



## Board of Adjustment

## Staff Report Variance Case BOA-23644

**Hearing Date:** April 9, 2024

**Prepared by:** Dylan Siers

dsiers@cityoftulsa.org

918-596-7584

### **Owner and Applicant Information**

Applicant: Trent Harris

Property Owner: Sisu Investments

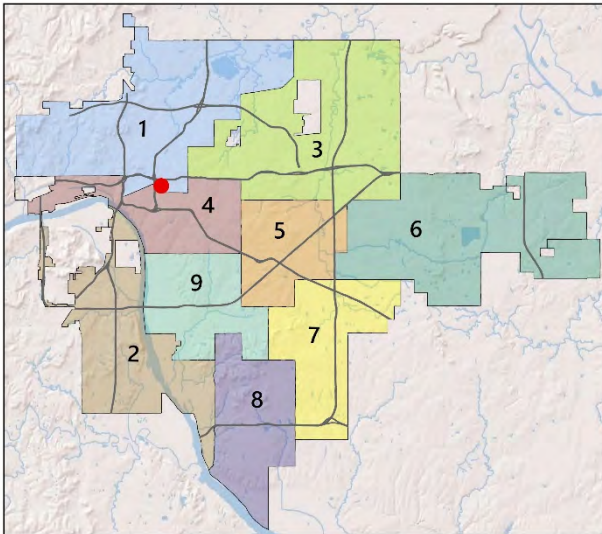
### **Property Location**

1100 E. 4th Street

Tract Size: ±0.31 acres

### **Location within the City of Tulsa**

(shown with City Council districts)



### **Elected Representatives**

City Council: District 1, Vanessa Hall-Harper

County Commission: District 2, Karen Keith

### **Public Notice Required**

Newspaper Notice – min. 10 days in advance

Mailed Notice to 300' radius – min. 10 days in advance

### **Case History:**

**2/27/2024:** First appearance on an agenda. Staff was made aware of a noticing deficiency after the case was heard and re-noticed the item for the current agenda.

**03/26/2024:** Item was continued to 4/9/24 to correct a noticing error.

### **Request Summary**

Variance to eliminate the Street Tree and the Interior Parking Lot Landscaping required for a building addition (Sections 65.040 and 65.050)

### **Zoning**

Zoning District: CH

Zoning Overlays: NIO

### **Comprehensive Plan Considerations**

#### **Land Use**

Land Use Plan: Employment

Small Area Plans: Pearl District

Development Era: Streetcar

#### **Transportation**

Major Street & Highway Plan: N/A

planitulsa Street Type: None

Transit: N/A

Existing Bike/Ped Facilities: None

Planned Bike/Ped Facilities: Bike Lane

#### **Environment**

Flood Area: N/A

Tree Canopy Coverage: 0-10%

Parks & Open Space: N/A

**Staff Analysis**

Variance to eliminate the Street Tree and the Interior Parking Lot Landscaping required for a building addition (Sections 65.040 and 65.050)

**Relevant Case History**

- None

**Statement of Hardship**

The property located at 1100 E. 4<sup>th</sup> St. in Tulsa (corner of 4<sup>th</sup> & Norfolk) is requesting a variance to the landscaping zoning code for this project due to hardship associated with the lots preexisting conditions. This property is currently all concrete. The property owner Phillip Childers (SISU Investments) purchased this property in this condition and did not add any of the concrete to the lot. The building and lot used to serve as an armored security truck company and that is why it is all concrete and has all of the higher security chain link fencing. Also, with the heavy trucks the previous owner had they made the concrete very reinforced and excessively thicker than normal to support the weight of the vehicles. In order to accommodate the landscape zoning code it would require major concrete excavation and removal and this also poses other challenges.

We have met with Planning and discussed several possible options such as concrete removal, planters, etc.. We even looked into requesting a licensing agreement to plant trees within the City of Tulsa right of way. After further consideration, planting in this right of way would impede the traffics ability to see well around the corner when turning and the tree growth would also be going into overhead lines. We then looked into removing concrete on the lot. The North side trees would grow into overhead lines. If moved to the South some, then the property owner would be removing the concrete to the only parking area that he has accessible. We also entertained the option of removing concrete from the driveway on Norfolk, this also would be near powerlines and would decrease his entryway into the only gate accessing the South side of the lot.

The conditions on this lot are unique to just this property due to utility challenges, the building layout, and preexisting construction methods of making the entire lot an impervious surface. The variance, if granted, would not cause detriment to the public or the surrounding neighbors or businesses. This lot has appeared the same way for many years and by being granted this variance it would not harm the character of the neighborhood. This will actually make the lot look better due to improvements that the property owner intends to make both to the structure and by adopting the nuisance code by removing the razor wire on the top of the security fencing.

SISU Investments wants to make this lot and property appear better to the public and also be of a better use to them on their needs. This hardship was acquired when the property was purchased in this condition and the property owner is not trying to bypass any zoning codes. We are respectfully asking permission from this Board and the public to be allowed to improve the use, condition, and looks of this lot and this structure.

**Comprehensive Plan Considerations****Land Use Plan**

The subject property is designated as Employment.

Employment is intended to accommodate offices, warehousing and storage, manufacturing and assembly, and industrial processes. The Industrial Site Suitability map corresponds to the Employment land use designation and indicates where uses that are potentially incompatible with sensitive land uses are best suited to locate. This directs industrial uses to particular areas of the city while discouraging industrial in close proximity to Neighborhood areas.

Surrounding Properties:

<u>Location</u>	<u>Existing Zoning/Overlay</u>	<u>Existing Land Use Designation</u>	<u>Existing Use</u>
North	CH/IM	Employment	Industrial
East	CH	Employment	Multiple Uses
South	IL	Employment	Vacancy
West	CH	Employment	Tool Shop

**Small Area Plans**

The subject properties are located within the Pearl District Small area plan

**Development Era**

The subject property is located in an area developed during the Streetcar era.

The subject property is in an area developed during the Streetcar Era (1910s-30s), prior to the proliferation of automobiles, when streetcars facilitated growth beyond downtown. Land uses range from fully integrated to somewhat separated, on a half-mile grid, with a mix of housing options. Priorities in these areas include walkability, bikeability, access to public transit, historic preservation, housing type variety, mixed-use development, transit-oriented development, commercial districts, and well-designed streetscapes.

**Transportation**

Major Street & Highway Plan: N/A

Comprehensive Plan Street Designation: None

Transit: N/A

Existing Bike/Ped Facilities: N/A

Planned Bike/Ped Facilities: Bike Lane

Arterial Traffic per Lane: N/A

**Environmental Considerations**

Flood Area: The subject property not within a flood area.

Tree Canopy Coverage: Tree canopy in the area is 0%. The area would benefit from additional trees, which also capture and treat runoff before it enters the river.

Parks & Open Space: N/A

**Sample Motion**

I move to approve or deny a Variance to eliminate the Street Tree and the Interior Parking Lot Landscaping required for a building addition (Sections 65.040 and 65.050)

- per the conceptual plan(s) shown on page(s) \_\_\_\_\_ of the agenda packet.
- subject to the following conditions (including time limitation, if any): \_\_\_\_\_.

The board finds the hardship to be \_\_\_\_\_.

In granting the Variance, the Board finds that the following facts, favorable to the property owner, have been established:

- a. That the physical surroundings, shape, or topographical conditions of the subject property would result in unnecessary hardships or practical difficulties for the property owner, as distinguished from a mere inconvenience, if the strict letter of the regulations were carried out;
- b. That literal enforcement of the subject zoning code provision is not necessary to achieve the provision's intended purpose;
- c. That the conditions leading to the need of the requested variance are unique to the subject property and not applicable, generally, to other property within the same zoning classification;
- d. That the alleged practical difficulty or unnecessary hardship was not created or self-imposed by the current property owner;
- e. That the variance to be granted is the minimum variance that will afford relief;
- f. That the variance to be granted will not alter the essential character of the neighborhood in which the subject property is located, nor substantially or permanently impair use or development of adjacent property; and
- g. That the variance to be granted will not cause substantial detriment to the public good or impair the purposes, spirit, and intent of this zoning code or the comprehensive plan.

**Property Description**

S30 LT 1 LESS E45 THEREOF & ALL LT 3 LESS E45 THEREOF & LESS S16 LT 3 BLK 16, HODGE ADDN, City of Tulsa, Tulsa County, State of Oklahoma

**Photos:**



**Subject Property**

**Exhibits**

Sections 65.040 and 65.050 of the zoning code.

Case map

Aerial (small scale)

Aerial (large scale)

Tulsa Comprehensive Plan Land Use Map

Applicant's Exhibits

**65.020-C** The design of landscape areas to promote low-impact development practices (e.g., bioretention basins, rain gardens, filter strips, and grassed swales) is strongly encouraged and may be used to satisfy the landscaping regulations of this zoning code, subject to compliance with all applicable standards of the *Stormwater Management Criteria Manual*.

**65.020-D** The alternative compliance provisions of [§65.100-D](#) are intended to accommodate creativity in landscape and screening design and address site-specific barriers that prevent strict compliance with the regulations of this chapter.

### Section 65.030 Applicability

The landscaping and screening regulations of this chapter apply as set forth in the individual sections of this chapter. The following are expressly exempt from the landscaping and screening regulations of this chapter:

**65.030-A** Agricultural uses;

**65.030-B** Public parks and open spaces;

**65.030-C** Household living uses consisting of a single household on one lot or 2 households on one lot (existing or proposed); and

**65.030-D** Reconstruction of any building that is damaged or destroyed by tornadoes, straight-line winds, ice storms, accidental fire, floods, hail, lightning, or other forces beyond the reasonable control of the property owner.

### Section 65.040 Street Trees

#### 65.040-A Purpose

Street trees help maintain and enhance the appearance of the city, contribute to pedestrian safety and comfort and offer environmental benefits by allowing the infiltration of stormwater, reducing urban heating and improving air quality.

#### 65.040-B Applicability

The street tree planting requirements of this section apply to all the following, except as otherwise expressly stated:

1. Construction of any principal building or non-accessory parking;
2. Any addition to or enlargement of an existing principal building when the addition or enlargement exceeds 20% of the building's existing floor area; and
3. Any increase in impervious coverage on the subject lot that exceeds 20% of the lot's existing impervious coverage.

#### 65.040-C Requirements

##### 1. Number

At least one large tree is required per 30 feet of street frontage. If large trees are not appropriate due to the presence of overhead lines, other obstructions or site visibility considerations, as determined by the land use administrator, at least one small tree is required per 25 feet of street frontage. Street tree



requirements may be satisfied by the installation of new trees or by the preservation of existing trees (see [§65.080-B4](#) to determine available incentives for preservation of existing trees). The tree list prepared by the planning director (see [§65.080-A2](#)) identifies and classifies street trees by size.

## 2. Location

a. Required street trees must be located on the subject property within 20 feet of the planned street right-of-way unless the land use administrator determines that the presence of buildings or obstructions or other factors prevent viable tree planting within this area, in which case required street trees must be installed in the first 7 feet of the planned street right-of-way, as measured from the outer edge of the right-of-way. Street tree planting in the right-of-way must comply with the regulations of [Title 35, Chapter 6](#) of the Tulsa Revised Ordinances.

b. The land use administrator is expressly authorized to approve an alternative compliance landscape plan for installation of street trees in alternative locations when circumstances prevent tree planting within the areas described in [§65.040-C2.a](#) or when compliance with [§65.040-C2.a](#) would result in a poor growing environment for the tree or damage to public or private improvements.

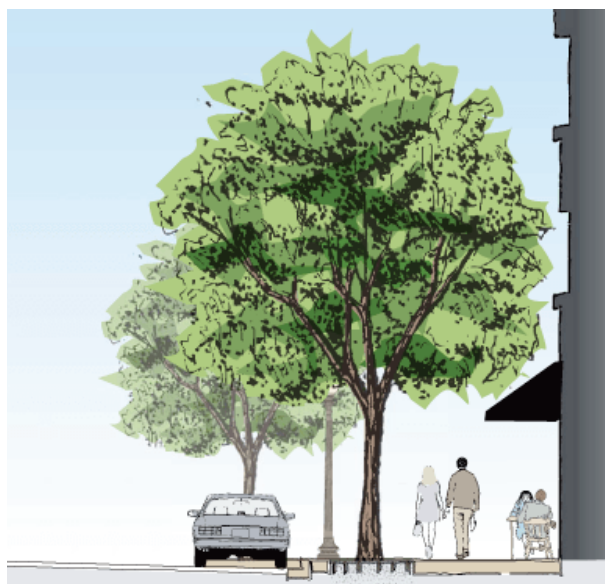
## 3. Spacing

Street trees are not required to be evenly spaced, but the distance between street trees may not exceed 75 feet.

## 4. Materials, Installation and Maintenance

See [Section 65.080](#) and [Section 65.090](#).

*Figure 65-1: Street Tree*



## **Section 65.050 Interior Parking Lot Landscaping**

### **65.050-A Purpose**

The interior parking lot landscaping regulations of this section are intended to help mitigate the visual and stormwater runoff impacts of parking lots and provide shade for parked vehicles and pedestrians.

### **65.050-B Applicability**

Unless otherwise expressly stated, the interior parking lot landscaping regulations of this section apply to all the following:

1. The construction of any new principal building or addition to a principal building that increases the floor area of principal buildings on the subject lot by more than 20%;
2. The construction or installation of any new parking lot containing 10 or more parking spaces; and
3. The expansion of any existing parking lot that increases the number of parking spaces or amount of paved area by more than 33%.

### **65.050-C Exception**

Parking areas used solely for the display of motor vehicles for sale, lease or rental are exempt from the interior parking lot landscaping requirements of this section.

### **65.050-D Requirements**

#### **1. Landscape Area**

- a. At least 35 square feet of interior parking lot landscape area must be provided for each parking space. If compliance with this regulation would result in the loss of required parking spaces, the amount of parking required is automatically reduced by the amount needed to accommodate the required interior parking lot landscape area.
- b. When at least 50% of interior parking lot landscape area consists of depressed bioretention areas used for stormwater management, the minimum interior parking lot landscape area requirement is reduced from 35 square feet per parking space to 28 feet per parking space. To receive this bioretention credit, the stormwater harvesting area must be at least 6 inches and not more than 18 inches in depth and planted with vegetation that can withstand periodic inundation.

#### **2. Trees and Plant Material**

Required interior parking lot landscape areas must include at least one large tree per 10 parking spaces. Small trees may be substituted for large trees if the land use administrator determines that the presence of overhead lines or other obstructions make the installation of large trees unsafe or impractical or would result in poor growing conditions. Minimum tree planting requirements may be satisfied by the installation of new trees or by the preservation of existing trees (see [§65.080-B4](#) to determine available incentives for preservation of existing trees).



### 3. Location and Design

a. Interior parking lot landscaping must be reasonably distributed throughout the parking lot and provided in landscape islands or medians that comply with all the following requirements:

- (1) They must be bordered by a paved surface on at least 2 sides;
- (2) They must be at least 7 feet wide, as measured from the back of the curb;
- (3) They must include at least one tree per island and be covered with ground cover plants or mulch;
- (4) They must be protected by curbs or other barriers, which may include breaks or inlets to allow stormwater runoff to enter the landscape island; and
- (5) They must be located so that every parking space is within 100 feet of a tree.

b. Parking rows that end abutting a paved driving surface must have a landscape terminal island (end cap) at that end of the parking row. All other parking lot landscape islands must be located to comply with all applicable regulations of this section. The regulations of [§65.050-D3.a](#) apply to the landscape terminal island.

c. The land use administrator is expressly authorized to approve landscape plans that do not provide terminal islands at the end of each parking row or that otherwise provide for reduced dispersal of interior parking lot landscape areas when proposed landscape planting areas are combined to form functional bioretention areas or to preserve existing trees and vegetation.

### 4. Vehicle Overhangs

A portion of a motor vehicle parking space may be landscaped instead of paved to meet interior parking lot landscaping requirements. The landscaped area may be up to 2.5 feet of the front of the space, as measured from a line parallel to the direction of the bumper of the vehicle using the space. Groundcover plants or mulch must be provided in the allowed overhang area.

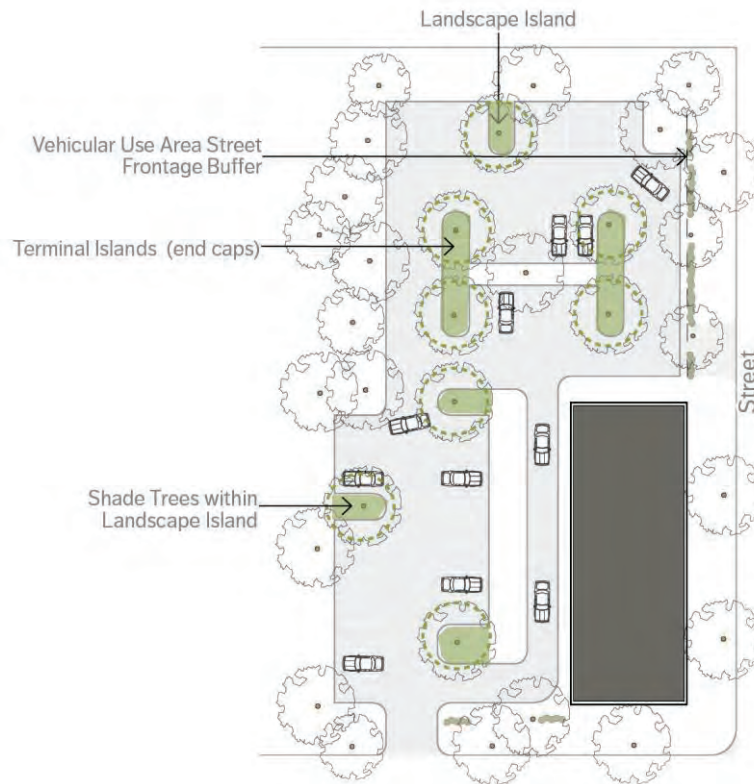
### 5. Relationship to Vehicular Use Area Buffer Regulations

Landscape areas and plant material provided to satisfy the vehicular use area buffer regulations of [Section 65.060](#) may not be counted toward satisfying the interior parking lot landscaping regulations of this section ([Section 65.050](#)).

### 6. Materials, Installation and Maintenance

See [Section 65.080](#) and [Section 65.090](#).

*Figure 65-2: Interior Parking Lot Landscaping*



## Section 65.060 Vehicular Use Area Buffers

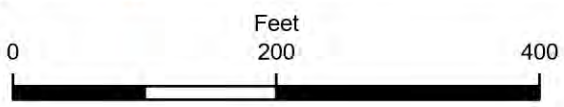
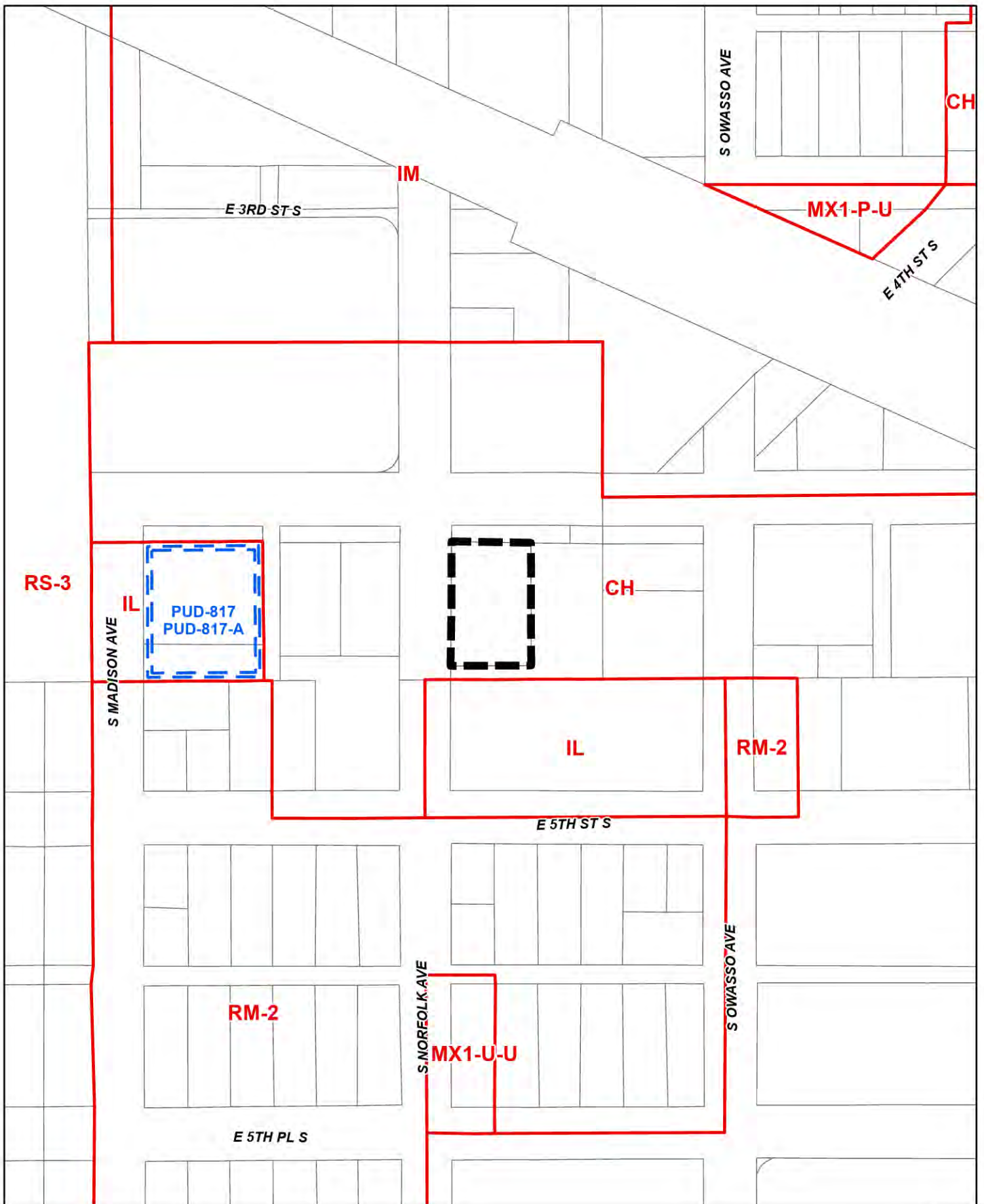
### 65.060-A Purpose

The vehicular use area buffer regulations of this section are intended to help mitigate the visual and operational impacts of parking lots and other vehicular use areas when such areas are adjacent to streets, highways, residential zoning districts, or agricultural-residential zoning districts.

### 65.060-B Applicability

A “vehicular use area” is an area on a lot that is not contained within a garage or similar enclosed or partially enclosed structure that is designed and intended for use by motor vehicles, including parking lots, vehicle storage and display areas, loading areas; and driveways and drive-through lanes. Unless otherwise expressly stated, the vehicular use area buffer regulations of this section apply to all the following:

1. The construction or installation of any new vehicular use area with a contiguous paved area of 3,500 square feet or more; and
2. The expansion of any existing vehicular use area that results in the addition of 3,500 square feet of paved area, in which case the vehicular use area perimeter landscaping requirements of this section apply only to the expanded area.



**BOA-23643**







Subject  
Tract

Feet  
200

400

**BOA-23643**

Note: Graphic overlays may not precisely  
align with physical features on the ground.

Aerial Photo Date: 2021



5.12



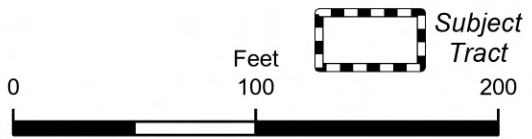


E 4TH ST S

SNORFOLK AVE

SOWASSO AVE

E 5TH ST S



**BOA-23643**

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: 2021

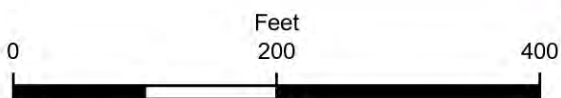


5.13





**BOA-23643**



**5.14**





DEVELOPMENT SERVICES  
175 E 2ND ST., STE 405  
TULSA, OK 74103  
918-596-9456

# CITY OF TULSA

## CORRECTIONS SUMMARY

### Note (3)



**Subject:** Note  
**Page Label:** [1] 9411PVCV-PVCV01  
**Author:** danabox  
**Date:** 11/28/2023 10:26:15 AM  
**Color:** ■

Sec.70.080-C: Applications for Zoning Clearance must be accompanied by a legal description of the lot and plans, drawn to scale.

Review comment: Submit a site plan with the following information:

- Actual shape and dimensions of the lot;
- Location and dimensions of all easements;
- Lot lines and names of abutting streets;
- The location, size and height of any existing buildings or structures to be erected or altered, including distances to lot lines;
- The location, dimensions and height of proposed buildings or structures to be erected or altered;
- The intended use of existing and proposed buildings, structures or portion of the lot;
- Location and dimensions of parking areas. This includes the parking spaces, the maneuvering areas necessary to enter and exit the spaces and the drives providing access to the parking spaces and maneuvering areas from a public or private street or other parking areas.

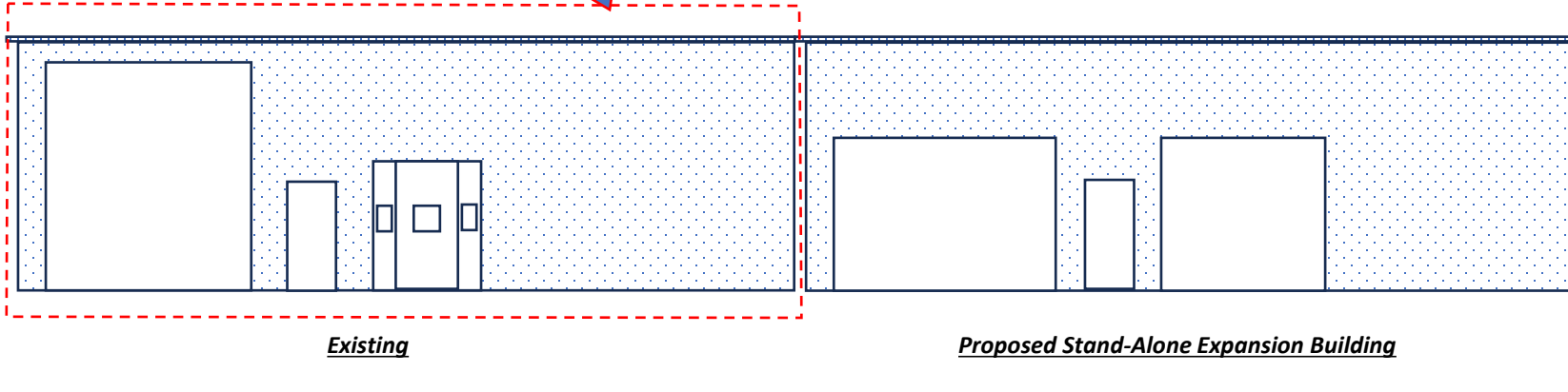


**Subject:** Note  
**Page Label:** [1] 9411PVCV-PVCV01  
**Author:** danabox  
**Date:** 11/28/2023 10:26:11 AM  
**Color:** ■

#### Section 65.030 Applicability

The landscaping and screening regulations of this chapter apply as set forth in the individual sections of this chapter.

Review Comment: Provide a Landscape Plan according to the regulations stated in Chapter 65 of the Tulsa Zoning Code.



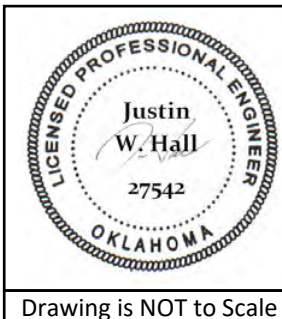
**Figure 1: Schematic Showing Subject Expansion/Retrofit**

Hall Engineering has determined that the foundation system, as described herein, satisfies applicable “Structural Design Considerations” as set forth by 2021 International Business Code (2021 IBC) and is suitable to serve its intended purpose.

## **General Notes**

1. The retrofit, concrete pile foundation system described herein is specifically intended to support the client-provided, pre-engineered, “stand alone” steel metal building design plan.
2. It is the responsibility of the land-owner or delegated contractor to acquire all necessary city permits prior to the start of construction.
2. Coordinate with utility master as required to mark all active utilities.
3. For property limits and easements, if available, refer to current land survey accomplished by registered Professional Land Surveyor.
4. Remove all trees, and undergrowth that may impede the construction and/or damage the foundation after construction.
5. Design considerations and select views, as referred-to throughout were made in consideration of client-provided Engineered Steel Building Design Plan further described as Job 22-163WB as developed by Whitney Steel Building Systems, and as dated 1/05/23.
6. All phases of this construction plan are to be accomplished using standard construction practices, in accordance with state and local building codes where not otherwise specified.

THE UNDERSIGNED PROFESSIONAL ENGINEER IS NOT THE ENGINEER OF THE RECORD FOR THE OVERALL PROJECT. THIS CERTIFICATION COVERS FOUNDATION DESIGN ONLY. PRIMARY STRUCTURE METAL FRAMING. SECONDARY STRUCTURE, PANELS, FLANGE BRACING, CLIPS, STRUTS, AND PARTS SUCH AS DOOR, WINDOWS, AND OTHER AS REQUIRED FOR ERECTION/CONSTRUCTION ARE TO BE PROVIDED BY OTHER.



Drawing is NOT to Scale

## **HALL ENGINEERING GROUP, LTD**

Oklahoma – Arkansas – Missouri - Texas

www.hallengineeringok.com Phone: 918-720-3393

**Project/Client:** “Childers” / LCS Construction

**Address:** 1100 E. 4<sup>th</sup> St., Tulsa, OK

**Issued:** 08/09/23

**Drawn By:** M. Henry



**Job #:**

23-5317 IR

**Pg:** 1 of 4

**5.16**

## NOTES FOR REACTIONS

Building reactions are based on the following building data:

Width (ft)	=	60.0
Length (ft)	=	57.0
Eave Height (ft)	=	14.0/ 16.0
Roof Slope (rise/12)	=	1.0/ 1.4
Dead Load (psf)	=	2.0
Collateral Load (psf)	=	2.0
Live Load (psf)	=	20.0
Snow Load (psf)	=	7.0
Wind Speed (mph)	=	115.0
Wind Code	=	IBC 15
Exposure	=	C
Closed/Open	=	C
Importance Wind	=	1.00
Importance Seismic	=	1.00
Seismic Zone	=	B
Seismic Coeff. (Fa/Sa)	=	0.21
Temperature Change	=	40

## ID Description

1	Dead+Collateral+Live
2	0.50Dead+0.6Wind_Left1
3	0.60Dead+0.6Wind_Right1
4	0.60Dead+0.6Wind_Long1
5	0.60Dead+0.6Wind_Long2
6	0.60Dead+0.6Wind_Pressure+0.6Wind_Long1
7	Dead+Collateral+0.75Live+0.45Wind_Right12+0.45Wind_Suction
8	0.60Dead+0.6Wind_Left1+0.6Wind_Suction
9	0.60Dead+0.6Wind_Pressure+0.6Wind_Long2
10	0.60Dead+0.6Wind_Right1+0.6Wind_Suction

## BUILDING BRACING REACTIONS

Wall	Col	Wind	Seismic	Panel Shear	Note
Loc	Line	Horz	Vert	Wind	Seis
L-EW	1				(h)
F-SW	D	3.4	4.7	3.8	0.5
R-LW	A	C.B	1.7	1.4	0.2
B-SW	A	3.2	4.3	2.6	0.5

(h) Rigid frame at endwall

## ANCHOR BOLT SUMMARY

Qty	Locate	Dia (in)	Type	Total Len (in)	Bend Len (in)	Prot (in)
Q 12	Jamb	1/2"	A307			1.50
Q 16	Endwall	5/8"	A307			1.50
Q 24	Frame	3/4"	A307			2.50

## GENERAL NOTES

- BUILDING MANUFACTURER ASSUMES NO RESPONSIBILITY OR LIABILITY FOR FOUNDATION DESIGN OR CONSTRUCTION.
- THE FOUNDATION DESIGN SHOULD BE DONE WITH DUE REGARD TO ADEQUATE PROVISIONS FOR THE DESIGN LOADS AND SOIL CONDITIONS AT THE ACTUAL JOB SITE.
- BOTTOMS OF ALL BASE PLATES ARE AT THE SAME ELEVATION UNLESS NOTED.

## RIGID FRAME: BASIC COLUMN REACTIONS (k)

Frame	Column	Line	Dead	Collateral	Live	Snow	Wind_Left1	Wind_Right1	Wind_Left2	Wind_Right2	Wind_Left3	Wind_Right3	Wind_Left4	Wind_Right4	Wind_Left5	Wind_Right5	Wind_Left6	Wind_Right6	Wind_Left7	Wind_Right7	Wind_Left8	Wind_Right8	Wind_Left9	Wind_Right9	Wind_Left10	Wind_Right10	Wind_Left11	Wind_Right11	Wind_Left12	Wind_Right12	Wind_Left13	Wind_Right13	Wind_Left14	Wind_Right14	Wind_Left15	Wind_Right15	Wind_Left16	Wind_Right16	Wind_Left17	Wind_Right17	Wind_Left18	Wind_Right18	Wind_Left19	Wind_Right19	Wind_Left20	Wind_Right20	Wind_Left21	Wind_Right21	Wind_Left22	Wind_Right22	Wind_Left23	Wind_Right23	Wind_Left24	Wind_Right24	Wind_Left25	Wind_Right25	Wind_Left26	Wind_Right26	Wind_Left27	Wind_Right27	Wind_Left28	Wind_Right28	Wind_Left29	Wind_Right29	Wind_Left30	Wind_Right30	Wind_Left31	Wind_Right31	Wind_Left32	Wind_Right32	Wind_Left33	Wind_Right33	Wind_Left34	Wind_Right34	Wind_Left35	Wind_Right35	Wind_Left36	Wind_Right36	Wind_Left37	Wind_Right37	Wind_Left38	Wind_Right38	Wind_Left39	Wind_Right39	Wind_Left40	Wind_Right40	Wind_Left41	Wind_Right41	Wind_Left42	Wind_Right42	Wind_Left43	Wind_Right43	Wind_Left44	Wind_Right44	Wind_Left45	Wind_Right45	Wind_Left46	Wind_Right46	Wind_Left47	Wind_Right47	Wind_Left48	Wind_Right48	Wind_Left49	Wind_Right49	Wind_Left50	Wind_Right50	Wind_Left51	Wind_Right51	Wind_Left52	Wind_Right52	Wind_Left53	Wind_Right53	Wind_Left54	Wind_Right54	Wind_Left55	Wind_Right55	Wind_Left56	Wind_Right56	Wind_Left57	Wind_Right57	Wind_Left58	Wind_Right58	Wind_Left59	Wind_Right59	Wind_Left60	Wind_Right60	Wind_Left61	Wind_Right61	Wind_Left62	Wind_Right62	Wind_Left63	Wind_Right63	Wind_Left64	Wind_Right64	Wind_Left65	Wind_Right65	Wind_Left66	Wind_Right66	Wind_Left67	Wind_Right67	Wind_Left68	Wind_Right68	Wind_Left69	Wind_Right69	Wind_Left70	Wind_Right70	Wind_Left71	Wind_Right71	Wind_Left72	Wind_Right72	Wind_Left73	Wind_Right73	Wind_Left74	Wind_Right74	Wind_Left75	Wind_Right75	Wind_Left76	Wind_Right76	Wind_Left77	Wind_Right77	Wind_Left78	Wind_Right78	Wind_Left79	Wind_Right79	Wind_Left80	Wind_Right80	Wind_Left81	Wind_Right81	Wind_Left82	Wind_Right82	Wind_Left83	Wind_Right83	Wind_Left84	Wind_Right84	Wind_Left85	Wind_Right85	Wind_Left86	Wind_Right86	Wind_Left87	Wind_Right87	Wind_Left88	Wind_Right88	Wind_Left89	Wind_Right89	Wind_Left90	Wind_Right90	Wind_Left91	Wind_Right91	Wind_Left92	Wind_Right92	Wind_Left93	Wind_Right93	Wind_Left94	Wind_Right94	Wind_Left95	Wind_Right95	Wind_Left96	Wind_Right96	Wind_Left97	Wind_Right97	Wind_Left98	Wind_Right98	Wind_Left99	Wind_Right99	Wind_Left100	Wind_Right100	Wind_Left101	Wind_Right101	Wind_Left102	Wind_Right102	Wind_Left103	Wind_Right103	Wind_Left104	Wind_Right104	Wind_Left105	Wind_Right105	Wind_Left106	Wind_Right106	Wind_Left107	Wind_Right107	Wind_Left108	Wind_Right108	Wind_Left109	Wind_Right109	Wind_Left110	Wind_Right110	Wind_Left111	Wind_Right111	Wind_Left112	Wind_Right112	Wind_Left113	Wind_Right113	Wind_Left114	Wind_Right114	Wind_Left115	Wind_Right115	Wind_Left116	Wind_Right116	Wind_Left117	Wind_Right117	Wind_Left118	Wind_Right118	Wind_Left119	Wind_Right119	Wind_Left120	Wind_Right120	Wind_Left121	Wind_Right121	Wind_Left122	Wind_Right122	Wind_Left123	Wind_Right123	Wind_Left124	Wind_Right124	Wind_Left125	Wind_Right125	Wind_Left126	Wind_Right126	Wind_Left127	Wind_Right127	Wind_Left128	Wind_Right128	Wind_Left129	Wind_Right129	Wind_Left130	Wind_Right130	Wind_Left131	Wind_Right131	Wind_Left132	Wind_Right132	Wind_Left133	Wind_Right133	Wind_Left134	Wind_Right134	Wind_Left135	Wind_Right135	Wind_Left136	Wind_Right136	Wind_Left137	Wind_Right137	Wind_Left138	Wind_Right138	Wind_Left139	Wind_Right139	Wind_Left140	Wind_Right140	Wind_Left141	Wind_Right141	Wind_Left142	Wind_Right142	Wind_Left143	Wind_Right143	Wind_Left144	Wind_Right144	Wind_Left145	Wind_Right145	Wind_Left146	Wind_Right146	Wind_Left147	Wind_Right147	Wind_Left148	Wind_Right148	Wind_Left149	Wind_Right149	Wind_Left150	Wind_Right150	Wind_Left151	Wind_Right151	Wind_Left152	Wind_Right152	Wind_Left153	Wind_Right153	Wind_Left154	Wind_Right154	Wind_Left155	Wind_Right155	Wind_Left156	Wind_Right156	Wind_Left157	Wind_Right157	Wind_Left158	Wind_Right158	Wind_Left159	Wind_Right159	Wind_Left160	Wind_Right160	Wind_Left161	Wind_Right161	Wind_Left162	Wind_Right162	Wind_Left163	Wind_Right163	Wind_Left164	Wind_Right164	Wind_Left165	Wind_Right165	Wind_Left166	Wind_Right166	Wind_Left167	Wind_Right167	Wind_Left168	Wind_Right168	Wind_Left169	Wind_Right169	Wind_Left170	Wind_Right170	Wind_Left171	Wind_Right171	Wind_Left172	Wind_Right172	Wind_Left173	Wind_Right173	Wind_Left174	Wind_Right174	Wind_Left175	Wind_Right175	Wind_Left176	Wind_Right176	Wind_Left177	Wind_Right177	Wind_Left178	Wind_Right178	Wind_Left179	Wind_Right179	Wind_Left180	Wind_Right180	Wind_Left181	Wind_Right181	Wind_Left182	Wind_Right182	Wind_Left183	Wind_Right183	Wind_Left184	Wind_Right184	Wind_Left185	Wind_Right185	Wind_Left186	Wind_Right186	Wind_Left187	Wind_Right187	Wind_Left188	Wind_Right188	Wind_Left189	Wind_Right189	Wind_Left190	Wind_Right190	Wind_Left191	Wind_Right191	Wind_Left192	Wind_Right192	Wind_Left193	Wind_Right193	Wind_Left194	Wind_Right194	Wind_Left195	Wind_Right195	Wind_Left196	Wind_Right196	Wind_Left197	Wind_Right197	Wind_Left198	Wind_Right198	Wind_Left199	Wind_Right199	Wind_Left200	Wind_Right200	Wind_Left201	Wind_Right201	Wind_Left202	Wind_Right202	Wind_Left203	Wind_Right203	Wind_Left204	Wind_Right204	Wind_Left205	Wind_Right205	Wind_Left206	Wind_Right206	Wind_Left207	Wind_Right207	Wind_Left208	Wind_Right208	Wind_Left209	Wind_Right209	Wind_Left210	Wind_Right210	Wind_Left211	Wind_Right211	Wind_Left212	Wind_Right212	Wind_Left213	Wind_Right213	Wind_Left214	Wind_Right214	Wind_Left215	Wind_Right215	Wind_Left216	Wind_Right216	Wind_Left217	Wind_Right217	Wind_Left218	Wind_Right218	Wind_Left219	Wind_Right219	Wind_Left220	Wind_Right220	Wind_Left221	Wind_Right221	Wind_Left222	Wind_Right222	Wind_Left223	Wind_Right223	Wind_Left224	Wind_Right224	Wind_Left225	Wind_Right225	Wind_Left226	Wind_Right226	Wind_Left227	Wind_Right227	Wind_Left228	Wind_Right228	Wind_Left229	Wind_Right229	Wind_Left230	Wind_Right230	Wind_Left231	Wind_Right231	Wind_Left232	Wind_Right232	Wind_Left233	Wind_Right233	Wind_Left234	Wind_Right234	Wind_Left235	Wind_Right235	Wind_Left236	Wind_Right236	Wind_Left237	Wind_Right237	Wind_Left238	Wind_Right238	Wind_Left239	Wind_Right239	Wind_Left240	Wind_Right240	Wind_Left241	Wind_Right241	Wind_Left242	Wind_Right242	Wind_Left243	Wind_Right243	Wind_Left244	Wind_Right244	Wind_Left245	Wind_Right245	Wind_Left246	Wind_Right246	Wind_Left247	Wind_Right247	Wind_Left248	Wind_Right248	Wind_Left249	Wind_Right249	Wind_Left250	Wind_Right250	Wind_Left251	Wind_Right251	Wind_Left252	Wind_Right252	Wind_Left253	Wind_Right253	Wind_Left254	Wind_Right254	Wind_Left255	Wind_Right255	Wind_Left256	Wind_Right256	Wind_Left257	Wind_Right257	Wind_Left258	Wind_Right258	Wind_Left259	Wind_Right259	Wind_Left260	Wind_Right260	Wind_Left261	Wind_Right261	Wind_Left262	Wind_Right262	Wind_Left263	Wind_Right263	Wind_Left264	Wind_Right264	Wind_Left265	Wind_Right265	Wind_Left266	Wind_Right266	Wind_Left267	Wind_Right267	Wind_Left268	Wind_Right268	Wind_Left269	Wind_Right269	Wind_Left270	Wind_Right270	Wind_Left271	Wind_Right271	Wind_Left272	Wind_Right272	Wind_Left273	Wind_Right273	Wind_Left274	Wind_Right274	Wind_Left275	Wind_Right275	Wind_Left276	Wind_Right276	Wind_Left277	Wind_Right277	Wind_Left278	Wind_Right278	Wind_Left279	Wind_Right279	Wind_Left280	Wind_Right280	Wind_Left281	Wind_Right281	Wind_Left282	Wind_Right282	Wind_Left283	Wind_Right283	Wind_Left284	Wind_Right284	Wind_Left285	Wind_Right285	Wind_Left286	Wind_Right286	Wind_Left287	Wind_Right287	Wind_Left288	Wind_Right288	Wind_Left289	Wind_Right289	Wind_Left290	Wind_Right290	Wind_Left291	Wind_Right291	Wind_Left292	Wind_Right292	Wind_Left293	Wind_Right293	Wind_Left294	Wind_Right294	Wind_Left295	Wind_Right295	Wind_Left296	Wind_Right296	Wind_Left297	Wind_Right297	Wind_Left298	Wind_Right298	Wind_Left299	Wind_Right299	Wind_Left300	Wind_Right300	Wind_Left301	Wind_Right301	Wind_Left302	Wind_Right302	Wind_Left303	Wind_Right303	Wind_Left304	Wind_Right304	Wind_Left305	Wind_Right305	Wind_Left306	Wind_Right306	Wind_Left307	Wind_Right307	Wind_Left308	Wind_Right308	Wind_Left309	Wind_Right309	Wind_Left310	Wind_Right310	Wind_Left311	Wind_Right311	Wind_Left312	Wind_Right312	Wind_Left313	Wind_Right313	Wind_Left314	Wind_Right314	Wind_Left315	Wind_Right315	Wind_Left316	Wind_Right316	Wind_Left317	Wind_Right317	Wind_Left318	Wind_Right318	Wind_Left319	Wind_Right319	Wind_Left320	Wind_Right320	Wind_Left321	Wind_Right321	Wind_Left322	Wind_Right322	Wind_Left323	Wind_Right323	Wind_Left324	Wind_Right324	Wind_Left325	Wind_Right325	Wind_Left326	Wind_Right326	Wind_Left327	Wind_Right327	Wind_Left328	Wind_Right328	Wind_Left329	Wind_Right329	Wind_Left330	Wind_Right330	Wind_Left331	Wind_Right331	Wind_Left332	Wind_Right332	Wind_Left333	Wind_Right333	Wind_Left334	Wind_Right334	Wind_Left335	Wind_Right335	Wind_Left336	Wind_Right336	Wind_Left337	Wind_Right337	Wind_Left338	Wind_Right338	Wind_Left339	Wind_Right339	Wind_Left340	Wind_Right340	Wind_Left341	Wind_Right341	Wind_Left342	Wind_Right342	Wind_Left343	Wind_Right343	Wind_Left344	Wind_Right344	Wind_Left345	Wind_Right345	Wind_Left346	Wind_Right346	Wind_Left347	Wind_Right347	Wind_Left348	Wind_Right348	Wind_Left349	Wind_Right349	Wind_Left350	Wind_Right350	Wind_Left351	Wind_Right351	Wind_Left352	Wind_Right352	Wind_Left353	Wind_Right353	Wind_Left354	Wind_Right354	Wind_Left355	Wind_Right355	Wind_Left356	Wind_Right356	Wind_Left357	Wind_Right357	Wind_Left358	Wind_Right358	Wind_Left359	Wind_Right359	Wind_Left360	Wind_Right360	Wind_Left361	Wind_Right361	Wind_Left362	Wind_Right362	Wind_Left363	Wind_Right363	Wind_Left364	Wind_Right364	Wind_Left365	Wind_Right365	Wind_Left366	Wind_Right366	Wind_Left367	Wind_Right367	Wind_Left368	Wind_Right368	Wind_Left369	Wind_Right369	Wind_Left370	Wind_Right370	Wind_Left371	Wind_Right371	Wind_Left372	Wind_Right372	Wind_Left373	Wind_Right373	Wind_Left374	Wind_Right374	Wind_Left375	Wind_Right375	Wind_Left376	Wind_Right376	Wind_Left377	Wind_Right377	Wind_Left378	Wind_Right378	Wind_Left379	Wind_Right379	Wind_Left380	Wind_Right380	Wind_Left381	Wind_Right381	Wind_Left382	Wind_Right382	Wind_Left383	Wind_Right383	Wind_Left384	Wind_Right384	Wind_Left385	Wind_Right385	Wind_Left386	Wind_Right386	Wind_Left387	Wind_Right387	Wind_Left388	Wind_Right388	Wind_Left389	Wind_Right389	Wind_Left390	Wind_Right390	Wind_Left391	Wind_Right391	Wind_Left392	Wind_Right392	Wind_Left393	Wind_Right393	Wind_Left394	Wind_Right394	Wind_Left395	Wind_Right395	Wind_Left396	Wind_Right396	Wind_Left397	Wind_Right397	Wind_Left398	Wind_Right398	Wind_Left399	Wind_Right399	Wind_Left400	Wind_Right400	Wind_Left401	Wind_Right401	Wind_Left402	Wind_Right402	Wind_Left403	Wind_Right403	Wind_Left404	Wind_Right404	Wind_Left405	Wind_Right405	Wind_Left406	Wind_Right406	Wind_Left407	Wind_Right407	Wind_Left408	Wind_Right408	Wind_Left409	Wind_Right409	Wind_Left410	Wind_Right410	Wind_Left411	Wind_Right411	Wind_Left412	Wind_Right412	Wind_Left413	Wind_Right413	Wind_Left414	Wind_Right414	Wind_Left415	Wind_Right415	Wind_Left416	Wind_Right416	Wind_Left417	Wind_Right417	Wind_Left418	Wind_Right418	Wind_Left419	Wind_Right419	Wind_Left420	Wind_Right420	Wind_Left421	Wind_Right421	Wind_Left422	Wind_Right422	Wind_Left423	Wind_Right423	Wind_Left424	Wind_Right424	Wind_Left425	Wind_Right425	Wind_Left426	Wind_Right426	Wind_Left427	Wind_Right427	Wind_Left428	Wind_Right428	Wind_Left429	Wind_Right429	Wind_Left430	Wind_Right430	Wind_Left431	Wind_Right431	Wind_Left432	Wind_Right432	Wind_Left433	Wind_Right433	Wind_Left434	Wind_Right434	Wind_Left435	Wind_Right435	Wind_Left436	Wind_Right436	Wind_Left437	Wind_Right437	Wind_Left438	Wind_Right438	Wind_Left439	Wind_Right439	Wind_Left440	Wind_Right440	Wind_Left441	Wind_Right441	Wind_Left442	Wind_Right442	Wind_Left443	Wind_Right443	Wind_Left444	Wind_Right444	Wind_Left445	Wind_Right445	Wind_Left446	Wind_Right446	Wind_Left447	Wind_Right447	Wind_Left448	Wind_Right448	Wind_Left449	Wind_Right449	Wind_Left450	Wind_Right450	Wind_Left451	Wind_Right451	Wind_Left452	Wind_Right452	Wind_Left453	Wind_Right453	Wind_Left454	Wind_Right454	Wind_Left455	Wind_Right455	Wind_Left456	Wind_Right456	Wind_Left457	Wind_Right457	Wind_Left458	Wind_Right458	Wind_Left459	Wind_Right459	Wind_Left460	Wind_Right460	Wind_Left461	Wind_Right461	Wind_Left462	Wind_Right462	Wind_Left463	Wind_Right463	Wind_Left464	Wind_Right464	Wind_Left465	Wind_Right465	Wind_Left466	Wind_Right466	Wind_Left467	Wind_Right467	Wind_Left468	Wind_Right468	Wind_Left469	Wind_Right469	Wind_Left470	Wind_Right470	Wind_Left471	Wind_Right471	Wind_Left472	Wind_Right472	Wind_Left473	Wind_Right473	Wind_Left474	Wind_Right474	Wind_Left475	Wind_Right475	Wind_Left476	Wind_Right476	Wind_Left477	Wind_Right477	Wind_Left478	Wind_Right478	Wind_Left479	Wind_Right479	Wind_Left480	Wind_Right480	Wind_Left481	Wind_Right481	Wind_Left482	Wind_Right482	Wind_Left483	Wind_Right483	Wind_Left484	Wind_Right484	Wind_Left485	Wind_Right485	Wind_Left486	Wind_Right486	Wind_Left487	Wind_Right487	Wind_Left488	Wind_Right488	Wind_Left489	Wind_Right489	Wind_Left490	Wind_Right490	Wind_Left491	Wind_Right491	Wind_Left492	Wind_Right492	Wind_Left493	Wind_Right493	Wind_Left494	Wind_Right494	Wind_Left495	Wind_Right495	Wind_Left496	Wind_Right496	Wind_Left497	Wind_Right497	Wind_Left498	Wind_Right498	Wind_Left499	Wind_Right499	Wind_Left500	Wind_Right500	Wind_Left501	Wind_Right501	Wind_Left502	Wind_Right502	Wind_Left503	Wind_Right503	Wind_Left504	Wind_Right504	Wind_Left505	Wind_Right505	Wind_Left506	Wind_Right506	Wind_Left507	Wind_Right507	Wind_Left508	Wind_Right508	Wind_Left509	Wind_Right509	Wind_Left510	Wind_Right510	Wind_Left511	Wind_Right511	Wind_Left512	Wind_Right512	Wind_Left513	Wind_Right513	Wind_Left514	Wind_Right514	Wind_Left515	Wind_Right515	Wind_Left516	Wind_Right516	Wind_Left517	Wind_Right517	Wind_Left518	Wind_Right518	Wind_Left519	Wind_Right519	Wind_Left520	Wind_Right520	Wind_Left521	Wind_Right521	Wind_Left522	Wind_Right522	Wind_Left523	Wind_Right523	Wind_Left524	Wind_Right524	Wind_Left525	Wind_Right525	Wind_Left526	Wind_Right526	Wind_Left527	Wind_Right527	Wind_Left528	Wind_Right528	Wind_Left529	Wind_Right529	Wind_Left530	Wind_Right530	Wind_Left531	Wind_Right531	Wind_Left532	Wind_Right532	Wind_Left533	Wind_Right533	Wind_Left534	Wind_Right534	Wind_Left535	Wind_Right535	Wind_Left536	Wind_Right536	Wind_Left537	Wind_Right537	Wind_Left538	Wind_Right538	Wind_Left539	Wind_Right539	Wind_Left540	Wind_Right540	Wind_Left541	Wind_Right541	Wind_Left542	Wind_Right542	Wind_Left543	Wind_Right543	Wind_Left544	Wind_Right544	Wind_Left545	Wind_Right545	Wind_Left546	Wind_Right546	Wind_Left547	Wind_Right547	Wind_Left548	Wind_Right548	Wind_Left549	Wind_Right549	Wind_Left550	Wind_Right550	Wind_Left551	Wind_Right551	Wind_Left552	Wind_Right552	Wind_Left553	Wind_Right553	Wind_Left554	Wind_Right554	Wind_Left555	Wind_Right555	Wind_Left556	Wind_Right556	Wind_Left557	Wind_Right557	Wind_Left558	Wind_Right558	Wind_Left559	Wind_Right559	Wind_Left560	Wind_Right560	Wind_Left561	Wind_Right561	Wind_Left562	Wind_Right562	Wind_Left563	Wind_Right563	Wind_Left564	Wind_Right564	Wind_Left565	Wind_Right565	Wind_Left566	Wind_Right566	Wind_Left567	Wind_Right567	Wind_Left568	Wind_Right568	Wind_Left569	Wind_Right569	Wind_Left570	Wind_Right570	Wind_Left571	Wind_Right571	Wind_Left572	Wind_Right572	Wind_Left573	Wind_Right573	Wind_Left574	Wind_Right574	Wind_Left575	Wind_Right575	Wind_Left576	Wind_Right576	Wind_Left577	Wind_Right577	Wind_Left578	Wind_Right578	Wind_Left579	Wind_Right579	Wind_Left580	Wind_Right580	Wind_Left581	Wind_Right581	Wind_Left582	Wind_Right582	Wind_Left583	Wind_Right583	Wind_Left584	Wind_Right584	Wind_Left585	Wind_Right585	Wind_Left586	Wind_Right586	Wind_Left587	Wind_Right587	Wind_Left588	Wind_Right588	Wind_Left589	Wind_Right589	Wind_Left590	Wind_Right590	Wind_Left591	Wind_Right591	Wind_Left592	Wind_Right592	Wind_Left593	Wind_Right593	Wind_Left594	Wind_Right594	Wind_Left595	Wind_Right595	Wind_Left596	Wind_Right596	Wind_Left597	Wind_Right597	Wind_Left598	Wind_Right598	Wind_Left599	Wind_Right599	Wind_Left600	Wind_Right600	Wind_Left601	Wind_Right601	Wind_Left602	Wind_Right602	Wind_Left603	Wind_Right603	Wind_Left604	Wind_Right604	Wind_Left605	Wind_Right605	Wind_Left606	Wind_Right606	Wind_Left607	Wind_Right607	Wind_Left608	Wind_Right608	Wind_Left609	Wind_Right609	Wind_Left610	Wind_Right610	Wind_Left611	Wind_Right611	Wind_Left612	Wind_Right612	Wind_Left613	Wind_Right613	Wind_Left614	Wind_Right614	Wind_Left615	Wind_Right615	Wind_Left616	Wind_Right616	Wind_Left617	Wind_Right617	Wind_Left618	Wind_Right618	Wind_Left619	Wind_Right619	Wind_Left620	Wind_Right620	Wind_Left621	Wind_Right621	Wind_Left622	Wind_Right622	Wind_Left623	Wind_Right623	Wind_Left624	Wind_Right624	Wind_Left625	Wind_Right625	Wind_Left626	Wind_Right626	Wind_Left627	Wind_Right627	Wind_Left628	Wind
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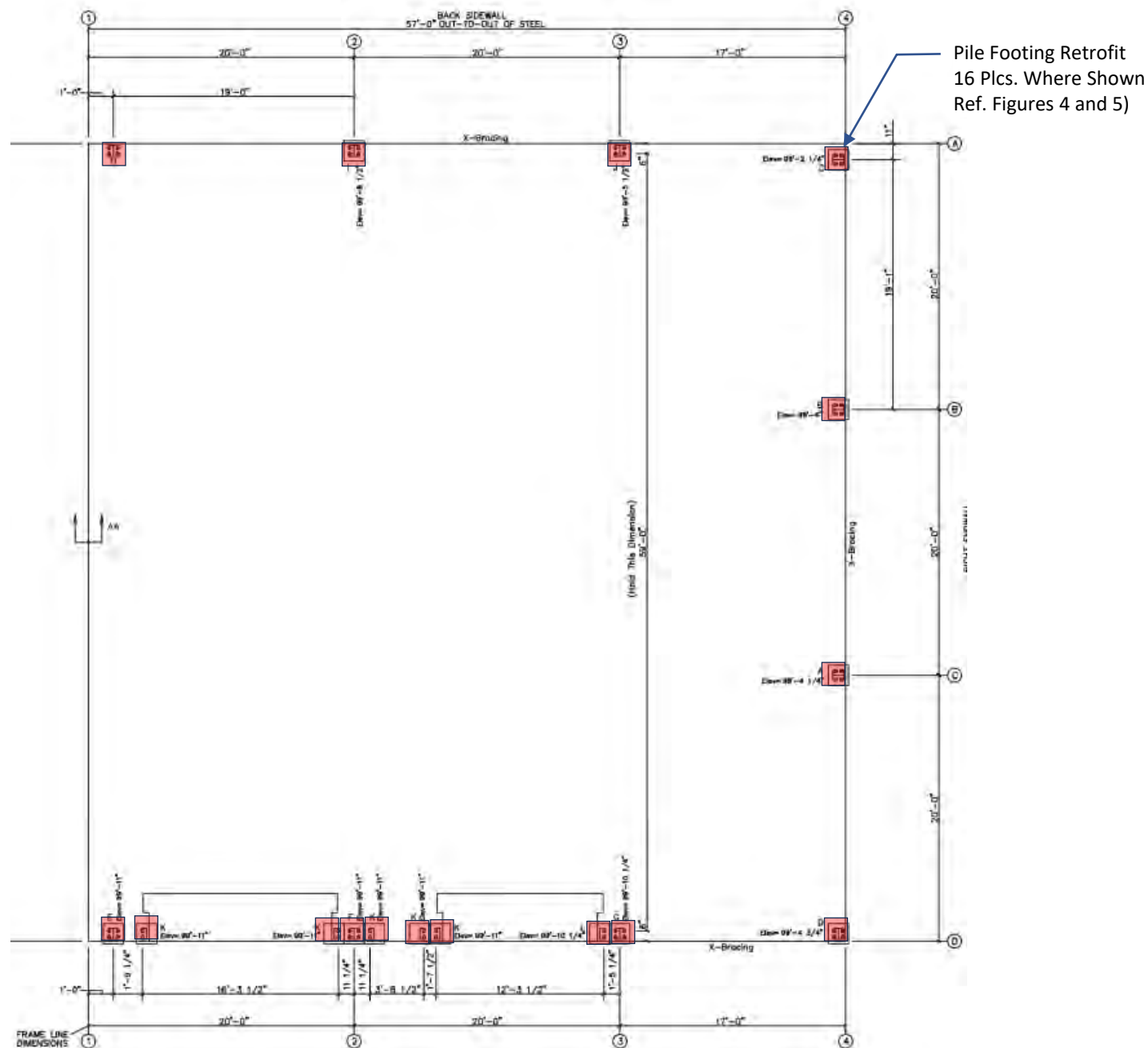


Figure 3: Plan View for Retrofit Pile Footings

## General Notes

1. Footing design was developed without the aid/insight of a soil report, that would have otherwise been developed/provided by a duly qualified and licensed geotechnical engineer. As such, foundation design is based on a bearing pressure of 2000 PSF for sand, silty sand, clayey sand, silty gravel, and sandy gravel (SW, SP, SM, SC, GM and GC). If other soil conditions are known to exist or the existing soil at bottom of pile excavation is soft or unsuitable, it will be necessary to over excavate to suitable material and replace with flowable fill or crushed stone. If crushed stone is used, it shall be placed in 6-8" lifts and compacted to 95%.



5.18

Drawing is NOT to Scale

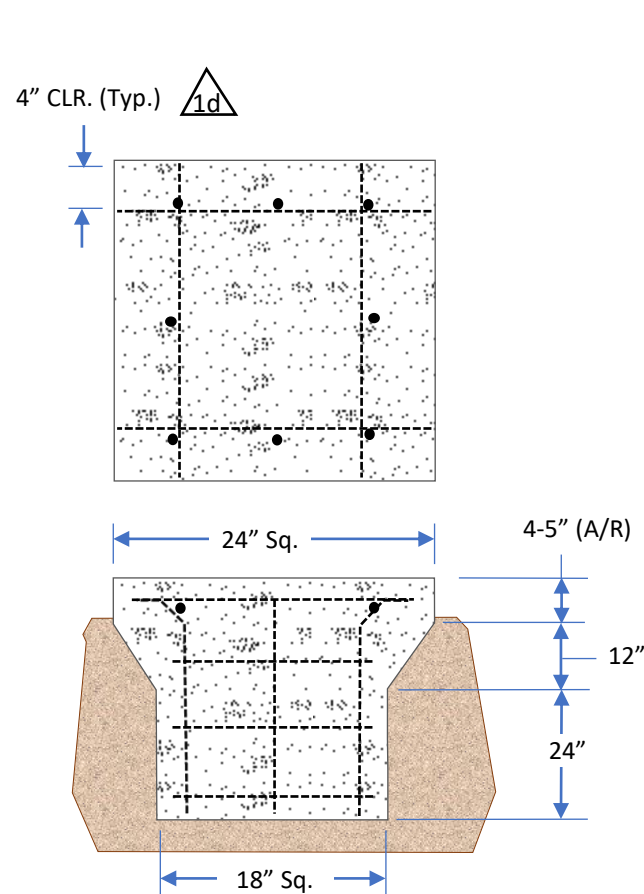
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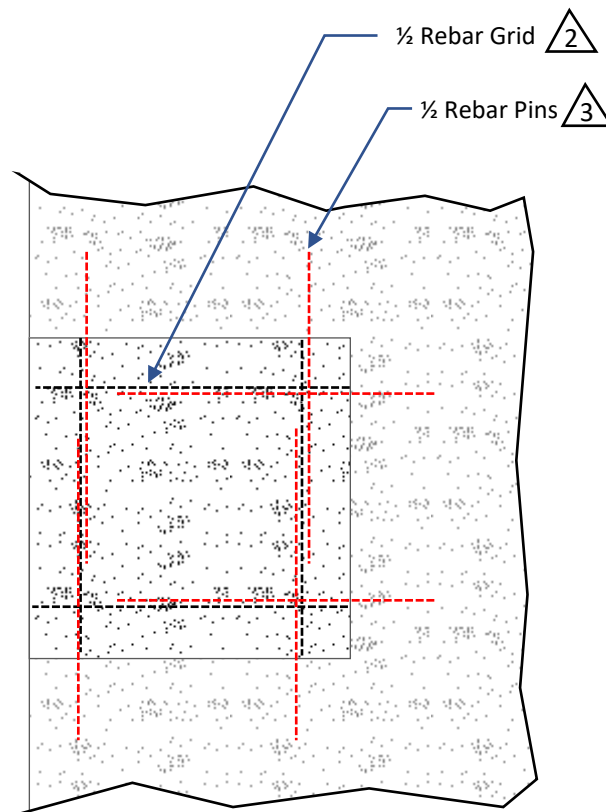
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**Figure 4: Reinforced Concrete Pile Footing Detail**



**Figure 5: Pinning Detail**

### Construction Notes:

1. The following requirements apply for the concrete pile footing.
  - a. Concrete shall have a 28-day cure compressive strength of 3500 PSI or stronger.
  - b. Do not install footings in backfill; they are to be drilled/dug in undisturbed soils.
  - c. Reinforce with #5 (5/8") rebar cage approximately as shown using 3 vertical sticks, evenly spaced every 8" along each formed edge of the footing.
  - d. Maintain 4" between rebar and formed edge of footing.
  - e. Box rebar cage with 1/2" rebar every 10-12" vertically.

2. Set 18" sq. rebar grid in the upper 4-5" of existing slab/foundation system using #4 (1/2") rebar.

3. Pin 18" sq. rebar grid into cut edges of existing slab. Maintain 18" of overlap and epoxy bond each pin 8-12" deep into the cut edge of the existing slab. To accomplish, fill drilled hole for pins completely by inserting injection tube at full depth and inject epoxy while slowly removing the injection tube. Use 1/2 diameter rebar pins.

**NOTE:** Where possible/If possible, utilize and tie-in to the existing rebar of the existing slab. To accomplish, score and jack-hammer slab section to be removed making efforts to expose the existing rebar of existing slab.



5.19

Drawing is NOT to Scale

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