



**ZONING BOARD OF ADJUSTMENTS  
AGENDA**

**Tuesday, June 21, 2022 - 4:00 PM  
Council Chambers, 2nd Floor, City Hall  
209 Pearl Street**

- 1. CALL TO ORDER**
- 2. ROLL CALL**
- 3. PLEDGE OF ALLEGIANCE**
- 4. ADOPTION OF AGENDA**
- 5. APPROVAL OF MINUTES**
- 6. PROOF OF PUBLICATION/POSTING**
- 7. REVIEW OF MEETING PROCEDURES**
- 8. PUBLIC HEARINGS**

**A. CASE #CU-22-003**

Public hearing on the request of Omaha Cellular Telephone Company d/b/a Verizon Wireless for a conditional use permit to allow a 199 foot-tall telecommunication tower in an A-2/Parks, Estates, and Agricultural District on property legally described as being part of the SE1/4 SE1/4 of Section 7-74-43, City of Council Bluffs, Pottawattamie County, Iowa, and generally described as lying north of East South Omaha Bridge Road, southwest of the Wabash Trace Nature Trail, and east of Mosquito Creek. Location: Undeveloped land located north of 1520 E. South Omaha Bridge Road

**B. CASE #BA-22-003**

Public hearing on the request of Ted Duitsman for a variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to exceed the maximum four-foot height in a required street-side yard in a R-2/Two-Family Residential District on property legally described as Lots 5 and 20 and the Northerly 56 feet of Lots 6 and 19, Block 2, Glendale Addition, Council Bluffs, Pottawattamie County, Iowa. Location: 231 Park Avenue

**9. OTHER BUSINESS**

**10. ADJOURNMENT**

Any questions or concerns regarding this agenda and/or requests for special accommodations at this meeting should be directed to the Community Development Department at (712) 890-5350 or email at [cgibbons@councilbluffs-ia.gov](mailto:cgibbons@councilbluffs-ia.gov).

## Zoning Board of Adjustment Communication

Department: Community  
Development

Case/Project No.: CU-22-003

CASE #CU-22-003

Council Action: 6/21/2022

Submitted by: Christopher N.  
Gibbons, AICP, Planning & Code  
Compliance Manager

### Description

Public hearing on the request of Omaha Cellular Telephone Company d/b/a Verizon Wireless for a conditional use permit to allow a 199 foot-tall telecommunication tower in an A-2/Parks, Estates, and Agricultural District on property legally described as being part of the SE1/4 SE1/4 of Section 7-74-43, City of Council Bluffs, Pottawattamie County, Iowa, and generally described as lying north of East South Omaha Bridge Road, southwest of the Wabash Trace Nature Trail, and east of Mosquito Creek. Location: Undeveloped land located north of 1520 E. South Omaha Bridge Road

### Background/Discussion

See attached staff report.

### Recommendation

### ATTACHMENTS:

Description

Type

Upload Date

Staff Report & Attachments

Other

6/16/2022

**TO:** Zoning Board of Adjustment  
**FROM:** Community Development Department  
**DATE:** June 21, 2022

**RE:** **CASE #CU-22-003**

**REQUEST:** A conditional use permit to allow construction of a 199 foot-tall communication tower within a 100' x 100' lease area, along with related supportive ground equipment, in an A-2/Parks, Estates, and Agricultural District.

**APPLICABLE**

**CODE SECTION:** §15.31.050 Communication Towers – Standards and Conditions for Approval

**LOCATION:** Undeveloped land located immediately north of 1520 East South Omaha Bridge Road.

**LEGAL**

**DESCRIPTION:** Being part of the SE1/4 SE1/4 of Section 7-74-43, City of Council Bluffs, Pottawattamie County, Iowa

**OWNER:** Scott A. and Deborah R. Glenn  
206 Timber Drive, Council Bluffs, IA 51503

**APPLICANT:** Omaha Cellular Telephone Company d/b/a Verizon Wireless  
One Verizon Way, Mail Stop 4AW100, Basking Ridge, NJ 07920

**REPRESENTATIVE:** Michele Roth – Great Plains Land Services, Inc.  
508 N. Polk Circle, Papillion, NE 68046

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**BACKGROUND** – The Community Development Department has received an application from Omaha Cellular Telephone Company d/b/a Verizon Wireless requesting approval of a conditional use permit to allow a communication tower in an A-2/Parks, Estates, and Agricultural District on property legally described above, and being more particularly described on Sheet 3 of 4 and *Land, Space and Right-of-Way Exhibit* of the submitted tower plans (See Attachment A).

The proposed communication tower will measure 199 feet to its highest point, as measured from finished grade to the top of its lightening rod, and will be centrally located within a 100' x 100' lease area in the southeast corner of the subject property. Within said lease area, the applicant will construct a 35' x 41' fenced enclosure that will contain the tower base, diesel generator, and other supportive ground equipment. The submitted plans show the 100' x 100' tower lease area will be accessed by a 20 foot-wide access easement, with a 12 foot-wide asphalt paved driveway included, that extends along the easterly property boundary of 1520 East South Omaha Bridge Road. A six foot-tall chain link fence with three strands of barb wire will be installed around the perimeter of the 35' x 41' enclosure for privacy and security purposes.

**CURRENT ZONING AND LAND USE** - The subject property is zoned A-2/Parks, Estates, and Agricultural District. Surrounding zoning includes A-2 District and C-2/Commercial District to the north; A-2 District to the east; I-2/Industrial District and C-2 District to the south; and A-2 District to the west (see Attachment B). Per Section 15.31.020, *Applicability* of the Council Bluffs Municipal Code (Zoning Ordinance) "communication towers exceeding the maximum height allowed in the underlying zoning district to a maximum height of 200 feet are permitted in all zoning districts, subject



**5. Operational characteristics of the facility including maintenance routines, employee access and security requirements.** This request is for an unmanned communication tower facility. The tower will be located within a 100' x 100' lease area, of which a 35' x 41' area will be secured by a six foot-tall chain link fence with three strands of barb wire on-top. A Knox Box will be attached to the fence in order to provide emergency access to the enclosed compound area. The proposed fence type complies with Section 15.24.040, Security Fence Requirements, of the Council Bluffs Municipal Code (Zoning Ordinance). The Community Development Department recommends the applicant include vinyl coated inserts within their chain link to help screen the tower base and associated ground equipment from public view.

The submitted plans show the 100' x 100' tower lease area will be accessed by a 20 foot-wide access easement, with a 12 foot-wide asphalt paved driveway included, that extends along the easterly property boundary of 1520 East South Omaha Bridge Road. The proposed asphalt driveway shall be constructed and installed as per the approved plans prior to issuance of a final zoning approval for the tower.

**6. Landscaping and other buffers proposed to screen the base of the tower from residential or commercial uses, streets, parks or other public property.** A landscaping plan was not provided with the submitted tower plans. Since the proposed tower will be visible from commercial uses along East South Omaha Bridge Road, and public properties such as Lewis Central High/Middle Schools, and the Wabash Trace Nature Trail, the Community Development Department recommends the applicant provide vinyl inserts within their proposed chain-link fence and plant one evergreen tree and/or one deciduous tree every 20 feet on-center around the perimeter of their 100' x 100' lease area for screening purposes. A landscaping plan and updated fencing plan shall be included with the tower's building permit submittal. All landscaping and vinyl fence inserts shall be installed prior to issuance of final zoning approval for the communication tower.

**7. Other proposed measures to minimize the adverse visual effects on adjacent land including lighting, non-interference with radio and television reception or other mitigating factors.** No exterior lights are shown on the submitted plans. Any future exterior lighting shall comply with the standards stated in Section 15.24.050, Lighting Controls, of the Municipal Code (Zoning Ordinance).

A letter from Robert Andersen, Director of Communications, Pottawattamie County Sheriff's Office, dated March 18, 2022, stated the proposed communication tower will not cause any interference or problems with the County's emergency public radio system (see Attachment C).

**8. Proximity to other towers and documentation of incompatibility with those towers, attempts to co-locate and/or accommodate other providers on the proposed tower.** The applicant's request is to construct a 199 foot-tall communication tower in an area of the City that does not have any existing telecommunication tower facilities. The closest communication towers are located at 4500 Piute Street, 220 29<sup>th</sup> Avenue, and 260 29<sup>th</sup> Avenue. Each of these existing sites are approximately 1.5 miles away from the proposed communication tower site on East South Omaha Bridge Road. The proposed tower is needed to meet Verizon's coverage and network objectives for areas along Harry Langdon Boulevard, Interstate 29, and Highway 92. The proposed tower is being designed to allow other telecommunication carriers to co-locate on the structure, if needed.

**9. Towers requiring painting or lighting to meet Federal Aviation Administration requirements are permitted in any zoning district.** The applicant has submitted their proposed communication tower plans to the FAA for review and is awaiting a response to determine if the tower



*proposed tower will comply with the requirements stated in Section 15.31.050 Communication Towers, 'Standards and conditions for approval' of the Municipal Code (Zoning Ordinance).*

**2. Adequate utility, drainage and other necessary facilities or improvements have been or will be provided.** *This is an unmanned facility; therefore water and sanitary sewer are not required. The applicant shall comply with all required stormwater regulations for development of the site, as well as, all Federal, State, and local floodplain development regulations as the property is located within an AH Flood Zone.*

**3. Adequate access roads or entrance and exit drives will be designed and built to prevent traffic hazards and to minimize traffic conflicts and congestion in public streets and alleys.** *This is an unmanned facility; therefore it's not anticipated to generate any traffic conflicts or congestion along East South Omaha Bridge Road. The 100' x 100' communication tower lease area will be accessed by a new asphalt paved driveway that connects into East South Omaha Bridge Road. The driveway will be constructed with six-inch thick asphalt cement and will be located within a 20 foot-wide access/utility easement along the easterly property line of 1520 East South Omaha Bridge Road. The final communication tower documents shall specify the type of asphalt material to be used on the driveway, and said driveway shall be constructed to comply with all applicable standards stated in Chapter 15.23.030 Off-Street Parking and Loading, of the Municipal Code (Zoning Ordinance). Additionally, the paved driveway shall be installed prior to issuance of final zoning approval for the communication tower.*

**4. All necessary permits and licenses required for the operation of the conditional use have been obtained, or it clearly appears that such permits are obtainable for the proposed conditional use on the subject property.** *The applicant shall obtain a building permit from the City of Council Bluffs for the construction of the proposed tower, as well as a permit from the Council Bluffs Fire Department for their diesel fuel tank for their on-site generator. Additionally, the applicant shall obtain approval from the Federal Aviation Administration for the proposed tower prior to issuance of any building permits. Said tower shall remain in compliance with all applicable Federal, State, and local codes at all times.*

**5. All exterior lighting shall be shaded as necessary to direct the light away from neighboring residential properties.** *All lighting at the communication tower site shall comply with the standards stated in Section 15.24.050, Lighting Controls, of the Municipal Code (Zoning Ordinance).*

**6. The location and size of the conditional use, the nature and intensity of the activities to be conducted in connection with it, the size of the site, and the relationship of the site to adjacent roadways shall be considered to assure the use is in harmony with the appropriate and orderly development of the district and the neighborhood in which it is located.** *The proposed 199 foot-tall communication tower will be located within a 100' x 100' lease area on property that contains 8.82 acres of land. The tower, along with all supportive ground equipment, will be secured within a 35'x41' fenced enclosure that will be locked at all times. Surrounding land uses primarily consist of commercial, and public land uses. The submitted plans show the proposed communication tower will comply with all applicable development standards, as per Section 15.31.050, Communication Towers, Standards and conditions for approval, of the Municipal Code (Zoning Ordinance). Any significant increases to the tower height and/or lease area will require a modification of the approved conditional use permit by the Zoning Board of Adjustment.*





Christopher N. Gibbons, AICP  
Planning Manager

**List of Attachments:**

**Attachment A:** Tower plans

**Attachment B:** Location/zoning map

**Attachment C:** Letter from Robert Andersen, Pottawattamie County Sheriff's Office

**Exhibit A** – Aerial view of the subject tower site and access easement (dated May 2022)

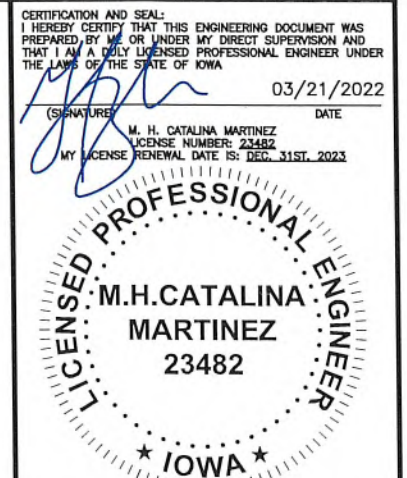






## NEW SITE DEVELOPMENT

SITE NAME: OMA TANK FARM  
LOCATION CODE: 621673  
STRUCTURE TYPE: 190' MONOPOLE



PAGES OR SHEETS COVERED BY THIS SEAL:  
T1, RF1, UC1, E1-3, N1-1.2, N3-4.1



KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:  
**OMA TANK FARM**

LOCATION CODE:  
**621673**  
SITE ADDRESS:  
E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

THESE DRAWINGS ARE THE PROPERTY OF  
VERIZON WIRELESS. THEY ARE INTENDED FOR  
THE EXCLUSIVE USE OF THIS PROJECT ONLY.  
ANY RE-USE OF THESE PLANS (DRAWINGS)  
WITHOUT THE EXPRESS WRITTEN CONSENT OF  
VERIZON WIRELESS IS PROHIBITED.

ISSUED FOR: DATE  
REVIEW REV A 06/25/2021  
REVIEW REV B 07/09/2021  
CONSTRUCTION REV 0 03/21/2022

REVISION			
NO	DESCRIPTION	BY	DATE

SHEET TITLE:  
**TITLE SHEET**

SHEET NUMBER:  
**T1**

### PROJECT SUMMARY

LATITUDE: 41° 13' 11.77" N  
LONGITUDE: 95° 49' 23.39" W

GROUND ELEVATION: 975.9' AMSL (NAVD88)

SITE ADDRESS: E SOUTH OMAHA BRIDGE RD & 192ND ST  
COUNCIL BLUFFS, IA 51503  
POTTAWATTAMIE COUNTY

CONSTRUCTION TYPE: UNMANNED TELECOMMUNICATIONS

JURISDICTION: CITY OF COUNCIL BLUFFS

### SCOPE OF WORK

- THIS WIRELESS COMMUNICATIONS FACILITY IS NOT INTENDED FOR HUMAN OCCUPANCY
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE.
- THE SCOPE OF WORK CONSISTS OF CONSTRUCTING A RAWLAND CELL SITE INCLUDING:
  - FENCED COMPOUND
  - GRAVEL ACCESS DRIVE
  - GROUND EQUIPMENT
  - CELLULAR TOWER
  - ANTENNAS AND LINE WORK
- RFDS/SDF DATED: 03/15/2022
- LEASE AREA: 100'X100' 10000 SFT

### APPLICABLE CODES & STANDARDS

- INTERNATIONAL BUILDING CODE, 2015 EDITION  
AS ADOPTED BY LOCAL JURISDICTION
- NATIONAL ELECTRICAL CODE, 2014 EDITION  
AS ADOPTED BY LOCAL JURISDICTION



Know what's below.  
Call before you dig.

### CONTACTS

APPLICANT:  
VERIZON WIRELESS  
10801 BUSH LAKE ROAD  
BLOOMINGTON, MN 55348  
CONTACT: REAL ESTATE

ENGINEER:  
KGI WIRELESS, INC.  
BUILDING THREE, SUITE 370  
805 LAS CIMAS PKWY.  
AUSTIN, TX 78746  
CONTACT: TYLER B. BOLINGER, P.E.  
PRINCIPAL ENGINEER  
PHONE: 512.334.3256

SITE ACQUISITION:  
KGI WIRELESS, INC.  
BUILDING THREE, SUITE 370  
805 LAS CIMAS PKWY.  
AUSTIN, TX 78746  
PHONE: 512.345.9595

LAND OWNER:  
SCOTT & DEBORAH GLENN  
1520 E SOUTH OMAHA BRIDGE RD  
COUNCIL BLUFFS, IA 51503  
402-618-8445

SURVEYOR:  
HUSKER SURVEYING  
4535 NORMAL BLVD, SUITE 165  
LINCOLN, NE 68506  
402.429.2632

UTILITY PROVIDER:  
MIDAMERICA ENERGY  
888-427-5632

TELCO PROVIDER:  
CENTURY LINK  
855-402-6723

### VICINITY MAP



### TEAM SIGN-OFF

LESSOR/LICENSOR \_\_\_\_\_ DATE \_\_\_\_\_

CONSTRUCTION SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

RF ENGINEERING \_\_\_\_\_ DATE \_\_\_\_\_

CONSTRUCTION MANAGER \_\_\_\_\_ DATE \_\_\_\_\_

THE ABOVE PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS  
AND AUTHORIZE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION  
DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE  
LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR  
MODIFICATIONS.

### DRAWINGS INDEX

GENERAL SHEETS		REVISION
T1	TITLE SHEET	0
SUR1	SITE SURVEY	-
CIVIL PLANS		
C1	OVERALL SITE PLAN	0
C1.1	DETAILED SITE PLAN	0
C2	GRADING PLAN	0
C2.1	GRADING PLAN	0
C3	CIVIL DETAILS	0
C3.1	FENCE DETAILS	0
C3.2	SIGNAGE DETAILS	0
C4	TOWER ELEVATION AND ANTENNA PLAN	0
C5	STANDARD DETAIL GENERATOR	0
C6	EQUIPMENT PAD DETAILS	0
RF DATA		
RF1	ANTENNA PLANS, RFDS	0
ELECTRICAL PLANS		
UC1	UTILITY ROUTING	0
E1	SITE UTILITY PLAN	0
E2	GROUNDING PLAN	0
E3	GROUNDING DETAILS	0
NOTES		
N1	GENERAL NOTES	0
N1.1	GENERAL NOTES	0
N1.2	SYMBOLS AND ABBREVIATIONS	0
N2	CIVIL NOTES	0
N2.1	CIVIL NOTES	0
N3	RF NOTES	0
N4	ELECTRICAL NOTES	0
N4.1	GROUNDING NOTES	0

NOTE: DRAWING SCALES ARE FOR 11"X17" SHEETS UNLESS OTHERWISE NOTED.



PARENT PARCEL DESCRIPTION:

ALL THAT PARCEL OF LAND IN THE CITY OF COUNCIL BLUFFS IN THE COUNTY OF POTTAWATTAMIE AND STATE OF IOWA AS MORE FULLY DESCRIBED IN DEED BOOK 103 PAGE 47257 AND PARCEL# 7443 07 400 016 AND 7443 07 400 013, BEING KNOWN AND DESIGNATED AS:

7443 07 400 016

THE SOUTH 600 FEET OF THE EAST 250 FEET OF THE SE 1/4 SE 1/4 OF SECTION 7, TOWNSHIP 74, RANGE 43, NOW LOCATED WITHIN THE CITY LIMITS OF COUNCIL BLUFFS, POTTAWATTAMIE COUNTY, IOWA. ALSO INCLUDING A PERPETUAL EASEMENT RESERVED IN DEED DATED DECEMBER 30, 1987 RECORDED IN BOOK 88, PAGE 16336, POTTAWATTAMIE COUNTY, SECTION 7, TOWNSHIP 74, RANGE 43, POTTAWATTAMIE COUNTY, IOWA.

7443 07 400 013

THE SE1/4 OF SECTION 7, TOWNSHIP 74, RANGE 43 LYING EAST OF THE RIGHT OF WAY OF MOSQUITO CREEK DRAINAGE DISTRICT NO. 22 AND SOUTH OF THEW ABASH RAILROAD, SUBJECT TO EASEMENTS OF RECORD AND PUBLIC HIGHWAYS, EXCEPT THE FOLLOWING TRACTS: AP ART OF THE SE1/4 SE1/4 OF SECTION 7, TOWNSHIP 74, RANGE 43 DESCRIBED AS FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 74, RANGE 43, THENCE NORTH ALONG THE SECTION LINE 600.0 FEET, THENCE WEST PARALLEL TO THE SOUTH LINE OF SAID SECTION 550.0 FEET, THENCE SOUTH PARALLEL TO THE EAST LINE OF SAID SECTION 600.0, THENCE EAST ALONG THE RIGHT OF WAY LINE AND SECTION LINE, 550.0 FEET TO THE POINT OF BEGINNING.

PART OF THE SE1/4 SE1/4 OF SECTION 7, TOWNSHIP 74, RANGE 43, DESCRIBED AS FOLLOWS: COMMENCING AT THE CONCRETE MONUMENT AT THE SOUTHEAST CORNER OF SECTION 7, THENCE NORTH 89 DEGREES 40' WEST 610.0 FEET ALONG THE SOUTH LINE OF SECTION 7 TO AN IRON PIPE AT THE POINT OF BEGINNING, THENCE NORTH 600.0 FEET TO AN IRON PIPE, THENCE NORTH 89 DEGREES 40' WEST 689.0 FEET TO AN IRON PIPE; THENCE SOUTH 05 DEGREES 05' EAST 601.1 FEET TO AN IRON PIPE ON THE SOUTH LINE OF SECTION 7, THENCE SOUTH 89 DEGREES 40' EAST 635.7 FEET ALONG THE SOUTH LINE OF SECTION 7 TO THE POINT OF BEGINNING.

THAT PART OF THE SE1/4 OF SECTION 7, TOWNSHIP 74, RANGE 43 MORE PARTICULARLY DESCRIBED AS FOLLOWS: (EAST LINE OF THE SE1/4 ASSUMED NORTH - SOUTH IN DIRECTION): BEGINNING AT A POINT ON THE SOUTH LINE OF SAID SE1/4 BEING NORTH 89 DEGREES 39'55" WEST 550.0 FEET FROM THE SOUTHEAST CORNER OF SAID SE 1/4; THENCE NORTH 1195.0 FEET ALONG A LINE 550.0 FEET WEST OF AND PARALLEL WITH THE EAST LINE OF SAID SE 1/4; THENCE SOUTH 89 DEGREES 39' 55" WEST, 787.56 FEET ALONG A LINE 1195.0 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF SAID SE1/4; THENCE SOUTH 7 DEGREES 49' 52" EAST, 601.60 FEET; THENCE SOUTH 89 DEGREES 39' 55" EAST, 642.11 FEET ALONG A LINE 600.0 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF SAID SE 1/4; THENCE SOUTH 600.0 FEET ALONG A LINE 610.0 FEET WEST OF AND PARALLEL WITH THE EAST LINE OF SAID SE1/4; THENCE SOUTH 89 DEGREES 39' 55" EAST, 60.0 FEET ALONG THE SOUTH LINE OF SAID SE1/4 TO THE POINT OF BEGINNING, LESS THE NEW RAILROAD RIGHT OF WAY SECTION 7, TOWNSHIP 74, RANGE 43, POTTAWATTAMIE COUNTY, IOWA.

PARCEL NUMBER: 7443 07 400 016 AND 7443 07 400 013

BEING THE SAME PROPERTY ACQUIRED BY SCOTT A. GLENN AND DEBORAH R. GLENN, HUSBAND AND WIFE BY DEED OF J. LONG, L.L.C., DATED 02/27/2003 AND RECORDED 03/07/2003 IN BOOK/ PAGE : 103 / 47257



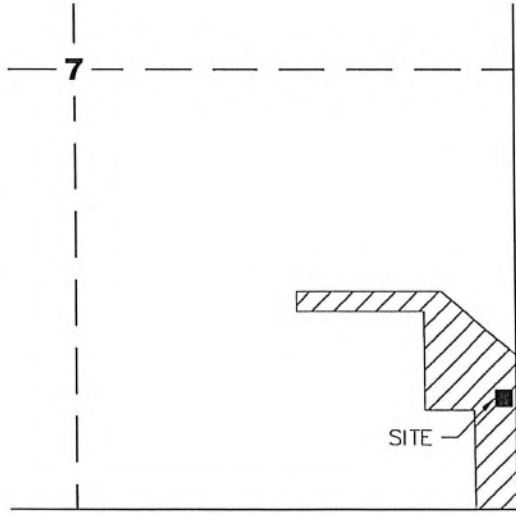
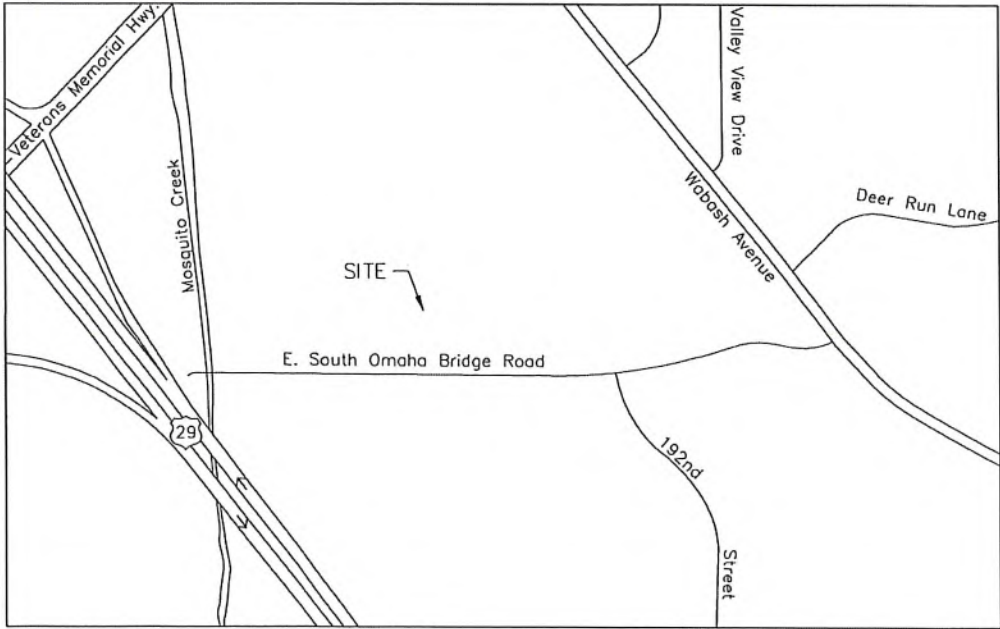
verizon

KGI

KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
512.345.9595

REVISION			
REV	DESCRIPTION	BY	DATE
1	PRELIMINARY	PD	05.27.21
2	REVISE LA & A/U	PD	06.10.21
3	COMMENTS/ADD LEGALS	PD	06.18.21
4	COMMENTS	KN	06.23.21
5	COMMENTS	PD	07.22.21

VICINITY MAP



T 74 N, R 43 W  
PARENT PARCEL DETAIL

SURVEYORS NOTES

- 1.) All Bearings Based on Iowa State Plane Coordinate System, South Zone (NAD-83).
  - 2.) Not intended to represent a survey for the entire parent parcel shown, but to be used only for the purposes shown hereon.
  - 3.) The Lessee's proposed Land Space and Access & Utility Right of Way are within the Parent Parcel Description.
  - 4.) No wetland areas have been investigated by this survey.
- Zoning Information: I-2 Industrial
- Flood Information: Property falls within Zone "AO" as determined by FEMA Flood Rate Map No. 19155C0577E, with an effective date of February 4, 2005.

SITE NAME:  
**OMA TANK FARM**

LOCATION CODE:  
**621673**

6640

HUSKER SURVEYING

4535 Normal Blvd. Ste #101  
Lincoln, Ne 68506  
(402)423-5202  
(402)423-5211  
www.huskersurveying.com

SHEET TITLE:  
**LAND SPACE &  
R.O.W. EXHIBIT**

SHEET NUMBER:  
**1 of 4**

LICENSED LAND SURVEYOR

JAYME M. MALONE  
11807

IOWA

I hereby certify that this land surveying document was prepared and the related survey work was performed by me or under my direct personal supervision and that I am a duly licensed Professional Land Surveyor under the laws of the State of Iowa.

Jayme M. Malone

8-20-2021

(signature) (date)

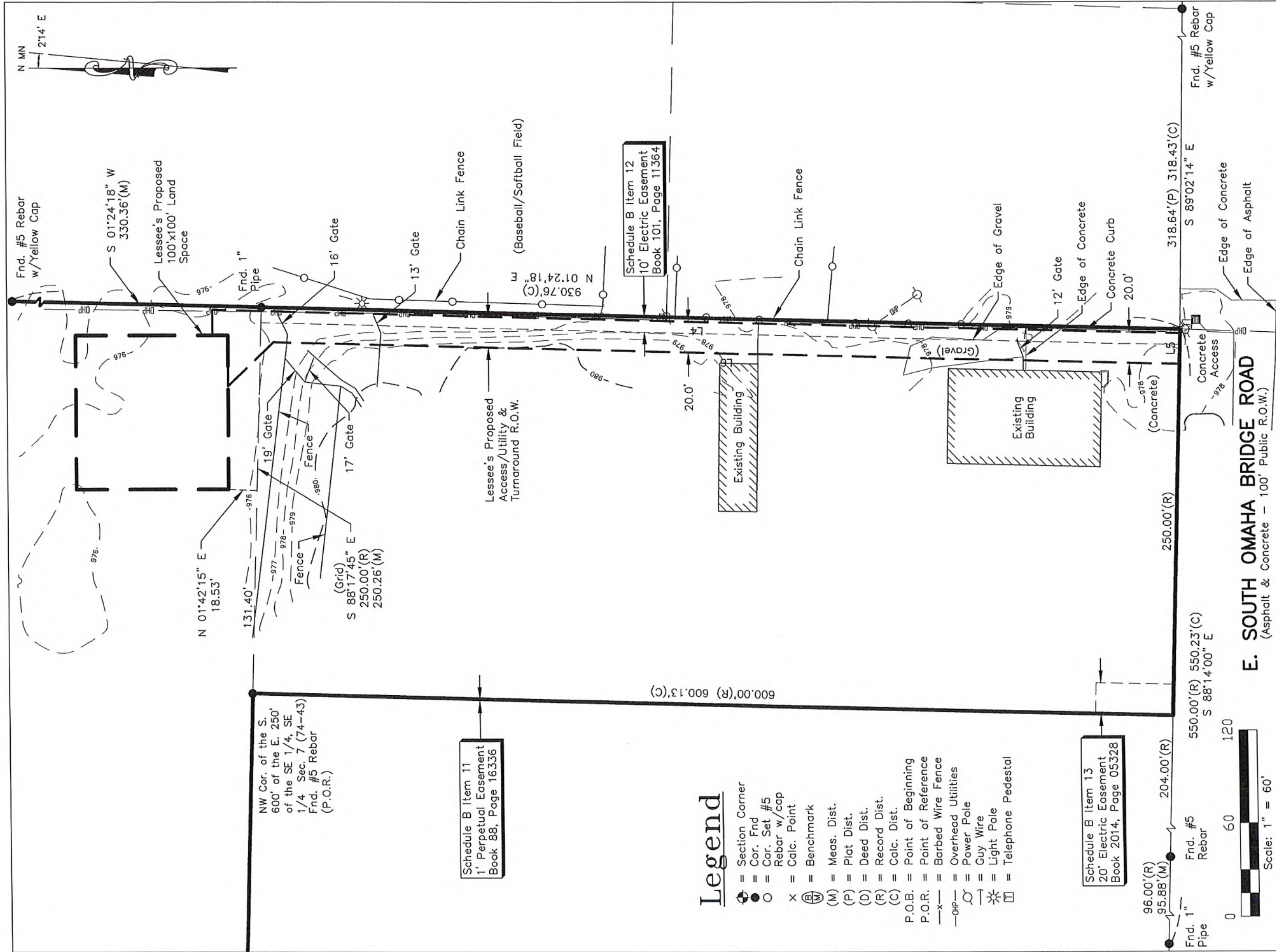
Jayme M. Malone

License number 11807

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: Sheets 1-4





# Legend

- = Section Corner
- = Cor. Fnd
- = Cor. Set #5
- x = Calc. Point
- ⊕ = Benchmark
- (M) = Meas. Dist.
- (P) = Plat Dist.
- (D) = Deed Dist.
- (R) = Record Dist.
- (C) = Calc. Dist.
- P.O.B. = Point of Beginning
- P.O.R. = Point of Reference
- x— = Barbed Wire Fence
- OHP— = Overhead Utilities
- ⊕ = Power Pole
- ⊕ = Guy Wire
- ⊕ = Light Pole
- ⊕ = Telephone Pedestal

verizon

KGI

KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
512.345.9595

## REVISION

REV	DESCRIPTION	BY	DATE
1	PRELIMINARY	PD	05.27.21
2	REVISE LA & A/U	PD	06.10.21
3	COMMENTS/ADD LEGALS	PD	06.18.21
4	COMMENTS	KN	06.23.21
5	COMMENTS	PD	07.22.21

SITE NAME:

OMA TANK FARM

LOCATION CODE:

621673

6640



HUSKER SURVEYING  
4535 Normal Blvd. Ste #101  
Lincoln, Ne 68506  
(402)423-5202  
(402)423-5211  
www.huskersurveying.com

SHEET TITLE:

LAND SPACE &  
R.O.W. EXHIBIT

SHEET NUMBER:

2 of 4



THAT PART OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 74 NORTH, RANGE 43 WEST OF THE 5TH PRINCIPAL MERIDIAN, POTTAWATTAMIE COUNTY, IOWA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

REFERRING TO THE NORTHWEST CORNER OF THE SOUTH 600' OF THE EAST 250' OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 7, A #5 REBAR FOUND FOR CORNER; THENCE EASTERLY, ON A GRID BEARING OF SOUTH 88°17'45" EAST, ON THE NORTH LINE OF THE SOUTH 600' OF THE EAST 250' OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 7, 131.40 FEET; THENCE DEPARTING SAID NORTH LINE, NORTHERLY, NORTH 01°42'15" EAST, 18.53 FEET TO THE POINT OF BEGINNING FOR THE DESCRIBED LAND SPACE; THENCE FOLLOWING THE PERIMETER OF THE LAND SPACE ON THE FOLLOWING BEARINGS AND DISTANCES: NORTHERLY, NORTH 00°00'00" WEST, 100.00 FEET; THENCE EASTERLY, NORTH 90°00'00" EAST, 100.00 FEET; THENCE SOUTHERLY, SOUTH 00°00'00" EAST, 100.00 FEET; THENCE WESTERLY, SOUTH 90°00'00" WEST, 100.00 FEET, TO THE POINT OF BEGINNING.

**LESSEE'S PROPOSED ACCESS/UTILITY & TURNAROUND RIGHT-OF-WAY DESCRIPTION:**

AN ACCESS/UTILITY AND TURNAROUND RIGHT-OF-WAY LOCATED IN THAT PART OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 74 NORTH, RANGE 43 WEST OF THE 5TH PRINCIPAL MERIDIAN, POTTAWATTAMIE COUNTY, IOWA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

REFERRING TO THE NORTHWEST CORNER OF THE SOUTH 600' OF THE EAST 250' OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 7, A #5 REBAR FOUND FOR CORNER; THENCE EASTERLY, ON A GRID BEARING OF SOUTH 88°17'45" EAST, ON THE NORTH LINE OF THE SOUTH 600' OF THE EAST 250' OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 7, 131.40 FEET; THENCE DEPARTING SAID NORTH LINE, NORTHERLY, NORTH 01°42'15" EAST, 18.53 FEET, TO THE SOUTHWEST CORNER OF THE DESCRIBED LAND SPACE; THENCE FOLLOWING THE SOUTH LINE OF THE LAND SPACE, EASTERLY, NORTH 90°00'00" EAST, 33.00 FEET, TO THE POINT OF BEGINNING FOR THE DESCRIBED ACCESS/UTILITY RIGHT-OF-WAY; THENCE FOLLOWING THE PERIMETER OF THE RIGHT-OF-WAY ON THE FOLLOWING BEARINGS AND DISTANCES: EASTERLY, NORTH 90°00'00" EAST, ON THE SOUTH LINE OF THE DESCRIBED LAND SPACE, 33.00 FEET; THENCE NORTHERLY, NORTH 00°00'00" WEST, ON THE EAST LINE OF THE LAND SPACE, 10.00 FEET; THENCE DEPARTING SAID EAST LINE, EASTERLY, NORTH 90°00'00" EAST, 16.53 FEET; THENCE SOUTHERLY, SOUTH 01°24'17" WEST, 632.39 FEET, TO A POINT OF INTERSECTION ON THE NORTHERLY RIGHT-OF-WAY LINE OF E. SOUTH OMAHA BRIDGE ROAD; THENCE WESTERLY, ON SAID RIGHT-OF-WAY LINE, NORTH 88°14'00" WEST, 20.00 FEET; THENCE DEPARTING THE NORTHERLY RIGHT-OF-WAY LINE OF E. SOUTH OMAHA BRIDGE ROAD, NORTHERLY, NORTH 01°24'18" EAST, 591.94 FEET; THENCE NORTHWESTERLY, NORTH 43°45'33" WEST, 41.29 FEET, TO THE POINT OF BEGINNING.

Diagram illustrating the boundaries of the 100'x100' Land Space, showing bearings and distances for each side:

- Top Boundary: N 90°00'00" E, 100.00'
- Right Boundary: S 00°00'00" E, 100.00'
- Bottom Boundary: S 90°00'00" W, 100.00'
- Left Boundary: N 00°00'00" W, 100.00'

Centered text: Lessee's Proposed 100'x100' Land Space

Annotation: P.O.B. Lessee's Proposed 100'x100' Land Space (Point of Beginning, indicated by an arrow pointing to the bottom-left corner).

**LAND SPACE DETAIL**

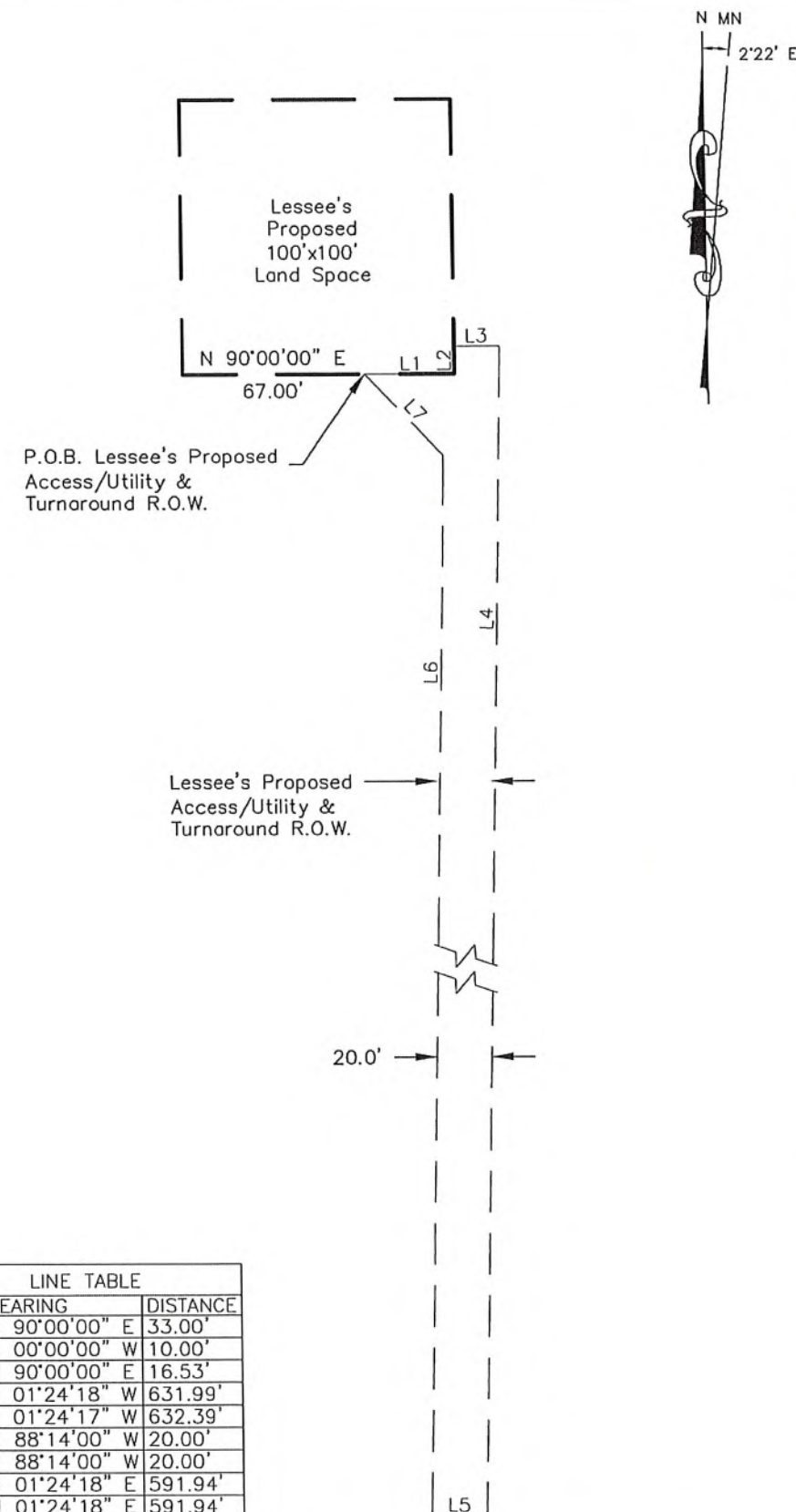
## LAND SPACE DETAIL

Scale: 1" = 40'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 90°00'00" E	33.00'
L2	N 00°00'00" W	10.00'
L3	N 00°00'00" E	16.53'
L4	S 01°24'18" W	631.99'
L4	S 01°24'17" W	632.39'
L5	N 88°14'00" W	20.00'
L5	N 88°14'00" W	20.00'
L6	N 01°24'18" E	591.94'
L6	N 01°24'18" E	591.94'
L7	N 43°45'33" W	41.29'

### ACCESS/UTILITY & TURNAROUND R.O.W. DETAIL

Scale: 1" = 40'



KGI WIRELESS, INC.  
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805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
512.345.9595

[illegible]

SITE NAME:  
**OMA TANK FARM**

LOCATION CODE:  
**621673**

3640



4535 Normal Blvd. Ste #101  
Lincoln, Ne 68506  
(402)423-5202  
(402)423-5211  
[www.huskersurveying.com](http://www.huskersurveying.com)

SHEET TITLE:

**LAND SPACE &  
R.O.W. EXHIBIT**

SHEET NUMBER:

3 of 4



TITLE REPORT:

BASED ON TITLE REPORT PROVIDED BY FIRST AMC SETTLEMENT SERVICES, ORDER NO. 50018061, BEARING AN EFFECTIVE DATE OF APRIL 12, 2021, THE FOLLOWING ARE OF SURVEY MATTER:

- 9. SUBJECT TO EASEMENT FROM JAMES A. NEILSEN, NEILSEN NURSERY TO IOWA POWER AND LIGHT COMPANY DATED 7/29/1975 AND RECORDED 8/4/1975 IN BOOK 76, PAGE 1952, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) DOES NOT AFFECT PROPOSED 100'X100' LAND SPACE OR 20' ACCESS/UTILITY EASEMENT.
- 10. SUBJECT TO EASEMENT GRANT FROM CHICAGO PACIFIC CORPORATION TO US SPRINT COMMUNICATIONS COMPANY DATED 7/2/1987 AND RECORDED 10/26/1987 IN BOOK 88, PAGE 9430, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) DOES NOT AFFECT PROPOSED 100'X100' LAND SPACE OR 20' ACCESS/UTILITY EASEMENT.
- 11. SUBJECT TO EASEMENT IN DEED FROM RAYL YN AG., INC. TO THOMAS M. JEPSON AND NANCY K. JEPSON DATED 12/30/1987 AND RECORDED 2/3/1988 IN BOOK 88, PAGE 16336, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) DOES NOT AFFECT PROPOSED 100'X100' LAND SPACE OR 20' ACCESS/UTILITY EASEMENT.
- 12. SUBJECT TO ELECTRIC EASEMENT FROM J. LONG, L.L.C. TO MIDAMERICAN ENERGY COMPANY DATED 8/30/2000 AND RECORDED 9/8/2000 IN BOOK 101, PAGE 11364, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) AFFECTS PROPOSED 20' ACCESS/UTILITY EASEMENT AND IS SHOWN HEREON.
- 13. SUBJECT TO OVERHEAD AND UNDERGROUND ELECTRIC EASEMENT FROM SCOTT A. GLENN AND DEBORAH R. GLENN, HUSBAND AND WIFE, TO MID AMERICAN ENERGY COMPANY DATED 4/17/2017 AND RECORDED 5/9/2014 IN BOOK 2014, PAGE 05328, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) DOES NOT AFFECT PROPOSED 100'X100' LAND SPACE OR 20' ACCESS/UTILITY EASEMENT.
- 14. SUBJECT TO RESOLUTION NO. 14-127 AUTHORIZING A PERMANENT RIGHT OF WAY CROSSING EASEMENT IN CONNECTION WITH A UTILITY RELOCATION BY CENTURYLINK COMMUNICATIONS, LLC, ASSOCIATED WITH 1-29 AND 1-80 INTERSTATE IMPROVEMENTS DATED 5/5/2014 AND RECORDED 5/19/2014 IN BOOK 2014, PAGE 05696, POTTWATTAMIE COUNTY RECORDS. (ENCUMBERS BOTH PARCELS) DOES NOT AFFECT PROPOSED 100'X100' LAND SPACE OR 20' ACCESS/UTILITY EASEMENT.



KGI WIRELESS, INC.  
ENGINEERING  
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BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
512.345.9595

REVISION			
REV	DESCRIPTION	BY	DATE
1	PRELIMINARY	PD	05.27.21
2	REVISE LA & A/U	PD	06.10.21
3	COMMENTS/ADD LEGALS	PD	06.18.21
4	COMMENTS	KN	06.23.21
5	COMMENTS	PD	07.22.21

SITE NAME:  
OMA TANK FARM

LOCATION CODE:  
621673

6640



HUSKER SURVEYING  
4535 Normal Blvd. Ste #101  
Lincoln, Ne 68508  
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SHEET TITLE:  
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SHEET NUMBER:  
4 of 4

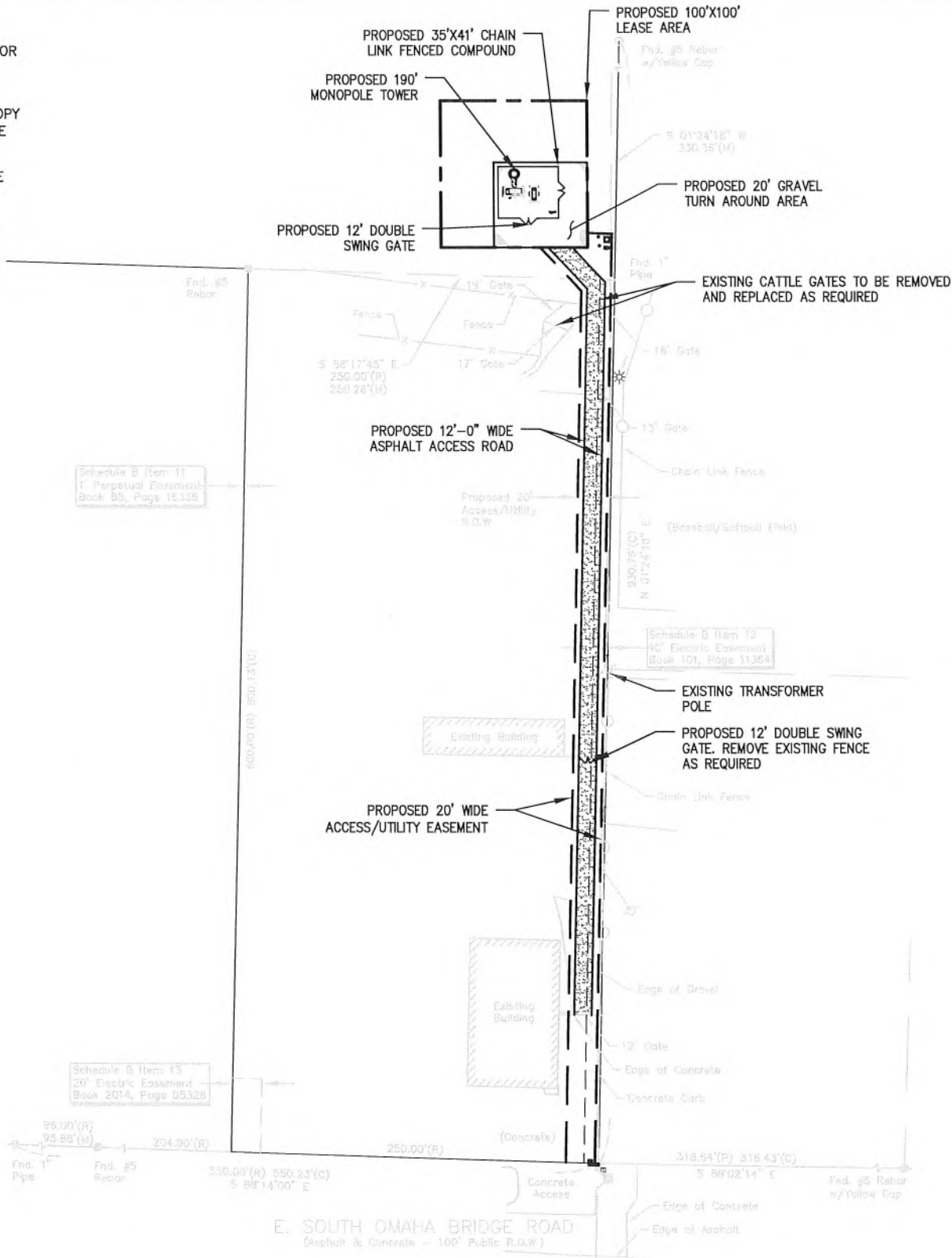
NOTES:

NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY NORTH AND INFORM ARCHITECT/ENGINEER OF ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.

AT THE TIME THIS DRAWING WAS COMPLETED, KGI DID NOT HAVE A COPY OF THE TOWER/FOUNDATION DESIGN DRAWINGS. THE SIZES SHOWN ARE APPROXIMATE.

THIS EQUIPMENT DIAGRAM SHOWS THE TYPICAL CONFIGURATION OF THE CABINETS, WAVEGUIDE BRIDGE, EQUIPMENT AND PAD. ACTUAL SITE CONDITIONS AND ORIENTATION MAY VARY.

THE CONTRACTOR MUST FIELD VERIFY ALL MEASUREMENTS AND FIELD CONDITIONS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.



CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.  
DATE: 03/21/2022  
(SIGNATURE) TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



PAGES OR SHEETS COVERED BY THIS SEAL:  
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LOCATION CODE:  
**621673**  
SITE ADDRESS:  
E SOUTH OMAHA BRIDGE RD  
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COUNCIL BLUFFS, IA 51503

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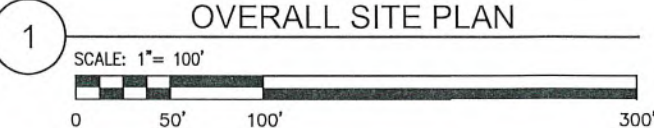
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REVIEW REV B 07/09/2021  
CONSTRUCTION REV 0 03/21/2022

REVISION		
NO	DESCRIPTION	BY DATE

SHEET TITLE:  
**OVERALL SITE PLAN**

SHEET NUMBER:  
**C1**

INDEX - DETAILS INCORPORATED FROM VERIZON STANDARD DETAIL BOOK (V12_04/12/2018)	
SLAB - 3 CABINETS - MODIFIED NSTD123	
GEN 1.4 30REOZK: DIESEL GENERATOR W/ICE SHIELD	
STD 3.1 CABLE BRIDGE SECTION	
STD 4.1 CABLE BRIDGE ELEVATION	
STD 6.1 SNOW/MAN GATE DETAIL	
STD 7.1 GPS MOUNTING DETAIL	





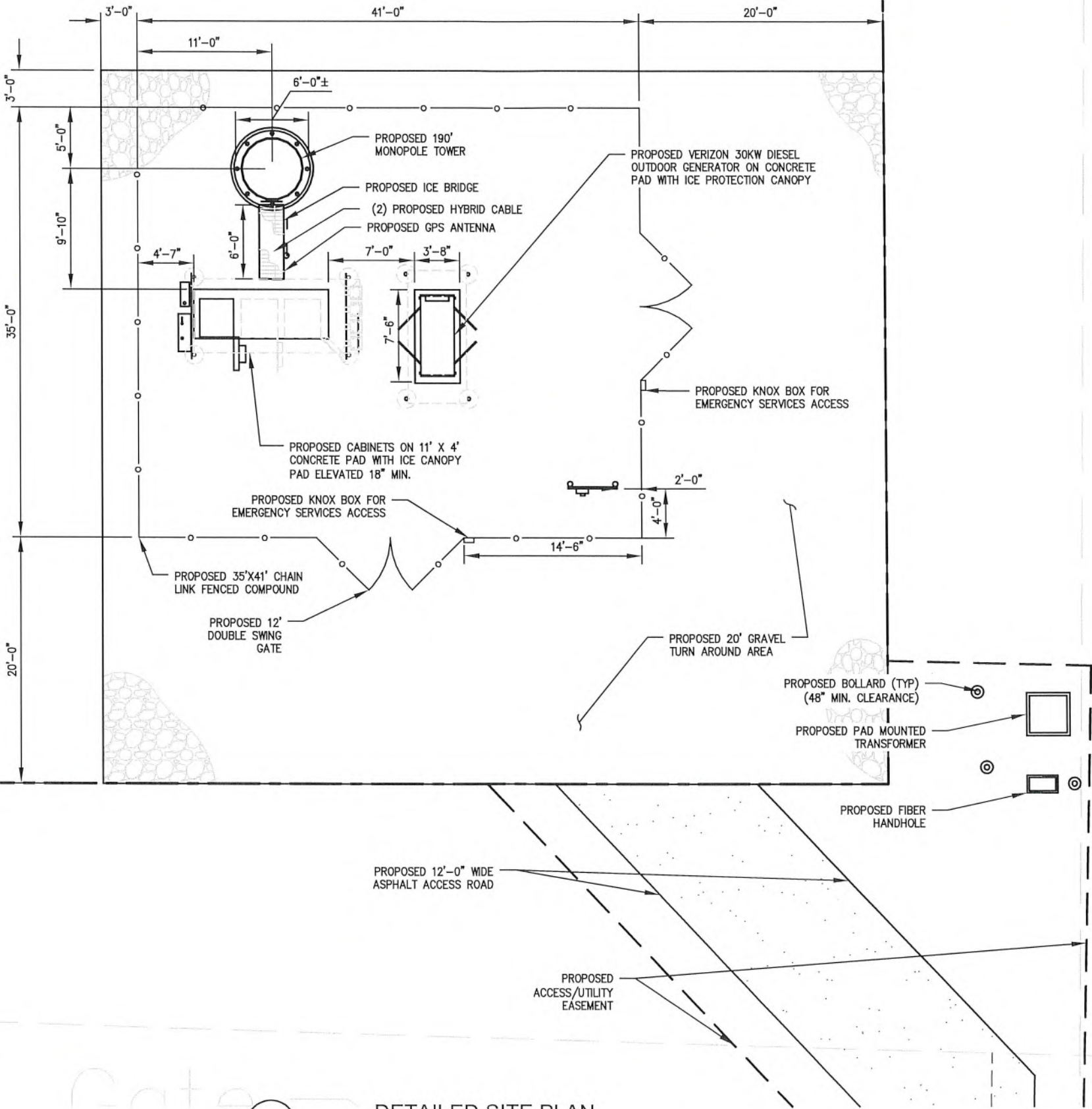
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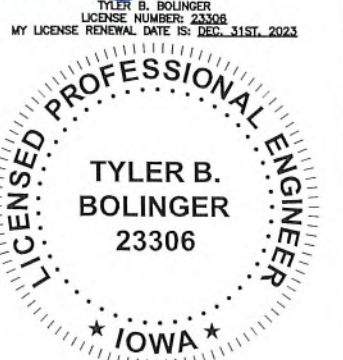
THE CONTRACTOR MUST FIELD VERIFY ALL MEASUREMENTS AND FIELD CONDITIONS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.



1 DETAILED SITE PLAN  
SCALE: 1" = 10'  
0 5' 10' 30'

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03/21/2022  
DATE  
(SIGNATURE) TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
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BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

OMA TANK FARM

LOCATION CODE:

621673

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
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REVISION

NO	DESCRIPTION	BY	DATE

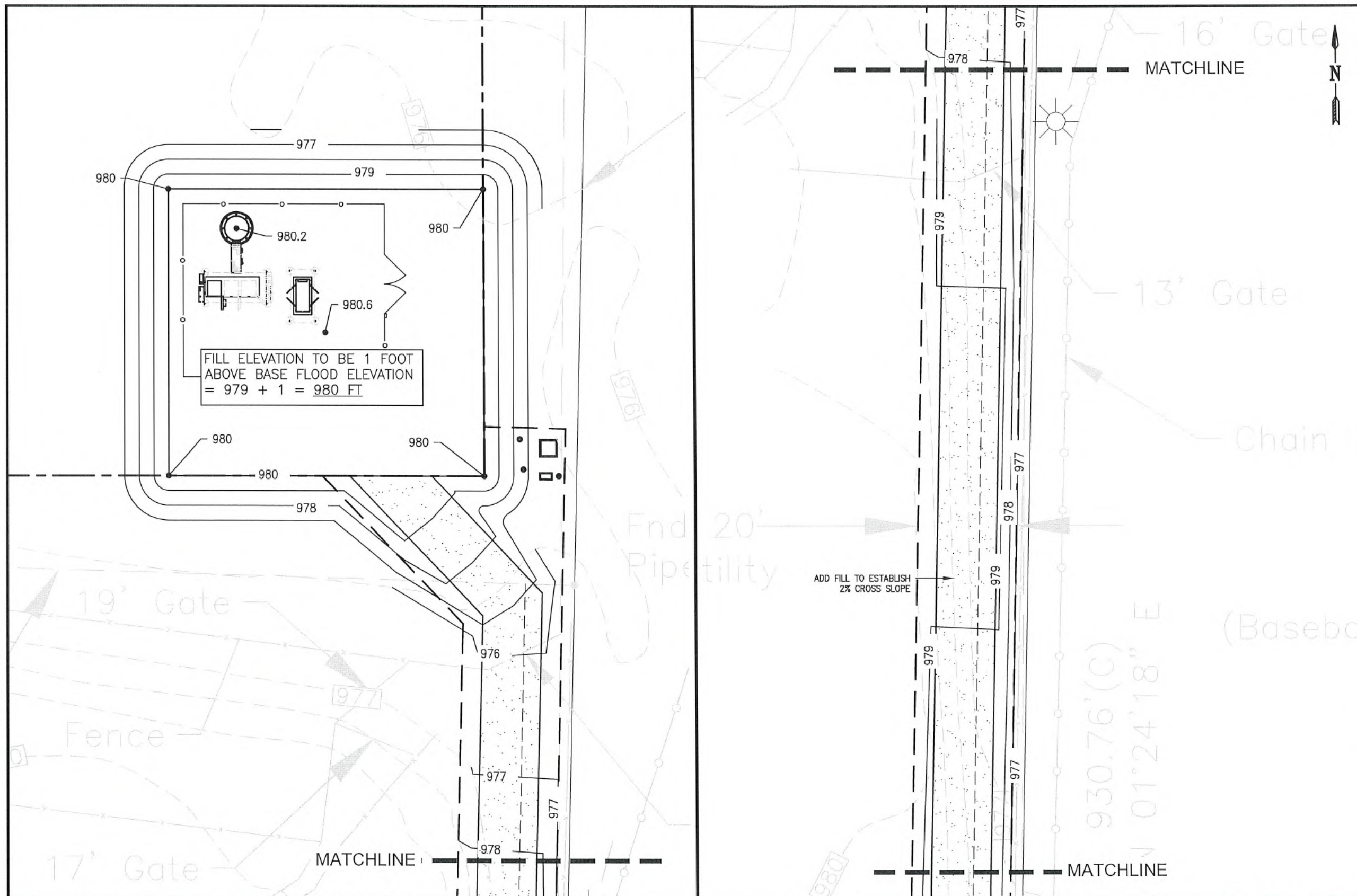
SHEET TITLE:

DETAILED SITE PLAN

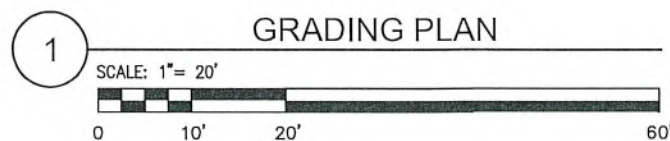
SHEET NUMBER:

C1.1





\*\*\*GEOTECHNICAL NOTES:  
REFERENCE GEOTECHNICAL ENGINEERING REPORT BY CERTIFIED TESTING SERVICES, INC. DATED 01/31/2022.  
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TOWER FOUNDATION DESIGN TO THE RESPONSIBILITY OF OTHERS.



FILL ELEVATION TO BE 1 FOOT ABOVE BASE FLOOD ELEVATION  
= 979 + 1 = 980 FT  
FEMA PANEL: 19155C0577E (eff. 2/4/2005)  
ZONE AH  
BASE FLOOD ELEVATION (BFE) 979  
SOURCE:  
FEMA FLOOD MAP SERVICE CENTER: SEARCH BY ADDRESS  
[HTTPS://MSC.FEMA.GOV/PORTAL/SEARCH?ADDRESSQUERY=COUNCIL%20BLUFFS%20IA#SEARCHRESULTSANCHOR](https://msc.fema.gov/portal/search?addressquery=council%20bluffs%20ia#searchresultsanchor)

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03/21/2022  
(SIGNATURE) DATE  
TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023  
LICENSED PROFESSIONAL ENGINEER  
TYLER B. BOLINGER  
23306  
IOWA  
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ENGINEERING  
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BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

OMA TANK FARM

LOCATION CODE:

621673

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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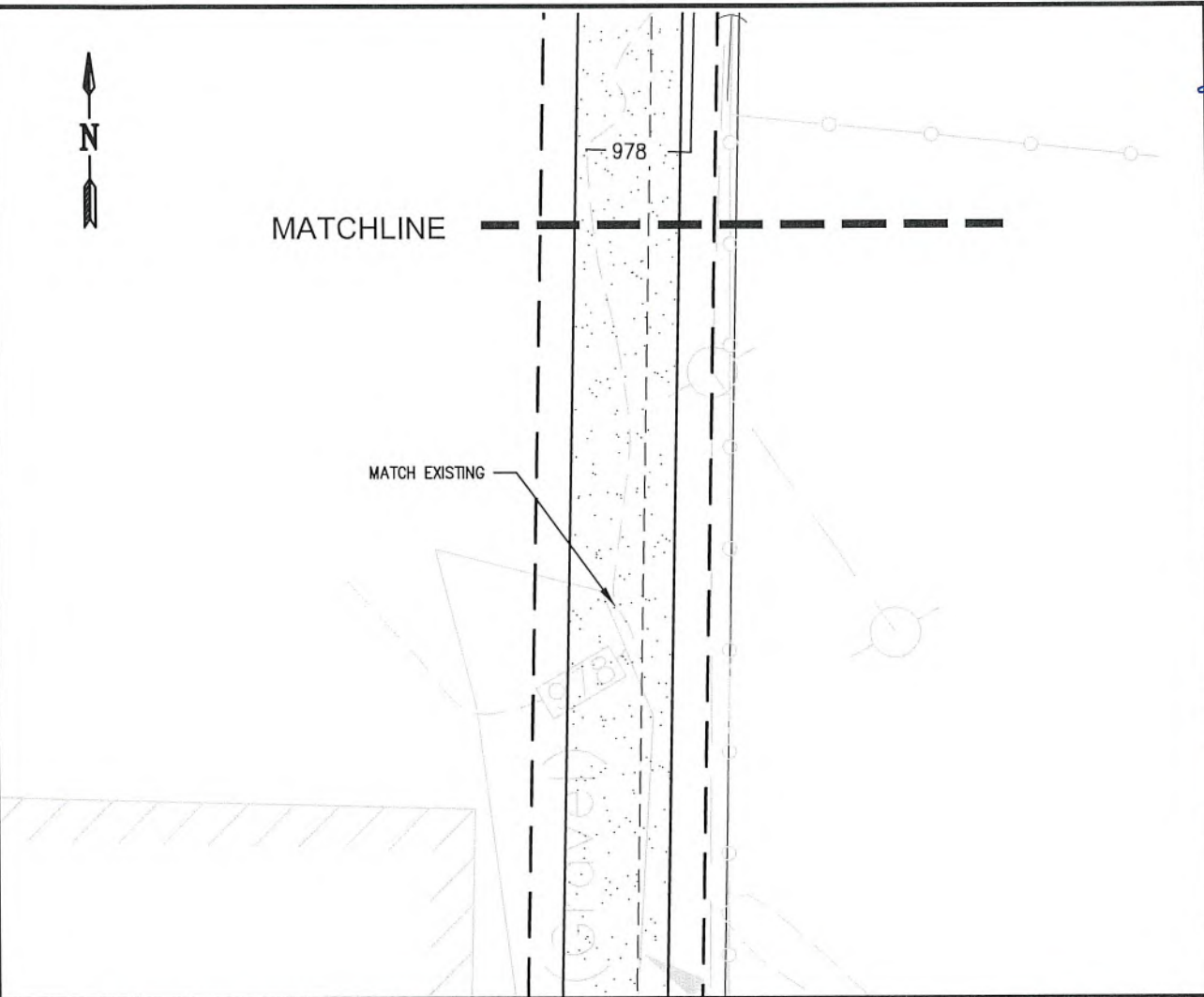
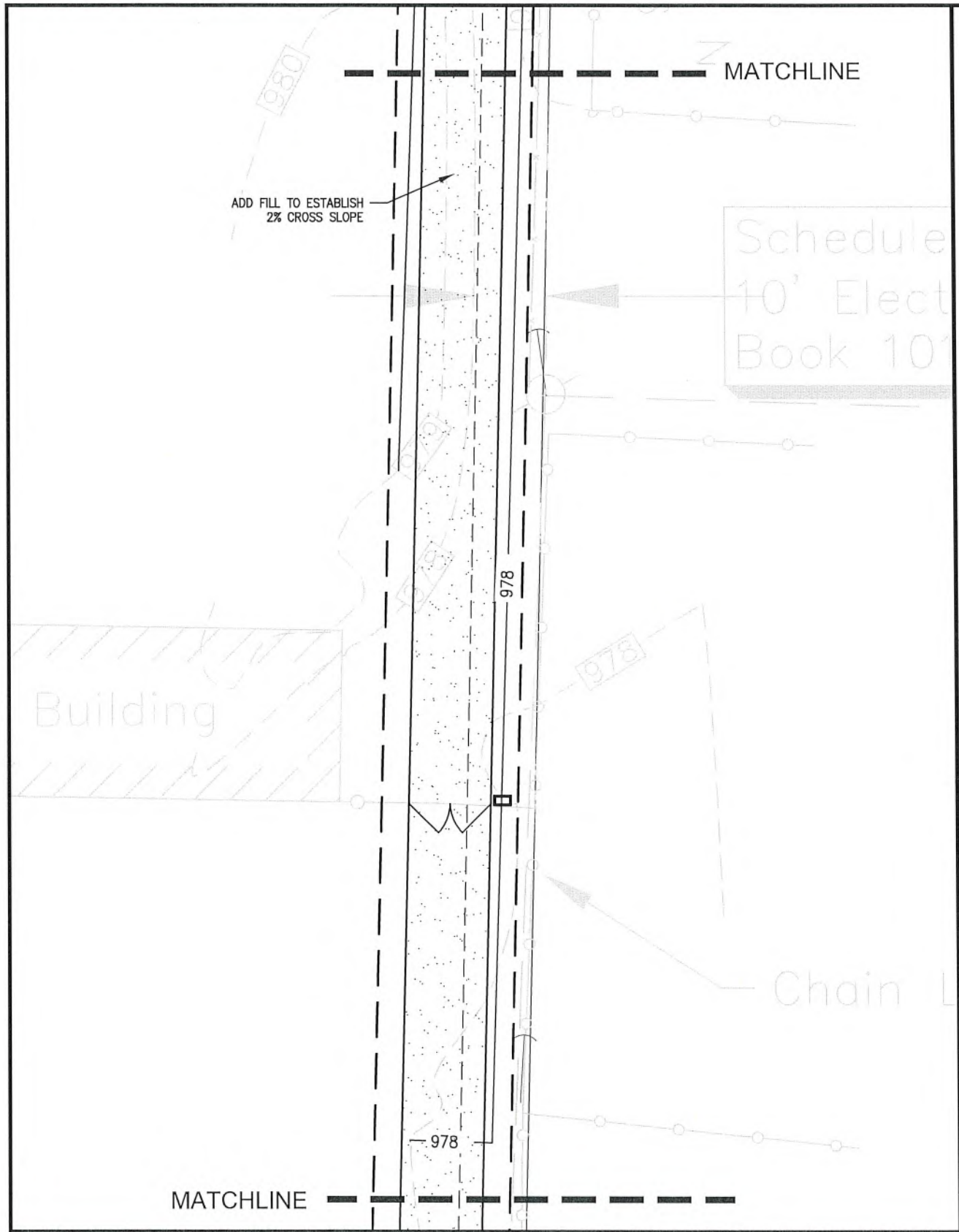
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NO	DESCRIPTION	BY DATE

SHEET TITLE:  
GRADING PLAN

SHEET NUMBER:  
C2

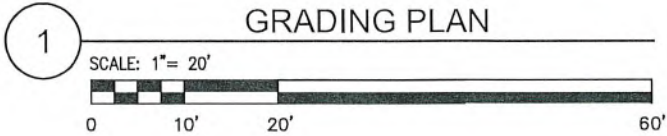




- GRADING AND EROSION CONTROL NOTES
1. EXCAVATE AND FILL TO LINES AND GRADES SHOWN. EG=EXISTING GRADE, FG=FINISH GRADE, FL=FLOW LINE. ALL PROPOSED CONTOURS AND SPOT ELEVATIONS ARE TO FINISH GRADE UNLESS NOTED OTHERWISE.
  2. COMPACTION AND MOISTURE CONTENT FOR FILL MATERIAL SHALL BE COMPLETED IN ACCORDANCE WITH THE GENERAL NOTES AND GEOTECH REPORT
  3. EXCESS MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS
  4. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH LOW MAINTENANCE GRASS AND COVER WITH APPROVED STRAW UNLESS OTHERWISE NOTED.
  5. CONTRACTOR SHALL PROVIDE ALL EROSION CONTROL TECHNIQUES AND BEST MANAGEMENT PRACTICES (BMPS) PER LOCAL AND STATE REQUIREMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION CONTROLS DURING CONSTRUCTION. INSTALL SILT FENCE ON THE DOWNHILL SIDE OF THE DISTURBED AREA AND ADDITIONALLY FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS AND WATERWAYS. THE EROSION CONTROL DEVICES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL PERMANENT STABILIZATION IS ESTABLISHED.
  6. CONTRACTOR SHALL INSPECT INSTALLED EROSION CONTROL DEVICES WEEKLY DURING CONSTRUCTION AND AFTER HEAVY RAINS FOR DAMAGE OR EXCESSIVE SILTATION. MAINTENANCE SHALL INCLUDE CLEANING BUILT UP SEDIMENT BEHIND THE BARRIERS AND/OR REPLACING DAMAGED SECTIONS.
  7. CONTRACTOR IS RESPONSIBLE FOR PROVIDING SITE FREE OF DRAINAGE PROBLEMS.
  8. CONTRACTOR SHALL PREVENT TRACKING OF SEDIMENT OUTSIDE THE CONSTRUCTION LIMITS. THIS MAY REQUIRE CLEANING AND/OR WASHING OF DEBRIS AND SEDIMENT FROM ALL VEHICLES PRIOR TO EXISTING THE SITE. ANY SEDIMENT DEPOSITED OF THE ROADWAY SHALL BE SWEEP AS NECESSARY THROUGHOUT THE DAY OR AT THE END OF EVERY DAY AND DISPOSED OF IN AN APPROPRIATE MANNER. SEDIMENT SHALL NOT BE WASHED INTO STORM SEWER SYSTEM.
  9. ANY DEBRIS AND/OR SEDIMENT EXITING THE SITE DUE TO TRACKING OR FAILURE OF A SITE BMP SHALL BE CLEANED IMMEDIATELY BY THE CONTRACTOR BY A METHOD OTHER THAN FLUSHING. CONTRACTOR SHALL ALSO IMMEDIATELY REPAIR ANY BMPS THAT HAVE FAILED AND/OR INTALL ADDITIONAL BMPS TO ENSURE SEDIMENT DOES NOT LEAVE THE SITE,

\*\*\*GEOTECHNICAL NOTES:  
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TOWER FOUNDATION DESIGN TO THE RESPONSIBILITY OF OTHERS.

FEMA PANEL: 19155C0577E (eff. 2/4/2005)  
ZONE AH  
ELEVATION 979  
SOURCE:  
FEMA FLOOD MAP SERVICE CENTER: SEARCH BY ADDRESS  
[HTTPS://MSC.FEMA.GOV/PORTAL/SEARCH?ADDRESSQUERY=COUNCIL%20BLUFFS%20IA#SEARCHRESULTSANCHOR](https://msc.fema.gov/portal/search?addressquery=council%20bluffs%20ia#searchresultsanchor)



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(SIGNATURE) DATE 03/21/2022

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023

REGISTERED PROFESSIONAL ENGINEER  
TYLER B. BOLINGER  
23306  
IOWA

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TEL: 512.345.9595

SITE NAME:  
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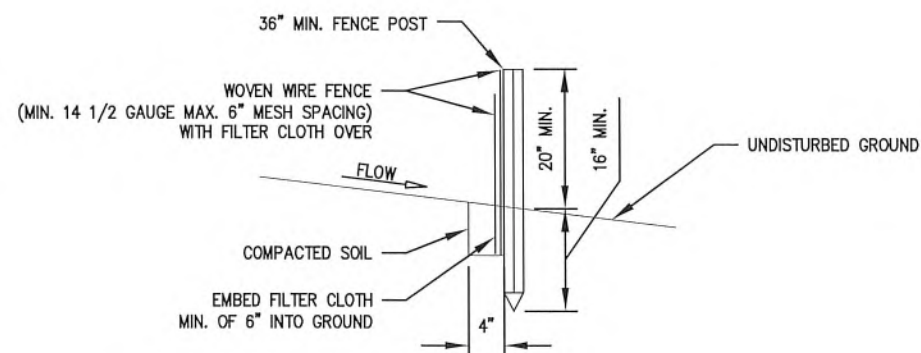
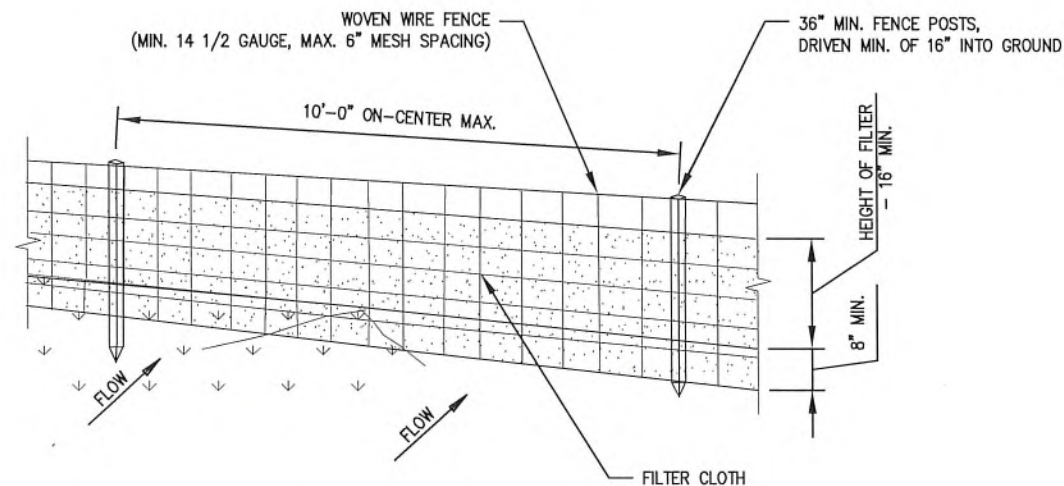
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SHEET TITLE:  
**GRADING PLAN**

SHEET NUMBER:  
**C2.1**





POSTS: STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD  
 FENCE: WOVEN WIRE, 14 1/2 GA., 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL.  
 PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

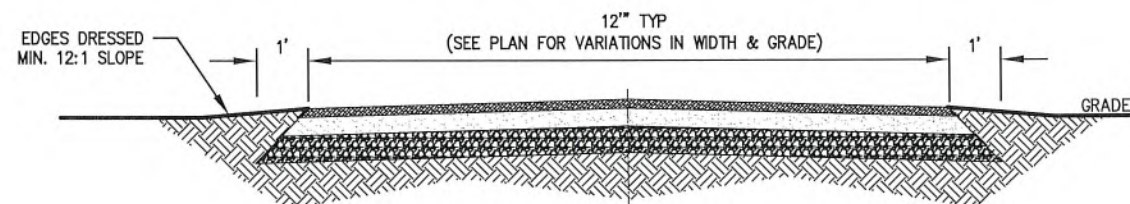
#### CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

1 **SILT FENCE DETAIL**  
 SCALE: N.T.S.

- NOTES:
1. PREPARE SUB-GRADE AND CONSTRUCT IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
  2. ANY VARIANCE FROM THIS DRIVE DESIGN MUST BE SUBMITTED AND APPROVED PRIOR TO BID.
  3. CONTRACTOR COMPACT EACH LAYER OF ROCK IN ACCORDANCE WITH ASTM & LOCAL STANDARDS.

**TYPICAL CONSTRUCTION:**  
 2" BITUMINOUS TOPPING  
 OVER 4" ASPHALTIC CONCRETE  
 OVER 6" IA CLASS A AGGREGATE OR ROADSTONE BASE



2 **DRIVE SECTION**  
 SCALE: N.T.S.

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(SIGNATURE) *Tyler B. Bolinger* DATE 03/21/2022

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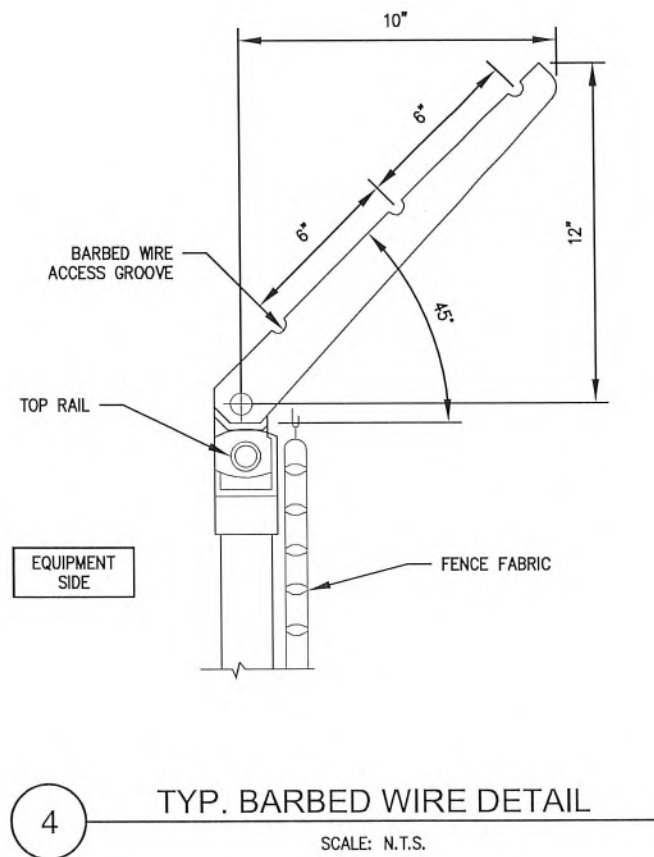
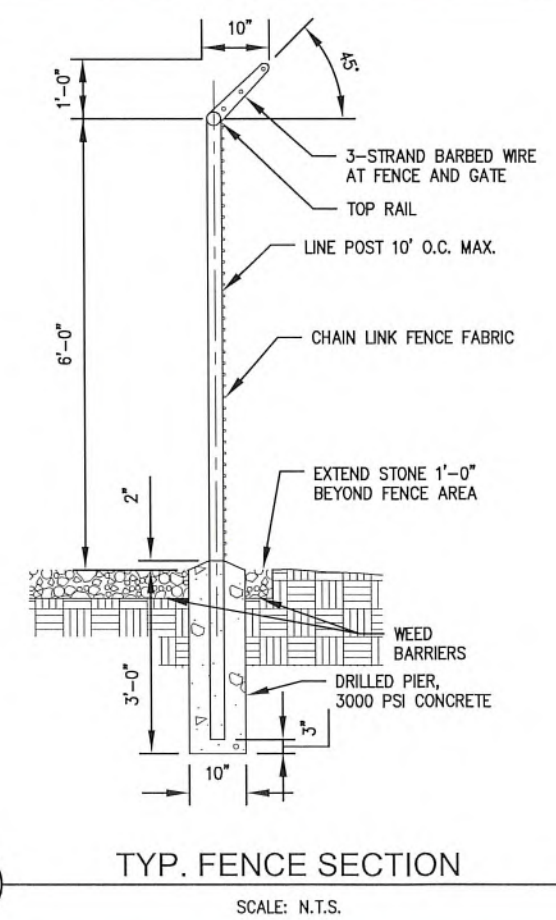
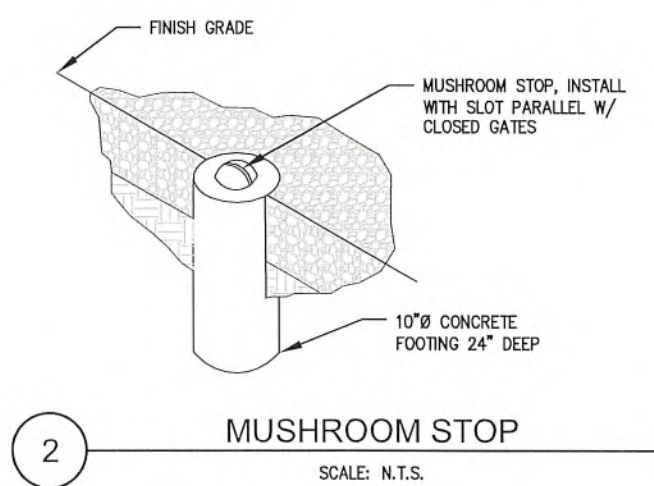
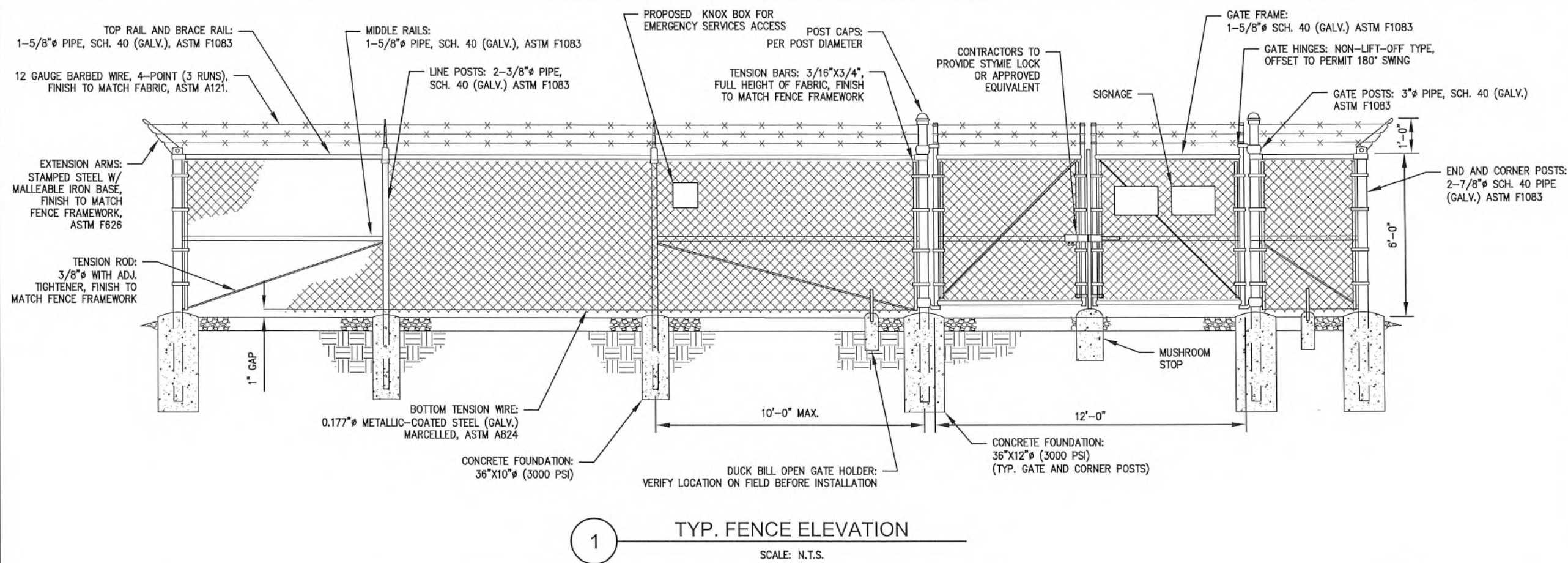
ISSUED FOR: DATE  
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 REVIEW REV B 07/09/2021  
 CONSTRUCTION REV 0 03/21/2022

REVISION			
NO	DESCRIPTION	BY	DATE

SHEET TITLE:  
**CIVIL DETAILS**

SHEET NUMBER:  
**C3**





- FENCE NOTES:**
1. USE 3,000-PSI CONCRETE, FULLY CONSOLIDATED AROUND THE POST.
  2. WHERE THE POST IS SET IN ROCK OR CONCRETE, CORE A HOLE 12" DEEP AND 1" LARGER IN DIAMETER THAN THE POST. SET THE POST AND GROUT IN PLACE USING NON-SHRINK GROUT.
  3. ALL POSTS MUST BE PLUMB AND ALIGNED WITH ONE ANOTHER IN BOTH HORIZONTAL AND VERTICAL PLANES.
  4. CORNERS AND GATEPOSTS FOR CHAIN LINK FENCE SHALL EXTEND ABOVE THE TOP STRAND OF BARBED WIRE TO PROVIDE TENSIONING FOR THE BARBED WIRE.
  5. PROVIDE MIDRAILS AND BRACING AT ALL CORNER POSTS WHERE THE FENCE CHANGES DIRECTION BY MORE THAN 30 DEGREES.
  6. THE GRADE OF THE SITE AND INSTALLATION OF THE FENCE SHALL PROVIDE FOR NO MORE THAN A 1" GAP BETWEEN THE BOTTOM OF THE FENCE MATERIAL AND FINISH GRADE.
  7. CONTRACTOR SHALL PROVIDE HOLD OPEN DEVICES FOR ALL GATES AT THE SPECIFIED OPEN POSITIONS, DRIVEN PIPE TYPE RECEIVERS ARE NOT AUTHORIZED.
  8. CONTRACTOR SHALL ALSO PROVIDE A MUSHROOM TYPE RECEIVER AT THE CLOSE POSITION.

CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

(SIGNATURE) *[Signature]* DATE 03/21/2022

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023

**LICENSED PROFESSIONAL ENGINEER**  
TYLER B. BOLINGER  
23306  
IOWA

PAGES OR SHEETS COVERED BY THIS SEAL:  
C1-C6, N2-2.1

**verizon**

**KGI**

KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:  
**OMA TANK FARM**

LOCATION CODE:  
**621673**

SITE ADDRESS:  
E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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REVISION		
NO	DESCRIPTION	BY DATE

SHEET TITLE:  
**FENCE DETAILS**

SHEET NUMBER:  
**C3.1**



**NOTICE**

GUIDELINES FOR WORKING IN RADIO FREQUENCY ENVIRONMENTS

- △ All personnel should have electromagnetic energy (EME) awareness training.
- △ All personnel entering this must be authorized.
- △ Obey all posted signs.
- △ Assume all antennas are active.
- △ Before working on antennas, notify owners and disable appropriate transmitters.
- △ Maintain minimum 3 Feet clearance from all antennas.
- △ Do not stop in front of antennas.
- △ Use personal RF monitors while working near antennas.
- △ Never operate transmitters without shielding during normal operation.
- △ Do not operate base station antennas in equipment room.

① RF GUIDELINES SIGN  
LOCATED ON:  
-ANTENNA ENCLOSURE ENTRANCE  
-EQUIPMENT ENCLOSURE GATE

**INFORMATION**

This is a Verizon Wireless Antenna Site

Site ID: \_\_\_\_\_

For information, call 800-264-6620

**verizon**

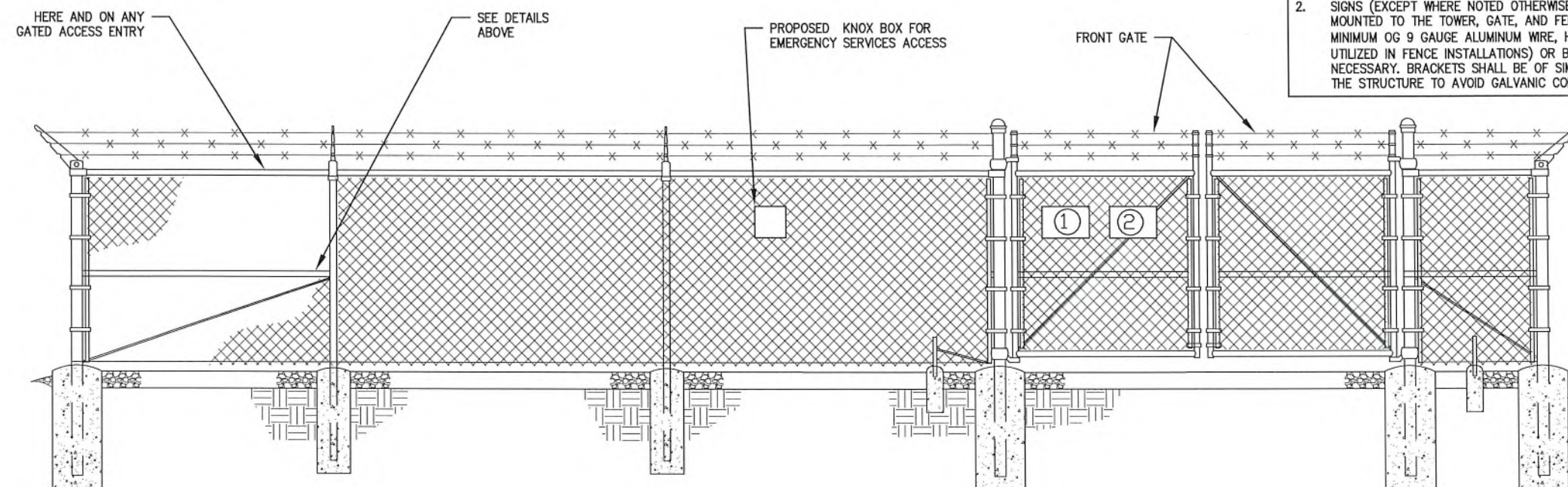
② NOC INFORMATION SIGN  
LOCATED ON:  
-EQUIPMENT ENCLOSURE GATE

① TYP. SIGNS AND SPECIFICATIONS

SCALE: N.T.S.

NOTE:  
PROVIDE ADHESIVE VINYL SIGNS IF LOCATION ALLOWS FOR IT

METAL SIGN SPECIFICATIONS:  
UV RESISTANT FOR OUTDOOR USE  
ROUNDED CORNERS WITH PRE-DRILLED HOLES  
NO OFFICIAL EME REPORT HAS BEEN PROVIDED.  
SIGNAGE SHOWN IS APPROXIMATE. WILL VERIFY WHEN REPORT IS GIVEN.



② SITE SIGNAGE FRONT GATE VIEW

SCALE: N.T.S.

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(SIGNATURE) *Tyler B. Bolinger* DATE 03/21/2022

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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**verizon**

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805 LAS CIMAS PKWY  
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TEL: 512.345.9595

SITE NAME:

**OMA TANK FARM**

LOCATION CODE:

**621673**

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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CONSTRUCTION REV 0 03/21/2022

REVISION

NO	DESCRIPTION	BY	DATE

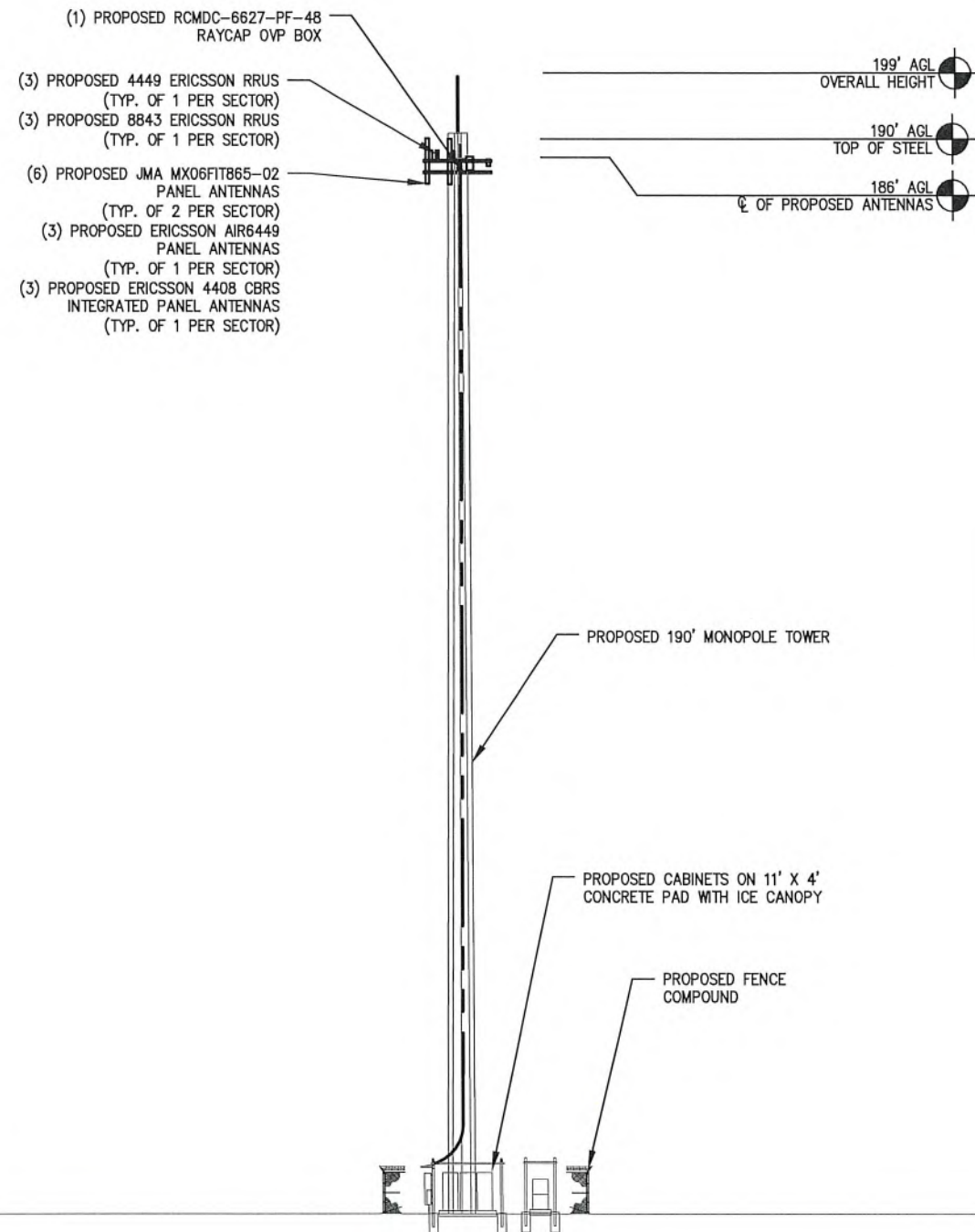
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**SIGNAGE DETAILS**

SHEET NUMBER:

**C3.2**

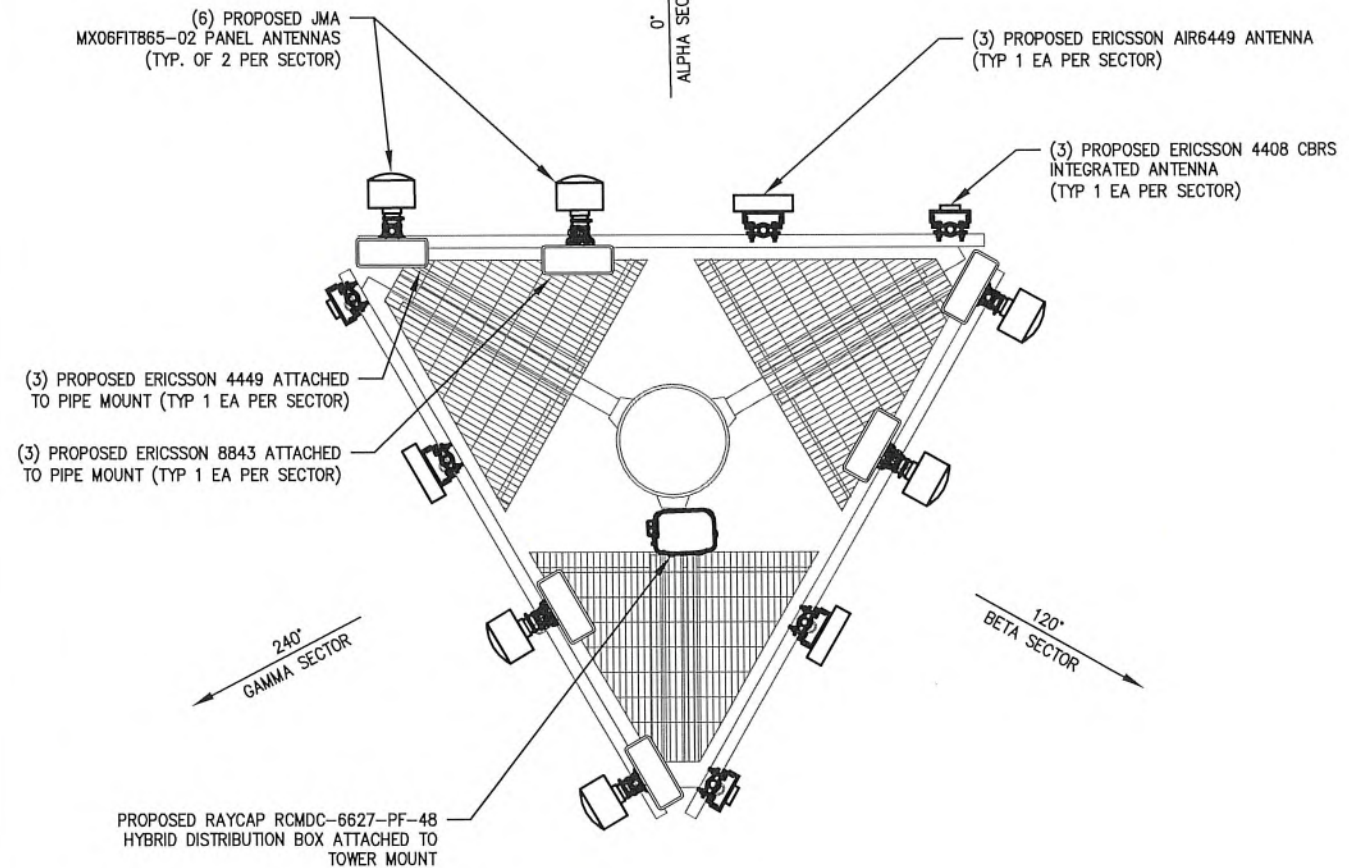




1 TOWER ELEVATION  
SCALE: N.T.S.

NOTE: CONTRACTOR TO ENSURE TIP OF ANTENNAS ARE BELOW OF OBSTRUCTION LIGHT PER FAA/FCC STANDARDS.

ALL VERIZON PROPOSED ANTENNAS WILL BE MOUNTED TO PROPOSED ANTENNA PIPE MOUNT WITH INCLUDED HARDWARE



2 ANTENNA PLAN  
SCALE: N.T.S.

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CONSTRUCTION REV 0	03/21/2022

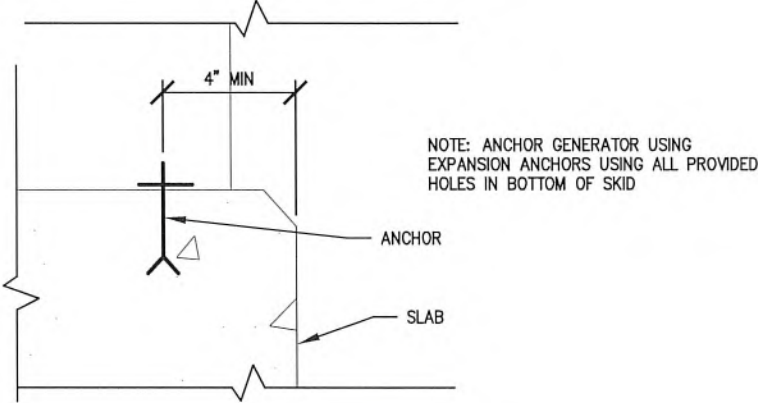
REVISION		
NO	DESCRIPTION	BY DATE

SHEET TITLE:  
TOWER ELEVATION &  
ANTENNA PLAN

SHEET NUMBER:  
C4

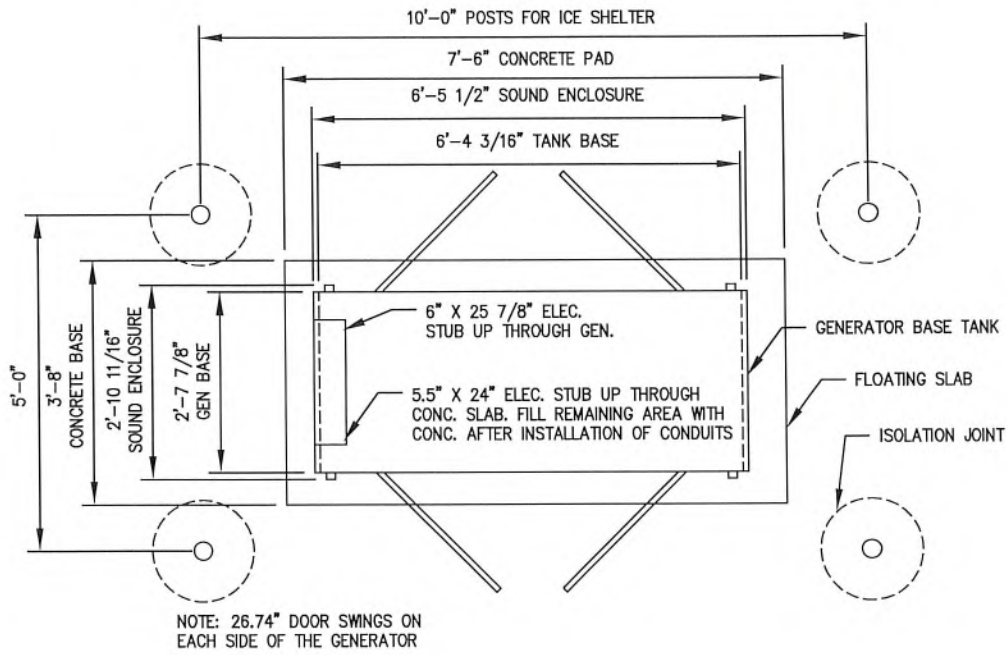


30RE0ZK (DIESEL 30KW) W/ STANDARD TANK (VZW-PSxxxx)  
W/ ICE SHEILD  
GENSET ADV-8622  
STANDARD TANK ADV-8784  
WEIGHT: 1927 LBS

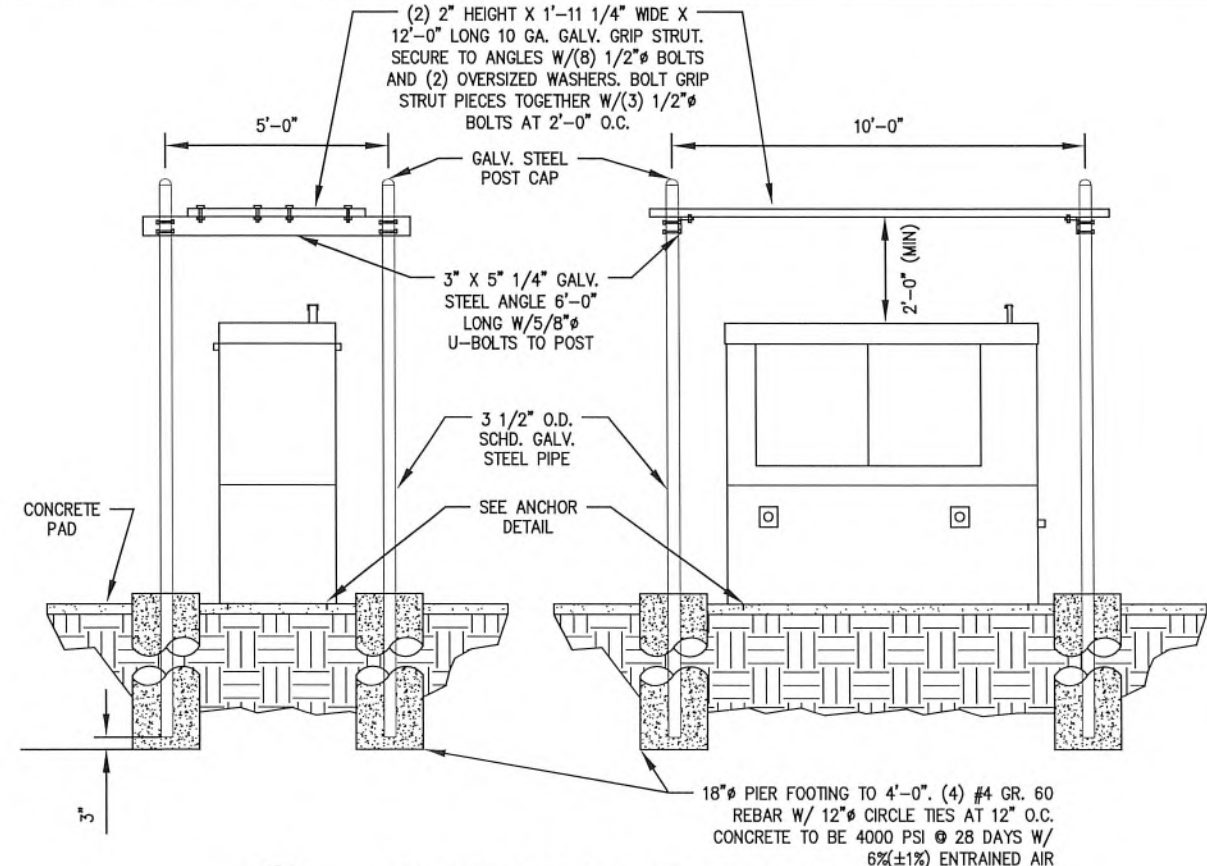


TYPICAL CAB. FRAME ANCHOR BOLT:  
HILTI KWIK BOLT TZ (GALV.) EXP.  
ANCHOR-5/8" X 3-9/16" NOM. EMBED, MIN.  
ANCHOR PER MANUFACTURERS SPECIFIED  
LOCATIONS

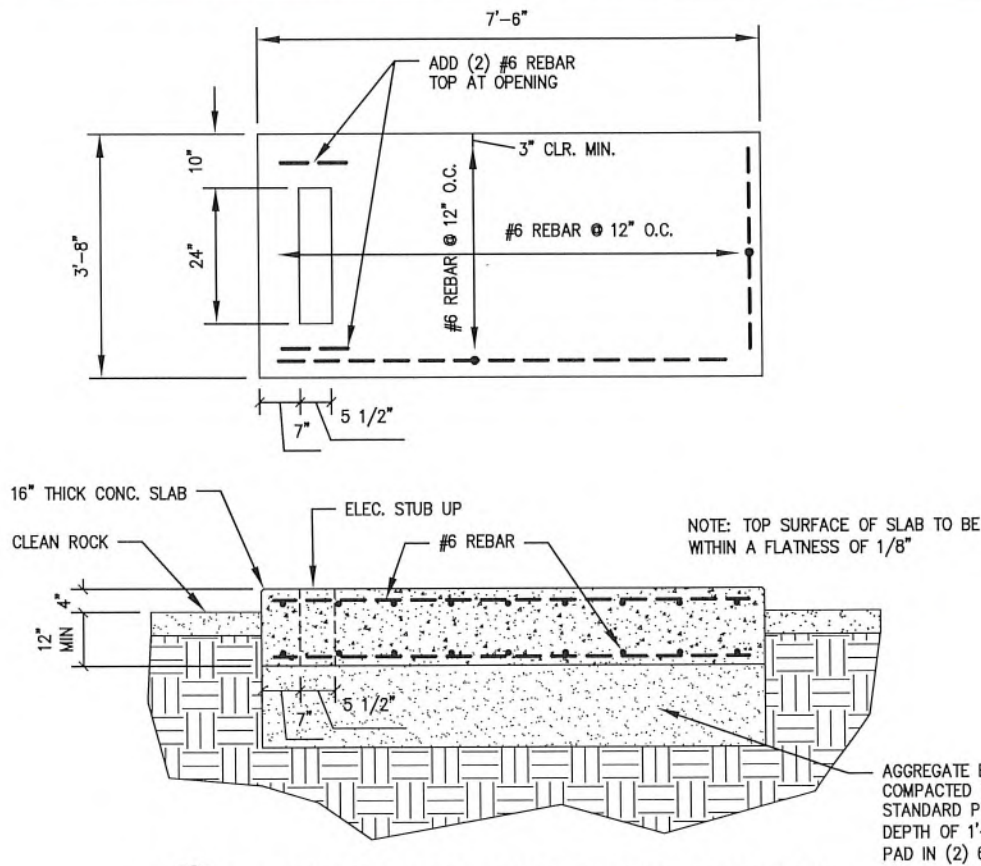
1 ANCHOR DETAIL  
SCALE: N.T.S.



2 GENERATOR PLAN  
SCALE: N.T.S.



3 GENERATOR ELEVATIONS



4 GENERATOR PAD PLAN & SECTION

CERTIFICATION AND SEAL:  
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03/21/2022  
DATE

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023

TYLER B. BOLINGER  
23306  
IOWA

PAGES OR SHEETS COVERED BY THIS SEAL:  
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verizon

KGI

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805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595  
SITE NAME:

OMA TANK FARM

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621673  
SITE ADDRESS:  
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NO	DESCRIPTION	BY DATE

SHEET TITLE:  
STANDARD DETAIL  
GENERATOR

SHEET NUMBER:  
C5



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*[Signature]* 03/21/2022  
 (SIGNATURE) DATE

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 LICENSE NUMBER: 23306  
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 ENGINEERING  
 805 LAS CIMAS PKWY  
 BUILDING THREE, SUITE 370  
 AUSTIN, TX 78746  
 TEL: 512.345.9595

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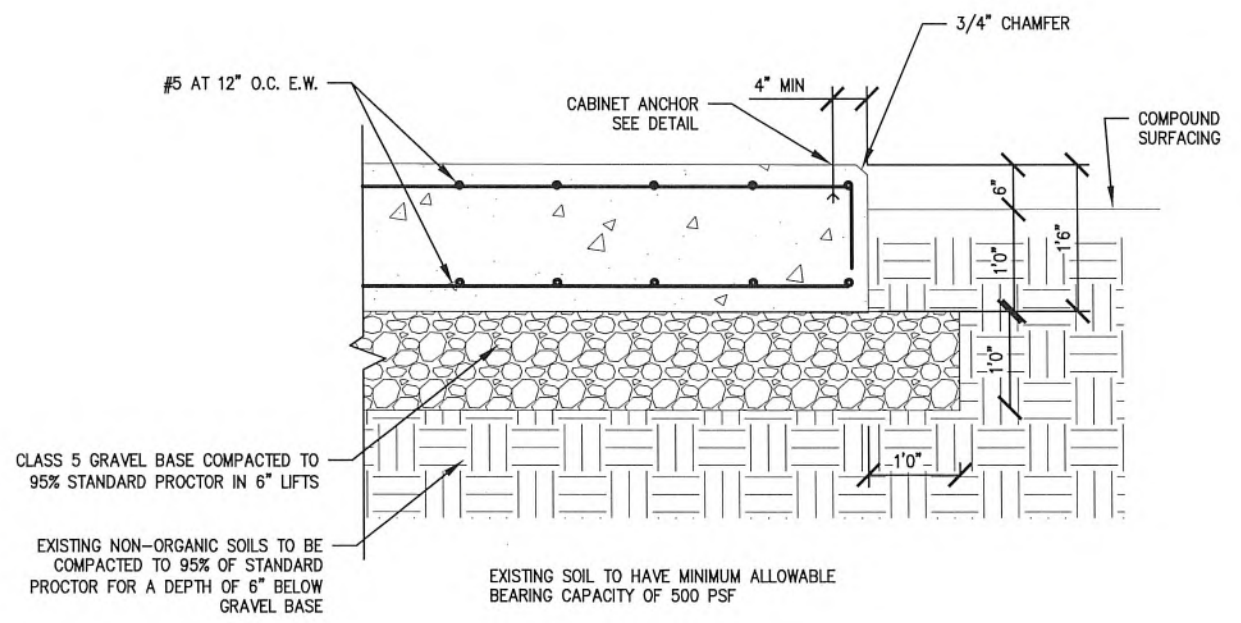
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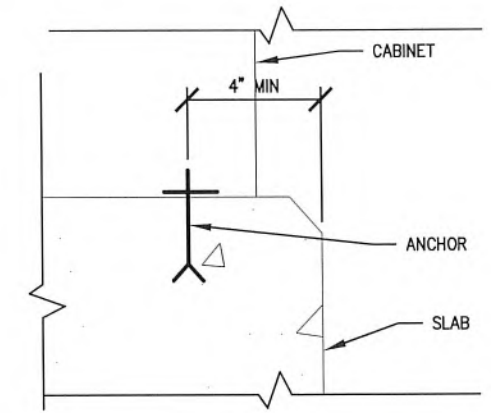
REVISION		
NO	DESCRIPTION	BY DATE

SHEET TITLE:  
**EQUIPMENT PAD  
 DETAILS**

SHEET NUMBER:  
**C6**

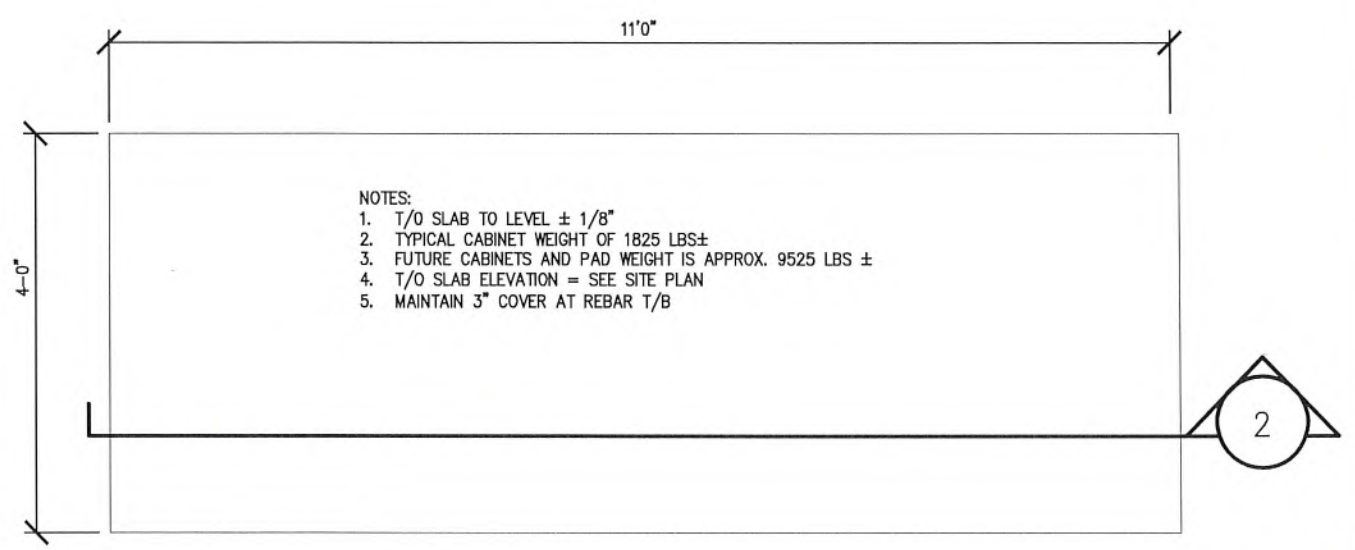


1 **CABINET PAD SECTION**  
 SCALE: N.T.S.



2 **ANCHOR DETAIL**  
 SCALE: N.T.S.

TYPICAL CAB. FRAME ANCHOR BOLT:  
 HILTI KWIK BOLT TZ (GALV.) EXP.  
 ANCHOR-5/8" X 3-9/16" NOM. EMBED, MIN.  
 ANCHOR PER MANUFACTURERS SPECIFIED  
 LOCATIONS



3 **CABINET PAD PLAN**  
 SCALE: N.T.S.

CABINET PART NUMBER  
 COMMSCOPE # 760237152  
 1. WEIGHT WITH RECTIFIER AND 2 STRINGS  
 2. 200A-HR BATTERIS IS 1825 LBS.



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THE LAWS OF THE STATE OF IOWA

03/21/2022

(SIGNATURE) M. H. CATALINA MARTINEZ  
DATE  
LICENSE NUMBER 23482  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

**OMA TANK FARM**

LOCATION CODE:

**621673**

SITE ADDRESS:  
E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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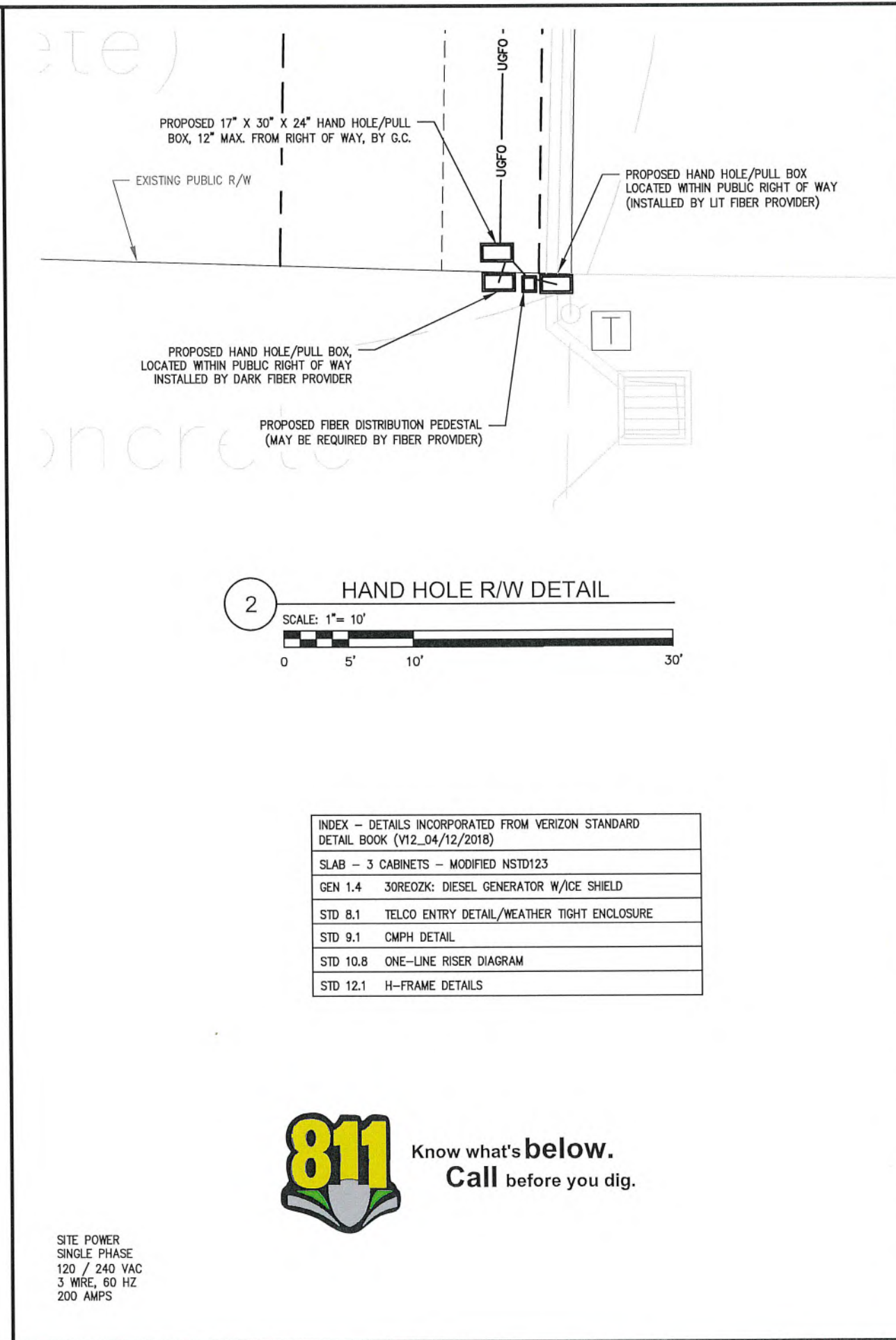
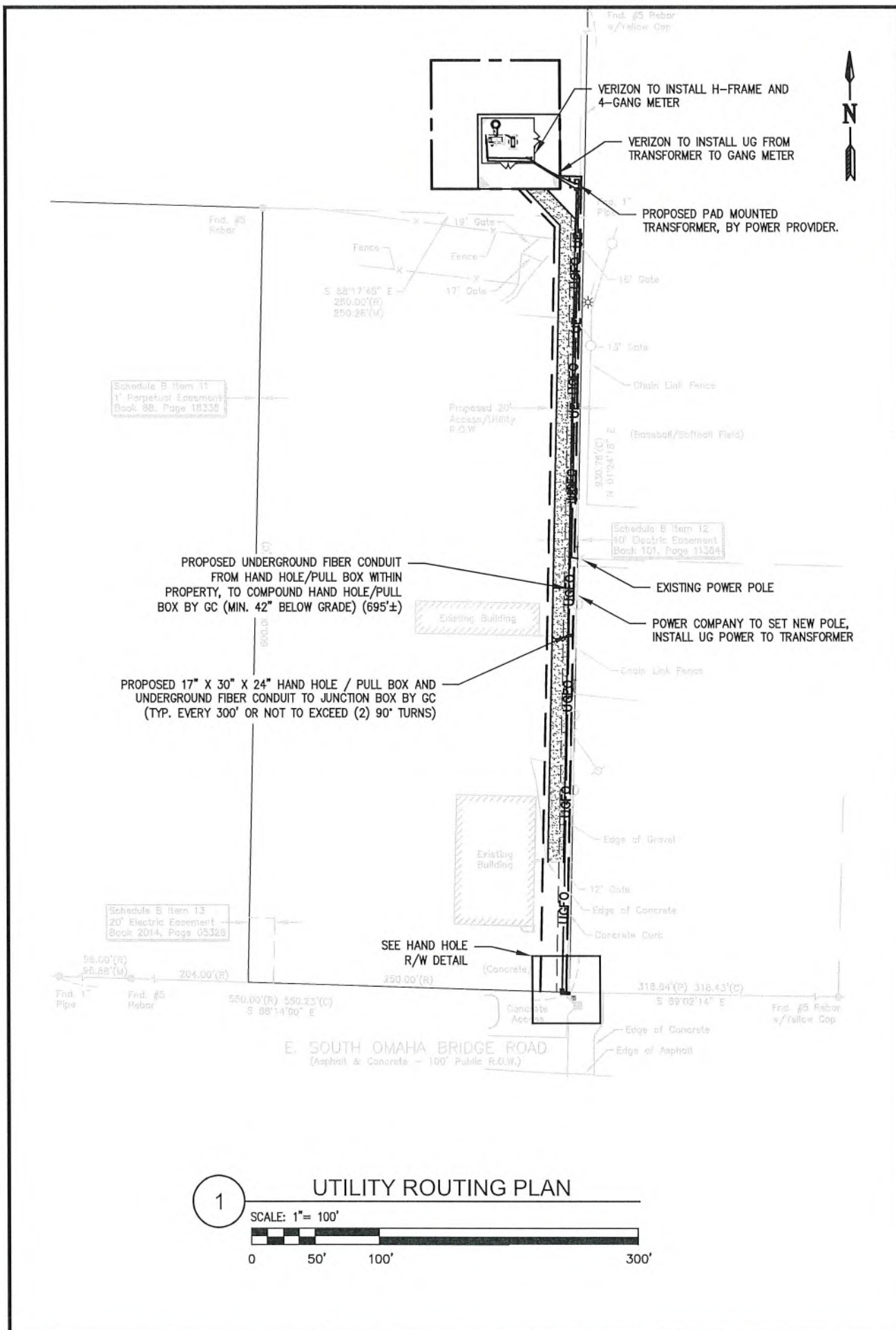
SHEET TITLE:  
**ANTENNA PLANS, RFDS**

SHEET NUMBER:  
**RF1**

ANTENNA KEY														COAX / HYBRID KEY								EQUIPMENT KEY			
SECTOR	AZIMUTH	POSITION	PORT	QTY	STATUS	MANUFACTURER	MODEL	TYPE	ANTENNA LENGTH	ANTENNA TIP	ANTENNA CENTER	ELEC DOWNTILT	MECH DOWNTILT	QTY	STATUS	COAX TYPE	MANUFACTURER	MODEL	DIELECTRIC	DIAMETER (INCH)	RUN (FEET)	QTY	MODEL	STATUS	
ALPHA SECTOR	0	1.1	TX/RX 0	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	4449	PROPOSED
		1.2	TX/RX 1					850 LTE						1	PROPOSED	HYBRID					15				
		1.3	TX/RX 0					850 5GRN																	
		1.4	TX/RX 1					1900 LTE																	
		1.5	TX/RX 2					2100 LTE																	
		1.6	TX/RX 3					AWS LTE																	
		2.1	TX/RX 2	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	8843	PROPOSED
		2.2	TX/RX 3					850 LTE						1	PROPOSED	HYBRID					15				
		2.3	TX/RX 0					850 5GRN																	
		2.4	TX/RX 1					1900 LTE																	
		2.5	TX/RX 2					2100 LTE																	
		2.6	TX/RX 3					AWS LTE																	
3.1	-	1	PROPOSED	ERICSSON	AIR6449	NL-Sub6	40.3	187.3	186	TBD	0										-	-	-		
4.1	-	1	PROPOSED	ERICSSON	CBRS Integrated	CBRS 3_5 GHz	12	186.3	186	TBD	0										-	-	-		
BETA SECTOR	120	1.1	TX/RX 0	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	4449	PROPOSED
		1.2	TX/RX 1					850 LTE						1	PROPOSED	HYBRID					15				
		1.3	TX/RX 0					850 5GRN																	
		1.4	TX/RX 1					1900 LTE																	
		1.5	TX/RX 2					2100 LTE																	
		1.6	TX/RX 3					AWS LTE																	
		2.1	TX/RX 2	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	8843	PROPOSED
		2.2	TX/RX 3					850 LTE						1	PROPOSED	HYBRID					15				
		2.3	TX/RX 0					850 5GRN																	
		2.4	TX/RX 1					1900 LTE																	
		2.5	TX/RX 2					2100 LTE																	
		2.6	TX/RX 3					AWS LTE																	
3.1	-	1	PROPOSED	ERICSSON	AIR6449	NL-Sub6	40.3	187.3	186	TBD	0										-	-	-		
4.1	-	1	PROPOSED	ERICSSON	CBRS Integrated	CBRS 3_5 GHz	12	186.3	186	TBD	0										-	-	-		
GAMMA SECTOR	240	1.1	TX/RX 0	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	4449	PROPOSED
		1.2	TX/RX 1					850 LTE						1	PROPOSED	HYBRID					15				
		1.3	TX/RX 0					850 5GRN																	
		1.4	TX/RX 1					1900 LTE																	
		1.5	TX/RX 2					2100 LTE																	
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		2.1	TX/RX 2	1	PROPOSED	JMA	MX06FIT865-02	700 LTE	96	190	186	TBD	0	6	PROPOSED	JUMPER						10	1	8843	PROPOSED
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		2.6	TX/RX 3					AWS LTE																	
3.1	-	1	PROPOSED	ERICSSON	AIR6449	NL-Sub6	40.3	187.3	186	TBD	0										-	-	-		
4.1	-	1	PROPOSED	ERICSSON	CBRS Integrated	CBRS 3_5 GHz	12	186.3	186	TBD	0										-	-	-		
ADDITIONAL: (2) DISTRIBUTION BOXES RCMDC-6627-PF-48 (1) ON TOWER & (1) ON GROUND (2) COMMSCOPE HFT1206 HYBRID CABLES									ANTENNA CL 186 ICE BRIDGE 6 PAD 10 SLACK 10 HYBRID CABLE LENGTH 212				CONTRACTOR TO CONTACT RF TO OBTAIN LATEST RFDS FOR FINAL TILT SETTINGS							PROPOSED JUMPERS. 36 FUTURE JUMPERS 0 PROPOSED HYBRID JUMPERS 6 FUTURE HYBRID JUMPERS 0			OMA TANK FARM		

1 RFDS (03/15/2022)  
SCALE: N.T.S.





CERTIFICATION AND SEAL:  
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DATE: 03/21/2022

(SIGNATURE) M. H. CATALINA MARTINEZ  
LICENSE NUMBER: 23482  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023

**LICENSED PROFESSIONAL ENGINEER**  
M.H.CATALINA MARTINEZ  
23482  
IOWA

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**verizon**

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TEL: 512.345.9595

SITE NAME:  
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CONSTRUCTION REV 0 03/21/2022

REVISION		
NO	DESCRIPTION	BY DATE

SHEET TITLE:  
**UTILITY ROUTING**

SHEET NUMBER:  
**UC1**



PROPOSED 18" X 18" X 6"  
FIBER JUNCTION BOX WITH  
INTERNAL GROUND BAR

PROPOSED  
INTEGRATED  
LOAD CENTER

PROPOSED ALARM &  
POWER CONDUITS

PROPOSED H-FRAME AND 800 AMP  
120/240V SINGLE PHASE METER BANK  
BY VERIZON

(2) PROPOSED 4" CONDUITS FROM  
TRANSFORMER TO METER BANK ON  
H-FRAME. BY VERIZON.  
(3) 600 KCMIL CU CONDUCTORS AND  
(1) 1/0 CU GROUND PER CONDUIT.

(3) PROPOSED SECONDARY POWER 3/0 AWG  
AND (1) #6 AWG GROUND WIRING IN 2" SCH  
80 CONDUIT BY VERIZON

PROPOSED VERIZON METER, BY POWER  
PROVIDER, 200 AMPS.

PROPOSED PAD MOUNTED TRANSFORMER IN  
VERIZON EASEMENT BY UTILITY COMPANY

PROPOSED 17" X 30" X 24" HAND HOLE / PULL BOX AND  
UNDERGROUND FIBER CONDUIT TO JUNCTION BOX BY GC  
(TYP. EVERY 300' OR NOT TO EXCEED (2) 90° TURNS)

PROPOSED UNDERGROUND FIBER CONDUIT  
FROM HAND HOLE/PULL BOX WITHIN  
PROPERTY, TO COMPOUND HAND HOLE/PULL  
BOX BY GC (MIN. 42" BELOW GRADE) (695'±)

NOTES:  
CONTRACTOR IS TO INSTALL ELECTRICAL PULL BOXES  
FOR UG PVC CONDUITS AS TO NOT EXCEED 360°

PROPOSED UGFO CONDUIT TO BE 2" SCHEDULE 40,  
2" SCHEDULE 80 UNDER ROADWAY/PARKING AREA OR  
IF SPECIFIED BY LANDOWNER.

# SITE UTILITY PLAN



CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS  
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND  
THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER  
THE LAWS OF THE STATE OF IOWA

03/21/2022

(SIGNATURE) M. H. CATALINA MARTINEZ  
DATE  
LICENSE NUMBER: 23482  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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**verizon**

**KGI**

KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

**OMA TANK FARM**

LOCATION CODE:

**621673**

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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CONSTRUCTION REV 0	03/21/2022

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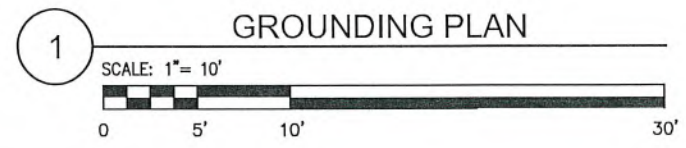
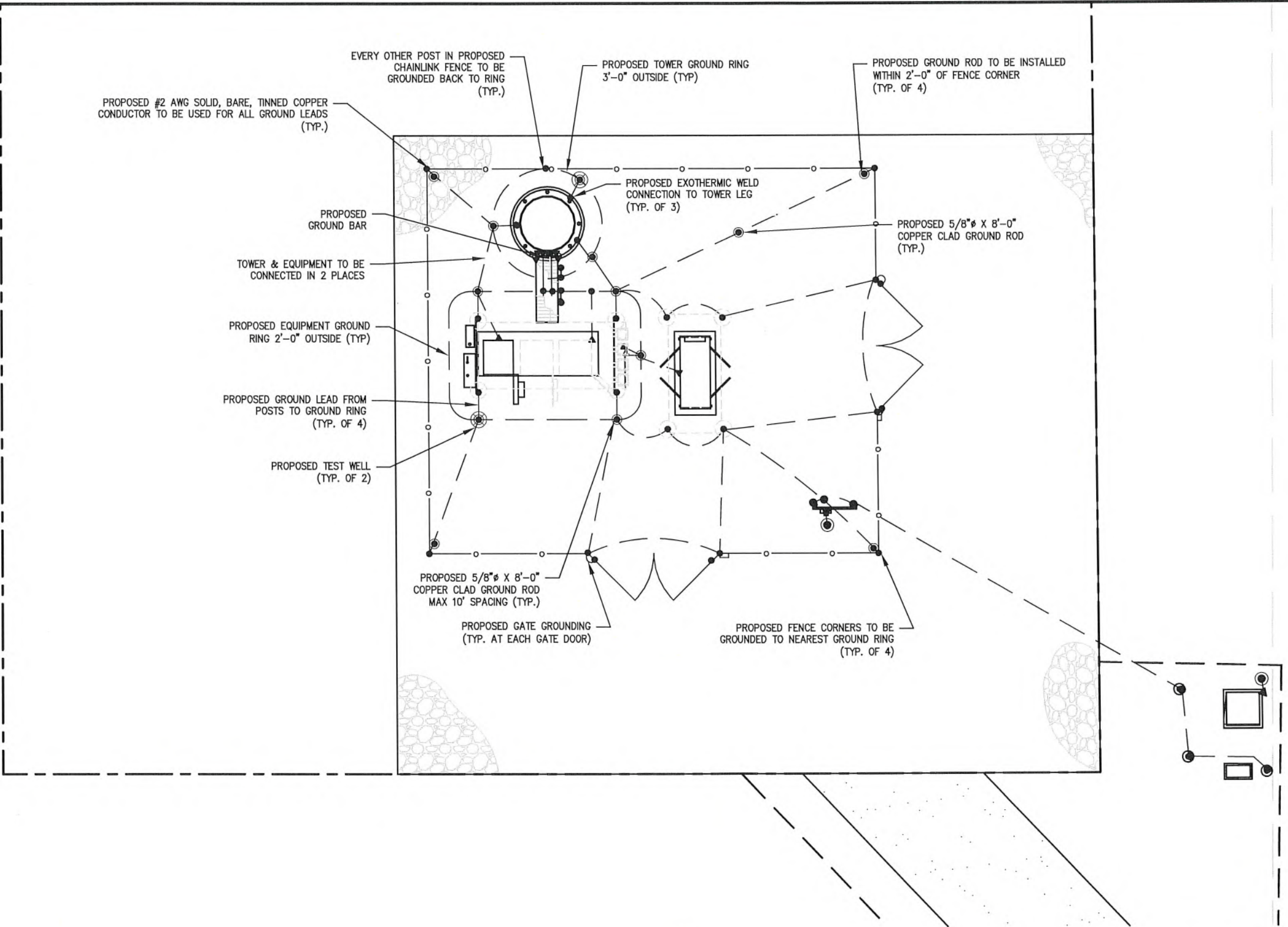
SHEET TITLE:

**SITE UTILITY PLAN**

SHEET NUMBER:

**E1**





INDEX - DETAILS INCORPORATED FROM VERIZON STANDARD DETAIL BOOK (V12_04/12/2018)	
SLAB - 3 CABINETS - MODIFIED NSTD123	
STD 10.8	ONE-LINE RISER DIAGRAM
STD 11.1	TEST WELL DETAIL & GROUND RING & ROD DETAIL
STD 11.3	REBAR GROUNDING DETAIL
STD 11.4	CONDUIT DETAIL (#1)
STD 11.5	TYPICAL GROUNDING CABLE BRIDGE DETAIL
STD 11.6	TYPICAL TOWER GROUNDING DETAIL

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PROFESSIONAL ENGINEER  
M.H.CATALINA  
MARTINEZ  
23482  
IOWA

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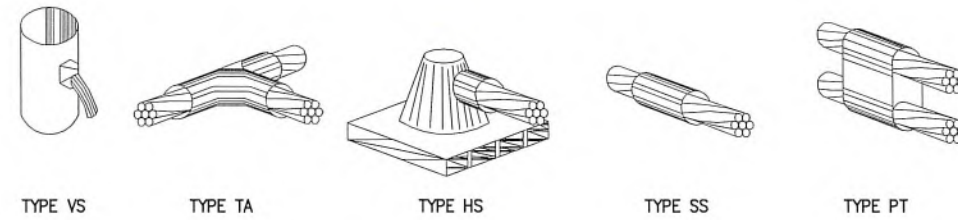
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GROUNDING PLAN

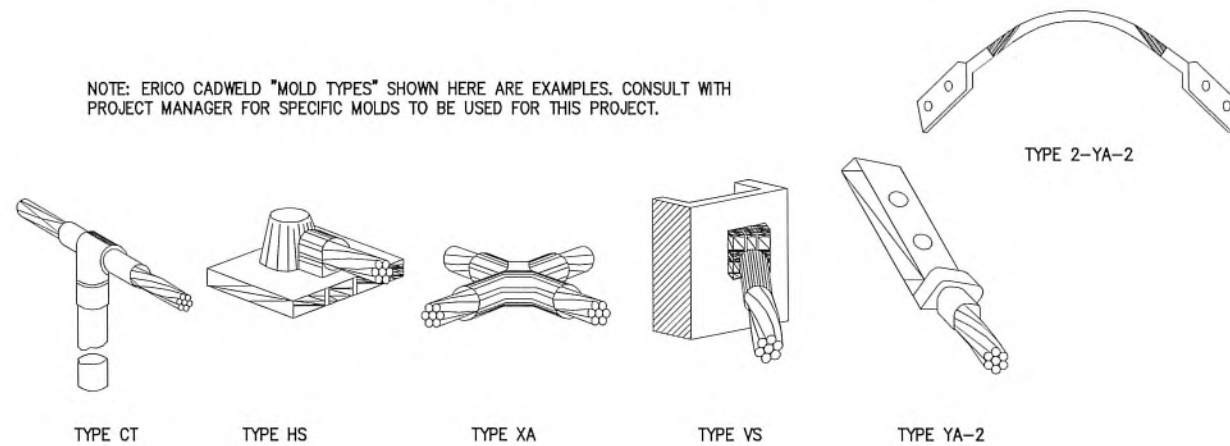
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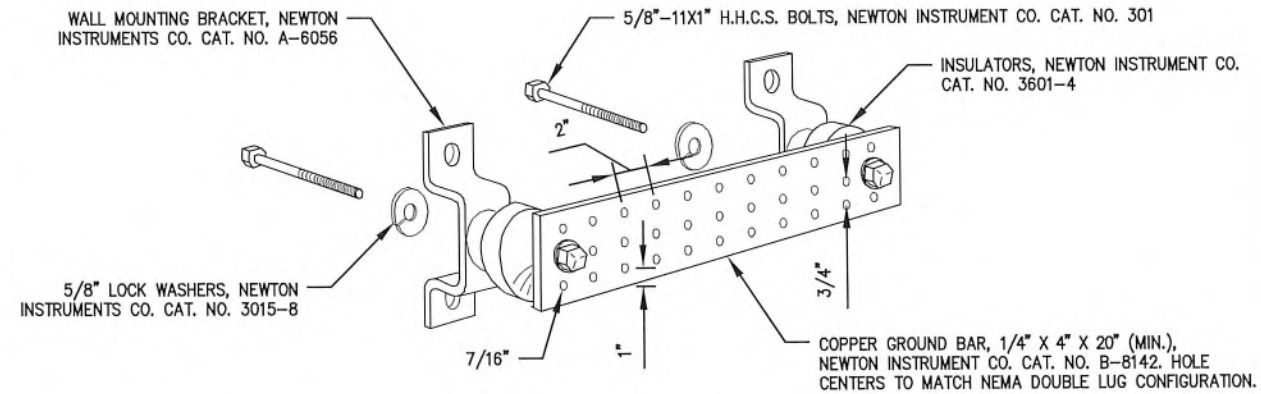




NOTE: ERICO CADWELD "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH PROJECT MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.

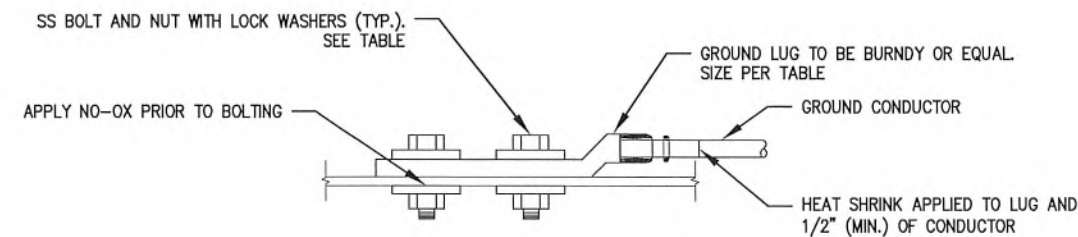


1 TYPICAL DETAILS  
SCALE: N.T.S.



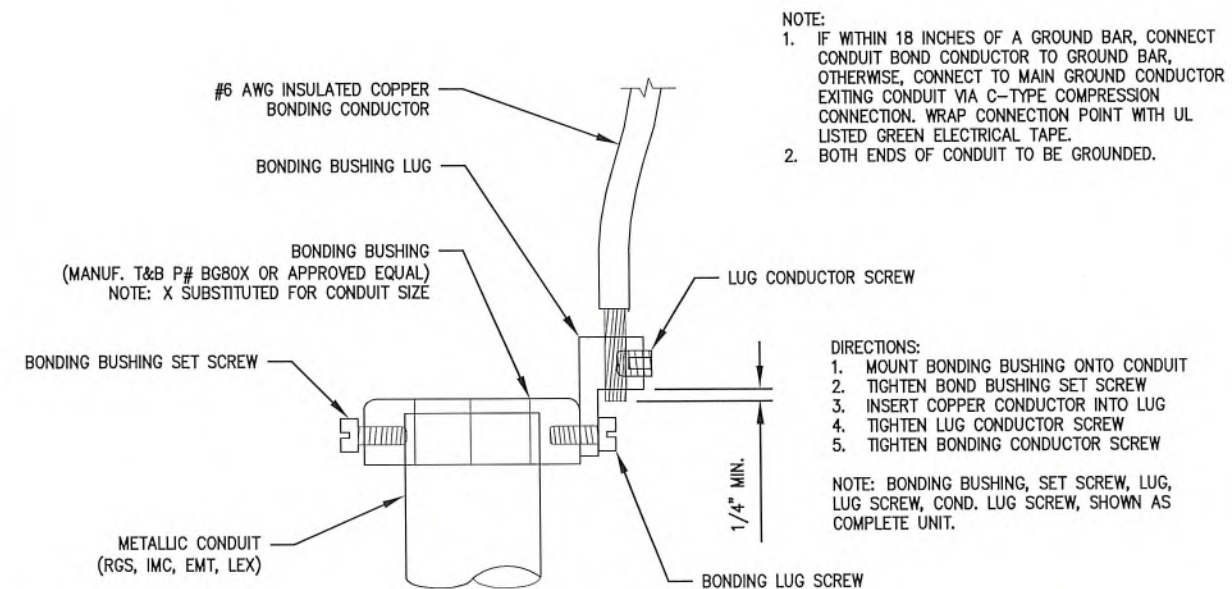
- NOTES:
- GROUND BAR SHALL BE SIZED TO ACCOMMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY.
  - GROUND BAR SHALL BE NEITHER FIELD FABRICATED NOR NEW HOLES DRILLED.
  - GROUND LUGS SHALL MATCH THE HOLE SPACING ON THE BAR.
  - HARDWARE DIAMETER SHALL BE A MINIMUM 3/8".

2 TYP. GROUND BAR DETAIL  
SCALE: N.T.S.



WIRE SIZE	LUG #	BOLT DIA.
#6 AWG	YA6C2TC14E2	1/4"
#2 AWG	YA2CL-2TC14	1/4"
#2 AWG SOLID	YA3C2TC38	3/8"
#2/0 AWG	YA262LN	1/2"
#4/0 AWG	YA282LN	1/2"

3 TYP. TWO-HOLE LUG DETAIL  
SCALE: N.T.S.



- NOTE:
- IF WITHIN 18 INCHES OF A GROUND BAR, CONNECT CONDUIT BOND CONDUCTOR TO GROUND BAR, OTHERWISE, CONNECT TO MAIN GROUND CONDUCTOR EXITING CONDUIT VIA C-TYPE COMPRESSION CONNECTION. WRAP CONNECTION POINT WITH UL LISTED GREEN ELECTRICAL TAPE.
  - BOTH ENDS OF CONDUIT TO BE GROUNDED.

- DIRECTIONS:
- MOUNT BONDING BUSHING ONTO CONDUIT
  - TIGHTEN BOND BUSHING SET SCREW
  - INSERT COPPER CONDUCTOR INTO LUG
  - TIGHTEN LUG CONDUCTOR SCREW
  - TIGHTEN BONDING CONDUCTOR SCREW

NOTE: BONDING BUSHING, SET SCREW, LUG, LUG SCREW, COND. LUG SCREW, SHOWN AS COMPLETE UNIT.

4 TYP. CONDUIT GROUNDING DETAIL  
SCALE: N.T.S.

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GROUNDING DETAILS

SHEET NUMBER:  
E3



GN1 GENERAL NOTES  
PART 1 GENERAL

1.1 SUMMARY OF WORK

- A. THE WORK SHALL CONSIST OF, BUT NOT LIMITED TO, THE INSTALLATION OF COMMUNICATION SITES, TOWER, ANTENNAS AND LINES, GROUNDING, ELECTRICAL WORK, ETC., AS INDICATED ON DRAWINGS AND AS SPECIFIED HEREIN.
- B. CONTRACTOR SHALL SUPPLY ALL MATERIALS/EQUIPMENT REQUIRED AND ALL LABOR, TOOLS, UTILITIES, MINOR HARDWARE/MATERIALS, TRANSPORTATION AND FACILITIES NECESSARY FOR PROPER EXECUTION AND COMPLETION OF SERVICES AND INSTALL WORK.
- C. CONTRACTOR SHALL BE OBLIGATED TO PERFORM ALL WORK IN THESE DRAWINGS IN ACCORDANCE WITH THE CONTRACT AGREEMENT, FEDERAL REGULATIONS, STATE REQUIREMENTS, LOCAL CODES, AND INDUSTRY STANDARDS.
- D. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED WITHOUT ISSUANCE OF A CHANGE ORDER.
- E. ALL SYMBOLS AND ABBREVIATIONS USED IN THE DRAWINGS ARE CONSIDERED CONSTRUCTION STANDARDS. CONTRACTOR SHALL NOTIFY KGI WIRELESS FOR CLARIFICATION IF ANY QUESTION EXISTS REGARDING EXACT MEANINGS BEFORE PROCEEDING WITH THE WORK.
- F. THIS SCOPE OF WORK DOES NOT INCLUDE STRUCTURAL EVALUATIONS OF THE SITE. APPURTENANCES, EQUIPMENT, AND COAXIAL CABLES SHOWN IN THESE DRAWINGS ARE SCHEMATIC AND FOR REFERENCE ONLY. A STRUCTURAL EVALUATION OF THE SITE STRUCTURE, ANTENNA MOUNTINGS AND HARDWARE SHOULD BE PERFORMED AND RECOMMENDATIONS INDICATED IN THE STRUCTURAL ANALYSIS REGARDING FINAL APPURTENANCE, EQUIPMENT, CABLE ARRANGEMENT AND DETAILS SUPERSEDES THESE DRAWINGS. IN THE CASE OF A NEW TOWER, MANUFACTURER'S DRAWINGS.

1.2 CONFLICTS

- A. IN CASE OF CONFLICT BETWEEN DOCUMENTS LISTED IN 1.1.C REGARDING STANDARDS OF WORK, THE MORE STRINGENT CRITERIA SHALL APPLY.
- B. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AND LAYOUT AT THE SITE BEFORE ORDERING ANY MATERIALS OR STARTING WORK. ANY ADDITIONAL COSTS RESULTING FROM DIFFERENCE FROM ACTUAL DIMENSIONS AS INDICATED ON DRAWINGS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ANY SUCH DISCREPANCY WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE CONSTRUCTION MANAGER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
- C. ANY ADDITIONAL COSTS OR DELAYS RESULTING FROM CORRECTION OF THE WORK TO COMPLY WITH THE ABOVE REQUIREMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

1.3 SITE FAMILIARITY

- A. CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING SITE WALKS PRIOR TO CONSTRUCTION TO FAMILIARIZE HIMSELF WITH THE FOLLOWING, INCLUDING BUT NOT LIMITED TO SITE CONDITIONS, CONSTRAINTS, SITE ACCESS, DIMENSIONS, MECHANICAL, AND ELECTRICAL/UTILITY SERVICE.
- B. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING THE PROJECT BID. ANY DISCREPANCIES, CONFLICTS, OR OMISSIONS SHALL BE REPORTED BEFORE ACCEPTING OR PROCEEDING WITH THE WORK.

1.4 DOCUMENTS REQUIRED AT JOB SITE

- A. CONTRACTOR SHALL MAINTAIN A FULL SET OF DRAWINGS ON-SITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
- B. DETAILS ARE INTENDED TO SHOW DESIGN, MATERIALS AND LABOR AS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM.
- C. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED IN THE AS-BUILT REDLINES USING RED INK AND PROVIDED AT CONTRACT COMPLETION.
- D. CONTRACTOR SHALL POST BUILDING PERMIT ISSUED BY LOCAL JURISDICTION ON EXISTING SITE FENCING (COLLOCATION SITE) OR A CONTRACTOR PROVIDED POST (RAW LAND SITE) CLEAR OF OBSTRUCTIONS.

1.5 ON-SITE SUPERVISION

- A. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK ON A DAILY BASIS DURING CONSTRUCTION.
- B. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING HIS BEST SKILL AND ATTENTION.
- C. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH CONTRACT DOCUMENTS AND INDUSTRY STANDARDS.

1.6 SITE CLEANUP

- A. THE CONTRACTOR MUST CLEAN UP AND REMOVE FROM THE WORK SITE ON A DAILY BASIS (OR SOONER IF DIRECTED BY THE CONSTRUCTION MANAGER) ALL RUBBISH, CONSTRUCTION DEBRIS, AND SURPLUS MATERIALS RESULTING FROM HIS OWN WORK.
- B. THE CONTRACTOR MUST SUPPLY A DUMPSTER OR SIMILAR TRASH STORAGE/REMOVAL DEVICE AT JOB SITES WHERE CONSTRUCTION DEBRIS OR GARBAGE IS GENERATED.
- C. UPON COMPLETION OF THE WORK, THE ENTIRE JOB SITE AREAS MUST BE LEFT CLEAN AND FREE OF TRASH, DEBRIS, MUD, DIRT, DUST, SCRAP METALS, AND EXCESS MATERIALS.
- D. UPON COMPLETION OF INSTALLATION AND CONSTRUCTION WORK, THE EQUIPMENT CABINET PLATFORM/SHELTER SHALL BE THOROUGHLY CLEANED TO THE SATISFACTION OF THE OWNER.

1.7 STANDARDS AND CODES (LATEST EDITION)

ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE BUT NOT BE LIMITED TO THE LATEST VERSION OF THE FOLLOWING:

- A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
- ANSI/TIA -222-G-2006
  - ANSI/TIA -222-G-2006 TELECOMMUNICATIONS STANDARDS
  - ANSI Z359 REQUIREMENTS FOR PERSONAL FALL ARREST SYSTEM, SUBSYSTEMS AND COMPONENTS
  - ANSI Z87.1 OCCUPATIONAL AND EDUCATIONAL EYE AND FACE PROTECTION
  - ANSI Z89.1 PROTECTIVE HEADWEAR FOR INDUSTRIAL WORKERS - REQUIREMENTS
  - ANSI/IEEE C95.1 SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE AND RADIO FREQUENCY ENERGY
  - ANSI/TIA/EIA STANDARD 222: STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES
- B. AMERICAN CONCRETE INSTITUTE:
- ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
  - ACI 305 HOT WEATHER CONCRETING
  - ACI 306 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
  - ACI 318 RECOMMENDED PRACTICE FOR CONCRETE INSPECTION
  - ACI 311 RECOMMENDED PRACTICE FOR CONCRETE INSPECTION
  - ACI 315 MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES
  - ACI 613 RECOMMENDED PRACTICE FOR SELECTING PROPORTIONS FOR CONCRETE
  - ACI 614 RECOMMENDED PRACTICE FOR MEASURING, MIXING AND PLACING CONCRETE
- C. AMERICAN INSTITUTE OF STEEL CONSTRUCTION:
- AISC MANUAL OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION: LATEST EDITION
- D. AMERICAN SOCIETY FOR TESTING AND MATERIALS
- ASTM A615 SPECIFICATION FOR DEFORMED AND PLAIN BILLET STEEL BARS FOR CONCRETE REINFORCEMENT
  - ASTM C33 SPECIFICATION FOR CONCRETE AGGREGATES
  - ASTM C39-77 SPECIFICATION FOR TEST FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMEN
  - ASTM C94-80 SPECIFICATION FOR READY-MIX CONCRETE
  - ASTM C150 SPECIFICATION FOR PORTLAND CEMENT CONCRETE
  - ASTM C172 SAMPLING FRESH CONCRETE
  - ASTM D698-91 TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT
  - ASTM 1556-64 DENSITY OF SOIL IN PLACE BY THE SAND-CONE METHOD
  - ASTM 1557 TEST FOR MOISTURE-UNIT WEIGHT RELATIONS OF SOILS AND SOIL-AGGREGATE MIXTURES USING 10-LB HAMMER AND 18 INCH DROP (PROCEDURE C)
  - ASTM D2922 DENSITY OF SOIL AND SOIL IN PLACE BY NUCLEAR METHODS SHALLOW DEPTH
- E. AMERICAN WELDING SOCIETY:
- AWS D12.1 RECOMMENDED PRACTICES FOR WELDING STEEL, METAL, INSERTS AND CONNECTIONS IN REINFORCED CONCRETE CONSTRUCTION
- F. CONCRETE REINFORCING STEEL INSTITUTE:
- MANUAL OF STANDARD PRACTICE
- G. FEDERAL AVIATION ADMINISTRATION (FAA):
- DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR, AC 70/7460-1G: OBSTRUCTION MARKING AND LIGHTING
  - DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR, 150-5345-43, FAA/DOD SPECIFICATION L-856: HIGH INTENSITY OBSTRUCTION LIGHTING SYSTEMS
- H. FEDERAL COMMUNICATIONS COMMISSION (FCC):
- FEDERAL COMMUNICATIONS COMMISSION-RULES AND REGULATIONS PART 17: CONSTRUCTION, MARKING AND LIGHTING OF ANTENNA STRUCTURES
- I. STRUCTURAL STEEL PAINTING COUNCIL:
- SSPC-SP-1-63: SPECIFICATION FOR PAINTING STEEL STRUCTURES
- J. NATIONAL FIRE PROTECTION ASSOCIATION:
- NFPA 1 - FIRE PREVENTION CODE
  - NFPA 70 - NATIONAL ELECTRIC CODE
  - NFPA 101 - LIFE SAFETY CODE
  - NFPA 111 - STANDARD ON STORED ELECTRICAL ENERGY, EMERGENCY AND STANDBY POWER SYSTEMS
  - NFPA 780 - STANDARD FOR THE INSTALLATION FOR LIGHTNING PROTECTION SYSTEMS
- K. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):
- OSHA 1926
  - OSHA DIRECTIVES CPL 2-1.29 - INTERIM INSPECTION PROCEDURES DURING COMMUNICATIONS TOWER CONSTRUCTION ACTIVITIES

- L. STANDARD BUILDING CODE:
- SEE T1 OF THIS DRAWING SET FOR THE PROPER VERSION OF THE IBC.
- M. NATIONAL ELECTRIC CODE:
- SEE T1 OF THIS DRAWING SET FOR THE PROPER VERSION OF THE NEC.
- N. INTERNATIONAL FIRE CODE: 2009 EDITION
- O. LIFE SAFETY CODE: 2009 EDITION
- P. UNIFORM PLUMBING CODE: 2009 EDITION
- Q. AMERICAN DISABILITIES ACT

1.8 NOTICE TO PROCEED

- A. WHEN THE SITE IS AVAILABLE FOR CONSTRUCTION START, VERIZON SHALL ISSUE A NOTICE TO PROCEED.
- B. CONTRACTOR SHALL NOT COMMENCE WORK PRIOR TO RECEIVING WRITTEN NOTICE TO PROCEED AND ISSUANCE OF PURCHASE ORDER.

1.9 VERIZON REPRESENTATIVE

- A. VERIZON SHALL DESIGNATE A PROJECT REPRESENTATIVE. THIS PERSON IS THE ONLY CONTACT POINT AUTHORIZED TO MAKE ANY CHANGES TO THE CONTRACT PROVISIONS, CONSTRUCTION DRAWINGS, OR SPECIFICATIONS. ANY CHANGES MADE BY THE CONTRACTOR WITHOUT THE VERIZON REPRESENTATIVE'S PRIOR APPROVAL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

1.10 CONTRACTORS RESPONSIBILITIES

- A. CONTRACTOR SHALL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THE PROJECT.
- B. THE CONTRACTOR SHALL SUBMIT A SCHEDULE REFLECTING THE WORK PLAN. THE SCHEDULE SHALL BE SUBMITTED PRIOR TO COMMENCING ANY WORK.
- C. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF COMMUNICATIONS SUCH AS A MOBILE PHONE. THIS EQUIPMENT WILL NOT BE SUPPLIED NOR WILL CELLULAR SERVICE BE ARRANGED.
- D. CONTRACTOR SHALL PROVIDE DAILY UPDATES ON SITE WORK PROGRESS, WRITTEN IN A FORM OF DAILY FIELD REPORT
- E. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF CONCRETE POURS, TOWER ERECTIONS, AND CABINET PLATFORM SETUP NO LESS THAN 48 HOURS IN ADVANCE AND IN WRITING.

1.11 PROJECT MEETINGS

- A. CONTRACTOR SHALL PROVIDE PROGRESS SCHEDULE UPDATES ON A DAILY BASIS.
- B. CONTRACTOR MAY BE REQUIRED TO ATTEND WEEKLY STATUS MEETINGS AND/OR CONFERENCE CALLS AS SCHEDULED.

1.12 AS-BUILT DRAWINGS

- A. CONTRACTOR SHALL KEEP UP-TO-DATE MARKED-UP DRAWINGS. UPON COMPLETION AT THE JOB SITE, THE CONTRACTOR SHALL REVIEW THE COMPLETE AS-BUILT DRAWINGS, AND ASCERTAIN THAT ALL DATA FURNISHED ON THE DRAWINGS IS ACCURATE AND TRULY REPRESENTS THE WORK AS ACTUALLY PERFORMED. MARKINGS INDICATING CHANGES SHALL BE MADE IN RED INK AND CLEARLY VISIBLE.
- B. UPON COMPLETION AT THE JOB SITE, THE CONTRACTOR SHALL PROVIDE ALL OPERATION AND MAINTENANCE MANUALS FOR THE SUPPLIED SITE EQUIPMENT (CABINET PLATFORM, UPS, GENERATOR, HVAC, ETC.) AND ALL AS-BUILT DRAWINGS, WHICH FULLY DESCRIBE THE ACTUAL INSTALLED EQUIPMENT.

1.13 CLOSEOUT DOCUMENTATION

- A. TESTING RESULTS AS IDENTIFIED IN THESE CONSTRUCTION DRAWINGS.
- B. AZIMUTH, DOWN TILT, TAPE DROP TEST FORM.
- C. ANTENNA SWEEP TESTING/COAXIAL CABLE SWEEP TESTING AS IDENTIFIED IN THESE CONSTRUCTION DRAWINGS.
- D. LABELED AND DATE STAMPED PHOTOGRAPHS OF MATERIALS AND EQUIPMENT SERIAL NUMBERS, SUBSTANTIAL INSTALLATION AND FINAL INSTALLATION.
- E. PERMIT CLOSEOUTS AND CERTIFICATE OF OCCUPANCY.
- F. A COLOR SCANNED PDF OF REDLINES PRODUCED ON-SITE.
- G. MILESTONE LIEN WAIVERS AND FINAL ACCEPTANCE LIEN WAIVERS.
- H. FINAL ACCEPTANCE INVOICE.
- I. PUNCH LIST CHECKLIST COMPLETE WITH NO PENDING ITEMS AND PHOTOS OF CORRECTED ITEMS.
- J. OTHER DOCUMENTS IDENTIFIED IN THE CONTRACT DOCUMENTS.

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**GENERAL NOTES**

SHEET NUMBER:

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1.15 QUALITY ASSURANCE

- A. CONTRACTOR SHALL PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION. ANY DAMAGE TO NEW AND EXISTING CONSTRUCTION, STRUCTURE, OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED OR REPLACED TO THE SATISFACTION OF THE TENANT OR BUILDING OWNER, OR OWNER'S REPRESENTATIVE AT THE EXPENSE OF THE CONTRACTOR.
- B. CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL REPLACE OR REMEDY ANY FAULTY, IMPROPER, OR INFERIOR MATERIALS OR WORKMANSHIP OR ANY DAMAGE WHICH SHALL APPEAR WITHIN ONE YEAR AFTER THE COMPLETION AND ACCEPTANCE OF THE WORK UNDER THIS CONTRACT.
- C. CONTRACTOR SHALL NOTIFY VERIZON IF DRAWING DETAILS ARE CONSIDERED UNSOUND, UNSAFE, NOT WATERPROOF, NOT CHEMICAL PROOF, OR NOT WITHIN CUSTOMARY TRADE PRACTICES. IF CONTRACTOR BEGINS CONSTRUCTION UNDER THESE CONDITIONS, VERIZON ASSUMES THAT THERE IS NO OBJECTION TO DRAWING DETAILS.

1.16 TEMPORARY FACILITIES

- A. CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER, AND TOILET FACILITIES AS REQUIRED BY THE CITY OF GOVERNING AGENCIES.

1.17 PERMITS

- A. CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK.
- B. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY AS REQUESTED BY VERIZON.
- C. WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
- D. CONTRACTOR SHALL MEET ALL OF THE REGULATORY REQUIREMENTS OF THE JURISDICTION GOVERNING CONSTRUCTION; SUCH AS TOWER CONSTRUCTION, EQUIPMENT SETUP, GENERATOR SETUP, AND FINAL CONSTRUCTION.

1.18 SAFETY

- A. CONTRACTOR, HIS EMPLOYEES, ANY THIRD PARTY SUBCONTRACTORS, VENDORS, THEIR RESPECTIVE EMPLOYEES AND CONTRACTOR'S VISITORS SHALL COMPLY WITH ALL SAFETY STANDARDS, ACCIDENT PREVENTION REGULATIONS AND ENVIRONMENTAL REGULATIONS TO AVOID THE RISK OF BODILY HARM TO ANY PERSON AND THE RISK OF DAMAGE TO ANY PROPERTY, EQUIPMENT, OR MATERIAL.
- B. CONTRACTOR SHALL ALSO COMPLY WITH ANY SAFETY AND HEALTH PROGRAMS AND/OR RULES PROMULGATED BY VERIZON.
- C. CONTRACTOR SHALL PERFORM DAILY SAFETY TAILGATE MEETINGS PRIOR TO COMMENCING WORK. THE TOPIC, DISCUSSION AND ATTENDANCE OF EACH MEETING SHALL BE LOGGED IN THE DAILY FIELD REPORT TO BE PROVIDED TO VERIZON AFTER DAILY WORK COMPLETION.

1.19 STARTUP AND COMMISSIONING

- A. CONTRACTOR AND/OR SUBCONTRACTORS SHALL DEMONSTRATE TO VERIZON THAT ALL SYSTEMS AND SUB-SYSTEMS INSTALLED UNDER THIS CONTRACT OPERATE PROPERLY AND IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
- B. CONTRACTOR IS REQUIRED TO SUBMIT THE RESULTS OF ALL TESTS REQUIRED BY THE PROJECT REQUIREMENTS AND DRAWINGS THAT FALL WITHIN THE SCOPE OF WORK TO VERIZON WITHIN (5) DAYS OF THE TEST. AT A MINIMUM, THE FOLLOWING TESTS RESULTS SHALL BE INCLUDED:
  - COAXIAL CABLE SWEEP TESTING (VSWR, RETURN LOSS, AND DISTANCE-TO-FAULT FORMATS PERFORMED IN SHORT, WITH LOAD, AND WITH ANTENNA)
  - FIBER TESTS PER VERIZON STANDARDS.
  - TAPE DROP TESTS TO VERIFY ANTENNA MOUNTING HEIGHT (AGL), AZIMUTH, AND DOWN TILT. INSTALLED AZIMUTH, CENTERLINE, AND DOWN TILT MUST CONFORM TO RF CONFIGURATION DATA IN THE DRAWINGS.
  - CONCRETE COMPRESSION TESTS.
  - FUEL LEAKAGE TEST FOR FUEL TANK AND PIPING INSTALLATION WORK.
  - GROUND RESISTANCE TEST FOR CONCRETE WORK.
  - SOIL/BACKFILL COMPRESSION TESTING.
  - ANY OTHER TEST THAT MAY BE JURISDICTIONALLY OR OTHERWISE REQUIRED.
  - UPS SYSTEM STARTUP.
  - GENERATOR SYSTEM STARTUP.
- C. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES, INSPECTIONS, AND/OR TESTING RESULTS.
- D. VERIZON WILL PROVIDE A CERTIFICATE OF COMPLETION AND APPROVE ALL FINAL PAYMENTS WHEN ALL PUNCH-LIST ITEMS HAVE BEEN CORRECTED AND ALL SYSTEMS ARE ACCEPTABLE AND IN OPERATION PER MANUFACTURER SPECIFICATIONS AND THE SCOPE OF WORK IN THESE CONSTRUCTION DRAWINGS AND ANY ADDITIONAL IDENTIFIED SCOPE OF WORK.

CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS  
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND  
THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER  
THE LAWS OF THE STATE OF IOWA

03/21/2022

(SIGNATURE) M. H. CATALINA MARTINEZ  
DATE  
LICENSE NUMBER 23482  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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**verizon**

**KGI**

KGI WIRELESS, INC.  
ENGINEERING

805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

**OMA TANK FARM**

LOCATION CODE:

**621673**

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
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**GENERAL NOTES**

SHEET NUMBER:

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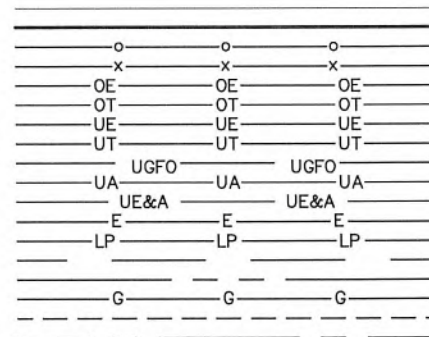


ABBREVIATION	DEFINITION
AAV	ACCELERATED ACCESS VENDOR
AB	ANCHOR BOLT
ABV	ABOVE
ACCA	ANTENNA CABLE COVER ASSEMBLY
ADD'L	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GRADE LEVEL
ALT	ALTERNATE
ALUM	ALUMINUM
AMSL	ABOVE MEAN SEA LEVEL
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
AWG	AMERICAN WIRE GAUGE
B/U	BACK-UP CABINET
BBS	BATTERY BACK UP STATION
BLK	BLOCK
BLDG	BUILDING
BLKG	BLOCKING
BTCW	BARE TINNED COPPER WIRE
BTS	BASE TRANSMISSION STATION
BM	BEAM
BOF	BOTTOM OF FOOTING
BN	BOUNDARY NAILING
CL	CENTERLINE
CAB	CABINET
CANT	CANTILEVER(ED)
CIP	CAST IN PLACE
CLG	CEILING
CLR	CLEAR
CND	CONDUIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION(OR)
CONT	CONTINUOUS
d	PENNY (NAILS)
DEPT	DEPARTMENT
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DBL	DOUBLE
DF	DOUGLAS FIR
DWG	DRAWING(S)
(E)	EXISTING
EA	EACH
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
ELEV (EL)	ELEVATION
EN	EDGE NAIL
ENGR	ENGINEER
EMT	ELECTRICAL METALLIC TUBING
EQ	EQUAL
EQUIP	EQUIPMENT
EXP	EXPANSION
EXT	EXTERIOR
F	FIBER
FAB	FABRICATION(OR)
FF	FINISH FLOOR
FG	FINISH GRADE
FN	FIBERNET
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FIN	FINISH(ED)
FLR	FLOOR
FT (')	FOOT(FEET)
FTG	FOOTING
FND	FOUNDATION
G	GROWTH (CABINET)
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GLB (GLU LAM)	GLUE LAMINATED BEAM
GND	GROUND
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GPS	GLOBAL POSITIONING SYSTEM
HGR	HANGER
HDR	HEADER
HT	HEIGHT
ICGB	ISOLATED COPPER GROUND BUS
IN (")	INCH(ES)
INT	INTERIOR
L	LONG(ITUDINAL)
LB	LAG BOLTS
LB(S) or #	POUND(S)
LF	LINEAR FEET (FOOT)
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT

ABBREVIATION	DEFINITION
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
(N)	NEW
NO (#)	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
OPNG	OPENING
(P)	PROPOSED
R	PLATE OR PROPERTY LINE
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PLY	PLYWOOD
PPC	POWER PROTECTION CABINET
PRC	PRIMARY RADIO CABINET
PSI	POUNDS PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
PT	PRESSURE TREATED
PWR	POWER (CABINET)
QTY	QUANTITY
RAD (R)	RADIUS
RBS	RADIO BASED STATION
REF	REFERENCE
REQ'D	REQUIRED
REINF	REINFORCEMENT(ING)
RGS	RIGID GALVANIZED STEEL
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SCH	SCHEDULE
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUC	STRUCTURAL
TC	TOWERCLOUD
TEMP	TEMPORARY
THK	THICK(NESS)
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
XFMR	TRANSFORMER
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W	WIDE(WIDTH)
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

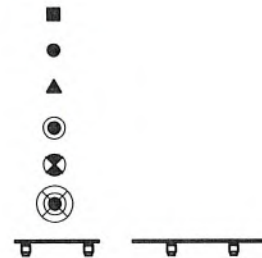
#### LINETYPES

EXISTING LAYER  
PROPOSED LAYER  
CHAIN-LINK FENCE  
BARBED-WIRE FENCE  
OVERHEAD POWER  
OVERHEAD TELCO  
UNDERGROUND POWER  
UNDERGROUND TELCO  
UNDERGROUND FIBER  
UNDERGROUND ALARM  
UNDERGROUND POWER & ALARM  
INTERIOR ELECTRICAL CONDUIT  
UNDERGROUND LP FUEL  
COAX CABLE  
HYBRID CABLE  
INTERIOR GROUND LINE  
EXTERIOR GROUND LINE  
PROPERTY LEASE LINE



#### GROUNDING SYMBOLS

IRREVERSIBLE CONNECTION  
EXOTHERMIC  
MECHANICAL CONNECTION  
COPPER GROUND ROD  
CHEM ROD  
GROUND ROD TEST-WELL  
12"/20" GROUND BAR



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SITE NAME:

### OMA TANK FARM

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**SYMBOLS & ABBREV.**

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CIVIL NOTES  
PART 1 WORK AND DRAINAGE

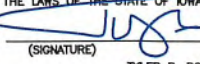
- 1.1 SUMMARY OF WORK
- A. REFER TO COMPLETE DRAWING SET AND REFERENCED SPECIFICATIONS, STANDARDS, AND PERMITTING JURISDICTION REGULATIONS FOR WORK INCLUDED.
  - B. APPLY SOIL STERILIZER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - C. VEGETATION AND LANDSCAPING, IF INCLUDED IN THE SCOPE OF WORK, WILL BE PLACED AND MAINTAINED AS RECOMMENDED BY NURSERY INDUSTRY STANDARDS.
  - D. EARTH FILL COMPACTION SHALL BE ACCOMPLISHED BY MECHANICAL MEANS.
- 1.2 RELATED WORK
- A. CONSTRUCTION OF SHELTER/EQUIPMENT CABINET PLATFORM FOUNDATION.
  - B. EQUIPMENT PLATFORM OFFLOADING AND SETUP.
  - C. INSTALLATION OF GROUNDING AND ELECTRICAL SYSTEM.
  - D. INSTALLATION OF ANTENNA SYSTEMS.
- 1.3 DESCRIPTION
- A. ACCESS ROADS, TURNAROUND AREAS, AND COMPOUND AREAS SHALL BE CONSTRUCTED TO PROVIDE A WELL-DRAINED, EASILY MAINTAINED, EVEN SURFACE FOR MATERIAL AND EQUIPMENT DELIVERIES, AND SITE PERSONNEL ACCESS.
- 1.4 MATERIALS
- A. ACCESS ROAD AND SITE MATERIALS SHALL BE IN ACCORDANCE WITH LOCAL DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND PERMITTING REGULATIONS.
  - B. SOIL HERBICIDE SHALL BE EPA REGISTERED OF LIQUID COMPOSITION AND OF PRE-EMERGENCE DESIGN.
  - C. SOIL STABILIZER FABRIC SHALL BE MIRAFI-100X.
- 1.5 INSTALLATION
- A. CONFIRM SITE SURVEY AND INSTALLATION OF CONSTRUCTION STAKES IN TOWER CENTER, FOUNDATION CORNERS (SHELTER/CABINET PROTECTION, GENERATOR, FUEL TANK), AND FENCE CORNERS PRIOR TO CONSTRUCTION.
  - B. INSTALL SILT FENCE OR OTHER REQUIRED EROSION CONTROL MATERIALS DOWN GRADIENT OF CONSTRUCTION AREA.
  - C. PERFORM CLEARING OF HEAVY GROWTH OF GRASS, TREES, SHRUBS, AND TOPSOIL OF THE COMPLETE ACCESS ROAD RIGHT OF WAYS AND SITE AREA PRIOR TO FOUNDATION CONSTRUCTION OR PLACEMENT OF BACKFILL.
  - D. CONSTRUCT TEMPORARY CONSTRUCTION ZONE ALONG ACCESS DRIVE WHEN REQUIRED FOR NEW TOWERS.
  - E. THE SITE AREA WILL BE BROUGHT TO SUB-BASE COURSE ELEVATION AND THE ACCESS ROAD TO BASE COURSE ELEVATION PRIOR TO FORMING AND POURING FOUNDATIONS.
  - F. APPLY SOIL HERBICIDE PRIOR TO PLACING BASE MATERIALS.
  - G. IF REQUIRED, GRADE, SEED, FERTILIZE AND MULCH DISTURBED AREAS IMMEDIATELY AFTER BRINING THE SITE AND ACCESS ROAD TO BASE COURSE ELEVATION. WATER TO ENSURE GROWTH.
  - H. REMOVE GRAVEL FROM TEMPORARY CONSTRUCTION ROAD FOR HEAVY DUTY EQUIPMENT ACCESS.
  - I. AFTER APPLICATION OF FINAL SURFACES, APPLY SOIL HERBICIDES TO THE STONE SURFACE.

PART 2 SITE PREPARATION

- 2.1 INSPECTIONS
- A. LOCAL BUILDING INSPECTIONS SHALL BE SCHEDULED IN ADVANCE PER REGULATORY JURISDICTION REQUIREMENTS FOR CONCRETE POURS, TOWER ERECTIONS, AND CABINET PLATFORM PLACEMENTS.
- 2.2 SITE CLEARING
- A. PERFORM CLEARING AS PER 1.5.C.
  - B. PRIOR TO CONSTRUCTION EFFORTS, CLEAR THE SITE AREA OF ORGANIC MATERIALS TO A MINIMUM OF 6 FEET BELOW GROUND LEVEL.
  - C. CONSULT WITH VERIZON CONSTRUCTION MANAGER AND OWNER REPRESENTATIVE PRIOR TO THE REMOVAL OF LARGE TREES, BRUSH OR DEBRIS FROM THE PROPERTY.
  - D. CONTRACTOR SHALL PROOF ROLL THE SOIL PRIOR TO PLACEMENT OF SITE EARTH FILL OR BASE MATERIALS.
  - E. WHERE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, COVER CLEARED AREAS WITH STABILIZER MAT PRIOR TO PLACEMENT OF FILL OR BASE MATERIAL.

- 2.3 SOIL AND EROSION CONTROL
- A. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL, AND OTHER REQUIREMENTS OF GOVERNMENTAL AUTHORITIES HAVING JURISDICTION.
  - B. EROSION CONTROL DEVICES SHALL BE INSTALLED BEFORE GROUND DISTURBANCE OCCURS. CONTRACTOR IS RESPONSIBLE OF ACCOMPLISHING EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE CONSTRUCTION MANAGER IMMEDIATELY.
  - C. CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
  - D. CONTRACTOR SHALL INSPECT EROSION CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.
  - E. FAILURE TO INSTALL, OPERATE OR MAINTAIN ALL EROSION CONTROL MEASURES MAY RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB SITE UNTIL SUCH MEASURES ARE CORRECTED.
  - F. ALL SILT BARRIERS MUST BE PLACED AS ACCESS IS OBTAINED DURING CLEARING.
  - G. GRADING SHALL NOT BEGIN UNTIL SILT BARRIER IS INSTALLED.
  - H. ANY AREA OF DISTURBANCE LEFT EXPOSED OR THAT IS ANTICIPATED TO BE EXPOSED BEYOND THE EXPOSURE PERIOD REQUIRED BY LOCAL AUTHORITIES SHALL BE STABILIZED WITH TEMPORARY SEEDING.
  - I. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED IF REQUIRED UPON INSPECTION BY AND DIRECTION FROM LOCAL AUTHORITIES.
  - J. UPON COMPLETION OF WORK, OR AS DIRECTED BY EROSION CONTROL AUTHORITIES, ALL DISTURBED AREAS NOT IMPROVED WITH GRAVEL SHALL BE SEEDED WITH PERMANENT SEEDING MATERIAL SUITABLE FOR THE LOCAL GROWING AREA.
  - K. A COPY OF THE APPROVED LAND DISTURBANCE PLAN AND PERMIT, IF REQUIRED, SHALL BE PLACED ON SITE WHENEVER LAND DISTURBANCE ACTIVITY IS IN PROGRESS.
- 2.4 INSTALLATION
- A. THE COMPOUND AND TURNAROUND AREAS SHALL BE AT THE SUB BASE COURSE ELEVATION PRIOR TO FORMING FOUNDATIONS.
  - B. GRADE OR FILL THE SITE AND ACCESS ROAD AS REQUIRED RESULTING FROM FOUNDATION INSTALLATIONS.
  - C. IF ANY, EXCESS SPOILS WILL BE CLEARED FROM THE JOB SITE AND NOT SPREAD BEYOND THE LIMITS OF THE OWNER OR LEASED PROPERTY.
  - D. THE ACCESS ROAD SHALL BE BROUGHT TO BASE COURSE ELEVATION PRIOR TO FOUNDATION FORMING, CONSTRUCTION AND POURING TO PERMIT USE. COMPACTION SHALL BE DONE DURING CONSTRUCTION OF THE SITE.
  - E. GRADE OR FILL THE AREAS WHERE WATER MAY POND AND BRING TO GROUND LEVEL.
  - F. THE FINISH GRADE AND GRAVEL AREA SHALL EXTEND ONE FOOT BEYOND THE SITE FENCE BOUNDARIES AND SHALL COVER THE SITE COMPOUND AS INDICATED IN THESE DRAWINGS.
  - G. RIP RAP SHALL BE APPLIED TO THE SIDES OF DITCHES OR DRAINAGE, SWALES.
  - H. RIP RAP ENTIRE DITCH FOR 6'-0" IN ALL DIRECTIONS AT CULVERT OPENINGS OR AS INDICATED IN THESE DRAWINGS.
  - I. SEED, FERTILIZER AND STRAW COVER SHALL BE APPLIED TO ALL OTHER DISTURBED AREAS AND DITCHES, DRAINAGE, SWALES NOT OTHERWISE RIP RAPPED.
  - J. DITCHES, SWALES, OR CULVERTS WILL NOT BE PLACED SO THEY DIRECT WATER TOWARDS THE SITE OR PERMIT STANDING WATER AT OR SURROUNDING THE SITE. REFERENCE SITE GRADING PLAN IN THESE CONSTRUCTION DRAWINGS. IF CONFLICTS EXIST, CONTRACTOR SHALL NOTIFY CONSTRUCTION MANAGER IMMEDIATELY.
  - K. SEED AND FERTILIZER SHALL BE APPLIED TO SURFACE CONDITIONS, WHICH WILL ENCOURAGE ROOTING.
  - L. CONTRACTOR SHALL PLACE SEEDS AS DIRECTED BY THE SEED PRODUCER.
  - M. CONTRACTOR SHALL ENSURE GROWTH OF SEEDED AREAS AND LANDSCAPED AREAS BY WATERING NEW SEEDS AND LANDSCAPING UP TO THE POINT OF CONTRACT FINAL ACCEPTANCE.
  - N. COMPACTION SHALL BE AT LEAST 95% OF MAXIMUM DENSITY AND WITHIN THE RANGE OF -1% TO +3% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.
  - O. CONTRACTOR SHALL WRAP, TIE WITH HOSE-PROTECTED WIRE, AND SECURE ALL TREES PLACED UNDER THE LANDSCAPING SCOPE OF THE CONTRACT.
  - P. ALL EXPOSED AREAS SHALL BE PROTECTED AGAINST WASHOUTS AND SOIL EROSION.

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 03/21/2022

(SIGNATURE) DATE

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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**N2**



CIVIL NOTES CONTINUED

PART 3 EXCAVATIONS & FOUNDATIONS

CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SUBSURFACE AND EXISTING CONDITIONS BEFORE COMMENCING WORK.

3.1 STRUCTURAL BACKFILL

- A. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL SUPERFICIAL VEGETATION, ANY DELETERIOUS MATERIALS WHICH MAY BE PRESENT AND ALL SOIL REQUIRED TO PROVIDE THE STRUCTURAL FILL PAD OF UNIFORM THICKNESS. FOR SLAB-ON-GRADE, AT LEAST 12 INCHES BELOW THE BOTTOM OF THE SLAB.
- B. IF SOFT, WEAK, OR UNSTABLE SOIL CONDITIONS ARE REVEALED, EXCAVATE THE AREA TO DEEPER DEPTH AND BRING BACK TO GRADE USING STRUCTURAL FILL.
- C. CONTRACTOR SHALL REMOVE ALL DEBRIS, WET, AND UNSATISFACTORY SOIL MATERIALS FROM GROUND SURFACE PRIOR TO PLACING STRUCTURAL BACKFILLS.
- D. ALL STRUCTURAL BACKFILL AND SUB-BASE UNDER SLABS SHALL BE SELECT STRUCTURAL FILL MEETING THE GRADATION AND SOUNDNESS REQUIREMENTS IN ACCORDANCE TO THE FOLLOWING:
- E. THE MATERIAL SHALL HAVE THE FOLLOWING GRADATION:
- | SIEVE SIZE | % PASSING BY WEIGHT |
|------------|---------------------|
| 2 INCH     | 100                 |
| 1/4 INCH   | 30 TO 65            |
| NO. 200    | 0 TO 10             |
- F. MATERIALS SHALL BE SUBSTANTIALLY FREE OF SHALE OR OTHER SOFT, POOR DURABILITY PARTICLES. IF TESTING IS SELECTED BY VERIZON, MATERIAL WITH A MAGNESIUM SULFATE SOUNDNESS LOSS EXCEEDING 30% WILL BE REJECTED.
- G. STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY PER ASTM D1557, UNLESS NOTED OTHERWISE.
- H. NON STRUCTURAL BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM D-698.
- I. ALL LOOSE AND/OR ORGANIC MATERIAL SHALL BE REMOVED PRIOR TO PREPARATION OF THE AREA FOR PLACEMENT OF STRUCTURAL BACKFILL.
- J. EXCAVATE ALL TOPSOIL TO STABLE SUB GRADE AND RE-COMPACT USING A PLATE TAMPER. ANY SOFT AREAS SHALL BE OVER-EXCAVATED TO STABLE MATERIAL AND BACKFILLED WITH MATERIALS AND COMPACTION REQUIREMENTS SHOWN IN THE DRAWINGS.
- K. PLACEMENT AND COMPACTION OF STRUCTURAL BACKFILL AND SUB BASE SHALL BE DONE IN 8 INCH LIFTS.
- L. CONTRACTOR SHALL GRADE SITE LEVEL A MINIMUM OF 2'-0" BEYOND PROPOSED EQUIPMENT COMPOUND FOOTPRINT. THEN, TAPER TO EXISTING GRADE IF REQUIRED AT A MINIMUM OF 3:1 SLOPE UNLESS SHOWN OTHERWISE ON THE SITE PLAN.

3.2 CONCRETE

- A. DESIGN AND CONSTRUCTION OF ALL CONCRETE ELEMENTS SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING APPLICABLE CODES: ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"; ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
- B. CONCRETE BREAK TESTS FOR THE PRELIMINARY DESIGN MIX PREPARED BY AN APPROVED LABORATORY MUST BE SUBMITTED TO THE CONSTRUCTION MANAGER FOR REVIEW AND APPROVAL. CONTRACTOR SHALL NOT PLACE CONCRETE WITHOUT THE APPROVED DESIGN MIX.
- C. MIX DESIGN SHALL BE APPROVED BY THE VERIZON REPRESENTATIVE PRIOR TO PLACING CONCRETE.
- D. CONCRETE SHALL BE NORMAL WEIGHT, 6% AIR ENTRAINED (+/- 1.5%) WITH A MAXIMUM 4 INCH SLUMP.
- E. UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL BE NORMAL WEIGHT WITH A MINIMUM OF 4000 PSI AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH.
- |               |          |
|---------------|----------|
| FOOTINGS      | 4000 PSI |
| SLAB-ON-GRADE | 4000 PSI |
- F. MAXIMUM AGGREGATE SIZE SHALL BE 1 INCH.
- G. THE FOLLOWING MATERIALS SHALL BE USED:
- |                          |                         |
|--------------------------|-------------------------|
| PORTLAND CEMENT:         | ASTM C 150, TYPE 1      |
| REINFORCEMENT:           | ASTM A 615, GRADE 60    |
| NORMAL WEIGHT AGGREGATE: | ASTM C 33               |
| WATER:                   | DRINKABLE               |
| ADMIXTURES:              | NON-CHLORIDE CONTAINING |
- H. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
- |                                       |              |
|---------------------------------------|--------------|
| CONCRETE CAST AGAINST EARTH           | 3 INCHES     |
| CONCRETE EXPOSED TO EARTH OR WEATHER: |              |
| #6 AND LARGER                         | 2 INCHES     |
| #5 AND SMALLER & WWR                  | 1-1/2 INCHES |
- CONCRETE NOT EXPOSED TO EARTH OF WEATHER OR NOT CAST AGAINST THE GROUND:
- |                   |              |
|-------------------|--------------|
| SLAB AND WALL     | 3/4 INCHES   |
| BEAMS AND COLUMNS | 1-1/2 INCHES |
- I. CURING COMPOUNDS SHALL CONFORM TO ASTM C-309.
- J. ADMIXTURES SHALL CONFORM TO ASTM STANDARD AS REFERENCED IN ACI-301.
- K. DOWELS, ANCHOR BOLTS, EMBEDDED STEEL, ELECTRICAL CONDUITS, PIPE SLEEVES, GROUNDS AND ALL OTHER EMBEDDED ITEMS AND FORMED DETAILS SHALL BE IN PLACE BEFORE START OF CONCRETE PLACEMENT.

- L. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR SHALL BE PER MANUFACTURER WRITTEN RECOMMENDATIONS. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE.
- M. FOR COLD WEATHER AND HOT WEATHER CONCRETE PLACEMENT, CONFORM TO APPLICABLE ACI CODES AND RECOMMENDATIONS. IN EITHER CASE, MATERIALS CONTAINING CHLORIDE, CALCIUM, SALTS, ETC. SHALL NOT BE USED. PROTECT FRESH CONCRETE FROM WEATHER FOR 7 DAYS MINIMUM.
- N. DO NOT PLACE CONCRETE IN WATER, ICE, OR IN FROZEN GROUND.
- O. DO NOT ALLOW CONCRETE SUB-BASE TO FREEZE DURING CONCRETE CURING AND SETTING PERIOD, OR FOR A MINIMUM OF 14 DAYS AFTER PLACEMENT.
- P. POUR CONCRETE IN A UNIFORM MANNER TO PREVENT THE FORMATION OF COLD JOINTS AND OTHER PLANES OF WEAKNESS. VIBRATE THE CONCRETE TO FULLY EMBED REINFORCING. DO NOT USE VIBRATORS TO TRANSPORT CONCRETE THROUGH CHUTES OR FORM WORK.

3.3 REINFORCEMENTS

- A. REINFORCING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 315.
- B. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60 (FY=60,000 PSI), DEFORMED UNLESS NOTED OTHERWISE.
- C. ALL REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A-706. CONTRACTOR SHALL PROVIDE VERIZON WITH AN AFFIDAVIT OF THE PRODUCER CERTIFYING THAT THE STEEL MEETS THE REQUIREMENTS OF THE ASTM.
- D. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE.
- E. WELDING OF REINFORCEMENT BARS, WHEN ACCEPTED BY THE STRUCTURAL ENGINEER, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STANDARD D1.4, ELECTRODES FOR SHOP AND FIELD WELDING FOR REINFORCEMENT BARS SHALL CONFORM TO ASTM A233, CLASS E90XX.
- F. REINFORCEMENT BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS AND APPROVED BY THE STRUCTURAL ENGINEER.
- G. SPLICES SHALL BE CLASS B AND ALL HOOKS SHALL BE STANDARD, UNO.
- H. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 36 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.
- I. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, CONTRACTOR SHALL PROVIDE ADDITIONAL BARS OR STIRRUPS NECESSARY TO SUPPORT ALL BARS AS REQUIRED TO COMPLETE THE WORK.

3.4 FOUNDATIONS

- A. SUB GRADE BELOW FOUNDATIONS SHALL BE REVIEWED AND ACCEPTED BY A GEOTECHNICAL ENGINEER BEFORE CONCRETE SLAB PLACEMENT.
- B. FOUNDATION EXCAVATION SHALL BE HAND-TRIMMED TO REMOVE LOOSE MATERIALS.
- C. DO NOT ALLOW GROUND BENEATH FOOTINGS TO FREEZE. PROVIDE Dewatering AS REQUIRED.
- D. A RIGID TEMPLATE SHALL BE USED TO INSTALL ALL FOUNDATIONS.
- E. SLAB-ON-GRADE FOUNDATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ENGINEERING DESIGN.
- F. PLACE A 10 MIL POLYOLEFIN, ASTM E 1745 (CLASS A), VAPOR BARRIER OVER COMPACTED SOIL PRIOR TO PLACING FOUNDATION SLABS.
- G. THE TROWELED FINISHED CONCRETE SLAB-ON-GRADE FLOOR PROFILE SHALL COMPLY WITH FLATNESS AND LEVELNESS VALUES AS PER ASTM E 1155.

3.5 UTILITY LOCATE

- H. CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES.
- I. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

3.6 MISCELLANEOUS

- A. ALL GROUT FOR STEEL BEARING AND LEVELING SHALL BE NON-METALLIC, NO SHRINK WITH A MINIMUM STRENGTH OF 5,000 PSI AT 28-DAY.
- B. GROUT SHALL CONFORM TO ASTM C827.
- C. PRE-GROUTING OF BASE PLATES WILL NOT BE ALLOWED.
- D. EVERY EFFORT SHALL BE MADE TO KEEP EXCAVATIONS DRY SHOULD GROUNDWATER BE ENCOUNTERED.
- E. TRAFFIC OF HEAVY EQUIPMENT (INCLUDING HEAVY COMPACTION EQUIPMENT) MAY CREATE PUMPING AND GENERAL DETERIORATION OF THE SHALLOWER SOILS.
- F. IF NECESSARY, RUBBISH, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- A. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- B. EROSION CONTROL MEASURES, IF REQUIRED, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- C. CONTRACTOR SHALL GRADE THE SITE TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE COMPOUND AND OTHER SITE IMPROVEMENT AREAS.
- D. SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- E. ALL AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE SITE IMPROVEMENTS SHALL BE GRADED BY THE CONTRACTOR TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE DRAWINGS.

PART 4 FENCING

4.1 SUMMARY OF WORK

- A. CONTRACTOR SHALL INSTALL FENCING AS INDICATED IN THE DRAWINGS, INCLUDING SIZE AND LOCATION OF FENCE AND GATES. ANY ALTERNATE CONFIGURATION MUST APPROVED BY VERIZON. CONTRACTOR SHALL NOT INSTALL FENCING UNLESS HE IS PROVIDED A PURCHASE ORDER.
- B. ACCESS ROAD GATES SHALL BE INSTALLED AS INDICATED IN THE DRAWINGS.

4.2 DESCRIPTION

- A. SECURITY FENCING INHIBITS UNAUTHORIZED ACCESS TO THE SITE COMPOUND AREA.

4.3 SEQUENCING

- A. CONTRACTOR SHALL NOT BEGIN FENCING INSTALLATION AND ERECTION BEFORE FINAL GRADING IS COMPLETED, UNLESS OTHERWISE PERMITTED.
- B. DRILL OR HAND-EXCAVATE (USING POST-HOLE DIGGER) HOLES FOR POSTS TO DIAMETERS AND SPACING INDICATED, IN FIRM, UNDISTURBED OR COMPACTED SOIL. ALL POST HOLE EXCAVATION SHALL BE BY USE OF MECHANICAL AUGER EQUIPMENT. IF NOT INDICATED ON DRAWINGS, EXCAVATE HOLES FOR EACH POST TO MINIMUM DIAMETER RECOMMENDED BY FENCE MANUFACTURER BUT NOT LESS THAN (4) TIMES LARGEST GROSS SECTION OF POST.
- C. REMOVE POST HOLE SPOILS FROM SITE. DO NOT SET SPOILS ON AGGREGATE WITHOUT ADEQUATE PROTECTION.
- D. PROTECT PORTION OF POSTS ABOVE GROUND FROM CONCRETE SPLATTER. PLACE CONCRETE AROUND POSTS AND VIBRATE OR TAMP FOR CONSOLIDATED.
- E. CHECK EACH POST FOR VERTICAL AND TOP ALIGNMENT AND HOLD IN POSITION DURING PLACEMENT AND FINISHING OPERATIONS.
- F. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, EXTEND CONCRETE FOOTING 1 INCH ABOVE GRADE AND TROWEL TO A CROWN TO SHED WATER.
- G. INSTALL FENCING, SWING GATES AND ACCESSORIES.
- H. INSTALL BARBED WIRE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- I. APPLY FABRIC TO OUTSIDE OF FRAMEWORK.

4.4 SPECIFICATIONS

- A. FENCE FABRIC SHALL CONFORM TO CHAIN LINK FENCE MANUFACTURERS INSTITUTE (CLFMI) PRODUCT MANUAL.
- B. FENCE INSTALLATION SHALL BE IN COMPLIANCE WITH ASTM F 567.
- C. SWING GATE INSTALLATION SHALL BE IN COMPLIANCE ASTM F 900.

4.5 MATERIALS

- A. ALL FABRIC WIRE, RAILS, POLES, HARDWARE AND OTHER STEEL MATERIALS SHALL BE HOT-DIPPED GALVANIZED.
- B. CONTRACTOR SHALL INSTALL ANGLE BRACKETS CANTED OUTWARD AT EACH POST FOR THREE STRANDS OF BARBED WIRE AND ONE FOOT WIDE.
- C. TOP RAIL PIPE SHALL BE GALVANIZED SCHEDULE 40, 1-5/8" OD.
- D. FABRIC SHALL EXTEND VERTICALLY SEVEN FEET ABOVE GRADE AND BE TWO-INCH CHAIN LINK ZINC-COATED MESH OF NO. 9 GAUGE (0.148") WIRE. FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-392 CLASS 1.
- E. CORNER AND GATE POSTS SHALL BE COMMERCIAL GRADE 2-7/8" OD SCHEDULE 40.
- F. ALL FENCE LINE POSTS SHALL BE COMMERCIAL GRADE 2-3/8" OD SCHEDULE 40.
- G. A ZINC COATED MARCELLED TENSION WIRE ASTM A824, TYPE LL, SHALL BE INSTALLED AT THE BOTTOM OF THE FABRIC WITHIN 1 INCH OF FINISHED GRADE, TERMINATED WITH BAND CLIPS AT CORNER AND GATE POSTS.
- H. CONCRETE SHALL BE A MINIMUM OF 3,000 PSI.

4.6 INSTALLATION

- A. CONTRACTOR SHALL INSTALL FENCING TO COMPLY WITH ASTM F567.
- B. ALL FENCE POSTS AND GATE POSTS SHALL BE SET IN A VERTICAL POSITION AND PLUMB.
- C. AT CORNER POSTS, GATE POSTS AND SIDES OF GATE, FABRIC SHALL BE ATTACHED WITH STRETCHES AND TENSION BAND CLIPS AT 15 INCH INTERVALS.
- D. AT LINE POSTS, FABRIC SHALL BE ATTACHED WITH TIE-CLIPS AT 15 INCH INTERVALS.
- E. FABRIC SHALL BE ATTACHED TO BRACE RAILS, TENSION WIRE, AND TRUSS RODS WITH TIE-CLIPS AT TWO FOOT INTERVALS.
- F. A MAXIMUM GAP OF 1 INCH WILL BE PERMITTED BETWEEN THE CHAIN LINK FABRIC AND THE FINAL GRADE.

4.7 INSPECTION

- A. ALL POST HOLES SHALL BE EXCAVATED AS PER CONSTRUCTION DOCUMENTS TO CONFORM TO PROPER DEPTH AND DIAMETER.

PART 5 TENANT IMPROVEMENTS

5.1 FIRE PROTECTION

- A. CONTRACTOR SHALL PROVIDE A PORTABLE FIRE EXTINGUISHER WITH A RATING OF NOT LESS THAN 2A OR 2A:10B:C WITHIN 75 FEET OF TRAVEL DISTANCE TO THE JOB SITE DURING CONSTRUCTION.
- B. ANY ALTERATION TO EXISTING FIRE PROTECTION FACILITIES WILL REQUIRE CLEARANCE AND PERMITS FROM THE GOVERNING FIRE DEPARTMENT AND OTHER AGENCIES BY A LICENSED FIRE PROTECTION CONTRACTOR.

CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

(SIGNATURE)  DATE 03/21/2022

TYLER B. BOLINGER  
LICENSE NUMBER: 23306  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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RF1 RF NOTES  
PART 1 ANTENNA SYSTEMS

1.1 SUMMARY OF WORK

- A. INSTALL ANTENNAS AND COAXIAL LINES, REMOTE RADIO HEADS (RRH'S), COAXIAL CABLE, FIBER CABLE, INSTALLATION AND SWEEP TESTING AS INDICATED ON DRAWINGS.
- B. INSTALL ICE BRIDGE AS INDICATED ON DRAWINGS.
- C. LABEL COAXIAL CABLES AND HYBRIFLEX FIBER CABLES.
- D. ANTENNA COAXIAL CABLES AND FIBER LENGTHS INDICATED ARE APPROXIMATE.

1.2 RELATED WORK

- FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER THESE CONSTRUCTION DRAWINGS, BUT COORDINATE WITH VERIZON PRIOR TO EXECUTION:
- A. PERFORMING EQUIPMENT SHELTER/CABINET PLATFORM CORING.
- B. SEALING AND CAULKING EXISTING OPENINGS OR THOSE RESULTING FROM CONSTRUCTION.
- C. PAINTING OF NEW OR EXISTING EQUIPMENT.
- D. CUTTING AND PATCHING OF NEW OR EXISTING EQUIPMENT.
- E. ENTRY PORT INSTALLATION.
- F. PERFORMING ANTENNA AND COAXIAL CABLES GROUNDING.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. FURNISH ONLY UL LISTED EQUIPMENT AND INSTALL IN CONFORMANCE TO UL STANDARDS, WHERE APPLICABLE.
- B. INSTALL ANTENNA CABLES AND GROUNDING SYSTEMS IN ACCORDANCE WITH THESE DRAWINGS AND RECOMMENDATIONS OR REQUIREMENTS FROM STATE AND LOCAL BUILDING CODES, SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF THE WORK. CODES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
- EIA – ELECTRICAL INDUSTRIES ASSOCIATION RS-222
  - FAA – FEDERAL AVIATION ADMINISTRATION, OBSTRUCTION MARKING AND LIGHTING
  - AISC – AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS
  - NEC – NATIONAL ELECTRICAL CODE
  - UL – UNDERWRITERS' LABORATORIES APPROVED
  - FAA PART 77 RULES AND FCC PART 17 AND 22 RULES ARE APPLICABLE IN ALL CASES AND SUPERSEDE ANY OTHER STANDARD OF SPECIFICATION.

1.4 MATERIALS

CONTRACTOR SHALL PROVIDE AND INSTALL ANTENNA MOUNTS FOR THE SPECIFIED ANTENNAS, COAXIAL CABLE MOUNTING HARDWARE INCLUDING BUT NOT LIMITED TO HOISTING GRIPS, CABLE WEATHERPROOFING KITS, SNAP-IN HANGERS, GROUNDING KITS, ANGLE ADAPTERS (IF NECESSARY REFERENCE STRUCTURAL ANALYSIS FOR COAXIAL CABLE INSTALLATION REQUIREMENTS), CONNECTORS, AND OTHER MATERIALS AS INDICATED IN THESE CONSTRUCTION DRAWINGS.

- A. ANTENNAS AND RRH'S
- INSTALL ANTENNAS AND RRH'S AS INDICATED ON DRAWINGS.
  - CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ON SITE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
  - ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE INSTALLED AS INDICATED ON THESE DRAWINGS.
- B. HYBRIFLEX CABLE
- HYBRIFLEX CABLE WILL BE DC/FIBER AND PROVIDED BY VERIZON AT EACH SITE. CABLE SHALL BE INSTALLED AS INDICATED ON THESE DRAWINGS AND MANUFACTURER SPECIFICATIONS.
- C. JUMPERS AND CONNECTORS
- CONTRACTOR SHALL FURNISH AND INSTALL 1/2 INCH LDF COAX JUMPER CABLES BETWEEN THE RRH'S AND ANTENNAS.
  - JUMPERS SHALL BE FOAM DIELECTRIC. PART NUMBERS: LDF4-50A, FLC 12-50, CR 540, OR FXL 540. SUPERFLEX CABLES ARE NOT ACCEPTABLE.
  - JUMPER CABLES SHALL HAVE A MINIMUM LENGTH OF 6'-0".

1.5 ANTENNA INSTALLATION

- A. CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ON-SITE IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. REFERENCE THESE CONSTRUCTION DRAWINGS FOR MOUNTING HEIGHT, AZIMUTH, AND FEED ORIENTATION PRIOR TO INSTALLATION.
- B. CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS AND ENSURE THE BOTTOM STRUT IS LEVELED. PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.
- C. CONTRACTOR SHALL TERMINATE UNUSED ANTENNA PORTS WITH CONNECTOR CAP AND WEATHERPROOF THOROUGHLY.
- D. CONTRACTOR SHALL WEATHERPROOF UNUSED TMA AND RADIO UNIT PORTS.
- E. ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH.

1.6 HYBRIFLEX CABLE INSTALLATION

- A. CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THESE DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADIUS.

- C. ALL HYBRIFLEX CABLES SHALL BE INSTALLED INSIDE MONOPOLE, IF APPLICABLE WITH SITE TOWER STRUCTURE, WITH CABLE SUPPORT GRIPS.
- CONTRACTOR SHALL FURNISH AND INSTALL 1/2 INCH COAX JUMPER CABLES BETWEEN THE RRH'S AND ANTENNAS. SUPPORT FIBER BUNDLES USING 1/2 INCH VELCRO STRAPS OF THE REQUIRED LENGTH AT 18 INCHES ON CENTER STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
  - DC: SUPPORT DC BUNDLES WITH UV RATED ZIP TIES OF ADEQUATE LENGTH. ZIP TIES SHALL BE BLACK NYLON WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.

1.7 JUMPER INSTALLATION

- A. CONTRACTOR SHALL SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL SNAP-IN HANGERS.

1.8 COAXIAL CABLE INSTALLATION

- A. CONTRACTOR SHALL PERFORM GROUND SWEEP TESTING ON COAXIAL CABLES TO INSPECT FOR DAMAGE PRIOR TO USE. IN CASE OF DAMAGE IDENTIFICATION, CONTRACTOR SHALL NOTIFY CONSTRUCTION MANAGER IMMEDIATELY AND COAXIAL CABLES SHALL NOT BE INSTALLED UNTIL A REPLACEMENT HAS BEEN ISSUED.
- B. COAXIAL CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES ARE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THESE CONSTRUCTION DRAWINGS. AVOID TWISTING AND CROSSOVERS.
- C. COAXIAL CABLES SHALL BE MOUNTED ON TOWER STRUCTURES OR FACILITIES USING APPROPRIATELY SIZED HOISTING GRIPS. EXCEEDING MANUFACTURER'S SPECIFICATIONS FOR BENDING RADIUS IS NOT ALLOWED.

1.9 COAXIAL CABLE COLOR CODING & LABELING

- CONTRACTOR SHALL PROVIDE UNIFORM IDENTIFICATION MARKINGS OF NEW COAXIAL CABLES AND OTHER CABLES PER THE FOLLOWING INSTRUCTIONS.
- A. ALL COAXIAL CABLES SHALL BE MARKED WITH APPROPRIATE COLOR TAPE BANDS, ONE INCH WIDE, FOR IDENTIFICATION NEAR ANTENNA MOUNTING LOCATION, BEFORE ENTERING THE SHELTER/CABINET PLATFORM, AND AFTER ENTERING THE CABINET PLATFORM.
- B. ALL HYBRIFLEX CABLES SHALL BE MARKED WITH APPROPRIATE COLOR TAPE BANDS AS REQUIRED BY TS 0200 REV4.
- C. COLOR TAPES SHALL BE PLACED WITHIN 24" OF THE ENTRY PORT (INTERIOR AND EXTERIOR).
- D. TAPE SHALL BE WEATHER RESISTANT, UV RESISTANT AND CHEMICAL RESISTANT. REFERENCE HH-1-595C().
- E. WHERE VISIBILITY IS OBSTRUCTED, ADDITIONAL COLOR BANDS SHALL BE INSTALLED.
- F. ALL HYBRIFLEX CABLES AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO VERIZON CELL SITE ENGINEERING REQUIREMENTS.

1.10 GROUNDING

- A. ALL ANTENNAS AND COAXIAL CABLES SHALL BE GROUNDED AS INDICATED IN THESE CONSTRUCTION DRAWINGS.
- B. ANTENNA AND COAXIAL CABLE GROUNDING SHALL BE INSTALLED IN CONJUNCTION WITH EQUIPMENT INSTALLATION.
- C. COAXIAL CABLES SHALL NOT BE CONNECTED TO EQUIPMENT PRIOR TO GROUNDING KIT INSTALLATION.

1.11 TESTING

- A. CONTRACTOR IS REQUIRED TO SUBMIT THE RESULTS OF ALL RF ANTENNA SYSTEM TESTS REQUIRED BY THE PROJECT REQUIREMENTS AND DRAWINGS THAT FALL WITHIN THE SCOPE OF WORK TO VERIZON WITHIN (5) DAYS OF THE TEST. AT A MINIMUM, THE FOLLOWING TESTS RESULTS SHALL BE INCLUDED:
- COAXIAL CABLE SWEEP TESTING (VSWR, RETURN LOSS, AND DISTANCE-TO-FAULT FORMATS PERFORMED IN SHORT, WITH LOAD, AND WITH ANTENNA)
  - FIBER TESTS PER VERIZON STANDARDS.
  - TAPE DROP TESTS TO VERIFY ANTENNA MOUNTING HEIGHT (AGL), AZIMUTH, AND DOWN TILT INSTALLED AZIMUTH, CENTERLINE, AND DOWN TILT MUST CONFORM TO RF CONFIGURATION DATA IN THE DRAWINGS.
- B. CONTRACTOR IS REQUIRED TO PERFORM COAXIAL CABLE SWEEP TESTING, DTF FORMAT ONLY, PRIOR TO INSTALLATION TO VERIFY FUNCTIONALITY OF THE CABLE. FAILURE TO PERFORM TESTING AND VERIFY FUNCTIONALITY MAY RESULT IN ADDITIONAL EFFORT BY THE CONTRACTOR TO REMOVE AND REPLACE CABLE ONCE INSTALLED. CONTRACTOR SHALL BEAR ALL COSTS RELATED TO REMOVAL AND INSTALLATION OF REPLACEMENT CABLES DUE TO MANUFACTURER DEFECTS OR CONTRACTOR MISHANDLE.

CERTIFICATION AND SEAL  
HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS  
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND  
THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER  
THE LAWS OF THE STATE OF IOWA

03/21/2022

SIGNATURE: M. H. CATALINA MARTINEZ  
DATE: 03/21/2022  
LICENSE NUMBER: 23482  
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SHEET NUMBER:

**N3**



PART 1. ELECTRICAL SPECIFICATIONS

1.1 GENERAL

- A. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE LOCAL AND NATIONAL CODES. ANY DISCREPANCY BETWEEN THE DRAWINGS AND CODE WILL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
- B. CONDUIT ROUTINGS ARE REPRESENTATIVE ONLY. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- C. CONTRACTOR SHALL BE AWARE AND AVOID OTHER UNDERGROUND UTILITY RUNS WITHIN THE SITE COMPOUND AND SURROUNDING AREAS.
- D. CONTRACTOR SHALL COORDINATE UTILITY METER PLACEMENT WITH VERIZON STANDARD EQUIPMENT MANUFACTURER.
- E. THE CONTRACTOR SHALL PROVIDE ALL ITEMS OF LABOR AND MATERIALS TO MAKE A COMPLETE AND FUNCTIONAL INSTALLATION OF ELECTRICAL WORK AS SHOWN ON DRAWINGS AND AS NECESSARY, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
- MAIN POWER BRANCH/FEEDERS AS REQUIRED.
  - BRANCH FEEDER FOR POWER AND LIGHTING.
  - ALL ELECTRICAL CONDUCTORS AND CONDUIT.
  - ALL WIRING DEVICES, SAFETY SWITCHES.
  - ALL LIGHTING FIXTURES AND LAMPS.
  - ALL COMMUNICATION EMPTY CONDUIT SYSTEMS.
  - LIGHTNING SURGE PROTECTION DEVICES.
  - ANTENNA AND EQUIPMENT GROUNDING.

1.2 ELECTRICAL REQUIREMENTS

- A. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL AND NATIONAL ELECTRICAL CODES.
- B. ALL WORK SHALL BE COMPLETED BY A CERTIFIED MASTER ELECTRICIAN.
- C. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN A MINIMUM CABLE SEPARATION AS REQUIRED BY NEC.
- D. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- E. RACEWAYS, CABLE TRAYS, CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
- F. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND NEMA 1 RATED (OR BETTER) FOR INDOOR USE, AND NEMA 3R RATED (OR BETTER) FOR OUTDOOR USE.
- G. ALL POWER CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90° IF AVAILABLE).
- H. ALL CONDUCTORS SHALL BE TESTED FOR SHORTS AND GROUNDS BEFORE ENERGIZING.

1.3 GUARANTEE

- A. THE CONTRACTOR SHALL FURNISH A WRITTEN CERTIFICATE, GUARANTEEING ALL MATERIALS, EQUIPMENT AND LABOR FURNISHED BY CONTRACTOR TO BE FREE OF ALL DEFECTS FOR A PERIOD OF ONE YEAR FROM AND AFTER THE DATE OF FINAL ACCEPTANCE OF SITE WORK. THE CONTRACTOR SHALL FURTHER GUARANTEE THAT IF ANY DEFECTS APPEAR WITHIN THE STIPULATED GUARANTEED PERIOD, SUCH WORK SHALL BE REPLACED AT NO COST TO THE OWNER.

1.4 FEEDERS, SWITCHES, AND METERING EQUIPMENT

- A. CONTRACTOR SHALL MAKE ARRANGEMENTS WITH OWNERS AS NEEDED TO BRING IN BRANCH FEEDERS FOR ELECTRICAL SERVICE AS SHOWN ON DRAWINGS.
- B. CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH PROVIDING SITE WITH ELECTRICAL SERVICE.
- C. CONTRACTOR SHALL FURNISH AND INSTALL ALL MATERIALS FOR A COMPLETE AND FUNCTIONAL SYSTEM INCLUDING BUT NOT LIMITED TO FEEDER WIRE TO DISTRIBUTION PANEL AND METER.

1.5 PANELBOARDS

- A. PANELBOARDS SHALL CONSIST OF A CAN, FRONT, INTERIOR AND CIRCUIT PROTECTIVE DEVICES AND SHALL BE UL LISTED. THE GAUGE OF METAL USED AND THE GUTTER SPACE SHALL BE IN ACCORDANCE WITH APPLICABLE UL STANDARDS.
- B. PANELBOARDS SHALL HAVE A DOOR MOUNTED ON A SEMI-CONCEALED HINGES WITH A CYLINDER LOCK, INDEX CARD HOLDER PROPERLY FILLED IN AS TO CIRCUIT; ALL PANELS OPEN WITH A MASTER KEY.
- C. PANELBOARDS SHALL BE FINISHED WITH BAKED-ON GRAY ENAMEL, OVER RUST INHIBITOR COAT.
- D. APPROVED PANELBOARD MANUFACTURERS INCLUDE SQUARE D, GE, SIEMENS/ITE OR EATON/CUTLER HAMMER.
- E. PANELBOARDS AND INTERNAL CIRCUIT BREAKERS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- F. PANELBOARDS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT NUMBERS (REFERENCE 1.5A).
- G. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA STANDARDS AND REGULATIONS.

1.6 MISCELLANEOUS EQUIPMENT

- A. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) FOR INTERIOR USE, AND NEMA 3R (OR BETTER) FOR EXTERIOR USE.
- B. METAL RECEPTACLES, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) FOR INTERIOR USE, AND NEMA 3R (OR BETTER) WEATHER PROTECTED FOR OUTDOOR USE.
- C. NON METALLIC RECEPTACLES, SWITCHES, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND NEMA 1 (OR BETTER) FOR INTERIOR USE, OR NEMA 3R (OR BETTER) WEATHER PROTECTED FOR OUTDOOR USE.
- D. ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC AS TO SIZE AND CONSTRUCTION.
- E. JUNCTION AND PULL BOXES SHALL BE GALVANIZED, AND NOT BE LESS THAN 4 INCHES SQUARE AND 1-1/2 INCHES DEEP WITH REMOVABLE COVERS. CAST ALUMINUM OR CAST IRON BOXES WITH THREADED HUBS AND GASKETED COVERS MUST BE USE IN OUTDOOR APPLICATIONS.
- F. JUNCTION AND PULL BOXES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS WHERE COVERS CAN BE REMOVED FOR ACCESS.
- G. JUNCTION AND PULL BOXES SHALL BE INSTALLED ON CONCEALED CONDUITS WITH COVERS FLUSH WITH FINISH.

1.7 WIRING

- A. CONDUCTORS SHALL BE TYPE "THHN/THWN" INSULATION.
- B. CONTRACTOR SHALL INSTALL CONDUCTORS IN CLEAN, DRY CONDUITS. USE UL APPROVED PULLING LUBRICANT WHERE REQUIRED.
- C. POWER SYSTEMS SHALL USE #12 AWG CONDUCTOR AT A MINIMUM.
- D. ALL CONTROL WIRES SHALL BE STRANDED AND TERMINATED WITH CRIMPED-ON LUGS.
- E. CONTRACTOR SHALL MAKE CONNECTION, SPLICES AND TAPS ONLY IN APPROVED BOXES AND FITTINGS. FOR SMALL BRANCH CIRCUIT CONDUCTORS, FIRST TWIST CONDUCTORS TOGETHER. THEN INSTALL A "SCOTCHLOK" OR EQUAL SPRING CONNECTOR OF PROPER SIZE. FOR LARGE CONDUCTORS USE SPLIT-BOLT OR HYDRAULICALLY COMPRESSED CONNECTIONS, THEN APPLY ENOUGH LAYERS OF VINYL ELECTRICAL TAPE TO EQUAL THE INSULATION VALUE OF THE CONDUCTOR INSULATION.
- F. CONTRACTOR SHALL INSTALL BANDS OF COLORED VINYL PLASTIC TAPE AT EACH END OF EACH CONDUCTOR WHERE FACTORY COLOR CODED CONDUCTORS ARE NOT AVAILABLE.

1.8 CONDUITS AND CONDUCTOR INSTALLATION

- A. CONTRACTOR SHALL PROVIDE A COMPLETE ASSEMBLY OF CONDUIT, TUBING OR DUCT WITH FITTINGS, INCLUDING, BUT NOT LIMITED TO, CONNECTORS, NIPPLES, COUPLINGS, LOCKNUTS, BUSHINGS, EXPANSION FITTINGS, OTHER COMPONENTS AND ACCESSORIES AS NEEDED. CONNECTIONS AND COUPLINGS MUST BE COMPRESSION TYPE.
- B. RIGID GALVANIZED STEEL CONDUIT (RGS) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- C. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC UNLESS NOTED OTHERWISE.
- D. ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED FOR ALL INDOOR LOCATIONS.
- E. RIGID NON-METALLIC CONDUIT SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- F. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- G. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- H. AS A MINIMUM, CONDUIT SIZES SHALL BE IN ACCORDANCE WITH NEC CONDUIT FILL AND BEND REQUIREMENTS, REGARDLESS OF SIZE SCHEDULE OR INDICATED. IF LARGER SIZE IS SCHEDULED OR INDICATED, THE LARGER SIZE SHALL BE USED.

1.9 INSTALLATION

- A. CONTRACTOR SHALL ANCHOR CONDUITS WITH HANGERS, CONDUIT STRAPS OR OTHER DEVICES SPECIFICALLY DESIGNED FOR THE PURPOSE. WIRE TIES ARE NOT PERMITTED. TRAPEZE HANGERS SHALL BE USED FOR MULTIPLE PARALLEL CONDUIT RUNS.
- B. ALL CONCRETE INSERTS SHALL BE GALVANIZED OR CADMIUM PLATED; INDIVIDUAL HANGERS, TRAPEZE HANGERS AND RODS SHALL BE PRIMER COATED.
- C. CONTRACTOR SHALL INSTALL HORIZONTAL RUNS OF CONDUIT TO PROVIDE A NATURAL DRAIN TO PREVENT MOISTURE COLLECTING IN THE POCKETS OR TRAPS.
- D. CONTRACTOR SHALL CAP CONDUIT ENDS UNTIL CONDUCTOR IS INSTALLED TO PREVENT FOREIGN OBJECTS FROM ENTERING CONDUIT.
- E. FITTINGS AND CONDUITS SHALL BE APPROVED FOR GROUNDING PURPOSES OR SHALL BE JUMPERED WITH A COPPER GROUNDING CONDUCTOR OF PROPER AMPACITY. CONTRACTOR SHALL LEAVE TERMINATION OF SUCH JUMPERS EXPOSED.
- F. INSTALL (2) 200 POUND NYLON PULL CORDS IN ROUGH-IN RACEWAYS.
- G. INSTALL OFFSETS, PULL BOXES AND ELBOWS AS REQUIRED ACCOMPLISHING A HARMONIOUS ROUTING OF THE SYSTEMS.
- H. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE RESISTANT RATED CONSTRUCTION SHALL BE FIR-STOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANT RATING.

CERTIFICATION AND SEAL:  
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS  
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND  
THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER  
THE LAWS OF THE STATE OF IOWA

03/21/2022

(SIGNATURE)

DATE

M. H. CATALINA MARTINEZ  
LICENSE NUMBER: 23482  
MY LICENSE RENEWAL DATE IS: DEC. 31ST, 2023



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**KGI**

KGI WIRELESS, INC.  
ENGINEERING

805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:

**OMA TANK FARM**

LOCATION CODE:

**621673**

SITE ADDRESS:

E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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REVIEW REV A	06/25/2021
REVIEW REV B	07/09/2021
CONSTRUCTION REV 0	03/21/2022

REVISION

NO	DESCRIPTION	BY	DATE

SHEET TITLE:

**ELECTRICAL NOTES**

SHEET NUMBER:

**N4**



PART 2. GROUNDING SPECIFICATIONS

2.1 GENERAL

- A. A RESISTANCE TO GROUND OF FIVE (5) OHMS OR LESS IS REQUIRED FOR ALL VERIZON SITES. CONTRACTOR SHALL RETAIN TESTER AT HIS OWN EXPENSE.
- B. ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALLS SHALL BE IN 3/4 INCH PVC CONDUIT. METALLIC CONDUIT IS NOT PERMITTED FOR GROUNDING CONDUCTOR SLEEVES.
- C. CONTRACTOR SHALL GROUND ALL EXPOSED METALLIC OBJECTS ON MULTI-TENANT METER/TELCO CENTER USING A TWO-HOLE NEMA DRILLED CONNECTOR SUCH AS THOMAS & BETTS #32207 OR APPROVED EQUAL.
- D. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING RING IS INSTALLED SO THE CONSTRUCTION MANAGER CAN PERFORM AN INSPECTION OF THE GROUNDING RING BEFORE TRENCHING IS BACKFILLED.
- E. ALL EXTERIOR GROUNDING CONDUCTORS INCLUDING GROUNDING RING SHALL BE #2 BARE, TINNED, SOLID COPPER WIRE. ALL GROUND CONNECTIONS SHALL BE AS SHORT AND DIRECT AS POSSIBLE. SHARP BENDS ARE TO BE AVOIDED. THE RADIUS OF ANY BEND SHALL NOT BE LESS THAN 8 INCHES AND THE INCLUSIVE ANGLE OF ANY BEND SHALL NOT EXCEED 90 DEGREES.
- F. GROUNDING CONDUCTORS SHALL BE ROUTED DOWNWARD TOWARD THE BURIED GROUND RING.
- G. ALL BELOW GROUND EXTERNAL CONNECTIONS SHALL BE EXOTHERMICALLY WELDED. ALL EXOTHERMIC WELDS TO BURIED GROUND RING SHALL BE THE PARALLEL-TYPE. EXCEPT FOR THE GROUND RODS WHICH ARE TEE-TYPE EXOTHERMIC WELDS.
- H. CONTRACTOR SHALL REPAIR ALL GALVANIZED SURFACES THAT HAVE BEEN DAMAGED BY EXOTHERMIC WELDING.
- I. GROUND WIRES SHALL BE RUN STRAIGHT FOR MINIMUM INDUCTANCE AND VOLTAGE DROP. CABLE BENDS INCREASE INDUCTANCE. THE MINIMUM REQUIRED BENDING RADIUS IS 8 INCHES WHEN BENDS ARE UNAVOIDABLE.
- J. ALL METAL WITHIN 6 FEET OF THE GROUND RING SHALL BE DIRECTLY BONDED, CAD WELDED TO THE SITE GROUNDING SYSTEM, WITHOUT USING SERIES OR DAISY CHAIN CONNECTION ARRANGEMENTS.
- K. ALL BELOW GRADE GROUND SYSTEM CONDUCTORS SHALL BE A MINIMUM DEPTH OF 30 INCHES (OR 6 INCHES BELOW FROST LINE, WHICHEVER IS GREATER).

2.2 CONNECTIONS

- A. ALL EXTERNAL GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC PROCESS, BY IRREVERSIBLE HIGH COMPRESSION, AND/OR BY 2-HOLE LONG BARREL LUGS. NO SINGLE-HOLE, CRIMP-ON, OR SOLDER CONNECTIONS SHALL BE USED. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE SPLICE. ALL MATERIALS USED (MOLDS, WELDING METAL, TOOLS, ETC.) SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.
- B. ALL INTERIOR GROUNDING AND BONDING CONDUCTORS SHALL BE CONNECTED BY TWO HOLE-TYPE (COMPRESSION) CONNECTIONS. MECHANICAL CONNECTIONS, FITTINGS OR CONNECTIONS THAT DEPEND SOLELY ON SOLDER SHALL NOT BE USED.

2.3 GROUND RODS

- A. ALL GROUND RODS SHALL BE COPPER-CLAD STEEL 5/8" DIAMETER X 8' -0" LONG AND OF THE NUMBER AND AT LOCATIONS INDICATED UNLESS OTHERWISE INDICATED IN THE DRAWINGS. GROUND RODS SHALL BE DRIVEN FULL LENGTH VERTICALLY IN UNDISTURBED EARTH.
- B. IF ROCK IS ENCOUNTERED, GROUND RODS MAY BE DRIVEN AT AN OBLIQUE ANGLE OF NOT GREATER THAN 45 DEGREES FROM VERTICAL OR MAY BE BURIED HORIZONTAL AND PERPENDICULAR TO THE BUILDING, IN A TRENCH AT LEAST 36" DEEP (OR 12 INCHES BELOW FROST LINE, WHICHEVER IS GREATER).
- C. GROUND RODS SHALL BE INSTALLED NO MORE THAN TWICE ITS LENGTH APART AND NO LESS THAN ITS ACTUAL LENGTH APART.

2.4 GROUND BARS

- A. ALL GROUND BARS SHALL BE 1/4" THICK BARE COPPER PLATES AND OF SUFFICIENT SIZE TO GROUND ATTACHMENTS INDICATED IN THE DRAWINGS (MINIMUM 2" X 12"). HOLES SHALL BE 7/16" DIAMETER ON 3/4" CENTERS TO PERMIT THE CONVENIENT USE OF TWO-HOLE LUGS.
- B. THE METHOD OF ATTACHMENT OF THE GROUNDING ELECTRODE CONDUCTOR TO EXTERIOR AND TOWER GROUND BARS SHALL BE EXOTHERMIC OR IRREVERSIBLE HIGH COMPRESSION. TOWER GROUND BARS SHOULD BE TINNED. TOWER GROUND BARS SHOULD BE DIRECT TO TOWER STEEL, NOT INSTALLED WITH INSULATORS.

2.5 CABLES

- A. ALL EXTERIOR GROUNDING CABLES SHALL BE STANDARD #2 AWG TINNED SOLID BARE COPPER WIRE UNLESS INDICATED OTHERWISE ON DRAWINGS.
- B. WHEN THE DIRECTION OF THE CONDUCTOR MUST CHANGE, IT SHALL BE DONE GRADUALLY. ALL BENDS SHALL BE MADE WITH THE GREATEST PRACTICAL RADIUS AND SHALL NOT BE LESS THAN 8".
- C. ALL CONDUITS SHALL BE METALLICALLY SUPPORTED.
- D. ALL METALLIC CONDUIT SHALL USE GROUND-BUSHING CONNECTIONS.
- E. ALL CONDUITS USED AS RACEWAYS FOR GROUNDING CONDUCTORS SHALL BE BONDED AT BOTH ENDS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
- F. PROVIDE WIRE PROTECTION PIPES AT ALL GROUND WIRES AT GRADE LEVEL PER DETAIL.

2.6 GROUNDING RING

- A. THE GROUND RING ENCIRCLING THE BUILDING SHALL BE A MINIMUM SIZE OF #2 AWG BARE TINNED SOLID COPPER CONDUCTOR IN DIRECT CONTACT WITH THE EARTH AT A MINIMUM DEPTH OF 36". CONDUCTOR BENDS SHALL HAVE A MINIMUM RADIUS OF 8".
- B. ALL EXTERNAL GROUND RINGS ARE TO BE JOINED TOGETHER AND ALL CONNECTIONS SHALL BE EXOTHERMIC OR IRREVERSIBLE HIGH COMPRESSION. NO LUGS OR CLAMPS WILL BE ACCEPTED.

2.7 FENCE AND GATE

- A. CONTRACTOR SHALL GROUND ALL SECTIONS OF FENCE AND GATE AS INDICATED ON DRAWINGS. GROUND EACH GATE POST AND CORNER POST TO A GROUND RING. ALL CONNECTIONS FOR THE FENCE GROUND SYSTEM SHALL BE EXOTHERMIC WELD AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES.

2.8 DISSIMILAR METALS

- A. CONNECTIONS BETWEEN DISSIMILAR METALS SHALL NOT BE MADE UNLESS THE CONDUCTORS ARE SEPARATED BY A SUITABLE MATERIAL THAT IS PART OF THE ATTACHMENT DEVICE.
- B. ONLY ATTACHMENT DEVICES LISTED AND APPROVED FOR USE WITH THE SPECIFIC DISSIMILAR METALS MAY BE USED FOR THIS PURPOSE.
- C. THE SAME METAL SHALL BE USED THROUGHOUT THE SYSTEM WHEN POSSIBLE.
- D. EXOTHERMICALLY WELD CONNECTIONS OF DIFFERENT METALS WHEN WELD MATERIAL IS AVAILABLE FOR THE METALS BEING BONDED.
- E. COPPER SHALL NOT COME IN CONTACT WITH GALVANIZED STEEL.
- F. TINNED COPPER SHALL BE USED WHEN CONNECTING TO A GALVANIZED STRUCTURE.

2.9 ANTI-OXIDANT COMPOUND

- A. ANTI-OXIDANT COMPOUND SHALL BE USED BETWEEN ALL EXTERNAL MECHANICAL CONNECTIONS. CARE SHALL BE TAKEN TO USE THE APPROPRIATE ANTI-OXIDANT TYPE ZINC ANTI-OXIDANT (GRAY COLOR) SHALL BE USED WHEN CONNECTING TO GALVANIZED AND ALUMINUM OBJECTS AND COPPER ANTI-OXIDANT (COPPER COLOR) SHALL BE USED WHEN CONNECTING TO COPPER OBJECTS.

2.10 TEST PROCEDURE

- A. THE GROUND SYSTEM RESISTANCE SHALL NOT EXCEED FIVE (5) OHMS.
- B. GROUND TEST MUST BE PERFORMED PRIOR TO UTILITY CONNECTION AND GROUND CONNECTION TO EXISTING SITE COMMON GROUNDING ELECTRODE SYSTEM.
- C. GROUND TEST MUST BE PERFORMED PRIOR TO BACKFILL. (2.1.D)

GROUNDING SYMBOLS

- IRREVERSIBLE CONNECTION
- EXOTHERMIC
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- CHEM ROD
- GROUND ROD TEST-WELL
- 12"/20" GROUND BAR

CERTIFICATION AND SEAL:  
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03/21/2022  
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LICENSE NUMBER: 23482  
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KGI

KGI WIRELESS, INC.  
ENGINEERING  
805 LAS CIMAS PKWY  
BUILDING THREE, SUITE 370  
AUSTIN, TX 78746  
TEL: 512.345.9595

SITE NAME:  
**OMA TANK FARM**  
LOCATION CODE:  
**621673**  
SITE ADDRESS:  
E SOUTH OMAHA BRIDGE RD  
& 192ND ST  
COUNCIL BLUFFS, IA 51503

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CONSTRUCTION REV 0 03/21/2022

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NO	DESCRIPTION	BY	DATE

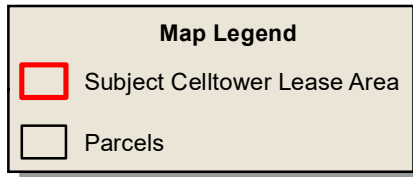
SHEET TITLE:  
**ELECTRICAL NOTES**

SHEET NUMBER:  
**N4.1**

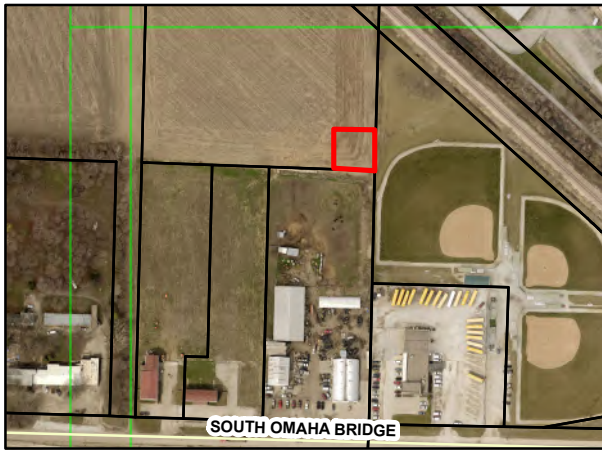


# CITY OF COUNCIL BLUFFS - ZONING BOARD OF ADJUSTMENT LOCATION/ZONING MAP CASE # CU-22-003

ATTACHMENT B



0 150 300  
1 inch = 300 feet



Note: Subject property is highlighted in red



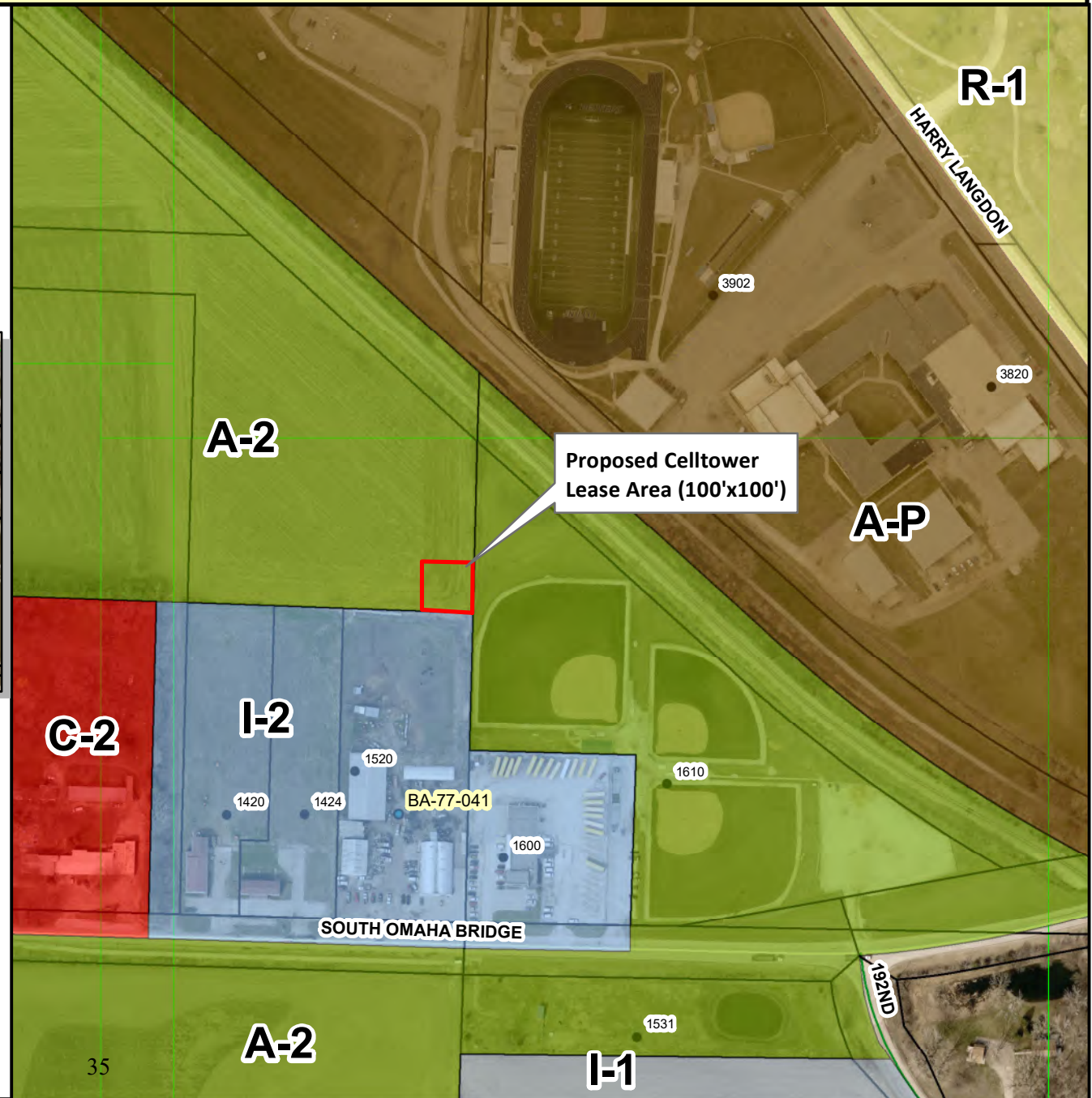
Last Amended: 5/26/22



Council Bluffs Community  
Development Department  
209 Pearl Street  
Council Bluffs, IA 51503  
Telephone: (712) 890.5350

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POTTAWATTAMIE COUNTY  
**SHERIFF'S OFFICE**

1400 Big Lake Road  
Council Bluffs, Iowa 51501

ATTACHMENT C

Andy Brown, Sheriff  
Robert Andersen, 911 Director

Communications Office: 712.328.5739  
Communications Fax: 712.328.4843

March 18, 2022

To whom it may concern,

The Pottawattamie County Sheriffs office Division of Communications has determined there would be no harmful interference to the county's public safety radio system caused by the proposed 190 foot Verizon tower located on the property parcel 744307400016 owned by Scott and Deborah Glenn.

Regards

A handwritten signature in black ink, appearing to be "R. Andersen".

Robert Andersen

Director of Communications

Pottawattamie County Sheriff's Office



## Zoning Board of Adjustment Communication

Department: Community  
Development

Case/Project No.: BA-22-003

CASE #BA-22-003

Council Action: 6/21/2022

Submitted by: Moises Monrroy,  
Planner

### Description

Public hearing on the request of Ted Duitsman for a variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to exceed the maximum four-foot height in a required street-side yard in a R-2/Two-Family Residential District on property legally described as Lots 5 and 20 and the Northerly 56 feet of Lots 6 and 19, Block 2, Glendale Addition, Council Bluffs, Pottawattamie County, Iowa. Location: 231 Park Avenue

### Background/Discussion

See attached staff report.

### Recommendation

### ATTACHMENTS:

Description

Type

Upload Date

Staff Report & Attachments

Other

6/16/2022



**TO:** Zoning Board of Adjustment  
**FROM:** Community Development Department

**DATE:** June 21, 2022

**RE:** **CASE #BA-22-003**

**REQUEST:** Public hearing on the request of Ted Duitsman for a variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to exceed the maximum height permitted in the required street-side yard of a double-frontage lot in a residential district on property legally described as Lots 5 and 20 and the Northerly 56 feet of Lots 6 and 19, Block 2, Glendale Addition, Council Bluffs, Pottawattamie County, Iowa.

**APPLICABLE**

**CODE SECTION:** **Section 15.24.040(C) Fence Height Requirements**

**RELIEF SOUGHT:** A variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to measure six feet in height, as opposed to the maximum four feet permitted in the required street-side yard of a double-frontage lot in a residential district.

**LEGAL**

**DESCRIPTION:** Lots 5 and 20 and the Northerly 56 feet of Lots 6 and 19, Block 2, Glendale Addition, Council Bluffs, Pottawattamie County, Iowa.

**LOCATION:** 231 Park Avenue, Council Bluffs, IA 51503

**OWNER/APPLICANT:** Ted Duitsman, 231 Park Avenue, Council Bluffs, IA 51503

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**BACKGROUND INFORMATION** – The Community Development Department has received a request from Ted Duitsman for a variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to exceed the maximum height permitted in the street-side yard of a double frontage lot on property addressed at 231 Park Avenue. The purpose of this request is to allow the applicant to install a six-foot tall fence, which exceeds the maximum height allowed of four feet for fences in the street-side yard of a double frontage lot in a residential district.

As per the applicant's statement of intent, the northeasterly portion of the subject property, which abuts Test Street, functions as the rear yard. The applicant contends the subject property suffers a unique disadvantage due to the decline in elevation towards Park Avenue, with no structures or leveling of the hill along the line of sight to provide any privacy. The applicant noted the subject property is located directly behind the intersection of Test Street and Huntington Avenue, which creates a nuisance as vehicles driving down Huntington Avenue shine their lights directly into their property. The applicant also stated vehicles stop behind their property multiple times a day due to the close proximity of their neighbors' mailboxes. The applicant also expressed concern with individuals who park on Test Street and stare down at their property. For the reasons stated above, the applicant wishes to install a six-foot tall wood privacy, which would replace a fence that was removed due to deterioration. The applicant stated their neighbors support the proposal, and noted the existing privacy fence at 226 Test Street.



The following attachments have been included for your reference:

Attachment A: Location/Zoning Map

Attachment B: Plot Plan

Attachment C: Fence Specifications

Attachment D: 231 Park Avenue Street-Side Yard Illustration

Attachment E: Fence Regulations in Residential Districts Graphic

**CURRENT ZONING AND LAND USE** – The subject property is zoned R-2/Two-Family Residential District. Surrounding land uses to the north, south, east and west primarily consist of single-family homes zoned R-2/Two-Family Residential District and R-3/Low Density Multifamily Residential District.

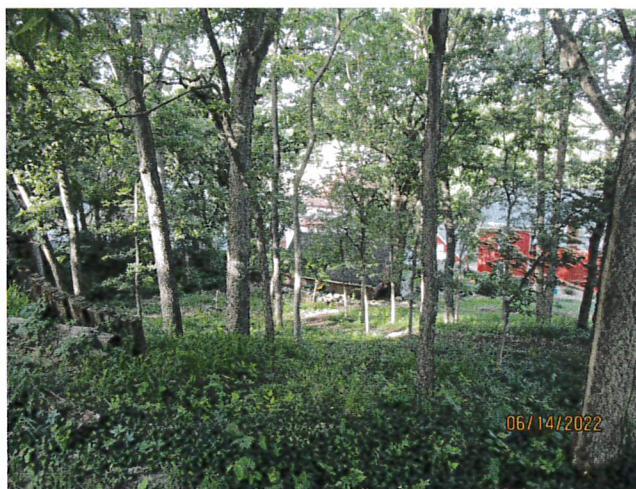
The following site photographs show the existing conditions of the subject property:



**Exhibit A:** Looking northeast from Park Avenue at the existing single-family dwelling at 231 Park Avenue



**Exhibit B:** Looking southwest from Test Street at the existing single-family dwelling at 231 Park Avenue



**Exhibit C:** Looking southwest from Test Street at the existing single-family dwelling and accessory structures at 231 Park Avenue



**Exhibit D:** Looking southwest from Test Street at the existing driveway at 226 Test Street



The following variances have been issued by the Zoning Board of Adjustment in the general vicinity of the subject property:

- Case #BA-77-020: A five-foot front yard setback variance and a one-foot side yard setback variance to allow the construction of a residential garage at 331 Huntington Avenue were granted due to the steep slope at the rear yard of the lot.
- Case #BA-79-009: A four-foot front yard setback variance to allow the construction of a duplex at 307 Huntington Avenue was granted due to the steep terrain at the rear of lots on the east side of the street.
- Case #BA-92-003: A 13.75-foot front yard setback variance to build an accessory structure at 207 Test Street was granted due to the topography on site.
- Case #BA-09-008: A 2.5-foot side yard setback variance and a variance from CBMC Section 15.26.040(01), Nonconforming Structures, to allow the construction of an attached garage onto an existing nonconforming structure at 331 Huntington Avenue were granted due to the topography of the lot.
- Case #BA-10-002: A 12-foot street-side yard setback variance and a variance from CBMC Section 15.26.040(01), Nonconforming Structures, to allow the enlargement of a nonconforming accessory structure at 340 Huntington Avenue were granted due to right-of-way abutting three sides of the property, which constituted an undue hardship.

**CITY DEPARTMENTS AND UTILITIES** – All City departments and local utility providers were notified of the requested variance. The following comments were received:

- The Community Development Department had the following comments:
  1. The subject property is a double-frontage lot zoned R-2/Two-Family Residential District.
  2. In the R-2 District, the minimum required front yard setback is 25 feet or the existing front setback line of the principal structure, whichever is greater; the minimum required street-side yard setback is 15 feet.
  3. For the purposes of determining minimum setback requirements, the property line abutting Park Avenue shall be considered the “front lot line” since the existing single-family residential structure on the subject property is oriented toward Park Avenue. The northeasterly 15 feet of the subject property, which abuts Test Street, shall be deemed the required “street-side yard.” An illustration of the street-side yard at 231 Park Avenue has been included with this staff report as Attachment ‘D.’
  4. On February 28, 2022, City Council passed Ordinance No. 6480 to update Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance). Under the recently adopted regulations, the maximum fence height allowed in the street-side yard in residential districts is six feet, unless one of the following conditions exist:
    - a. An entrance to the principal structure faces the street side yard;
    - b. A driveway is located within the street side yard;
    - c. The fence is located within five feet of the driveway entrance of an adjoining property along the same street; or
    - d. The street side yard abuts an alley that intersects a public or private street.

If any of the conditions outlined above are met, fences in the street-side yard in residential districts cannot exceed four feet in height. Since the driveway entrance at 226 Test Street is located within five feet from the north lot line of the subject property, condition ‘c’ above is met. As such, any fence proposed to be installed in the area shown in Attachment ‘D’ cannot exceed four feet in height. The purpose of this provision is to ensure fences do not create an obstruction that impairs the visibility of motorists exiting existing driveways.



5. The maximum fence height allowed in a front yard in residential districts is four feet. Fences built in the street-side yard of lots with multiple frontages cannot exceed four feet in height to ensure consistency with fences built in the front yard of interior lots located on the same side of the street (see Attachment 'E').
  6. The topography of the subject property is characterized by a steep upward slope from Park Avenue to Test Street. The change in elevation significantly increases towards the northeast portion of the lot. The proposed fence will be built at the top of the bluff. The height of the proposed fence will be measured from the grade on which the fence will be placed to the highest point of the fence structure.
  7. The applicant is proposing to install a six-foot tall wood fence in the street-side yard of the subject property for privacy purposes. The Community Development Department finds that a four-foot tall fence should provide sufficient screening for the subject property since it would be located at a higher elevation than the existing house. If adjusting the height of the proposed fence is not an acceptable solution to address their concerns, the applicant can consider one of the following options:
    - a. Place the proposed fence 15 feet from the property line abutting Test Street to ensure it will be located outside of the required street-side yard;
    - b. Construct an ornamental wrought iron/aluminum fence, which can have a maximum height of six feet in the required street-side yard; or
    - c. Install a vegetative fence.
- The Council Bluffs Public Works Department stated they had no comments on the request.
  - The Council Bluffs Parks and Recreation Department stated they had no objections to the request.
  - The Council Bluffs Fire Department stated they had no comments on the request.
  - Council Bluffs Water Works stated they had no comments on the request.

**NEIGHBORHOOD RESPONSE** – All property owners within 200 feet of the subject property were notified of the variance request. No comments have been received as of the date of this report.

**COMMENTS** - Evidence must be presented to demonstrate that a literal enforcement of the Ordinance will create a hardship for which relief is necessary. The Board of Adjustment shall approve a variance to grant relief when 'unforeseen applications of this Ordinance...create particular hardships.' No variance shall be granted unless the Board of Adjustment makes findings of fact based on the standards and conditions that follow. A variance less than requested may be granted by the Board when the record supports the applicant's right to some relief, but not to the entire relief requested. (§15.02.080 – Variances)

1. *The particular property, because of size, shape, topography or other physical conditions suffers singular disadvantage through the application of this ordinance, which does not apply to other properties in the vicinity. The size, shape and topography of the subject property is typical for the area. Although the topography of the lot creates some difficulties for the subject property, it is not unique to this particular property. The majority of properties lying southeast of the site consist of double frontage lots with significant changes in elevation. All double frontage lots located in the general vicinity of the site are subject to the same fence height regulations applicable to the subject property. As such, the subject property does not suffer a singular disadvantage.*
2. *Because of such disadvantage, the owner is unable to make reasonable use of the affected property. The subject property is developed with a single-family residential dwelling. The owner can continue to use the property for residential purposes if the variance request is not granted.*
3. *The disadvantage does not exist because of conditions created by the owner or previous owners of the property. The disadvantage exists because of a design preference from the property owner. The*

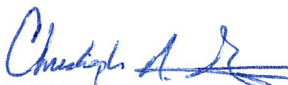


applicant can construct a six-foot tall wood fence if it is placed outside the required street-side yard. Alternatively, the applicant can construct an ornamental wrought iron/aluminum fence, which can have a maximum height of six feet in the required street-side yard, or install a vegetative fence, which does not have any height restrictions.

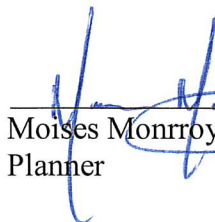
4. *Granting the variance will not confer on the applicant any special privileges that are denied by this ordinance to other properties or structures in the same district. Several properties in the general vicinity of the subject property only have frontage along Test Street. For these properties, the area between the existing residential structure and the lot line directly abutting Test Street is considered the required front yard. As such, the maximum fence height allowed in those areas is four feet. Granting the requested variance would constitute a special privilege, as it would allow the applicant to place a six-foot tall fence along Test Street.*
5. *Granting the variance will not be contrary to the public interest, will not adversely affect other property in the vicinity, and will be in harmony with the purpose and intent of this ordinance. The variance process is to provide a narrowly circumscribed means by which relief may be granted from unforeseen applications of this ordinance that create particular hardships. Granting the requested variance would not be contrary to the public interest, but would not be in harmony with the purpose and intent of this ordinance as the subject property does not suffer from a particular hardship.*

#### RECOMMENDATION

The Community Development Department recommends denial of a variance from Section 15.24.040, Fence Regulations, of the Council Bluffs Municipal Code (Zoning Ordinance) to allow a fence to exceed the maximum height permitted in the required street-side yard of a double-frontage lot in a residential district on property legally described as Lots 5 and 20 and the Northerly 56 feet of Lots 6 and 19, Block 2, Glendale Addition, Council Bluffs, Pottawattamie County, Iowa, based on the reasons stated above.



Christopher Gibbons, AICP  
Planning Manager



Moises Monroy  
Planner



# CITY OF COUNCIL BLUFFS - ZONING BOARD OF ADJUSTMENT CASE #BA-22-003 LOCATION/ZONING MAP

## Legend

 Subject Property

0 30 60  
1 Inch = 63 Feet



Last Amended: 5/31/2022



Council Bluffs Community  
Development Department  
209 Pearl Street  
Council Bluffs, IA 51503  
Telephone: (712) 890-5350

### DISCLAIMER

This map is prepared and compiled from City documents, plans and other public records data. Users of this map are hereby notified that the City expressly denies any and all responsibilities for errors, if any, in the information contained on this map, the misuse of the same by the user or anyone else. The user should verify the accuracy of information/data contained on this map before using it. The City assumes no legal responsibility for the information contained on this map.





Click any parcel to go to its web page  
See [more maps](#) at the [County GIS Department](#).

Find Property      Res Sales      Comm/Ind Sales

5/19/2022, 10:56 AM



**Aksarben Fence and Gate**

Owner/Lead Sales: Robert Malloy P:402-430-4120

Sales: Mark English P 402-215-6574

Sales: Megan Smits P 308-293-5211

Office Manager: Lisa Chandler P 402-499-1667

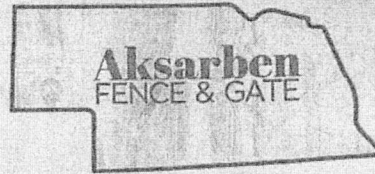
Customer -Ted Duitsman

Address 231 Park Ave.

City CB State Ia.

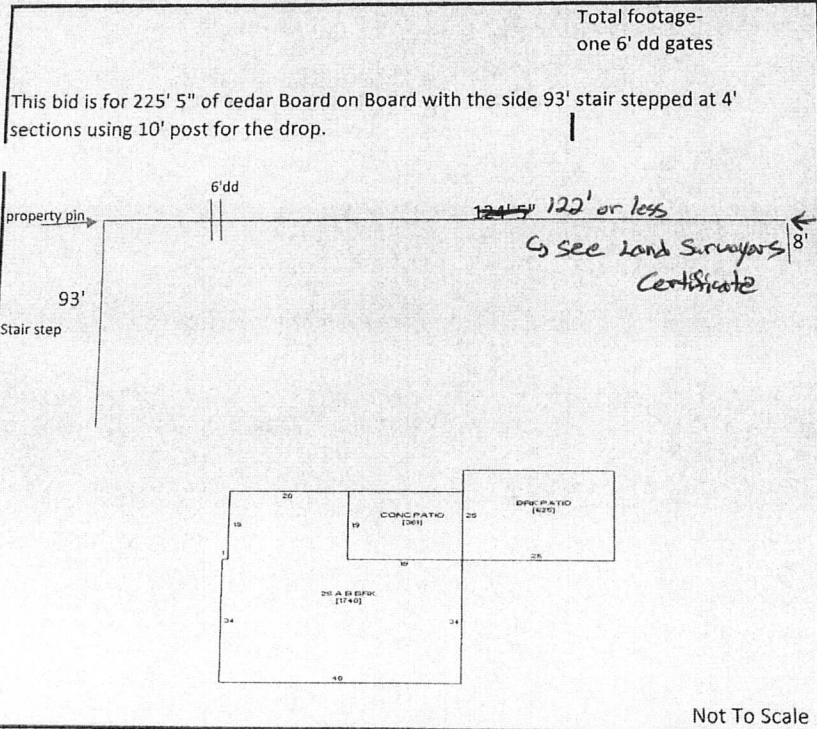
Phone 712/310/4026

Email tduitsman@gmail.com



3/25/2022

Estimate valid for 14 days.



**Wood Specs-**

Style: B on B

Posts: Reg ( x ) FG( )

Height: 6'

**Maintenance-Free Vinyl Specs**

Style:

Posts: 4x4 ( ) 5x5( )

Post Top:

Height:

Gates: 7' pin

Color:

**Ornamental Iron/Aluminum Spec**

Color:

Style:

Height:

Rails: 3-rail( ) 4-rail( )

Finials: none

Gates:

**Chain Link Specs**

Black Vinyl: Ga 8( ) 9( )

Galvanized: Ga 11.5 ( )

Height:

Gates:

Corner Lot? Yes( ) No( )

Job completion date: \_\_\_\_\_

	Bid One	Bid Two	Bid Three	Bid Four
Fence	\$ 9,738.20			
Permits				
Survey				
Total Contract	\$ 9,738.20	\$ -	0	0
Deposit	\$ 4,869.10	\$ -	0	0

Install: Tight to ground \_\_\_\_\_ Nice Flow \_\_\_\_\_

Dirt placement \_\_\_\_\_

Customer \_\_\_\_\_

Date \_\_\_\_\_

Owner Robert Malloy \_\_\_\_\_

Date \_\_\_\_\_

Aksarben Fence and Gate LLC is not liable for damage to sprinkler lines during installation.  
By signing, you agree to services, terms and installation dates as described.


15% Cancellation fee \_\_\_\_\_

There will be a 3% Convenience fee added to all credit card transactions.

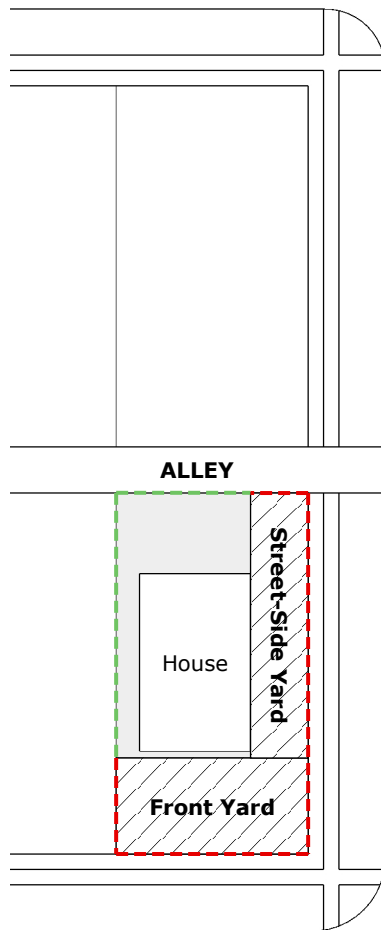


## 231 Park Avenue

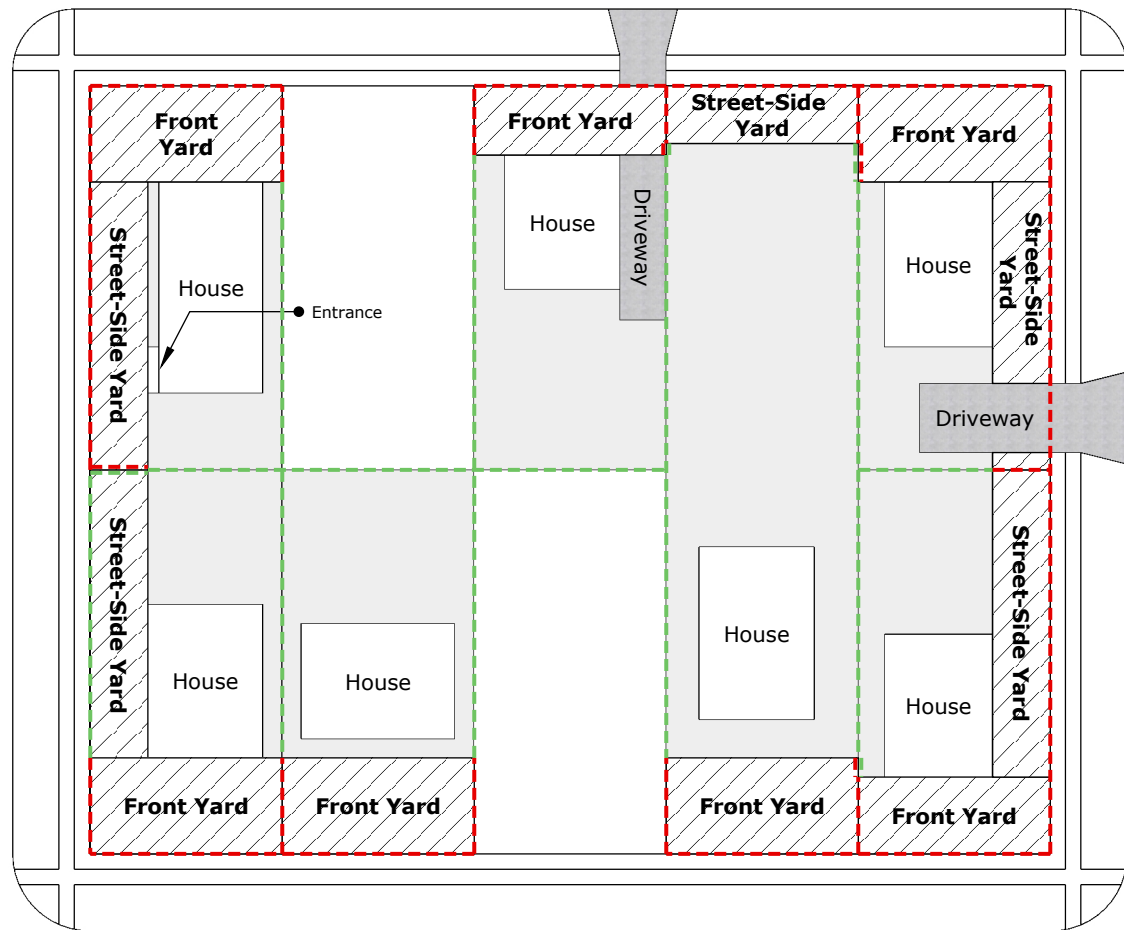


 Street-Side Yard (Max. Fence Height Allowed: 4 feet)





STREET



AVENUE

### Legend

- Max. Fence Height: 4'-0"
- Max. Fence Height: 6'-0"

# Fence Height Regulations

## Residential Districts

