUNDATION IS NOT INSTALLED DURING A DRY OR WET PERIOD WHICH IS CONSIDERED EXTREME OR ABNORMAL FOR THE AREA. IF SUCH IS THE CASE, BUILDER SHALL NOTIFY THE ENGINEER FOR A POSSIBLE RE–DESIGN.
   - 2.C. NO SITE SPECIFIC SOIL REPORT PROVIDED FOR THIS PROJECT. SOIL BEARING CAPACITY BASED ON THE 2015 INTERNATIONAL RESIDENTIAL/BUILDING CODE, TABLE 401.4.1 AND TABLE 1806.2 RESPECTIVELY. THE SOIL BEARING PRESSURE SHALL BE 1200 PSF MINIMUM.
3. BOTTOM OF FLOOR JOISTS SHALL BE AS SPECIFIED BY REGULATORY FLOODPLAIN ELEVATION REQUIREMENTS AND A MAXIMUM OF 3 FEET ABOVE EXISTING GRADE.
4. PILES/COLUMNS SHALL BE SPACED AT A MAXIMUM OF 7'–6" FROM CENTER TO CENTER UNLESS NOTED OTHERWISE PER FRAMING PLAN.
5. DESIGN WINDSPEED SHALL BE 139 MPH, EXPOSURE B AS PER ASCE 7–10,
6. ROOF PITCH SHALL NOT EXCEED 6:12.
7. WALL PLATE HEIGHT/CEILING HEIGHT SHALL NOT EXCEED 9 FEET.
8. SEISMIC DESIGN LOADS DO NOT GOVERN.
9. STRUCTURE SHALL NOT EXCEED TWO STORIES.
10. STRUCTURE SHALL NOT EXCEED 2000 SQ.FT.
11. DESIGN SHALL ALSO COMPLY WITH CITY OF HOUSTON AND/OR HARRIS COUNTY CODES, ORDINANCES, AND REGULATIONS
12. MEAN ROOF HEIGHT FOR 1–STORY SHALL NOT EXCEED 15 FEET.
13. MEAN ROOF HEIGHT FOR 2–STORY SHALL NOT EXCEED 25 FEET.
14. STRUCTURE SHALL NOT BE CONSTRUCTED IN V–ZONE FLOODWAY AREAS.
15. THE SOIL BEARING CAPACITY HAS BEEN ASSUMED LOWER THAN THE CODE STATED CAPACITY OF 1500 PSF. SOIL CAPACITY HAS BEEN ASSUMED 1200 PSF FOR THESE DETAILS.
16. THE GARAGE IS DETACHED FROM THE HOUSE AND EXCLUDED IN THESE DRAWINGS.
17. THE LIVE LOAD CRITERIA IS AS FOLLOWS:

LIVE LOAD NOTES

1. UNINHABITABLE ATTICS WITHOUT STORAGE ARE THOSE WHERE THE CLEAR HEIGHT BETWEEN JOISTS AND RAFTERS IS NOT MORE THAN 42 INCHES, OR WHERE THERE ARE NOT TWO OR MORE ADJACENT TRUSSES WITH WEB CONFIGURATIONS CAPABLE OF ACCOMMODATING AN ASSUMED RECTANGLE 42 INCHES IN HEIGHT BY 24 INCHES IN WIDTH, OR GREATER, WITHIN THE PLANE OF THE TRUSSES. THIS LIVE LOAD NEED NOT BE ASSUMED TO ACT CONCURRENTLY WITH ANY OTHER LIVE LOAD REQUIREMENTS.
2. INDIVIDUAL STAIR TREADS SHALL BE DESIGNED FOR THE UNIFORMLY DISTRIBUTED LIVE LOAD OR A 300–POUND CONCENTRATED LOAD ACTING OVER AN AREA OF 4 SQUARE INCHES, WHICHEVER PRODUCES THE GREATER STRESSES.
3. SEE SECTION R507.1 FOR DECKS ATTACHED TO EXTERIOR WALLS.
4. GUARD IN–FILL COMPONENTS (ALL THOSE EXCEPT THE HANDRAIL), BALUSTERS AND PANEL FILLERS SHALL BE DESIGNED TO WITHSTAND A HORIZONTALLY APPLIED NORMAL LOAD OF 50 POUNDS ON AN AREA EQUAL TO 1 SQUARE FOOT. THIS LOAD NEED NOT BE ASSUMED TO ACT CONCURRENTLY WITH ANY OTHER LIVE LOAD REQUIREMENT.
5. UNINHABITABLE ATTICS WITH LIMITED STORAGE ARE THOSE WHERE THE CLEAR HEIGHT BETWEEN JOISTS AND RAFTERS IS 42 INCHES OR GREATER, OR WHERE THERE ARE TWO OR MORE ADJACENT TRUSSES WITH WEB CONFIGURATIONS CAPABLE OF ACCOMMODATING AN ASSUMED RECTANGLE 42 INCHES IN HEIGHT BY 24 INCHES IN WIDTH, OR GREATER, WITHIN THE PLANE OF THE TRUSSES.
6. THE LIVE LOAD NEED ONLY BE APPLIED TO THOSE PORTIONS OF THE JOISTS OR TRUSS BOTTOM CHORDS WHERE ALL OF THE FOLLOWING CONDITIONS ARE MET:
   - 6.1. THE ATTIC AREA IS ACCESSED FROM AN OPENING NOT LESS THAN 20 INCHES IN WIDTH BY 30 INCHES IN LENGTH THAT IS LOCATED WHERE THE CLEAR HEIGHT IN THE ATTIC IS NOT LESS THAN 30 INCHES.
   - 6.2. THE SLOPES OF THE JOISTS OR TRUSS BOTTOM CHORDS ARE NOT GREATER THAN 2 INCHES VERTICAL TO 12 UNITS HORIZONTAL.
   - 6.3. REQUIRED INSULATION DEPTH IS LESS THAN THE JOIST OR TRUSS BOTTOM CHORD MEMBER DEPTH.
7. THE REMAINING PORTIONS OF THE JOISTS OR TRUSS BOTTOM CHORDS SHALL BE DESIGNED FOR A UNIFORMLY DISTRIBUTED CONCURRENT LIVE LOAD OF NOT LESS THAN 10 POUNDS PER SQUARE FOOT.

IRC TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(POUNDS PER SQUARE FOOT)

USE	LIVE LOAD
UNINHABITABLE ATTICS WITHOUT STORAGE	10
UNINHABITABLE ATTICS WITH LIMITED STORAGE	20
HABITABLE ATTICS AND ATTICS SERVED WITH FIXED STAIRS	30
BALCONIES (EXTERIOR) AND DECKS	40
FIRE ESCAPES	40
GUARDRAILS AND HANDRAILS	200
GUARDRAIL IN–FILL COMPONENTS	50
PASSENGER VEHICLE GARAGES	50
ROOMS OTHER THAN SLEEPING ROOM	40
SLEEPING ROOMS	30
STAIRS	40

FOR SI: 1 POUND PER SQUARE FOOT=0.0479 kPa,
1 SQUARE INCH=645 MM2, 1 POUND=4.45 N.

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

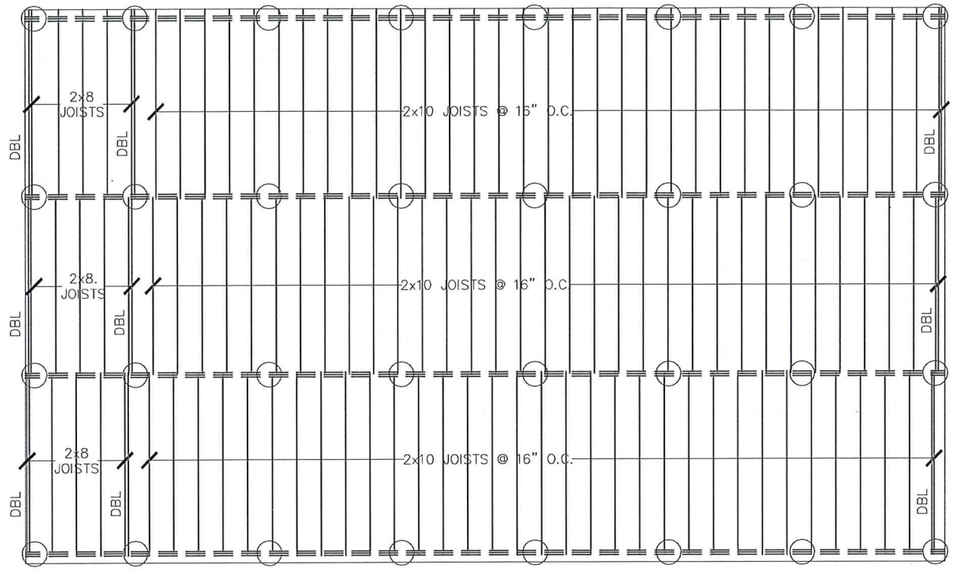
PROJECT TITLE: JOINT FOUNDATION DEAILS
SHEET DESCRIPTION: GENERAL NOTES
DRAWN BY: ZPN
CK'D BY: RDB
SCALE: NTS
JOB No:
DATE: AUG–2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

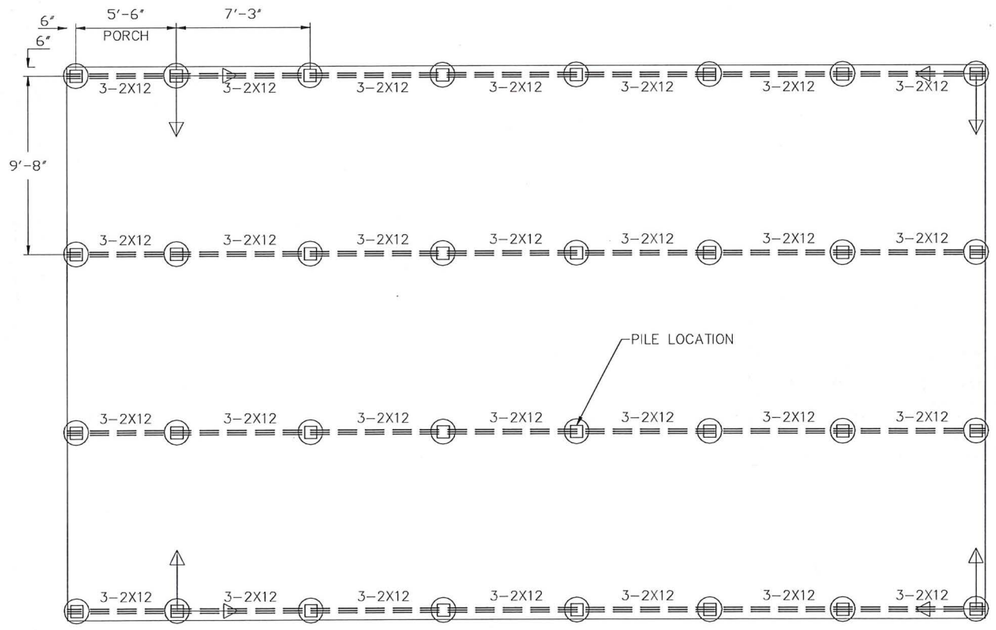
SHEET NO:
F0.0



REPRESENTATIVE PILE LAYOUT PLAN (1 STORY)

NOTES:

1. 1. STRINGERS TO BE 3-2x12 #2 SP PRESSURE TREATED. FASTENED TOGETHER PER DETAILS ON SHEETS 1.3 AND 1.4
2. FLOOR JOISTS TO BE 2x10 #2 SP AT 16' O.C.
3. DBL JOISTS UNDER ALL WALLS ABOVE.
4. STRINGERS MAY BE FASTENED TO PILES PER SHT F1.4



REPRESENTATIVE PILE LAYOUT PLAN (1 STORY)

HELICAL PILES (SEE SHEET F1.5, F1.6) MAY BE INSTALLED IN LIEU OF WOOD PILINGS AT IDENTICAL LOCATIONS.

BRACED PILE
ARROW INDICATES DIRECTION OF BATTERED PILES
RAMJACK AND CANTSINK

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: SINGLE STORY PILE LAYOUT

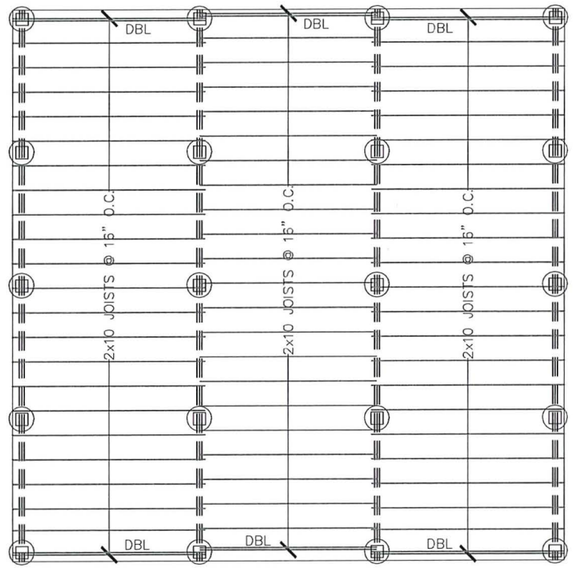
DRAWN BY: ZPN
CK'D BY: RDB
SCALE:
JOB NO:
DATE: AUG-2020
SCALE: NTS

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

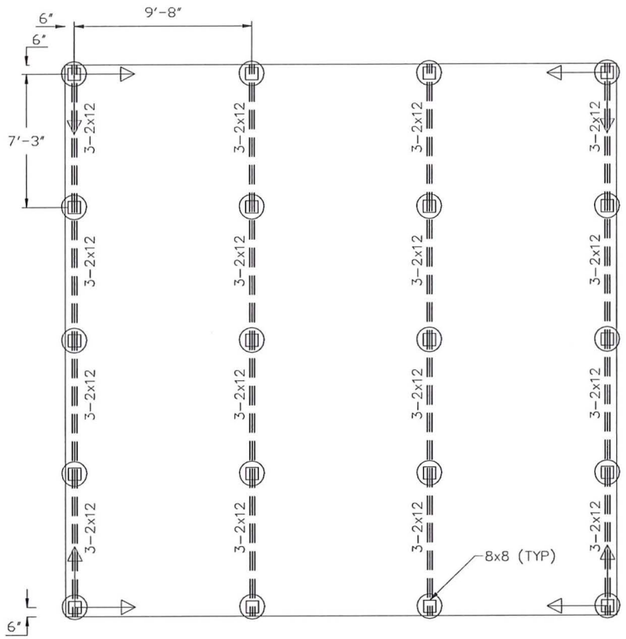
SHEET NO:
F1.1



REPRESENTATIVE PILE LAYOUT PLAN (2 STORY)

NOTES:

1. 1. STRINGERS TO BE 3-2x12 #2 SP PRESSURE TREATED. FASTENED TOGETHER PER DETAILS ON SHEETS 1.3 AND 1.4
2. FLOOR JOISTS TO BE 2x10 #2 SP AT 16" O.C.
3. DBL JOISTS UNDER ALL WALLS ABOVE.
4. STRINGERS MAY BE FASTENED TO PILES PER SHT F1.4



REPRESENTATIVE PILE LAYOUT PLAN (2 STORY)

HELICAL PILES (SEE SHEET F1.5, F1.6) MAY BE INSTALLED IN LIEU OF WOOD PILINGS AT IDENTICAL LOCATIONS.

BRACED PILE
ARROW INDICATES DIRECTION OF BATTERED PILES
RAMJACK AND CANTSINK

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: TWO STORY PILE LAYOUT

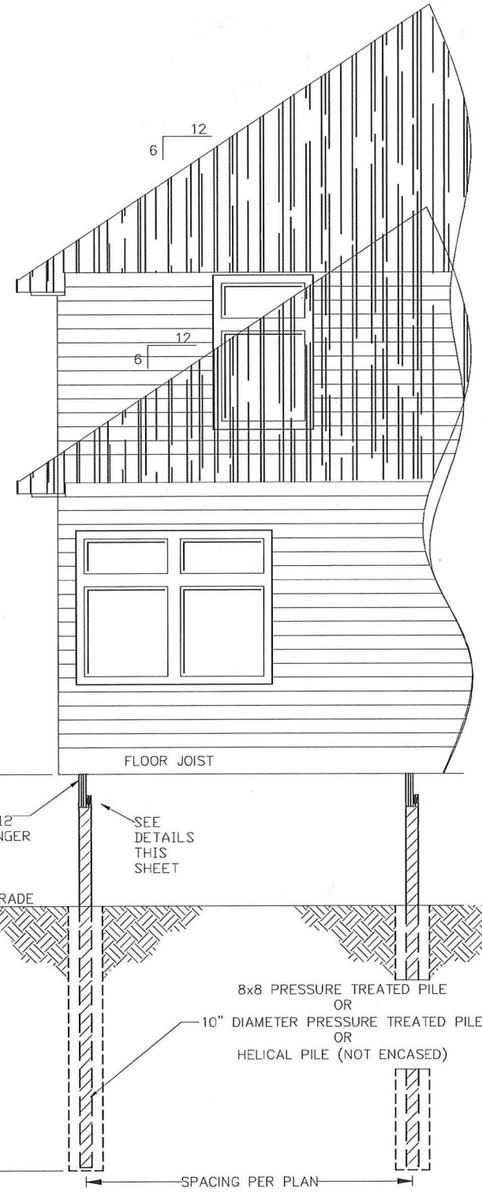
DRAWN BY: ZPN
CK'D BY: RDB
SCALE: NTS
JOB NO:
DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

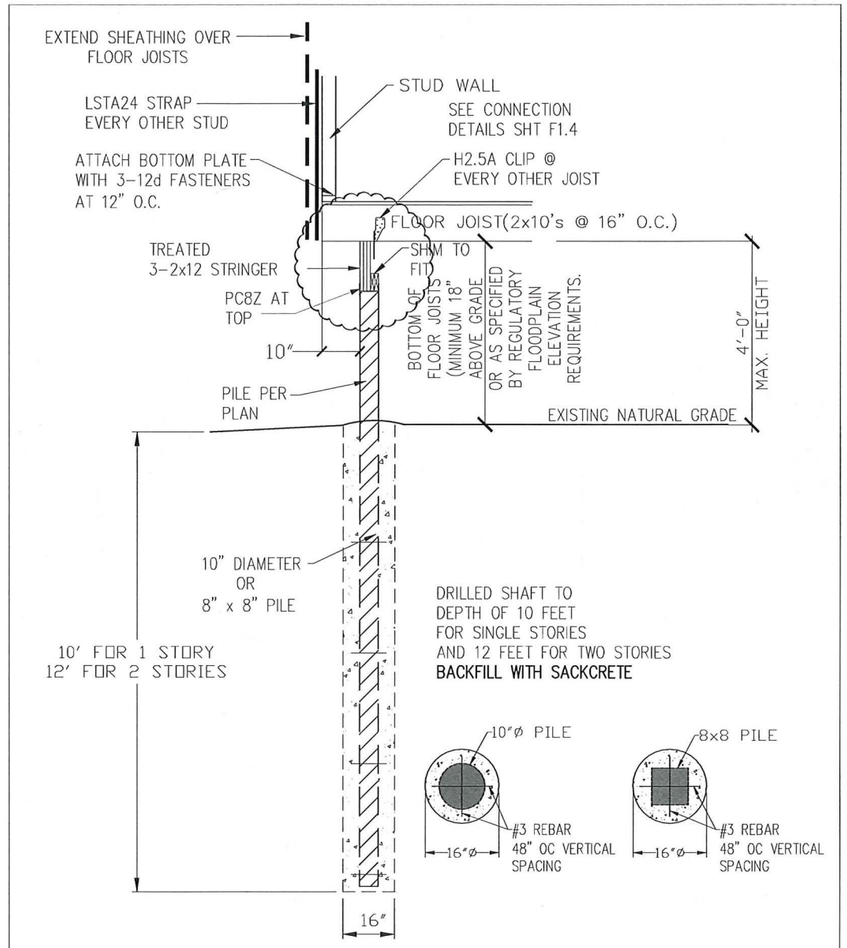
P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
F1.2



8'–9' TOP PLATE PER FLOOR

CONCRETE PILE ELEVATION



PILE DETAIL

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: PILE DETAILS

DRAWN BY: PN | CK'D BY: RDB | SCALE: NTS

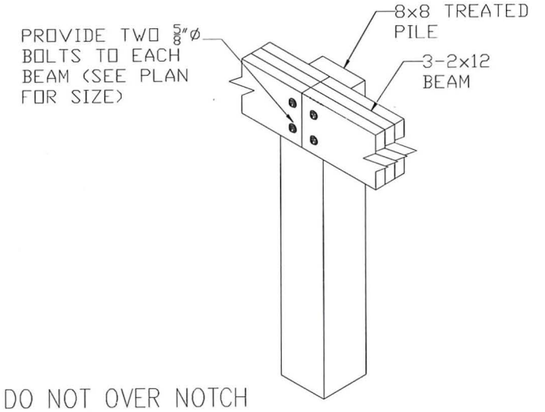
JOB NO: | DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

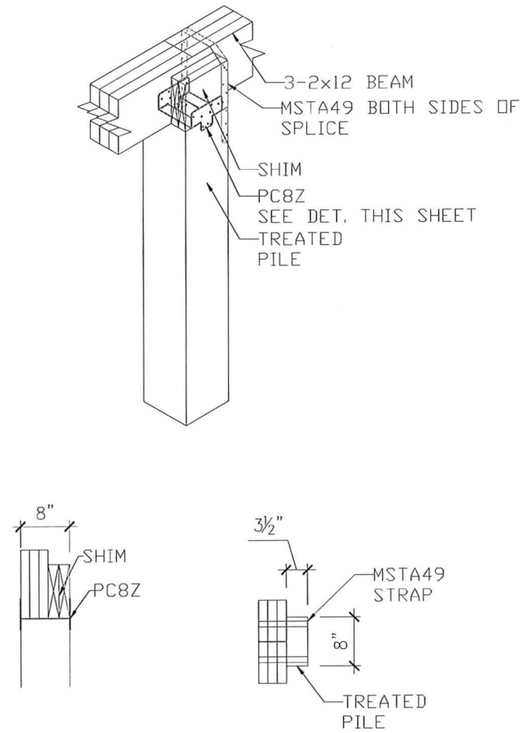
CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

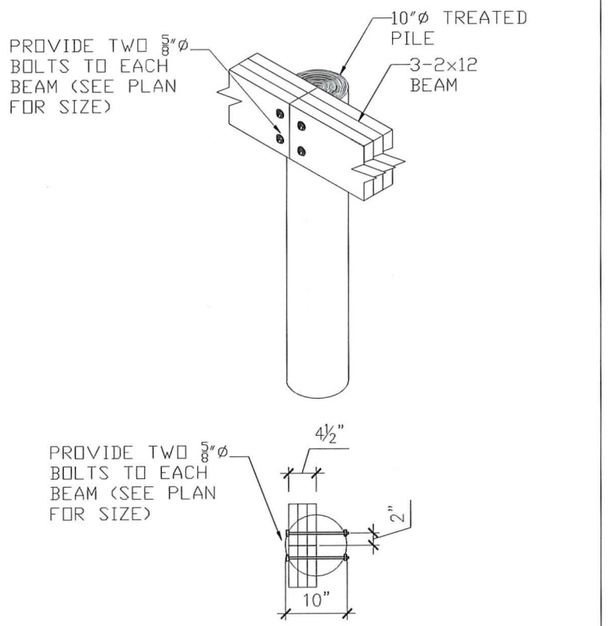
SHEET NO:
F1.3



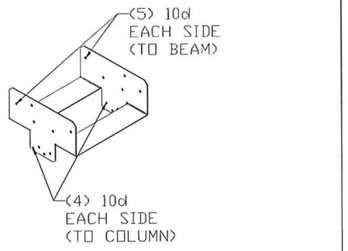
SQUARE PILE–BOLTED STRINGERS | A.1



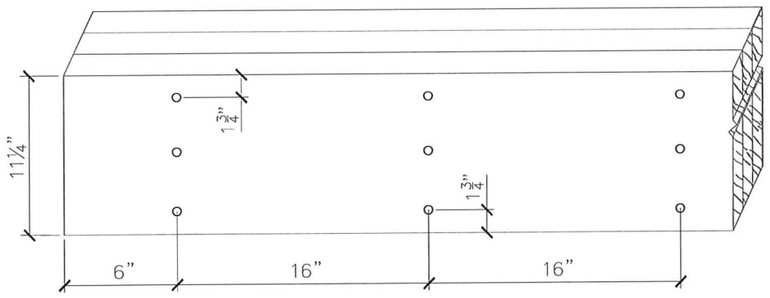
SQUARE PILE–TOP MOUNTED STRINGERS | A.2



10" ROUND PILE | A.3



PC8Z CONNECTOR | B



STRINGER NAILING PATTERN | C

NO.	REVISIONS	DATE	NAME
#	REVISION_TEXT	DATE	INIT
#	REVISION_TEXT	DATE	INIT
#	REVISION_TEXT	DATE	INIT
#	REVISION_TEXT	DATE	INIT
#	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: PILE DETAILS CONNECTIONS

DRAWN BY: ZPN

CK'D BY: RDB

SCALE: NTS

JOB NO:

DATE: AUG-2020

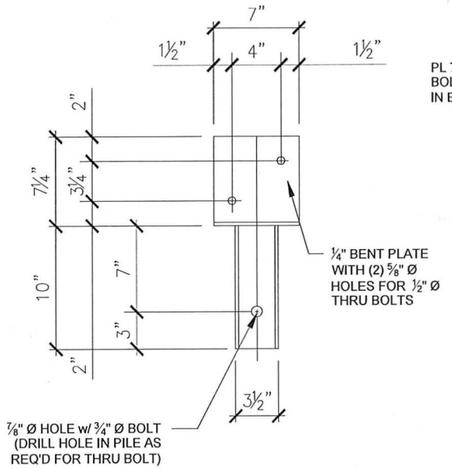
HARRIS COUNTY ENGINEERING DEPARTMENT

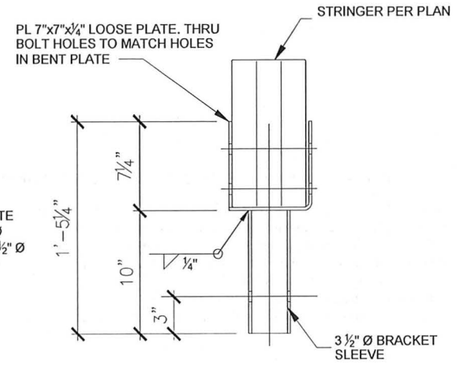
CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
F1.4

\\10.1.10.164\Design\Harris County\Harris County Foundation Details\FINAL – JOINT STANDARD FOUNDATION COH HC.dwg





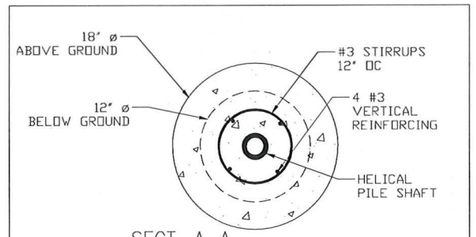
PLAN NOTES:

1) BRACKET TO BE THERMO PLASTIC POWDER COATED OR GALVANIZED BY MANUFACTURER.
2) FIELD DRILL ALL WOOD MEMBERS AS REQU'D FOR THRU BOLT CONNECTION.

REPRESENTATIVE DETIAL

NOTES:

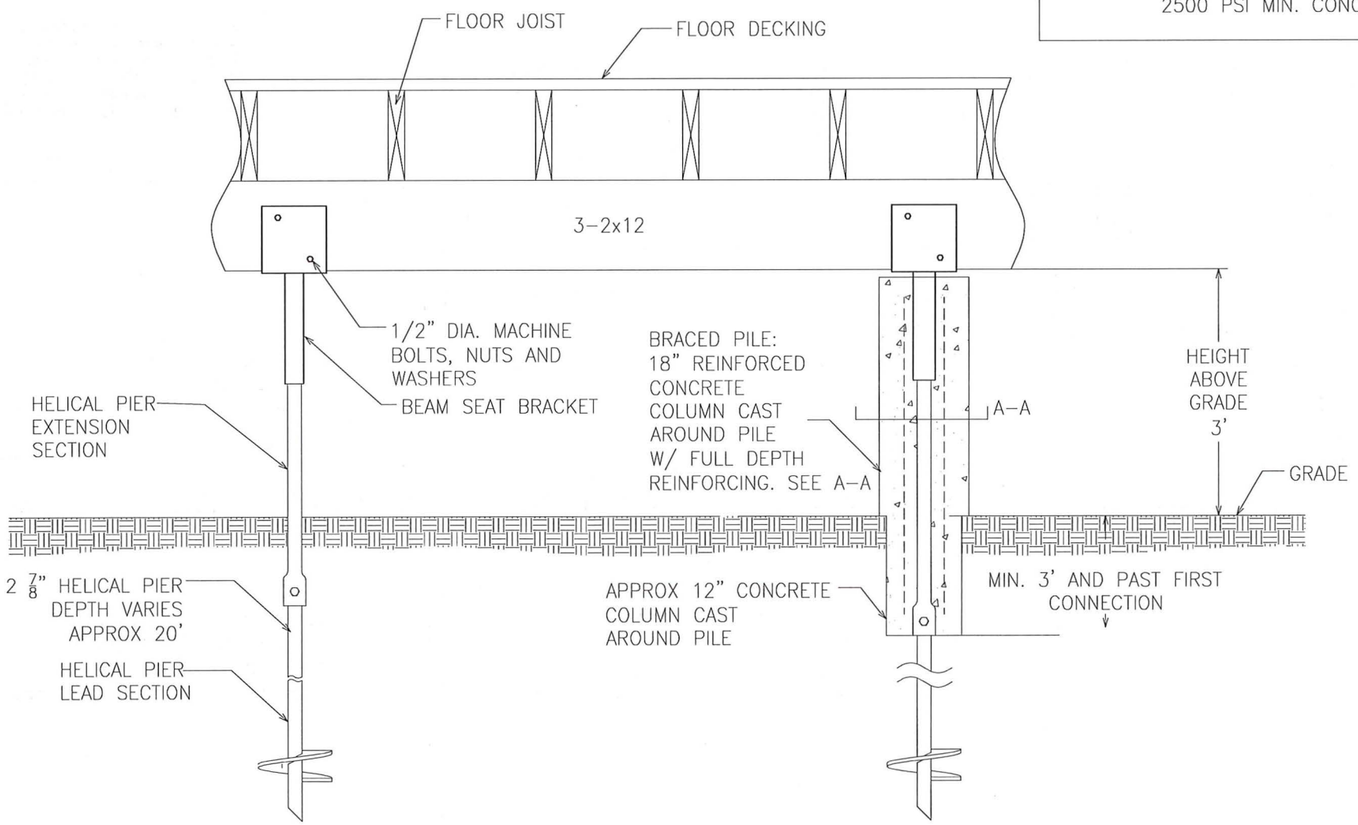
1. Helical piers can be either single or multi-helix. The number and size of helix plates vary depending on pier load and soil conditions.
2. Helical piers are installed (screwed) to a minimum depth and torque as required to achieve required bearing and uplift capacity.
3. Hot-dipped galvanized per ASTM A-153.
4. Material for saddle: ¼" thick hot-rolled steel.
5. Bolt: ½" diameter hex head, 4½" long with nut and lockwasher supplied by others.



SECT. A-A
CONCRETE SLEEVED PILE
2500 PSI MIN. CONCRETE

DISCLAIMER

1. The information and sketches contained in these drawings are given as guidelines only.
2. Capacities of Helical Piles/Anchors may vary depending on, but not limited to, water table elevation and changes to that elevation, changing soil conditions, soil layer thicknesses.
3. Achievable capacities could be higher or lower than ratings due to site-specific conditions. On site load testing should be performed to confirm additional pile/anchor capacities.



NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: HELICAL PILE DETAILS
SLEEVED PILE

DRAWN BY: PN | CK'D BY: BDB | SCALE: NTS | JOB NO: | DATE: AUG-2020

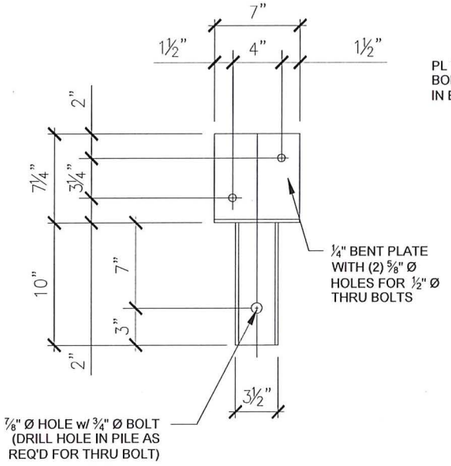
HARRIS COUNTY ENGINEERING DEPARTMENT

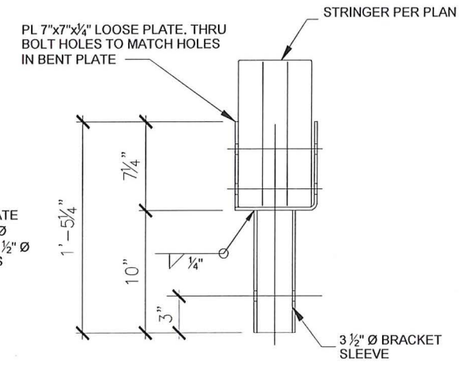
CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
F1.5

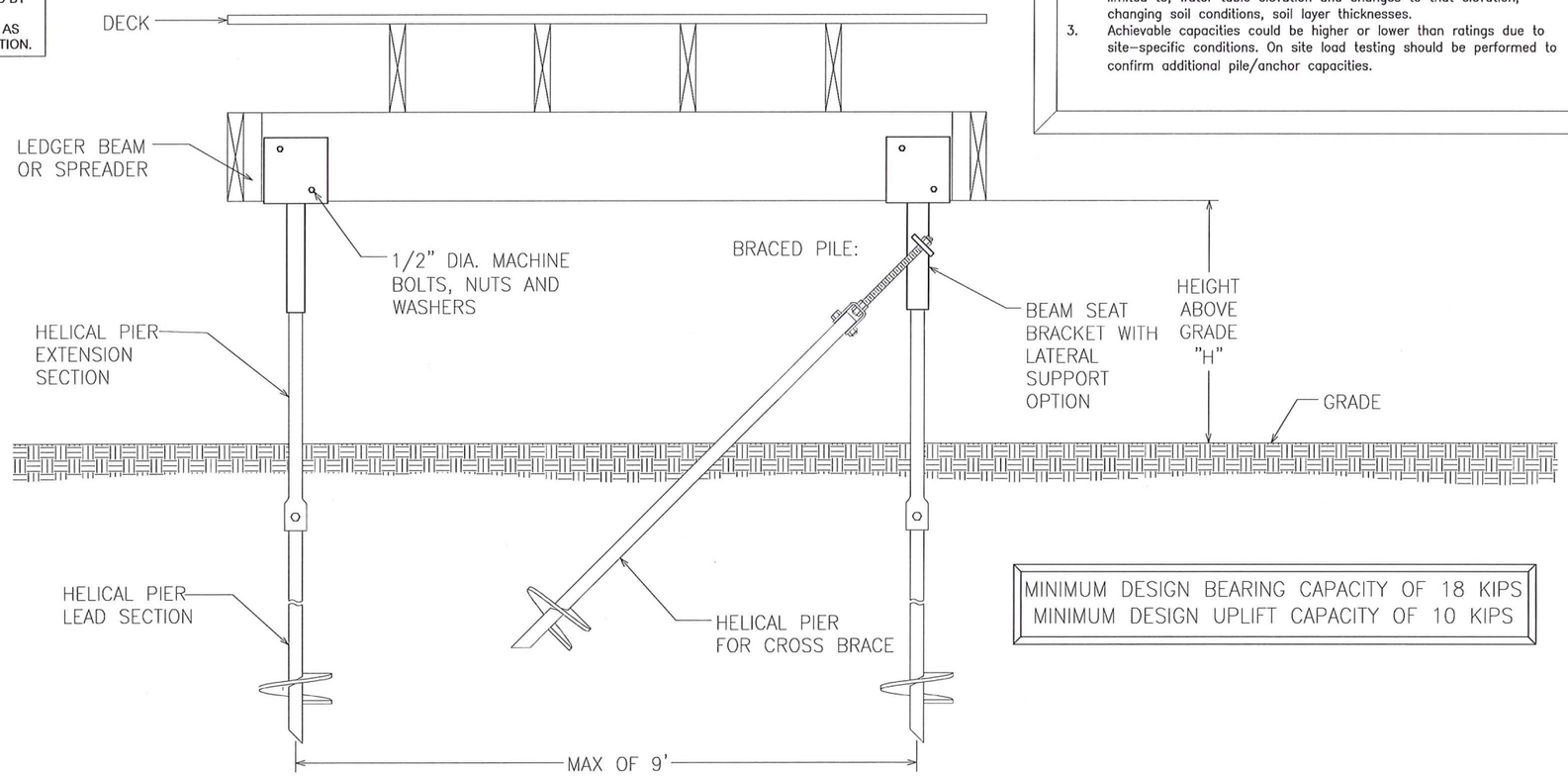
\\10.1.10.164\Design\Harris County\Harris County Foundation Details\FINAL - JOINT STANDARD FOUNDATION COH HC.dwg





PLAN NOTES:

1) BRACKET TO BE THERMO PLASTIC POWDER COATED OR GALVANIZED BY MANUFACTURER.
2) FIELD DRILL ALL WOOD MEMBERS AS REQU'D FOR THRU BOLT CONNECTION.



NOTES:

1. Actual design and construction helical pier support system provided by manufacturer.
2. Helical piers can be either single or multi-helix. The number and size of helix plates vary depending on pier load and soil conditions.
3. Helical piers are installed (screwed) to a minimum depth and torque as required to achieve required bearing and uplift capacity.
4. Hot-dipped galvanized per ASTM A-153.
5. Material for saddle: ¼" thick hot-rolled steel.
6. Bolt: ½" diameter hex head, 4½" long with nut and lockwasher supplied by others.

DISCLAIMER

1. The information and sketches contained in these drawings are given as guidelines only.
2. Capacities of Helical Piles/Anchors may vary depending on, but not limited to, water table elevation and changes to that elevation, changing soil conditions, soil layer thicknesses.
3. Achievable capacities could be higher or lower than ratings due to site-specific conditions. On site load testing should be performed to confirm additional pile/anchor capacities.

MINIMUM DESIGN BEARING CAPACITY OF 18 KIPS
MINIMUM DESIGN UPLIFT CAPACITY OF 10 KIPS

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

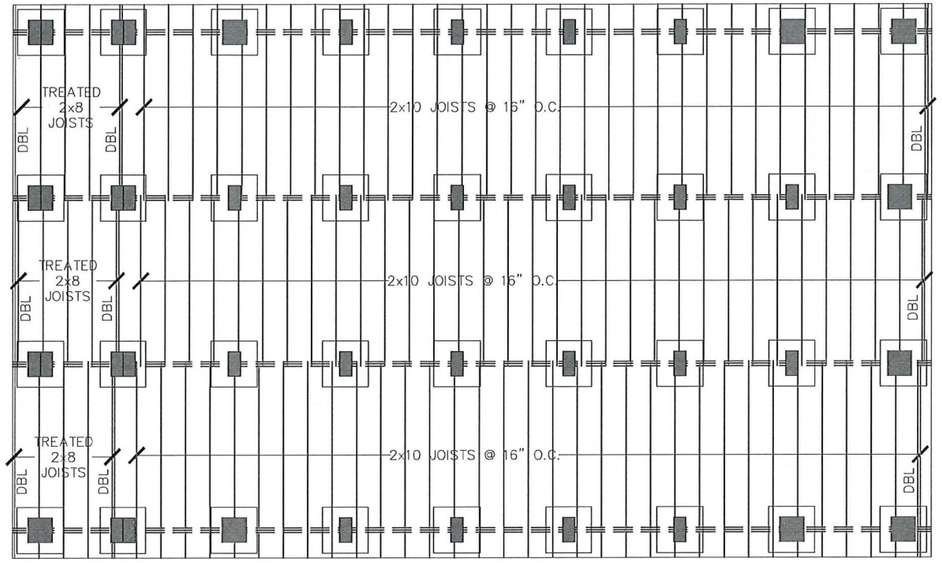
PROJECT TITLE: JOINT FOUNDATION DEAILS
SHEET DESCRIPTION: HELICAL PILE DETAILS BATTERED BRACED PILE
DRAWN BY: ZPN
CK'D BY: RDB
SCALE: NTS
JOB NO:
DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

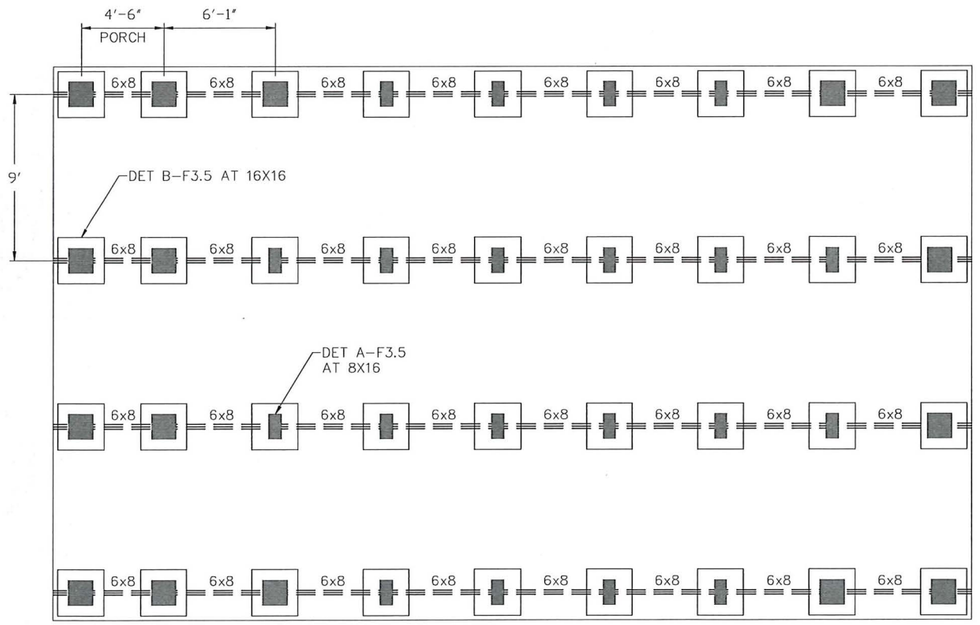
CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No. NUMBER
DATE: / /

SHEET NO: F1.6



REPRESENTATIVE FOOTER LAYOUT PLAN (1 STORY)



REPRESENTATIVE FOOTER PLAN (1 STORY)

NOTES:

1. STRINGERS TO BE 6x8 #2 SP PRESSURE TREATED.
2. FLOOR JOISTS TO BE 2x10 #2 SP AT 16" O.C. U.N.O. DBL JOISTS UNDER ALL WALLS ABOVE.

NO.	REVISIONS	DATE	NAME
#1	REVISION_TEXT	DATE	INIT
#2	REVISION_TEXT	DATE	INIT
#3	REVISION_TEXT	DATE	INIT
#4	REVISION_TEXT	DATE	INIT
#5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: SINGLE STORY CONCRETE FOOTER LAYOUT

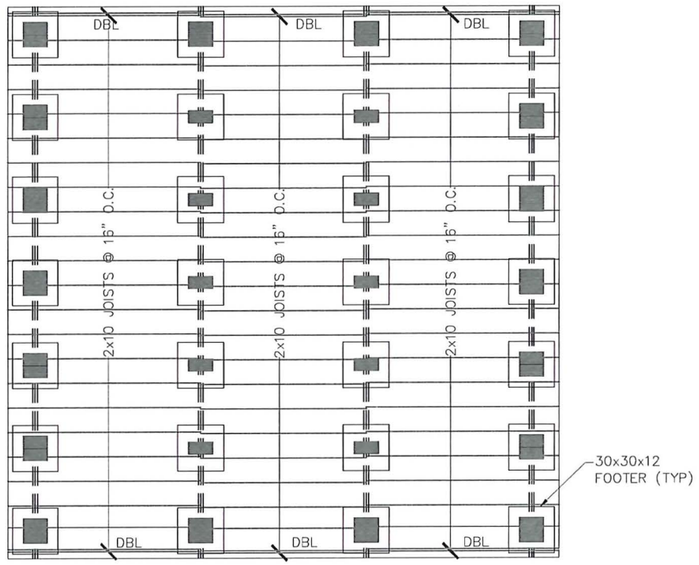
DRAWN BY: ZPN | CK'D BY: RDB | SCALE: NTS | JOB NO: | DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

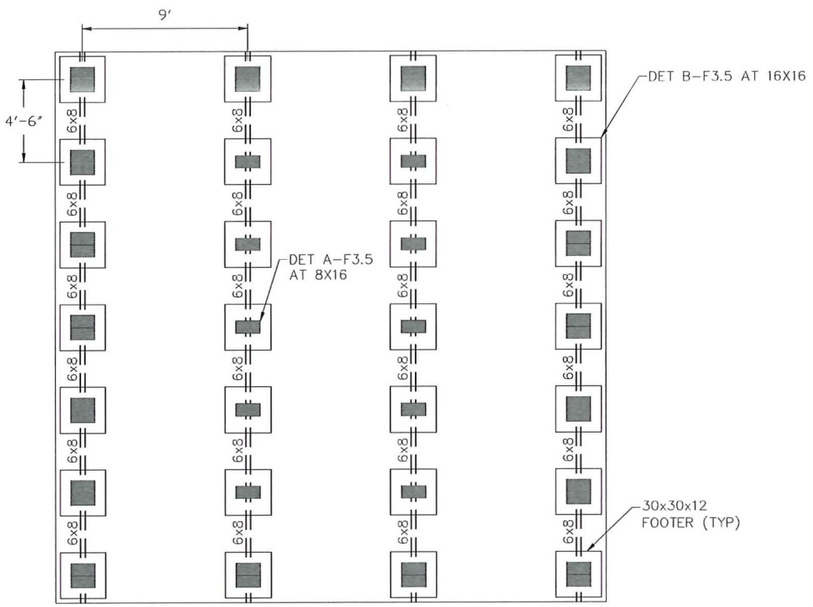
SHEET NO:
F2.1



REPRESENTATIVE FOOTER LAYOUT PLAN (2 STORY)

NOTES:

1. STRINGERS TO BE 6x8 #2 SP PRESSURE TREATED.
2. FLOOR JOISTS TO BE 2x10 #2 SP AT 16" O.C. U.N.O. DBL JOISTS UNDER ALL WALLS ABOVE.



REPRESENTATIVE FOOTER LAYOUT PLAN (2 STORY)

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: TWO STORY CONCRETE FOOTER LAYOUT

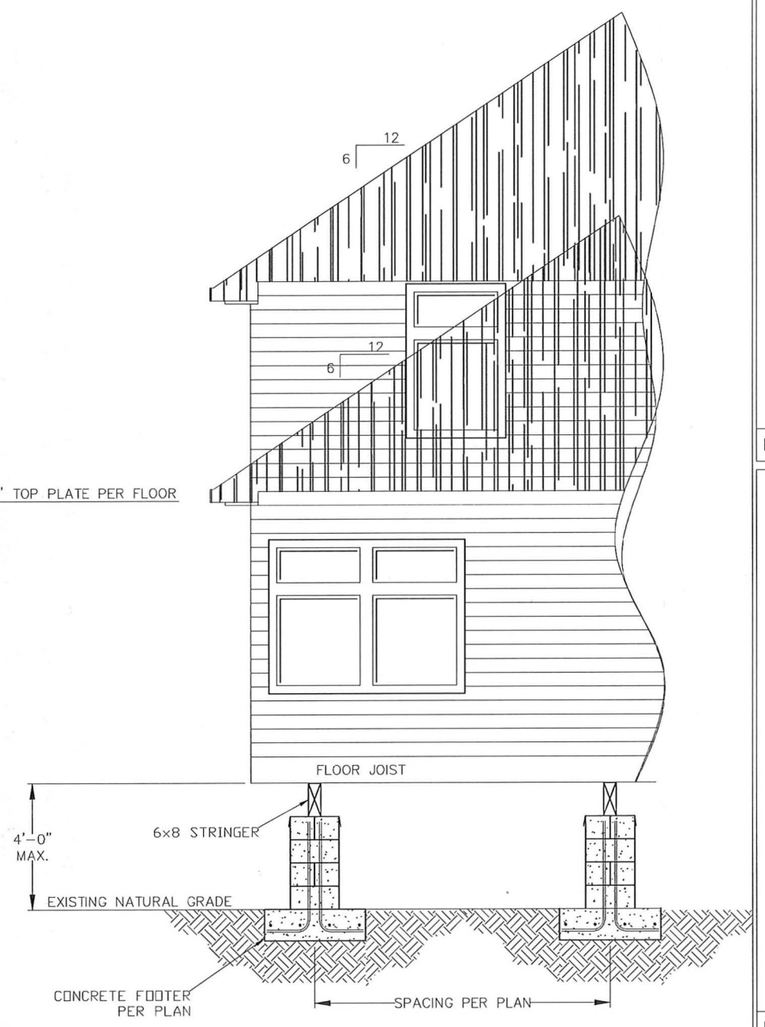
DRAWN BY: ZPN
CK'D BY: RDB
SCALE: NTS
JOB NO:
DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

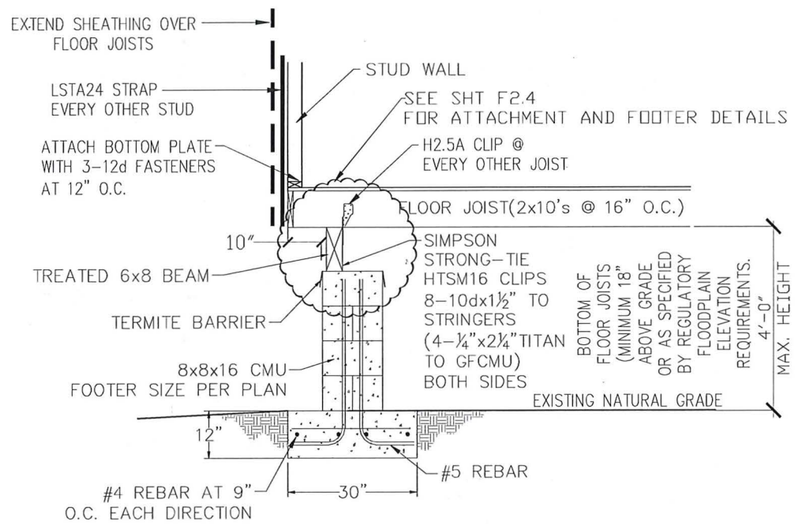
CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

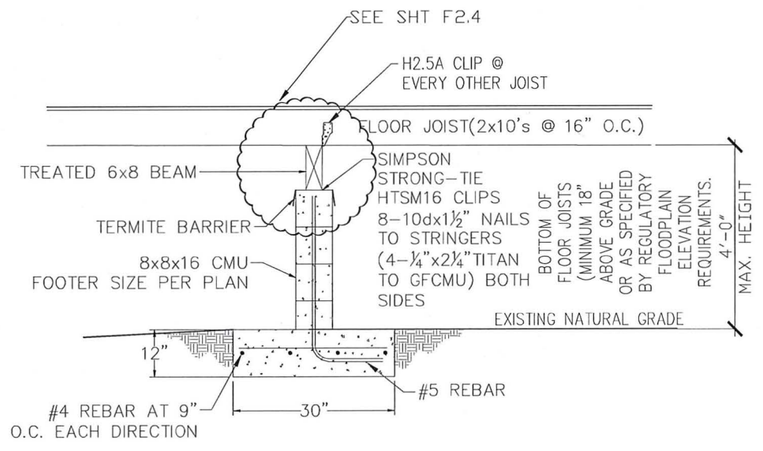
SHEET NO:
F2.2



CONCRETE FOOTER
TYP.



PERIMETER FOOTER | A



INTERIOR FOOTER | B

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

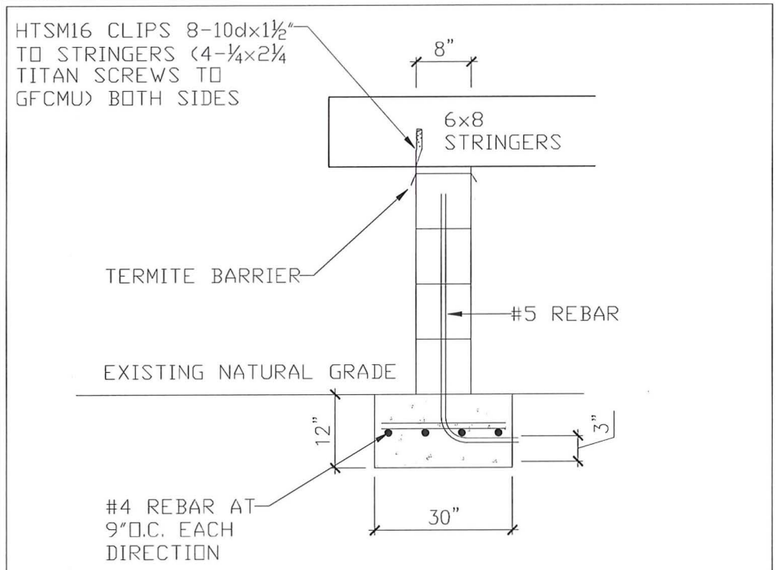
PROJECT TITLE: JOINT FOUNDATION DEAILS
SHEET DESCRIPTION: FOOTER DETAILS
ELEVATION
DRAWN BY: ZPN
CK'D BY: RDB
JOB NO:
DATE: AUG–2020
SCALE: NTS

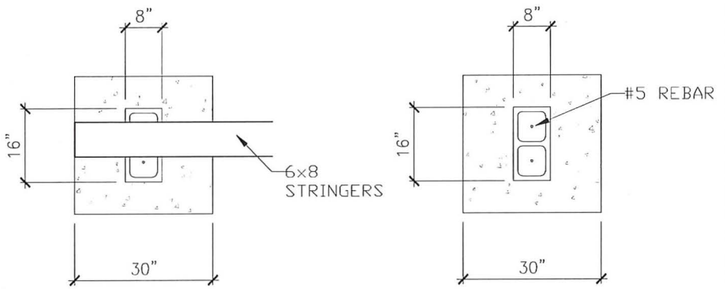
HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

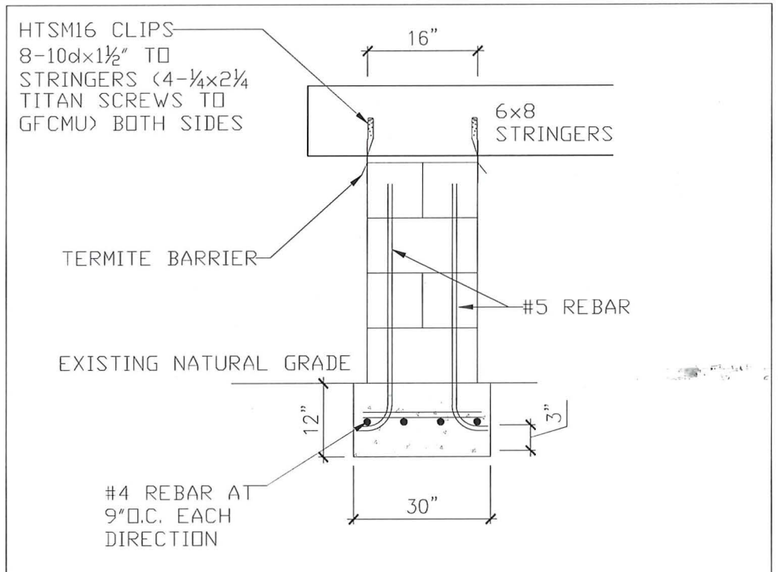
P.E. SERIAL No.
NUMBER
DATE: / /

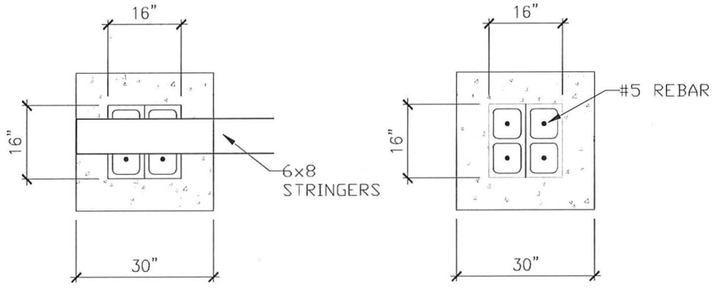
SHEET NO:
F2.3



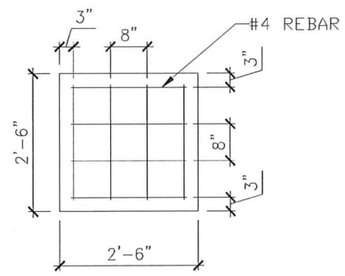


8X16 CMU COLUMN DETAILS	A





16X16 CMU COLUMN DETAILS	B



TYP FOOTER REBAR LAYOUT	B

NO.	REVISIONS	DATE	NAME
1	REVISION_TEXT	DATE	INIT
2	REVISION_TEXT	DATE	INIT
3	REVISION_TEXT	DATE	INIT
4	REVISION_TEXT	DATE	INIT
5	REVISION_TEXT	DATE	INIT

PROJECT TITLE: JOINT FOUNDATION DEAILS

SHEET DESCRIPTION: CONCRETE FOOTER DETAILS

CONNECTION DETAILS

DRAWN BY: ZPN
CK'D BY: RDB
SCALE: NTS
JOB NO:
DATE: AUG-2020

HARRIS COUNTY ENGINEERING DEPARTMENT

CITY OF HOUSTON PUBLIC WORKS

P.E. SERIAL No.
NUMBER
DATE: / /

SHEET NO:
F2.4