Agenda

GRAND COUNTY
Planning Commission

Tuesday, October 23, 2018
5:00 P.M. Regular Meeting
Grand County Courthouse
Council Chambers
125 E. Center St., Moab, Utah

Type of Meeting:	Regular Meeting	
Facilitator:	TBD	
Attendees:	Planning Commissioners, interested citizens, and staff	
5:00 PM	Citizens to be heard	*TBD*
Public Meeting Action Item	Review of Sandstone Cliffs Subdivision, a 24.4-acre parcel zoned Rural Residential, located off Munsey Drive	*Staff*
Public Hearing Action Item	Review of T-Mobile Book Cliffs Site, Conditional Use Permit	*Staff*
Public Meeting Action Item	Approval of October 9, 2018 Meeting Minutes	*TBD*
	Future Considerations	*TBD*
	County Council Update – Mary McGann	*Council Liaison*
	ADJOURN	

DEFINITIONS:

Public hearing = a hearing at which members of the public are provided a reasonable opportunity to comment on the subject of the hearing.

Public meeting= a meeting required to be open to the public pursuant to the requirements of Title 52, Chapter 4, Open and Public Meetings; the public may or may not be invited to participate.

Legislative act = action taken by the County Council or Planning Commission; amending ordinances, adopting general plan, Annexations, zoning and rezoning; a reasonable debatable action that could promote the general welfare of the community.

Administrative act = action taken by the Planning Commission, County Council or staff interpreting ordinances and regulations, conditional uses, approving subdivision, site plans, issuing building permits; an administrative decision must satisfy the requirements prescribed under state law or the County Land Use Code, whichever is stricter.

Agenda Summary
GRAND COUNTY PLANNING COMMISSION
October 23, 2018

TITLE:	Sandstone Cliffs Preliminary Plat Application Review
FISCAL IMPACT:	N/A
PRESENTER(S):	Community and Economic Development Staff

Prepared By:
KENNY GORDON
GRAND COUNTY
PLANNING & ZONING
ADMINISTRATOR

FOR OFFICE USE ONLY:

Attorney Review:

N/A

STATED MOTION :

Move to approve the preliminary plat application.

STAFF RECOMMENDATION:

See attached Staff Report. Staff recommends the planning commission approve the preliminary plat application with the following condition:

Applicant will continue to work with the county engineer on road and drainage designs.

BACKGROUND:

See staff report attached.

ATTACHMENT(S):

- Staff report
- Preliminary plat application materials
- Utility approvals
- 30% Slope areas
- Building Envelopes
- Intersection

STAFF REPORT
COMMUNITY DEVELOPMENT DEPARTMENT
GRAND COUNTY

DATE: October 23, 2018

TO: Grand County Planning Commission

SUBJECT: Preliminary Plat

PROPERTY OWNER	Kevin Carroll
PROP. OWNER REP.	Diana Carroll, Grand County Clerk; Scoot Flannery, Jones & DeMille Engineering
ENGINEER	Jones & DeMille / PEPG Consulting
PROPERTY ADDRESS	Munsey Drive
SIZE OF PROPERTY	24.4 Acres – 15 lots proposed
EXISTING ZONE	Rural Residential (RR)
EXISTING LAND USE	Vacant/Undeveloped Land

ADJACENT ZONING AND LAND USE

Rural Residential and Large Lot Residential

APPLICATION TYPE

Preliminary Plat – 15 lots

SUMMARY OF REQUEST

This application is submitted by Kevin Carroll and Diana Carroll. The subject property is located off Munsey Lane, zoned Rural Residential, and includes a total of 24.4 acres. The Applicant proposes division of the subject property into 15 residential lots. Surrounding properties are used for residential uses and zoned Rural Residential and Large Lot Residential.

SITE IMPROVEMENTS / ADDITIONS / CHANGES

The site has constrained lands, including drainages that the applicant has considered in the layout of the subdivision. The Applicant has requested a design exception for the intersection of Munsey Drive and the proposed Sandstone Cliffs Dr., which would serve as the subdivision entrance. GWSSA has provided a will-serve letter to the Applicant conditioned upon the Applicant constructing off-site water and sewer improvements.

APPLICATION PROCEDURE

☐ Administrative

☐ Legislative

☐ Public Hearing at ☐ Planning Commission ☐ County Council

☒ Public Meeting at ☒ Planning Commission ☐ County Council

ATTACHMENTS

☐ Approval Letters

☐ Site Plan

☐ Landscape Plan

☐ Vicinity Map

☐ Legal Notice

☐ Legal Description

☐ Public Comments

☐ Agency Comments

☐ Response to Standards

☐ Other:

STAFF RECOMMENDATION:

☐ Approve ☒ Approve with Conditions ☐ Deny ☐ Postpone

During the October 9, 2018 meeting, the planning commission requested the Applicant to identify, call out, and record a public easement a public trail across the proposed plat. Commissioners referenced Section 7.6.8 of the LUC, Trail Easements and the "Munsey to Tank Trail Connector" shown in the 2011 Grand County Non-motorized Trails Master Plan. Section 7.6.8, Trail Easements establishes a process for recording public trail easements similar to the way in which the County requires road right-of-way dedications when it is supported by the Transportation Master Plan. Planning Commission requested the Applicant to determine a trail alignment that results in the least amount of impact to the subdivision but still maintains public access. The Applicant has chosen not to identify and call out a public trail easement on the proposed preliminary plat.

Applicant will be required to call out and show the building envelopes clearly on the recorded plat. The recorded plat will also require that both drainage detention basins be dedicated to Grand County prior to construction, currently the north drainage detention basin is dedicated (this description will need to be revised to match current drainage detention basin area), and the south drainage detention basin will need to be recorded. The Grand County Engineer has stated that the developer is only responsible to increase the pond sizes for impacts created by the new development, and that final approval will need to include plans for increasing the basin sizes as well as subdivision drainage plans.

CONSIDERATIONS FOR APPROVAL, DENIAL, AND/OR POSTPONEMENT

The applicant is requesting a design exception to the Grand County Construction standards for the intersection of Munsey Drive and the proposed Sandstone Cliffs Rd, which would serve as the subdivision entrance. Construction standards establish a maximum grade of 12%; current conditions on Munsey Drive exceed this standard and improving Munsey Drive to meet County standards is impractical due to cost and impact to adjacent owners. The Grand County Engineer has approved the design exception. Subdividing the subject parcel will require dedication of the portion of Murphy Lane running through Lot 5 and an easement granted to GWSSA parallel to Murphy Lane running through Lot 5.

The Commission shall consider the physical arrangement of the subdivision, and determine the adequacy of street rights of way and alignment, adequate easements for proposed or future utility service and surface drainage. Is the proposed subdivision adequate to comply with the minimum requirements for the underlying zone district and for the type of sewage disposal proposed?

See building envelope, drainage detention basin, and trail comments above.

COMPATABILITY WITH GENERAL PLAN

GC Construction Standards I. Roads and Streets Table 2 & I.2 Street Dedications

COMPATABILITY WITH LAND USE CODE (ZONING)

The proposed preliminary plat meets all County standards.

LAND USE CODE REFERENCE SECTIONS

Section 2.5 Rural Residential Zone District
Section 5.4 Residential Lot Design Standards
Section 6 General Development Standards
Section 7 Subdivision Standards
Section 9.4 Preliminary Plat Review and Approval Procedures

PROPERTY HISTORY

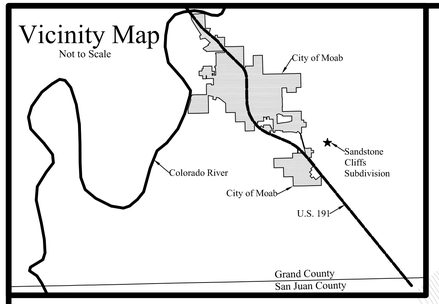
The property is undeveloped. Members of the public have traversed the private property on various routes for an undetermined amount of time and frequency.

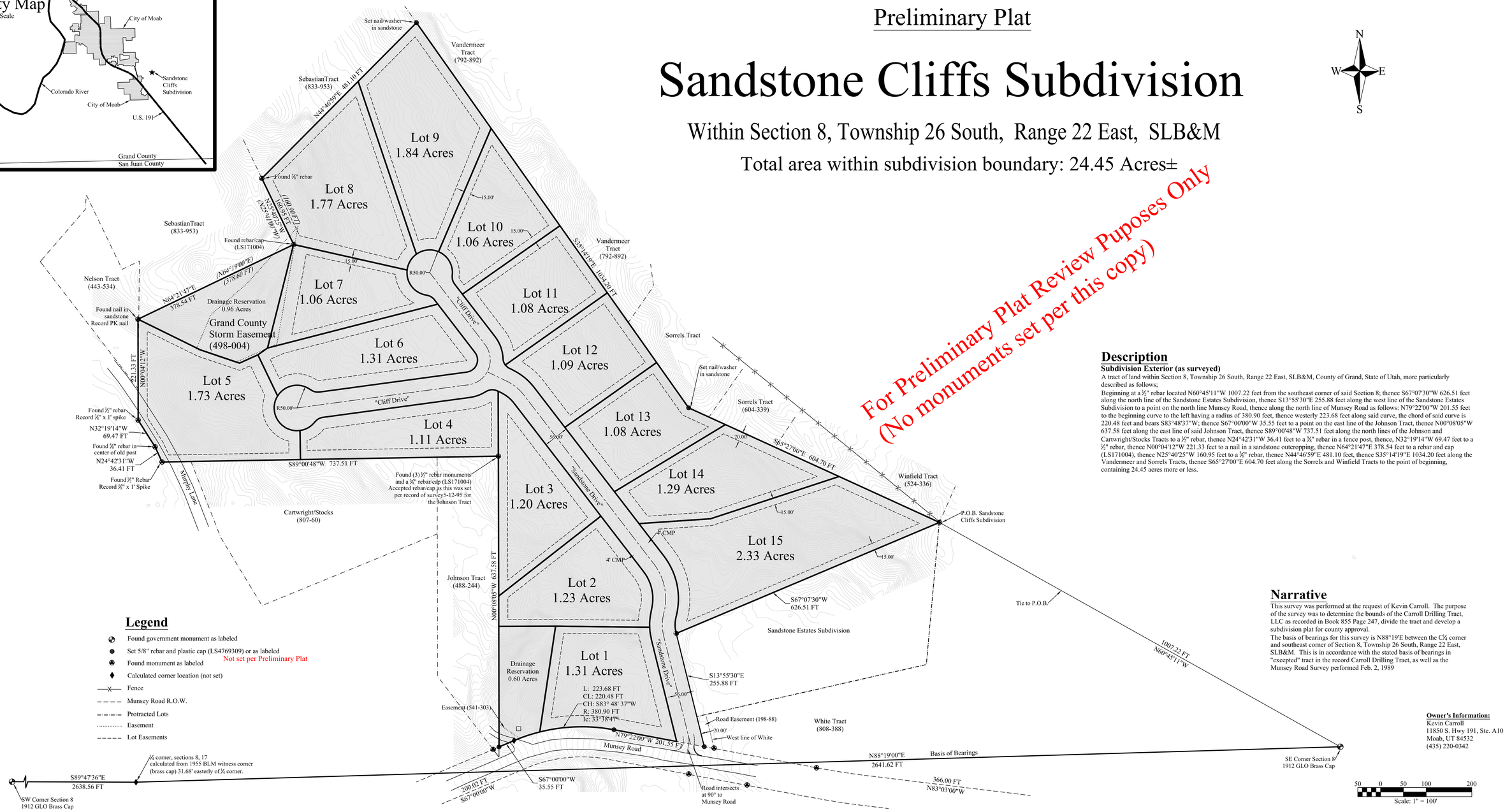
Preliminary Plat

Sandstone Cliffs Subdivision

Within Section 8, Township 26 South, Range 22 East, SLB&M

Total area within subdivision boundary: 24.45 Acres±





For Preliminary Plat Review Puposes Only
(No monuments set per this copy)

Description

Subdivision Exterior (as surveyed)

A tract of land within Section 8, Township 26 South, Range 22 East, SLB&M, County of Grand, State of Utah, more particularly described as follows;

Beginning at a ½" rebar located N60°45'11"W 1007.22 feet from the southeast corner of said Section 8; thence S67°07'30"W 626.51 feet along the north line of the Sandstone Estates Subdivision, thence S13°55'30"E 255.88 feet along the west line of the Sandstone Estates Subdivision to a point on the north line Munsey Road, thence along the north line of Munsey Road as follows: N79°22'00"W 201.55 feet to the beginning curve to the left having a radius of 380.90 feet, thence westerly 223.68 feet along said curve, the chord of said curve is 220.48 feet and bears S83°48'37"W; thence S67°00'00"W 35.55 feet to a point on the east line of the Johnson Tract, thence N00°08'05"W 637.58 feet along the east line of said Johnson Tract, thence S89°00'48"W 737.51 feet along the north lines of the Johnson and Cartwright/Stocks Tracts to a ½" rebar, thence N24°42'31"W 36.41 feet to a ½" rebar in a fence post, thence, N32°19'14"W 69.47 feet to a ½" rebar, thence N00°04'12"W 221.33 feet to a nail in a sandstone outcropping, thence N64°21'47"E 378.54 feet to a rebar and cap (LS171004), thence N25°40'25"W 160.95 feet to a ½" rebar, thence N44°46'59"E 481.10 feet, thence S35°14'19"E 1034.20 feet along the Vandermeer and Sorrels Tracts, thence S65°27'00"E 604.70 feet along the Sorrels and Winfield Tracts to the point of beginning, containing 24.45 acres more or less.

Narrative

This survey was performed at the request of Kevin Carroll. The purpose of the survey was to determine the bounds of the Carroll Drilling Tract, LLC as recorded in Book 855 Page 247, divide the tract and develop a subdivision plat for county approval.

The basis of bearings for this survey is N88°19'E between the C¼ corner and southeast corner of Section 8, Township 26 South, Range 22 East, SLB&M. This is in accordance with the stated basis of bearings in "excepted" tract in the record Carroll Drilling Tract, as well as the Munsey Road Survey performed Feb. 2, 1989

Owner's Information:
Kevin Carroll
11850 S. Hwy 191, Ste. A10
Moab, UT 84532
(435) 220-0342

Legend

- Found government monument as labeled
- Set 5/8" rebar and plastic cap (LS4769309) or as labeled
- Found monument as labeled — Not set per Preliminary Plat
- Calculated corner location (not set)
- Fence
- Munsey Road R.O.W.
- Protracted Lots
- Easement
- Lot Easements

Surveyor's Certificate

I Brad D. Bunker, Professional Utah Land Surveyor, Number 4769309, hold a license in accordance with Title 58, Chapter 22, Professional Engineers and Land Surveyors Licensing Act. This survey has been completed under my direction for the property described hereon in accordance with section 17-23-17. I hereby certify all descriptions and measurements are correct. Monuments will be set as noted hereon. I also certify that this record of survey has been prepared under my direction at the request of Kevin Carroll.

PROFESSIONAL LAND SURVEYOR — BRAD D. BUNKER 4769309-2201 — 3-19-18 — STATE OF UTAH

Brad D. Bunker 3-19-18
Brad D. Bunker Utah P.L.S. No.4769309 Date

County Recorder

State of Utah, County of San Juan, Recorded at the request of

_____ Date: _____

Time: _____ Book: _____ Page: _____ Fee: _____

_____
County Recorder

Grand County Council Approval

Approved by the Grand County Planning Commission this _____ Day of __ _____, 20____

Attest_____ _____
County Clerk Chairman, Grand County Council

Acknowledgement

State of Utah, County of Grand, on the _____ Day of _____, 20____ personally appeared before me _____ and proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is (are) subscribed to this instrument, and acknowledged that he (she/they) executed the same freely and voluntarily for the purposes stated herein.

My commission expires _____20____ _____
Residing in _____County Notary Public

Owners Dedication

Know all men by these presents that we, the undersigned owners of the above described tract of land, having caused the same to be subdivided into lots and streets hereafter to be known as the Sandstone Cliffs Subdivision, and do hereby dedicate for perpetual use of the public all parcels of land shown on this plat as intended for public use.

In witness whereof I have hereunto set my hand this _____day of _____, 20____

By: _____
Kevin Carroll, Carroll Drilling, LLC Owner

Preliminary Plat

Sandstone Cliffs Subdivision

Within Section 8, Township 26 South, Range 22 East, SLB&M

Bunker Engineering
965 S. South Creek Road, Monticello, UT 84535
P.O. Box 432, Monticello, UT 84535 (435) 459-9152

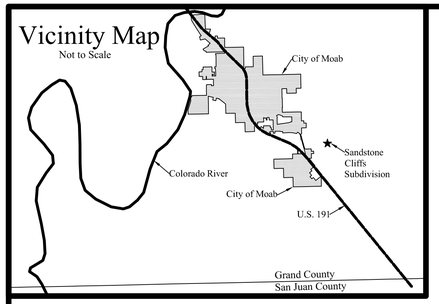
Date: 3-19-18	Drawn By: B.D. Bunker	Scale: 1" = 100'
Drawing Name: Survey Reference Number: BE802		Sheet: 1 of 1

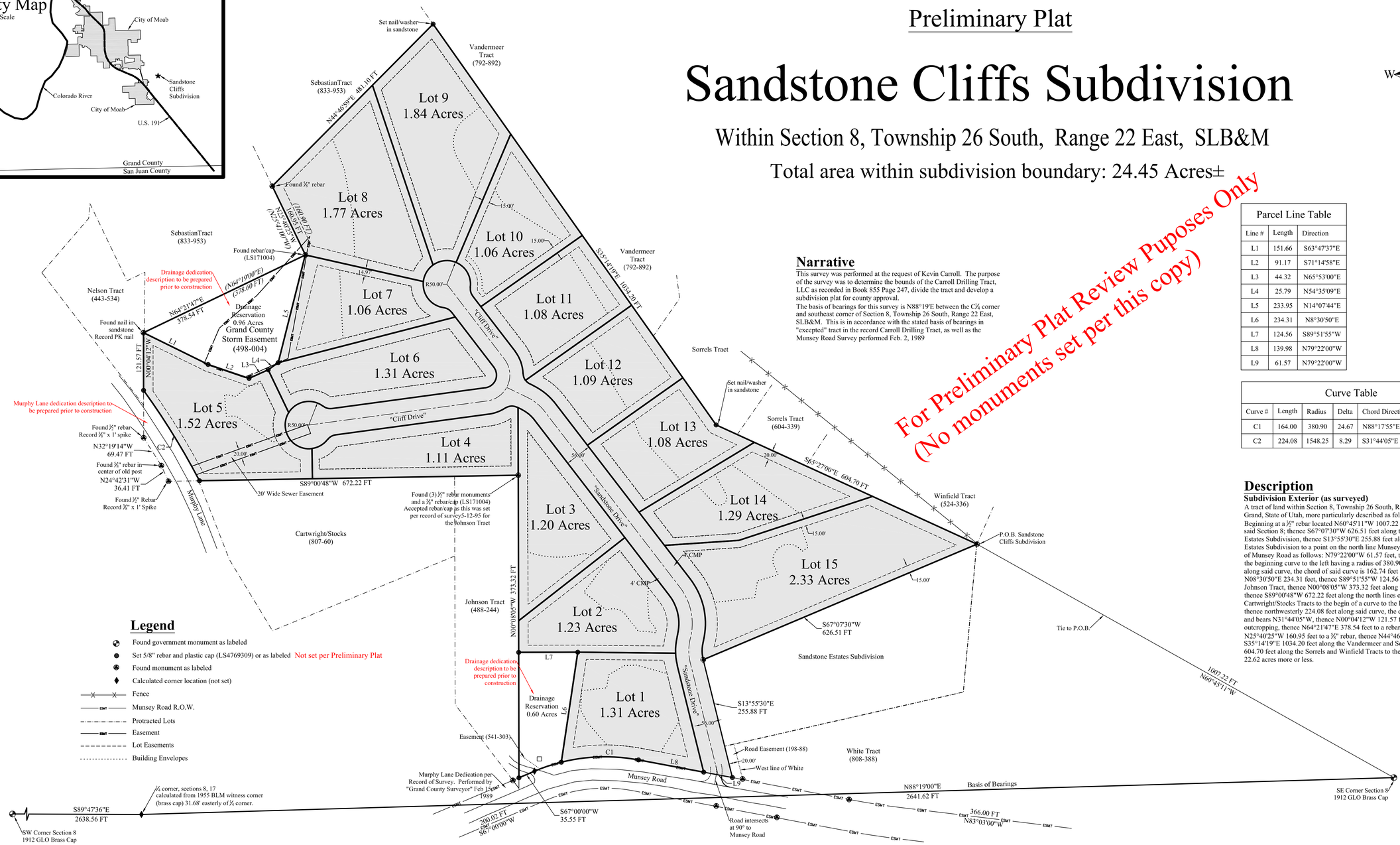
Preliminary Plat

Sandstone Cliffs Subdivision

Within Section 8, Township 26 South, Range 22 East, SLB&M

Total area within subdivision boundary: 24.45 Acres±





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Parcel Line Table		
Line #	Length	Direction
L1	151.66	S63°47'37"E
L2	91.17	S71°14'58"E
L3	44.32	N65°53'00"E
L4	25.79	N54°35'09"E
L5	233.95	N14°07'44"E
L6	234.31	N8°30'50"E
L7	124.56	S89°51'55"W
L8	139.98	N79°22'00"W
L9	61.57	N79°22'00"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	164.00	380.90	24.67	N88°17'55"E	162.74
C2	224.08	1548.25	8.29	S31°44'05"E	223.88

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Legend

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- Fence
- Munsey Road R.O.W.
- Protracted Lots
- Easement
- Lot Easements
- Building Envelopes

Owner's Information:
Kevin Carroll
11850 S. Hwy 191, Ste. A10
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(435) 220-0342

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PROFESSIONAL LAND SURVEYOR
BRAD D. BUNKER
4769309-2201
3-19-18
STATE OF UTAH

3-19-18
Brad D. Bunker Utah P.L.S. No.4769309 Date

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State of Utah, County of San Juan, Recorded at the request of

_____ Date: _____

Time: _____ Book: _____ Page: _____ Fee: _____

_____
County Recorder

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My commission expires _____20____ _____
Residing in _____County Notary Public

Grand County Council Approval

Approved by the Grand County Planning Commission this _____ Day of __ _____, 20____

Attest_____ _____
County Clerk Chairman, Grand County Council

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In witness whereof I have hereunto set my hand this _____day of _____, 20____

By: _____
Kevin Carroll, Carroll Drilling, LLC Owner

Preliminary Plat

Sandstone Cliffs Subdivision

Within Section 8, Township 26 South, Range 22 East, SLB&M

Bunker Engineering
965 S. South Creek Road, Monticello, UT 84535
P.O. Box 432, Monticello, UT 84535 (435) 459-9152

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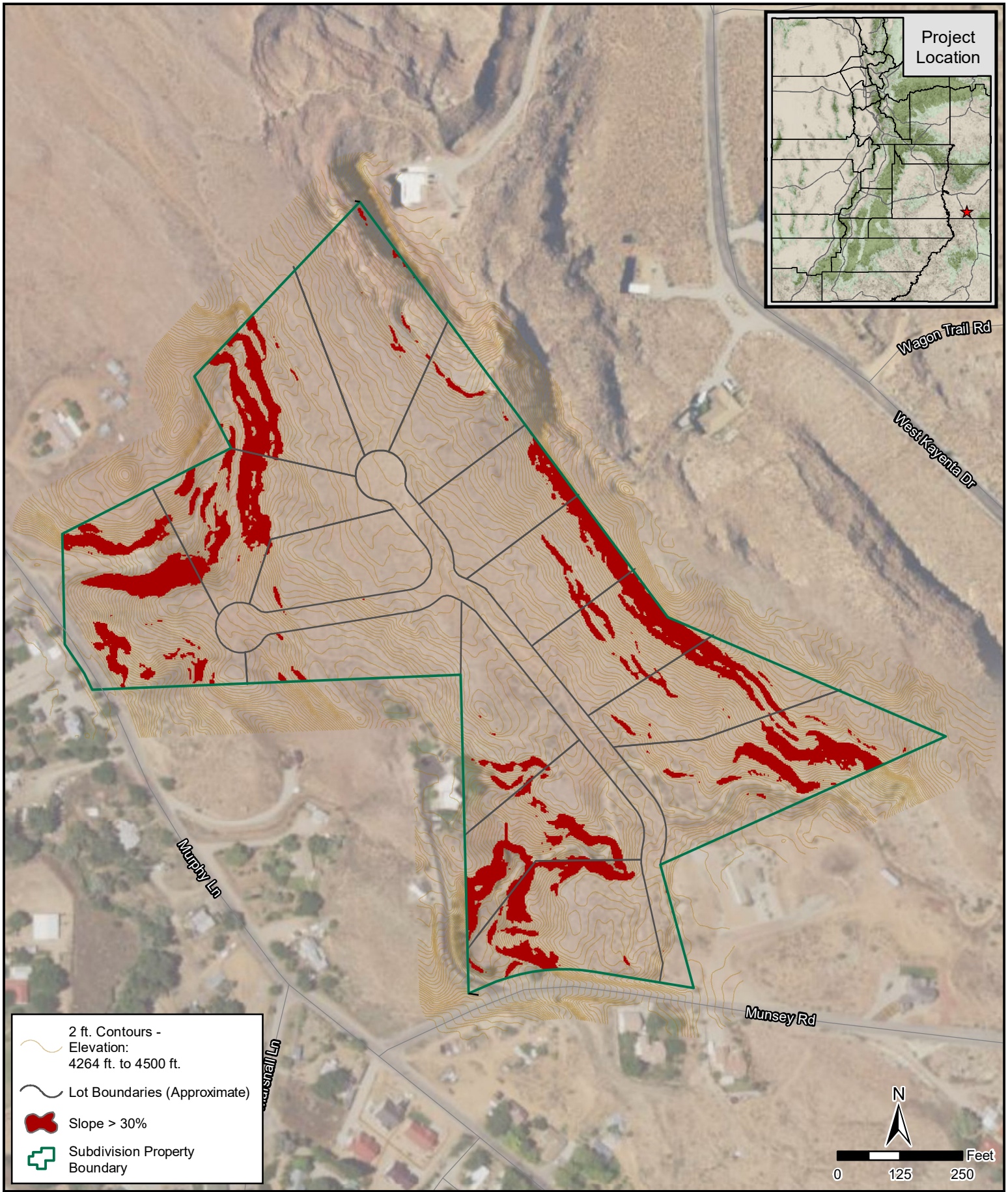


Jones & DeMille Engineering

- Shaping the Quality of Life -

800.748.5275 www.jonesanddemille.com

Carroll Drilling LLC

Sandstone Cliffs Subdivision
Slope Analysis

Map Name: H:\JD\Proj\1711-279\Design\GIS\Maps\Sandstone_Cliffs_Subdivision_Slope_Analysis.mxd

Project Number: 1711-279 | Drawn by: JEM 01-18 | Last Edit: 01/04/2018

Grand County

Scale: 1 " = 250 '

1

Jones & DeMille Engineering

800.748.5275
www.jonesanddemille.com
infrastructure professionals

CORPORATE
1535 South 100 West
Richfield, UT 84701
435.896.8266

50 South Main, Suite 4
Manti, UT 84642
435.835.4540

1675 South Highway 10
Price, UT 84501
435.637.8266

45 South 200 West (45-13)
Roosevelt, UT 84066
435.722.8267

775 West 1200 North
Suite 200A
Springville, UT 84663
801.692.0219

435 East Tabernacle, Suite 302
St. George, UT 84770
435.986.3622

16 East 300 South
PO Box 577
Monticello, UT 84535
1.800.748.5275

38 West 100 North
Vernal, UT 84078
435.781.1988

April 18, 2018

Mary Hofhine
Grand County
125 E. Center St.
Moab, UT 84532

Dear Ms. Hofhine,

This letter is in response to the letter from Dave Dillman with Horrocks Engineers dated April 11, 2018. This purpose of this letter is to address the comments from Mr. Dillman regarding the drainage report and letter about Munsey Drive improvements submitted by Jones and DeMille to Grand County.

Drainage Report:

Upon reviewing table 9 in the drainage report, it was determined there was an error in the table. However the error was in the Post Peak Storage as opposed to the additional needed storage. The Post Peak Storage should be 1.80 ac-ft which correlates with the HEC-HMS results shown in Figure D-2 in Appendix D of the drainage report. Therefore the additional needed storage for the North Basin should remain as 0.02 ac-ft. Additional information can be provided supporting this value if requested.

The drainage report was also updated to include culvert sizing for additional culverts. There was a culvert added to Cliff Drive to convey water from the south side of the road (Lot 4) to the North Basin. A culvert was also added to the subdivision entrance to allow water flowing down Munsey Drive to continue unimpeded.

The revised drainage report is include in the resubmittal for the Preliminary Plat Review.

Munsey Drive Improvements:

The Grand County Standards for a Local Type II Road along with the as-built condition of Munsey Drive are summarized below in Table 1. The table outlines which criteria Munsey Drive currently is and is not in compliance with. An exhibit is also included showing measured widths, grades, etc. for Munsey Drive based on the topographic survey done in conjunction with the design of the Sandstone Cliffs Subdivision.

Longitudinal slopes (including the intersection grade) are in excess of the maximum recommended slope for a majority of the roadway. In order to decrease the slopes, the entire roadway would need to be reconstructed as fixing the slopes where the subdivision fronts Munsey Drive would result in even steeper slopes elsewhere along the road. Additionally there are several existing driveway approaches along Munsey Drive that constrain what changes could be made to bring the grades into compliance.

Shoulder widths are insufficient along both sides of the roadway. There is approximately 175 feet of roadway on the where the shoulder is approximately 0-2 feet. Should the county require the developer to improve the shoulder width, there would be a significant amount of rock excavation to cut back the existing rock face.

Table 1. Comparison of Local Type II Public Road Standards with Munsey Drive.

	Grand County Standard	**As-built Condition of Munsey Drive**	**Deficiency on Munsey**
Design Speed	20-30	30	No
ROW Width	56 ft.	66 ft.	No
Surface Width	24 ft.	24 ft. ± 0.5 ft	No
Travel Lanes	2	2	No
Lane Widths	11 ft.	11 ft.	No
Min. – Max. Grades	0.5% - 12%	9% - 17%	Yes
Min. Horizontal & Alignment Radius	150 ft.	394 ft.	No
Intersection Grade	0.5% - 4%	14.5%	Yes
On-Street Parking	None	None	No
Intersection Sight Distance	300 ft.	See Exhibit	Yes
Stopping Sight Distance	200 ft.	See Exhibit	Yes
Curb Return Radius	15 ft.	25 ft.	No
Shoulders	10 ft.	0-10 ft.	Yes

The intersection sight distance appears to be insufficient for the downhill grade for the intersection of the subdivision and Munsey Drive just west of the intersection. There is approximately 50 feet which could be a potential obstruction (see attached exhibit). However this is based on the vehicle stopped 20 feet from the edge of Munsey Drive.

The stopping sight distance was analyzed using the sight distance check in AutoCAD Civil 3D. There is a short section of the roadway that has a SSD less than the minimum of 200 feet per Grand County Standards. That is due to the lack of shoulder and obstructions on the south side of Munsey Drive. No improvements on the north side of the road where the subdivision fronts would alleviate this deficiency.

It is evident that Munsey Drive is substandard in several areas, but we believe the as-built condition of the roadway will protect the public safety for full buildout based on AASHTO's standards for Very-Low-Volume Local Roads. We feel these standards apply for the following reasons:

- Low Volume or Low ADT (ADT $\leq$ 400). Per our letter dated April 9, 2018, we estimated the ADT for full buildout as approximately 420, which was a very conservative estimate.
- Munsey is a minor residential road with no through access. Because of this the majority of drivers using the roadway will be familiar with the features of the roadway and there is less opportunity for higher speeds from through traffic.

The standards presented in AASHTO's Very-Low-Volume Local Roads is shown below in Table 2 along with Munsey Drive conditions. Currently Munsey Drive would be adequate based on those standards and there is no reason to believe there are any site specific safety issues. We spoke the Grand County Sherriff's office on the phone regarding any accidents that had occurred on Munsey Drive in the past 10 years. No crash data was provided but the Sherriff's office stated they did not believe any accidents had occurred on that roadway.

Table 2. Comparison of AASHTO Standards with Munsey Drive.

	Low Volume Local Road Standards (AASHTO)	**As-built Condition of Munsey Drive**
Roadway Width (including shoulder)	20-28 ft. (AASHTO Exhibit 2)	24 ft. ±
Intersection Sight Distance	165 ft.*	See Exhibit
Stopping Sight Distance	165 ft. (AASHTO Exhibit 10)	~190 ft.
Clear Zone	0-6 ft.	0-10 ft.

*In constrained situations use a minimum of stopping sight distance. Line of sight vertex located at 14.4 feet from edge or roadway.

The as-built condition of Munsey Drive is substandard based on Grand County guidelines. Due to the difficult terrain, it is our opinion that there are no improvements that can be readily made to bring the roadway into compliance with Grand County Construction Standards. However as has been demonstrated previously, it is our opinion that Munsey Drive is adequate to protect public health, safety, and general welfare based on AASHTO standards for low-volume local roads and there is no history of site-specific safety concerns.

Please review and provide recommendations for what the County would like to do to address the deficiencies on Munsey Drive.

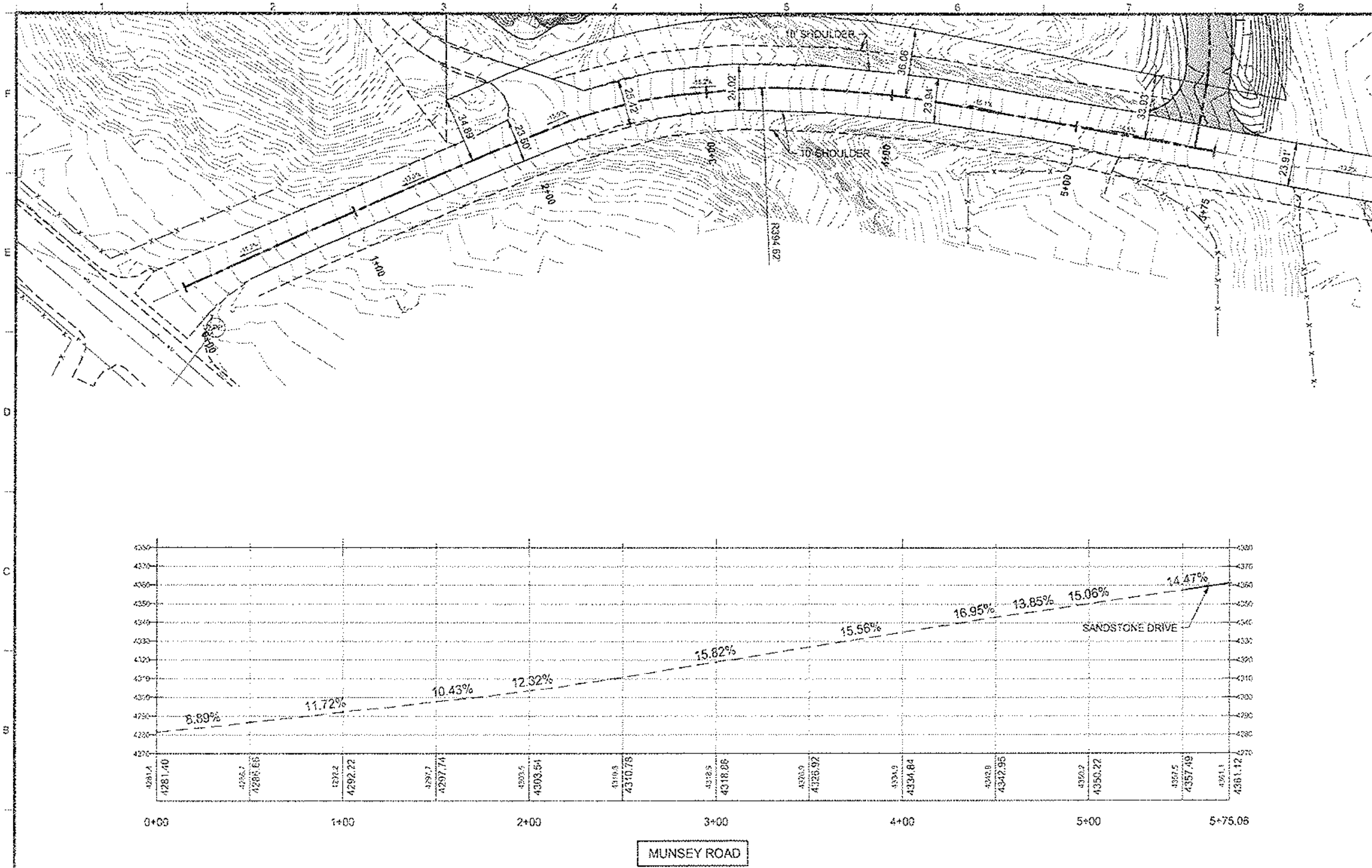
Sincerely,

Scoot Flannery

JONES & DeMILLE ENGINEERING, INC.

Attachments: Munsey Exhibit

cc: Dave Dillman



CARROL DRILLING LLC

MUNSEY ROAD

EXISTING PLAN AND PROFILE

PROJECT NUMBER 1711-279

Jones & DeMille Engineering, Inc.

CIVIL ENGINEERING • SURVEYING • TESTING

GIS • ENVIRONMENTAL

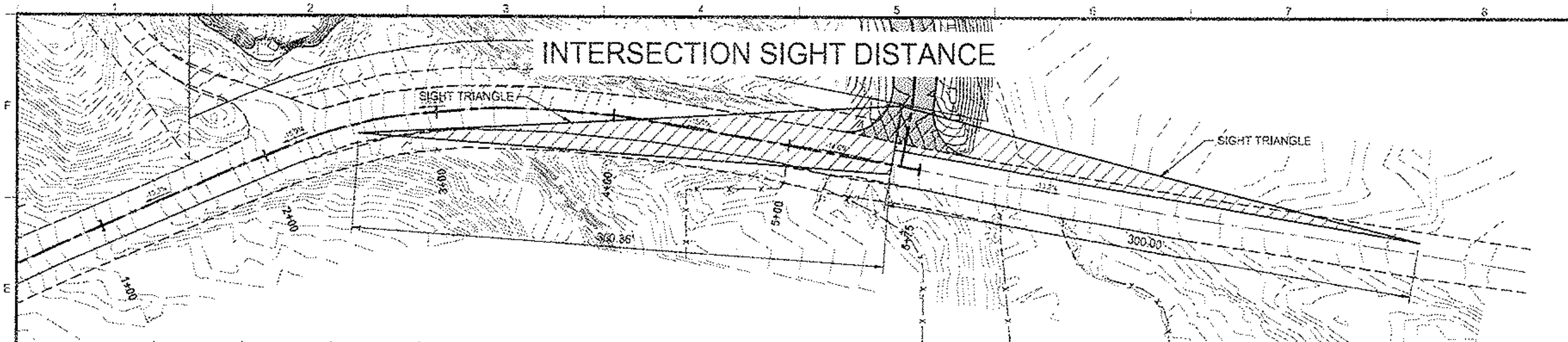
REVISIONS

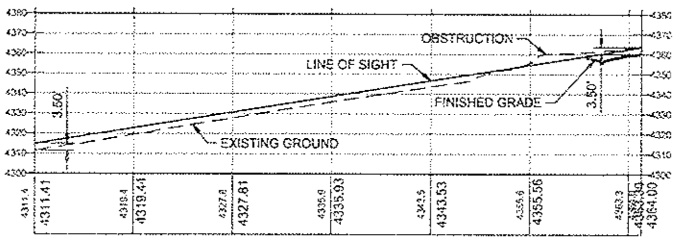
SCALE 1" = 50'

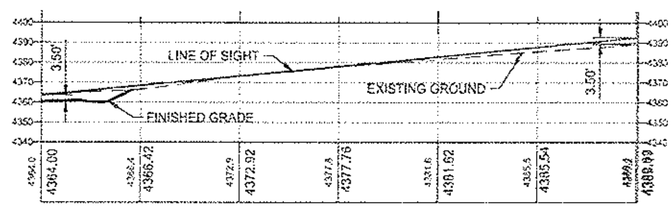
GRAND COUNTY

SHEET NO. EX-01

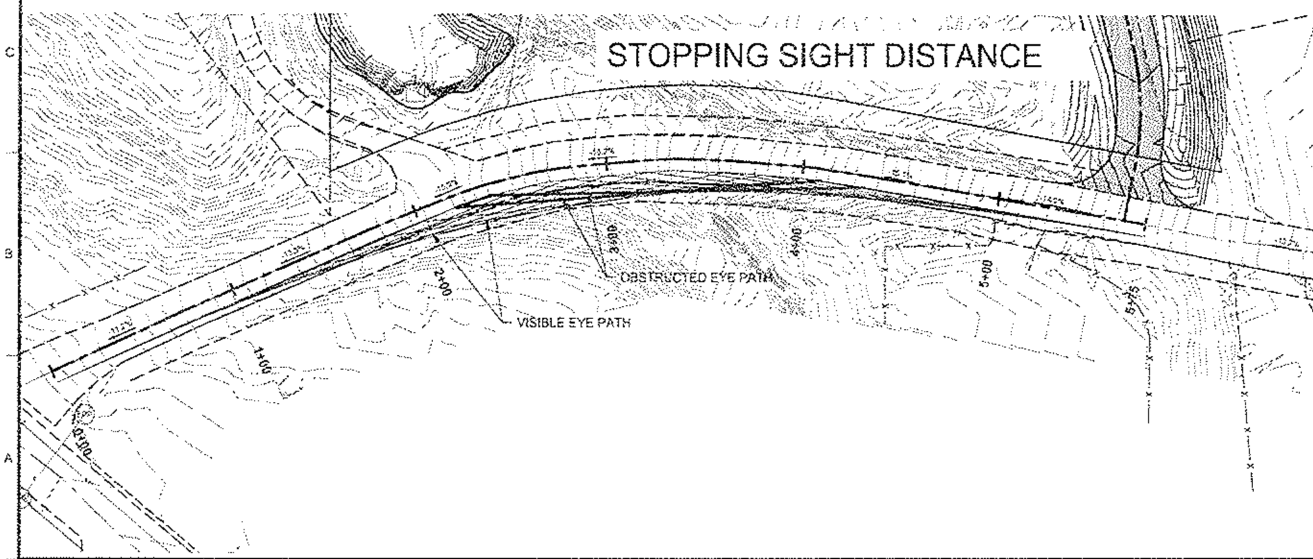
INTERSECTION SIGHT DISTANCE







STOPPING SIGHT DISTANCE



Eye Path Alignment	Munsey	Eye Path Profile	[illegible]
Eye Offset	6	Eye Height	3.5
Object Offset	6	Object Height	2
[illegible]	[illegible]		

Station	Actual Sight Distance	Minimum Sight Distance	Obstruction Point	Violated?
0+00.00	200.00'	200.00'	No	
0+20.00	200.00'	200.00'	No	
0+40.00	200.00'	200.00'	No	
0+60.00	200.00'	200.00'	No	
0+80.00	200.00'	200.00'	No	
1+00.00	200.00'	200.00'	No	
1+20.00	200.00'	200.00'	No	
1+40.00	200.00'	200.00'	No	
1+60.00	200.00'	200.00'	No	
1+80.00	200.00'	200.00'	No	
2+00.00	200.00'	200.00'	No	
2+20.00	199.41'	200.00	[illegible]	Yes
2+40.00	191.07'	200.00	[illegible]	Yes
2+60.00	200.00'	200.00'	No	
2+80.00	200.00'	200.00'	No	
3+00.00	200.00'	200.00'	No	
3+20.00	200.00'	200.00'	No	
3+40.00	200.00'	200.00'	No	
3+60.00	200.00'	200.00'	No	
3+80.00	195.00'	200.00'	No	
4+00.00	175.00'	200.00'	No	
4+20.00	155.00'	200.00'	No	
4+40.00	135.00'	200.00'	No	
4+60.00	115.00'	200.00'	No	
4+80.00	95.00'	200.00'	No	
5+00.00	75.00'	200.00'	No	
5+20.00	55.00'	200.00'	No	
5+40.00	35.00'	200.00'	No	
5+60.00	15.00'	200.00'	No	
5+75.00	0.00'	200.00'	No	

CARROL DRILLING LLC

MUNSEY ROAD

EXISTING SIGHT DISTANCE

PROJECT NUMBER 1711-279

GRAND COUNTY

SHEET NO. EX-02

Jones & DeMille Engineering, Inc.
CIVIL ENGINEERING • SURVEYING • TESTING
GIS • ENVIRONMENTAL

REVISIONS

SCALE 1" = 60'

HORROCKS
ENGINEERS

2162 West Grove Parkway, Ste 400
Pleasant Grove, Utah 84062
801-763-5100
www.horrocks.com

April 30, 2018

Subject: Sandstone Cliffs Subdivision – Munsey Lane Improvements

Mary Hofhine
Planning and Zoning Administrator
Grand County
125 E. Center
Moab, Utah 84532

Dear Mary:

In response to the letter from Jones and DeMille Engineering dated April 18, 2018 regarding improvements to Munsey Lane, we have the following comments.

The Grand County Transportation Master Plan shows Munsey Lane as a Local Road. Following a review of the zoning map, adjacent land uses, and geographic area served by Munsey Lane, we concur that Munsey Lane is classified as a Local Type II Road. The submitted letter provides information on the current "as-built condition" of Munsey Lane and identified deficiencies. In order to receive subdivision approval, the developer shall demonstrate that all public roadways meet Grand County Construction Standards at full build-out. The developer shall correct all deficiencies or request and receive approval for design exceptions on specific criteria.

The design criteria of greatest concern are the Intersection Grade and Stopping Sight Distance. The proposed intersection grade of 14.5% is unacceptable. This grade creates unsafe conditions for the public and potentially limits access for emergency vehicles, school busses, and maintenance vehicles. The proposed grade is more than twice the allowable grade of 6%. No design exception will be granted for an intersection grade that substantially exceeds the 6% maximum design standard. Additionally, the proposed sight triangle does not meet the County standards, which are intended to maintain safe intersections. It is expected that the sight triangle will change with any changes to the intersection and will then be re-evaluated.

The County will evaluate each design exception request based on the specific deficiency in question. The developer shall provide full documentation and adequate justification for each design exception. At a minimum, the developer shall provide documentation of what would be required to meet the design criteria standards. The County will only evaluate design exception requests on the basis of information formally submitted.

If you have any question or would like to discuss, please feel free to contact me.

Sincerely,
HORROCKS ENGINEERS

David Dillman, PE
Principal

cc: file

GRAND COUNTY CORPORATION

October 1, 2018 **Tax Roll Master Record** 10:02:56AM

Parcel: 02-0008-0015 Serial #:26-22-8-3 6 5.2 Entry: 525227
Name: CARROLL DRILLING LLC
c/o Name:
Address 1: 11850 S HWY 191 STE A-10
Address 2:
City State Zip: MOAB UT 84532-0000
Mortgage Co:
Status: **Active** Year: **2018** District: **002 SPANISH VALLEY** **0.010532**

Property Address
MUNSEY DR 2005 E
MOAB 84532-0000
Acres: 24.51

Owners	Interest	Entry	Date of Filing	Comment
CARROLL DRILLING LLC		525227	06/23/2017	(0855/0247)

Property Information	2018 Values & Taxes				2017 Values & Taxes		
	Units/Acres	Market	Taxable	Taxes	Market	Taxable	Taxes
LV01 LAND VACANT	24.51	183,765	183,765	1,935.41	183,765	183,765	2,004.69
Totals:	24.51	183,765	183,765	1,935.41	183,765	183,765	2,004.69

****** SPECIAL NOTE ******
Tax Rates for 2018 have been set and approved. All levied taxes and values shown on this printout for the year 2018 should be correct.

2018 Taxes:	1,935.41	2017 Taxes: 2,004.69
Special Fees:	0.00	
Penalty:	0.00	**Review Date**
Abatements: (	0.00)	**03/04/2015**
Payments: (	0.00)	
Amount Due:	1,935.41	**NO BACK TAXES!**

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

LAND LEFT OVER DESC FOR ASSESSING ONLY: BEG AT PT WHICH BEARS S 89°381W 1374.09 FT FROM SE COR SEC 8 T26S R22E SLB&M & PROC N 79°22'W 232.01 FT ALONG THE N'LY BOUNDARY OF MUNSEY LN; TH ALONG THE ARC OF A 380.9 FT RADIUS CURVE TO THE LEFT (CURVE #4) OF MUNSEY LANE 223.7 FT; N 638.32 FT; S 89°15'W 735.78 FT; N 27°26'W 36.21 FT; N 32°29'W 61.55 FT; N 0°09'W 230.49 FT; N 64°19'E 368.47 FT; N 25°41'W 160.9 FT; N 44°39'E 480.3 FT; S 35°32'E 1035.24 FT; S 65°27'E 604.31 FT; S 67°01'W 625.97 FT; S 14°02'E 187.9 FT; N 77°06'E 18.23 FT ±; S14°02'E 84.36 FT ± TO BEG' & CONT 24.41 AC ± <<>> SUBJECT TO AN ESMNT :BEG AT A PT ON THE N'LY R.W OF MUNSEY RD; SAID PT BRS N 89°59'W 1846.7 FT FROM THE SE COR SEC 8 T26S R22E SLM & PROC TH WITH E LN OF JOHNSON N 50.0 FT; TH S 55°00'E 54.9 FT TO A PT ON N'LY R.W OF MUNSEY RD; TH WITH R/W ALNG THE ARC OF A 380.9 FT RAD CUR TO LEFT 20.4 FT (CHD BRG=S 68°32'W 20.3 FT) TH WITH SAID R/W S 67°00'W 28.3 FT TO POB & CONT 1115 SQ FT <<<>>>PARCEL - EAST OF MUNSY RD: BEG AT A PT WHICH BEARS S 88°15'W 399.3 FT FROM THE SE COR SEC 8 T26S R22E & PROC TH S 88°15'W 73.01 FT; TH N 31°54'45"E 136.25 FT; S 50°53'47"E 8.86 FT ; N 89°15'E 4.29 FT; S 5°37'W 108.8 FT TO POB & CONT 0.11 AC M-O-L (TOTAL TAXED ACRES; TOTAL AC 24.51 AC±)

Agenda Summary

GRAND COUNTY PLANNING COMMISSION

October 23, 2018

TITLE:	T-Mobile Book Cliffs Site Conditional Use Permit
FISCAL IMPACT:	N/A
PRESENTER(S):	Community and Economic Development Staff

Prepared By:
KENNY GORDON
GRAND COUNTY
PLANNING & ZONING
ADMINISTRATOR

FOR OFFICE USE ONLY:

Attorney Review:

N/A

STATED MOTION :

Move to forward a favorable recommendation to the Grand County Council.

STAFF RECOMMENDATION:

Review and consider feedback provided to the planning commission related to the T-Mobile Book Cliffs Site. Staff recommends the planning commission move to forward a favorable recommendation of the T-Mobile Book Cliffs Site Conditional Use to the Grand County Council.

BACKGROUND:

See staff report attached.

ATTACHMENT(S):

- Construction Plans
- Applicant Statement
- Lease Agreement
- Fee receipt

STAFF REPORT

COMMUNITY DEVELOPMENT DEPARTMENT
GRAND COUNTY

DATE: October 23, 2018

TO: Grand County Planning Commission

SUBJECT: Conditional Use Permit

PROPERTY OWNER	State of Utah (SITLA)
PROP. OWNER REP.	Craig Chagnon / Crown Castle Tower Owner & Agent for T-Mobile
ENGINEER	Jacob Goralski
PROPERTY ADDRESS	Bitter Creek Canyon Road – T16S R 24E SEC20 N2 SW
SIZE OF PROPERTY	0.49 acres
EXISTING ZONE	Range and Grazing (RG)
EXISTING LAND USE	Range and Grazing/Existing Telecommunications Tower Conditional Use

ADJACENT ZONING AND LAND USE

Range and Grazing

APPLICATION TYPE

Conditional Use Permit

SUMMARY OF REQUEST

This is an existing development with an approved conditional use permit. It is located in a remote setting in the Book Cliffs. The proposed conditional use will result in no net change in structural footprint and no net change in fencing footprint. The structural upgrades proposed for the existing tower requires a new CUP approval because they will result in a net increase in tower height (See Sec. 3.2.3(Q)(4))

SITE IMPROVEMENTS / ADDITIONS / CHANGES

This is an existing, unmanned site, in a remote location. All changes / improvements will occur within the existing fenced compound.

APPLICATION PROCEDURE

☐ Administrative

☐ Legislative

☒ Public Hearing at ☐ Planning Commission ☒ County Council

☒ Public Meeting at ☒ Planning Commission ☐ County Council

ATTACHMENTS

☐ Approval Letters

☐ Site Plan

☐ Landscape Plan

☐ Vicinity Map

☐ Legal Notice

☐ Legal Description

☐ Public Comments

☐ Agency Comments

☐ Response to Standards

☐ Other:

STAFF RECOMMENDATION: ☐ Approve ☒ Approve with Conditions ☐ Deny ☐ Postpone

---

CONSIDERATIONS FOR APPROVAL, DENIAL, AND/OR POSTPONEMENT

Conditional uses are permitted uses with the potential to create unique impacts that may require mitigation through approval conditions. In this instance, although Section 3.2.3(Q)(4) states that upgrades to existing telecommunications towers may not result in a net increase in height. However, staff interprets that code section to refer to by-right upgrades (i.e. upgrades not requiring a new approval). In this instance, the applicant is requesting a new CUP approval due to the proposed upgrades resulting in a net increase of height on the existing tower.

COMPATABILITY WITH GENERAL PLAN

N/A

COMPATABILITY WITH LAND USE CODE (ZONING)

LAND USE CODE REFERENCE SECTIONS

Grand County Land Use Code, 3.2.3 Commercial Use Standards, P. Telecommunications Tower and Facility and Q. Telecommunications Towers and Facilities on an Existing Tower or Other Structure.

PROPERTY HISTORY

N/A

CROWN CASTLE

2055 S. Stearman Drive
Chandler, AZ 85286

Phone: (480) 735-6900
Fax:
www.crowncastle.com

September 27, 2018

GRAND COUNTY, UT
COMMUNITY DEVELOPMENT
125 E. CENTER ST.
MOAB, UT 84532

RE: Eligible Facilities Request to modify equipment on a communications tower located at:
BITTER CREEK CANYON ROAD, GREEN RIVER, UT, 84540
Crown Site Number: 858303 / Crown Site Name: ZOD_ALLTEL_UT05_MCCOOK RIDGE
Customer Site Number: DN02488A / Application Number: 443529

Crown Castle USA Inc. ("Crown Castle") on behalf of T-Mobile West LLC ("T-Mobile") is submitting the attached Eligible Facilities Request application to transmission equipment on a telecommunications tower located at BITTER CREEK CANYON ROAD, GREEN RIVER, UT 84540 in COUNTY OF GRAND, UT (the "ZOD_ALLTEL_UT05_MCCOOK RIDGE Tower").

Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012, commonly known as the "Spectrum Act" (Pub. Law No. 112-96, 126 Stat 156), mandates that state and local governments "may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station."

T-Mobile proposes to modify the "ZOD_ALLTEL_UT05_MCCOOK RIDGE Tower" as follows:

- Install (6) New Panel Antennas
- Install (6) New RRUs
- Install (1) COVP
- Install (1) Hybrid Cable Lines
- Install New Platform Mount
- Install New 8'-0"x8'-0" Modular Equipment Platform within Existing Fenced Compound

Itemized list of submittal documents:

- Conditional Use Application
- Eligible Facility Request Letter with Applicant Statement
- Site Plan, Construction Drawings, Equipment Detail

CROWN CASTLE

2055 S. Stearman Drive
Chandler, AZ 85286

Phone: (480) 735-6900
Fax:
www.crowncastle.com

Conditional Use Criteria:

- Effect on Environment – Minimal to zero effect on the environment. This is an existing site, in a remote location, and all construction is within our existing lease/fenced area
- Compatible with Surround Area - This is an existing site, in a remote location in adherence with the conditions of its original approval.
- External Impacts Minimized - Minimal to zero external impacts. This is an existing, unmanned site, in a remote location whose use is expanding but not changing.
- Infrastructure Impacts Minimized - Minimal to zero infrastructure impacts. This is an existing site, in a remote location. All changes/improvement will occur within the existing fenced compound.
- Consistent with LUC and General Plan – This wireless telecommunications facility is consistent and will adhere with all pasts and future conditions of the LUC, General Plan, and any other statutes, ordinances or policies that may be applicable
- Parcel Size – Additional land area should not be required to mitigate of impacts on surrounding land uses and the zoning district. All improvements will occur within the existing fenced compound

T-Mobile is committed to working cooperatively with all jurisdictions around the country to secure expeditious approval of requests to modify existing personal wireless service facilities. If you should require more information regarding the Spectrum Act, please do not hesitate to contact me with your questions.

Sincerely,

Craig Chagnon
_____

Craig Chagnon
Craig.Chagnon@crowncastle.com
(801) 979-9077

Date: **August 20, 2018**

Rebecca Quisenberry
Crown Castle
2055 S. Stearman Drive
Chandler, AZ 85286

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	DN02488A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	858303
	Crown Castle Site Name:	ZOD_ALLTEL_UT05_McCook Ridge
	Crown Castle JDE Job Number:	509289
	Crown Castle Work Order Number:	1616419
	Crown Castle Order Number:	443529 Rev. 2
Engineering Firm Designation:	**TEP Project Number:**	74637.176324

Site Data: **Bitter Creek Canyon Road, Green River, Grand County, UT 84540**
Latitude *39° 26' 32.3"*, Longitude *-109° 14' 28.6"*
115 Foot - Monopole Tower

Dear Rebecca Quisenberry,

Tower Engineering Professionals, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 115 mph from the 2015 International Building Code. Exposure Category C and Risk Category II were used in this analysis.

Structural analysis prepared by: Travis L. Infante, E.I. / KEH

Respectfully submitted by:

Ronald E. Glover, P.E, S.E.

08/20/2018

Electronic Copy

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 115-ft Monopole tower designed by Rohn. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

Building Code: 2015 IBC
TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 115 mph
Exposure Category: C
Topographic Factor: 1
Ice Thickness: 0.5 in
Wind Speed with Ice: 40 mph
Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
115.0	115.0	3	Andrew	HBXX-6517DS-A2M w/ Mount Pipe	1	1-3/5
		3	Commscope	FF-65C-R1 w/ Mount Pipe		
		3	Nokia	AHLOA		
		3	Nokia	FRIJ		
		1	Raycap	RNSDC-7771-PF-48		
		1	Perfect Vision	PV-LPP12M-B		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	104.0	3	Andrew	SBNHH-1D65C w/ Mount Pipe	1 2 2	3/8 3/4 7/8
	103.0	1	Amphenol	BCR-80015-EDIN-3-25		
	100.0	3	Alcatel Lucent	B25 RRH4x30-4R		
		3	Alcatel-Lucent	RRH2X40-07-L-AT		
		1	Raycap	DC6-48-60-18-8F		
		1	Commscope	MC-PK12S-9-97		
	95.0	1	Amphenol	BCR-80015-EDIN-3-25		
74.0	74.0	1	RFS Celwave	UXA10-59	1	EW52
		1	Tower Mounts	Pipe Mount [PM 602-1]		
48.0	48.0	1	Commscope	UHX6-59/L	1	EW63
		1	Tower Mounts	Pipe Mount [PM 601-1]		
31.0	31.0	1	Gabriel Electronics	SSP4-23	1	1/2
		1	Tower Mounts	Pipe Mount [PM 601-1]		
30.0	30.0	1	RFS Celwave	UXA10-59	1	EW52
		1	Tower Mounts	Pipe Mount [PM 602-1]		
23.0	23.0	1	Tower Mounts	Pipe Mount [PM 601-1]	-	-

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Geotechnical Report	Tower Engineering Professionals	5965834	CCISites
Tower Foundation Drawings	Rohn	6419185	CCISites
Tower Manufacturer Drawings	Rohn	4275256	CCISites

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

For analysis of concrete monopole sections, the loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each pole section and presents percent capacities for the pole shaft along each critical axis. Selected output from the calculations is included in Appendix C. The actual percent capacity of the tower structure is reported in Table 4 – Section Capacity (Summary).

3.2) Assumptions

1) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2, and "Appendix B – Base Level Drawing".
4) All tower components are in sufficient condition to carry their full design capacity.
5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	A (in^2)	I_{EFF} (in^4)	P_U (k)	L_B (ft)	ϕP_{CR} (k)	$P_U / \phi P_{CR}$	M_U (k-ft)	ϕM_N (k-ft)	$M_U / \phi M_N$	Capacity (%)	Pass/Fail
1	100.00	135.17	3734.7	5.0	100.00	25.2	0.20	66.4	143.7	0.46	62.9	Pass
2	78.42	187.33	7691.4	11.7	78.42	81.0	0.14	240.6	488.5	0.49	60.7	Pass
3	56.83	246.67	9728.2	18.6	56.83	182.0	0.10	474.3	677.5	0.70	76.4	Pass
4	35.25	313.16	13632.3	26.9	35.25	573.0	0.05	766.0	861.4	0.89	89.2	Pass
5	17.63	372.78	22058.2	36.1	17.63	2641.4	0.01	1056.9	1203.9	0.88	84.9	Pass
6	0.00	437.17	30459.9	45.5	0.00	4131.3	0.01	1368.8	1392.6	0.98	94.7	Pass

Section No.	Elevation (ft)	A (in^2)	I_{EFF} (in^4)	P_U (k)	L_B (ft)	ϕP_{CR} (k)	P_U / ϕP_{CR}	M_U (k-ft)	ϕM_N (k-ft)	M_U / ϕM_N	Capacity (%)	Pass/Fail
											Summary	
										Pole (L6)	94.7	Fail
										Rating	**94.7**	**Fail**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Steel Splice Sleeve	35.25	90.4	Pass
1	Base Foundation Soil Interaction	-	15.5	Pass
1	Base Foundation Structural	-	96.6	Pass

Structure Rating (max from all components) =	**96.6%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.

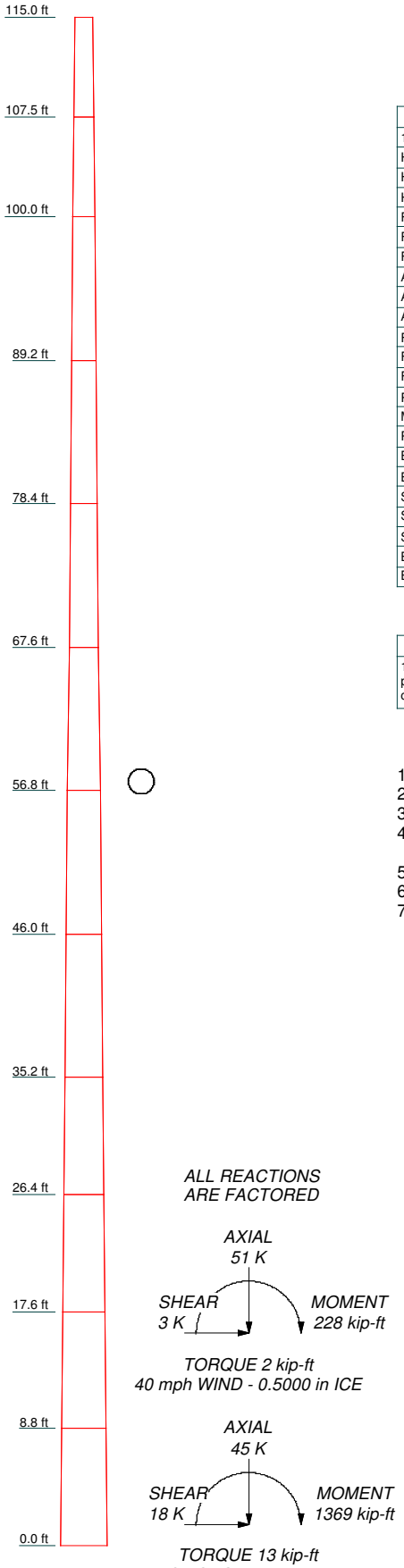
4.1) Recommendations

1) If the load differs from that described in Tables 1 and 2 of this report, the referenced drawings, or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	7.50	1	2.4100	16.4700	18.0900	10.5 ksi prestressed concrete	0.9
2	7.50	1	2.4100	18.0900	19.7100		1.0
3	10.79	1	2.6295	19.7100	22.0410		1.7
4	10.79	1	2.6295	22.0410	24.3720		1.9
5	10.79	1	1.5510	24.3720	26.7030		2.3
6	10.79	1	1.5510	26.7030	29.0340		2.5
7	10.79	1	1.2715	29.0340	31.3650		3.0
8	10.79	1	1.2715	31.3650	33.6960		3.3
9	8.81	1	1.4022	33.6960	35.5995		3.1
10	8.81	1	1.4022	35.5995	37.5030		3.2
11	8.81	1	1.4123	37.5030	39.4065		3.6
12	8.81	1	1.4123	39.4065	41.3100		3.8
							30.3



ALL REACTIONS ARE FACTORED

AXIAL 51 K
SHEAR 3 K
MOMENT 228 kip-ft
TORQUE 2 kip-ft
40 mph WIND - 0.5000 in ICE

AXIAL 45 K
SHEAR 18 K
MOMENT 1369 kip-ft
TORQUE 13 kip-ft
REACTIONS - 115 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
1/2" x 10' LROD	115	B25 RRH4x30-4R	100
HBXX-6517DS-A2M w/ Mount Pipe	115	RRH2X40-07-L-AT	100
HBXX-6517DS-A2M w/ Mount Pipe	115	RRH2X40-07-L-AT	100
HBXX-6517DS-A2M w/ Mount Pipe	115	RRH2X40-07-L-AT	100
FF-65C-R1 w/ Mount Pipe	115	DC6-48-60-18-8F	100
FF-65C-R1 w/ Mount Pipe	115	(2) 2.4" Dia x 8-ft Mount Pipe	100
FF-65C-R1 w/ Mount Pipe	115	(2) 2.4" Dia x 8-ft Mount Pipe	100
AHLOA	115	(2) 2.4" Dia x 8-ft Mount Pipe	100
AHLOA	115	Platform Mount [LP 303-1]	100
AHLOA	115	1.9-in x 4-ft Pipe	74
FRIJ	115	1.9-in x 4-ft Pipe	74
FRIJ	115	Pipe Mount [PM 602-1]	74
FRIJ	115	UXA10-59	74
RNSDC-7771-PF-48	115	Pipe Mount [PM 601-1]	48
Miscellaneous [NA 509-3]	115	1.9-in x 4-ft Pipe	48
Platform Mount [LP 303-1]	115	UHX6-59/L	48
BCR-80015-EDIN-3-25	100	Pipe Mount [PM 601-1]	31
BCR-80015-EDIN-3-25	100	SSP4-23	31
SBNHH-1D65C w/ Mount Pipe	100	1.9-in x 4-ft Pipe	30
SBNHH-1D65C w/ Mount Pipe	100	1.9-in x 4-ft Pipe	30
SBNHH-1D65C w/ Mount Pipe	100	Pipe Mount [PM 602-1]	30
B25 RRH4x30-4R	100	UXA10-59	30
B25 RRH4x30-4R	100	Pipe Mount [PM 601-1]	23

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
10.5 ksi prestressed concrete	11 ksi	11 ksi			

TOWER DESIGN NOTES

1. Tower is located in Grand County, Utah.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 0.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

Tower Engineering Professionals

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603-5263
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: ***ZOD_Alltel_UT05_McCook Ridge (BU 858303)***		
Project: ***TEP No. 74637.176324***		
Client: Crown Castle	Drawn by: TLI	App'd:
Code: TIA-222-H	Date: 08/20/18	Scale: NTS
Path: C:\Users\tlinfante\Desktop\74637.176324 ZOD_ALLTEL_UT05_MCCOOK RIDGE\tnxTower\858303_LC7.er		Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Grand County, Utah.
Tower base elevation above sea level: 8426.00 ft.
Basic wind speed of 115 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	115.00-107.50	7.50	0.00	Round	16.4700	18.0900	2.4100		10.5 ksi prestressed concrete (11 ksi)
L2	107.50-100.00	7.50	0.00	Round	18.0900	19.7100	2.4100		10.5 ksi prestressed concrete (11 ksi)
L3	100.00-89.21	10.79	0.00	Round	19.7100	22.0410	2.6295		10.5 ksi prestressed concrete (11 ksi)
L4	89.21-78.42	10.79	0.00	Round	22.0410	24.3720	2.6295		10.5 ksi prestressed concrete (11 ksi)
L5	78.42-67.62	10.79	0.00	Round	24.3720	26.7030	1.5510		10.5 ksi prestressed concrete (11 ksi)
L6	67.62-56.83	10.79	0.00	Round	26.7030	29.0340	1.5510		10.5 ksi prestressed concrete (11 ksi)
L7	56.83-46.04	10.79	0.00	Round	29.0340	31.3650	1.2715		10.5 ksi prestressed concrete (11 ksi)
L8	46.04-35.25	10.79	0.00	Round	31.3650	33.6960	1.2715		10.5 ksi prestressed concrete (11 ksi)
L9	35.25-26.44	8.81	0.00	Round	33.6960	35.5995	1.4022		10.5 ksi prestressed concrete (11 ksi)
L10	26.44-17.62	8.81	0.00	Round	35.5995	37.5030	1.4022		10.5 ksi prestressed concrete (11 ksi)
L11	17.62-8.81	8.81	0.00	Round	37.5030	39.4065	1.4123		10.5 ksi prestressed concrete (11 ksi)
L12	8.81-0.00	8.81		Round	39.4065	41.3100	1.4123		10.5 ksi prestressed concrete (11 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.4700	106.4516	2707.7524	5.0435	8.2350	328.8102	5415.5048	53.1940	0.0000	0
	18.0900	118.7170	3734.6964	5.6088	9.0450	412.9018	7469.3927	59.3231	0.0000	0
L2	18.0900	118.7170	3734.6964	5.6088	9.0450	412.9018	7469.3927	59.3231	0.0000	0

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	19.7100	130.9824	4995.3110	6.1755	9.8550	506.8809	9990.6221	65.4521	0.0000	0
L3	19.7100	141.0989	5267.5350	6.1100	9.8550	534.5038	10535.0700	70.5073	0.0000	0
	22.0410	160.3549	7691.4332	6.9257	11.0205	697.9205	15382.8665	80.1296	0.0000	0
L4	22.0410	160.3549	7691.4332	6.9257	11.0205	697.9205	15382.8665	80.1296	0.0000	0
	24.3720	179.6108	10768.8049	7.7431	12.1860	883.7030	21537.6099	89.7518	0.0000	0
L5	24.3720	111.1959	7272.2780	8.0871	12.1860	596.7732	14544.5560	55.5647	0.0000	0
	26.7030	122.5537	9728.1617	8.9095	13.3515	728.6194	19456.3235	61.2403	0.0000	0
L6	26.7030	122.5537	9728.1617	8.9095	13.3515	728.6194	19456.3235	61.2403	0.0000	0
	29.0340	133.9115	12683.4728	9.7322	14.5170	873.6979	25366.9456	66.9158	0.0000	0
L7	29.0340	110.8984	10706.8658	9.8258	14.5170	737.5398	21413.7316	55.4161	0.0000	0
	31.3650	120.2097	13632.3070	10.6492	15.6825	869.2687	27264.6140	60.0690	0.0000	0
L8	31.3650	120.2097	13632.3070	10.6492	15.6825	869.2687	27264.6140	60.0690	0.0000	0
	33.6960	129.5209	17047.6230	11.4726	16.8480	1011.8485	34095.2461	64.7218	0.0000	0
L9	33.6960	142.2571	18579.7817	11.4283	16.8480	1102.7886	37159.5633	71.0861	0.0000	0
	35.5995	150.6421	22058.2023	12.1007	17.7998	1239.2423	44116.4045	75.2761	0.0000	0
L10	35.5995	150.6421	22058.2023	12.1007	17.7998	1239.2423	44116.4045	75.2761	0.0000	0
	37.5030	159.0272	25945.9905	12.7732	18.7515	1383.6755	51891.9811	79.4662	0.0000	0
L11	37.5030	160.1258	26111.2227	12.7698	18.7515	1392.4871	52222.4454	80.0151	0.0000	0
	39.4065	168.5711	30459.8857	13.4423	19.7033	1545.9321	60919.7714	84.2353	0.0000	0
L12	39.4065	168.5711	30459.8857	13.4423	19.7033	1545.9321	60919.7714	84.2353	0.0000	0
	41.3100	177.0165	35266.6381	14.1148	20.6550	1707.4141	70533.2761	88.4554	0.0000	0

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 115.00-107.50				1	1	1			
L2 107.50-100.00				1	1	1			
L3 100.00-89.21				1	1	1			
L4 89.21-78.42				1	1	1			
L5 78.42-67.62				1	1	1.76334			
L6 67.62-56.83				1	1	1.76334			
L7 56.83-46.04				1	1	2.3211			
L8 46.04-35.25				1	1	2.3211			
L9 35.25-26.44				1	1	2.27277			
L10 26.44-17.62				1	1	2.27277			
L11 17.62-8.81				1	1	2.39887			
L12 8.81-0.00				1	1	2.39887			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
WR-VG86ST-BRD(3/4")	B	No	Surface Ar (CaAa)	100.00 - 74.00	2	2	0.250 0.250	0.7950		0.58
EW52(ELLIPTICAL)	B	No	Surface Ar (CaAa)	74.00 - 0.00	1	1	0.250 0.250	2.2500		0.59
*										
ASU9325TYP01(1-3/5)	C	No	Surface Ar (CaAa)	115.00 - 0.00	1	1	0.000 0.000	1.5840		1.61

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF5-50A(7/8)	A	No	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
FB-L98-002-XXX(3/8")	B	No	No	CaAa (Out Of Face)	100.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
WR-VG86ST-BRD(3/4")	B	No	No	CaAa (Out Of Face)	74.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
EW63(ELLIPTICAL)	B	No	No	CaAa (Out Of Face)	48.00 - 0.00	1	No Ice	0.00	0.51
							1/2" Ice	0.00	2.04
LDF4-50A(1/2)	B	No	No	CaAa (Out Of Face)	31.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
EW52(ELLIPTICAL)	B	No	No	CaAa (Out Of Face)	30.00 - 0.00	1	No Ice	0.00	0.59
							1/2" Ice	0.00	0.59

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	115.00-107.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.188	0.000	0.01
L2	107.50-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.188	0.000	0.01
L3	100.00-89.21	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	1.716	0.000	0.01
		C	0.000	0.000	1.709	0.000	0.02
L4	89.21-78.42	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	1.716	0.000	0.01
		C	0.000	0.000	1.709	0.000	0.02
L5	78.42-67.62	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	2.137	0.000	0.02
		C	0.000	0.000	1.709	0.000	0.02
L6	67.62-56.83	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	2.428	0.000	0.02
		C	0.000	0.000	1.709	0.000	0.02
L7	56.83-46.04	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	2.428	0.000	0.02
		C	0.000	0.000	1.709	0.000	0.02
L8	46.04-35.25	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	2.428	0.000	0.03
		C	0.000	0.000	1.709	0.000	0.02
L9	35.25-26.44	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	1.983	0.000	0.02
		C	0.000	0.000	1.396	0.000	0.01
L10	26.44-17.62	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	1.983	0.000	0.03
		C	0.000	0.000	1.396	0.000	0.01
L11	17.62-8.81	A	0.000	0.000	0.000	0.000	0.01

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	1.983	0.000	0.03
		C	0.000	0.000	1.396	0.000	0.01
L12	8.81-0.00	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	1.983	0.000	0.03
		C	0.000	0.000	1.396	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	115.00-107.50	A	0.565	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.035	0.000	0.02
L2	107.50-100.00	A	0.561	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.029	0.000	0.02
L3	100.00-89.21	A	0.555	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.643	0.000	0.03
		C		0.000	0.000	2.908	0.000	0.03
L4	89.21-78.42	A	0.549	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.625	0.000	0.03
		C		0.000	0.000	2.894	0.000	0.03
L5	78.42-67.62	A	0.541	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.600	0.000	0.03
		C		0.000	0.000	2.878	0.000	0.03
L6	67.62-56.83	A	0.533	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.578	0.000	0.04
		C		0.000	0.000	2.859	0.000	0.03
L7	56.83-46.04	A	0.523	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.556	0.000	0.04
		C		0.000	0.000	2.837	0.000	0.03
L8	46.04-35.25	A	0.510	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	3.530	0.000	0.06
		C		0.000	0.000	2.811	0.000	0.03
L9	35.25-26.44	A	0.497	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	2.858	0.000	0.05
		C		0.000	0.000	2.271	0.000	0.03
L10	26.44-17.62	A	0.480	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	2.829	0.000	0.05
		C		0.000	0.000	2.242	0.000	0.02
L11	17.62-8.81	A	0.456	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	2.787	0.000	0.05
		C		0.000	0.000	2.200	0.000	0.02
L12	8.81-0.00	A	0.408	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	2.703	0.000	0.05
		C		0.000	0.000	2.116	0.000	0.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	115.00-107.50	0.0000	1.4613	0.0000	1.2115

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L2	107.50-100.00	0.0000	1.4703	0.0000	1.2192
L3	100.00-89.21	1.2657	1.3068	1.2018	0.9942
L4	89.21-78.42	1.2913	1.3287	1.2325	1.0161
L5	78.42-67.62	1.6609	1.3152	1.3504	1.0767
L6	67.62-56.83	1.9070	1.3128	1.4306	1.1180
L7	56.83-46.04	1.9281	1.3295	1.4384	1.1241
L8	46.04-35.25	1.9467	1.3443	1.4427	1.1269
L9	35.25-26.44	1.9619	1.3563	1.4431	1.1260
L10	26.44-17.62	1.9743	1.3661	1.4395	1.1213
L11	17.62-8.81	1.9857	1.3751	1.4294	1.1099
L12	8.81-0.00	1.9962	1.3833	1.4008	1.0795

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	12	ASU9325TYP01(1-3/5)	107.50 - 115.00	1.0000	1.0000
L2	12	ASU9325TYP01(1-3/5)	100.00 - 107.50	1.0000	1.0000
L3	3	WR-VG86ST-BRD(3/4")	89.21 - 100.00	1.0000	1.0000
L3	12	ASU9325TYP01(1-3/5)	89.21 - 100.00	1.0000	1.0000
L4	3	WR-VG86ST-BRD(3/4")	78.42 - 89.21	1.0000	1.0000
L4	12	ASU9325TYP01(1-3/5)	78.42 - 89.21	1.0000	1.0000
L5	3	WR-VG86ST-BRD(3/4")	74.00 - 78.42	1.0000	1.0000
L5	5	EW52(ELLIPTICAL)	67.62 - 74.00	1.0000	1.0000
L5	12	ASU9325TYP01(1-3/5)	67.62 - 78.42	1.0000	1.0000
L6	5	EW52(ELLIPTICAL)	56.83 - 67.62	1.0000	1.0000
L6	12	ASU9325TYP01(1-3/5)	56.83 - 67.62	1.0000	1.0000
L7	5	EW52(ELLIPTICAL)	46.04 - 56.83	1.0000	1.0000
L7	12	ASU9325TYP01(1-3/5)	46.04 - 56.83	1.0000	1.0000
L8	5	EW52(ELLIPTICAL)	35.25 - 46.04	1.0000	1.0000
L8	12	ASU9325TYP01(1-3/5)	35.25 - 46.04	1.0000	1.0000
L9	5	EW52(ELLIPTICAL)	26.44 - 35.25	1.0000	1.0000
L9	12	ASU9325TYP01(1-3/5)	26.44 - 35.25	1.0000	1.0000
L10	5	EW52(ELLIPTICAL)	17.62 - 26.44	1.0000	1.0000
L10	12	ASU9325TYP01(1-3/5)	17.62 - 26.44	1.0000	1.0000
L11	5	EW52(ELLIPTICAL)	8.81 - 17.62	1.0000	1.0000
L11	12	ASU9325TYP01(1-3/5)	8.81 - 17.62	1.0000	1.0000
L12	5	EW52(ELLIPTICAL)	0.00 - 8.81	1.0000	1.0000
L12	12	ASU9325TYP01(1-3/5)	0.00 - 8.81	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
1/2" x 10' LROD	C	From Leg	0.00 0.00 5.00	0.0000	115.00	No Ice 1/2" Ice	0.50 1.51	0.50 1.51	0.01 0.01
*									
HBXX-6517DS-A2M w/ Mount Pipe	A	From Centroid-Face	4.00 6.00 0.00	-10.0000	115.00	No Ice 1/2" Ice	8.77 9.34	6.96 8.18	0.07 0.14
HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid-Face	4.00 6.00 0.00	15.0000	115.00	No Ice 1/2" Ice	8.77 9.34	6.96 8.18	0.07 0.14
HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid-Face	4.00 6.00 0.00	-20.0000	115.00	No Ice 1/2" Ice	8.77 9.34	6.96 8.18	0.07 0.14
FF-65C-R1 w/ Mount Pipe	A	From Centroid-Face	4.00 -6.00 0.00	-10.0000	115.00	No Ice 1/2" Ice	21.38 22.13	11.50 13.03	0.14 0.29
FF-65C-R1 w/ Mount Pipe	B	From Centroid-Face	4.00 -6.00 0.00	15.0000	115.00	No Ice 1/2" Ice	21.38 22.13	11.50 13.03	0.14 0.29
FF-65C-R1 w/ Mount Pipe	C	From Centroid-Face	4.00 -6.00 0.00	-20.0000	115.00	No Ice 1/2" Ice	21.38 22.13	11.50 13.03	0.14 0.29
AHLOA	A	From Centroid-Face	4.00 -6.00 0.00	-10.0000	115.00	No Ice 1/2" Ice	2.23 2.42	1.39 1.55	0.08 0.10
AHLOA	B	From Centroid-Face	4.00 -6.00 0.00	15.0000	115.00	No Ice 1/2" Ice	2.23 2.42	1.39 1.55	0.08 0.10
AHLOA	C	From Centroid-Face	4.00 -6.00 0.00	-20.0000	115.00	No Ice 1/2" Ice	2.23 2.42	1.39 1.55	0.08 0.10
FRIJ	A	From Centroid-Face	4.00 6.00 0.00	-10.0000	115.00	No Ice 1/2" Ice	2.42 2.62	1.52 1.69	0.07 0.09
FRIJ	B	From Centroid-Face	4.00 6.00 0.00	15.0000	115.00	No Ice 1/2" Ice	2.42 2.62	1.52 1.69	0.07 0.09
FRIJ	C	From Centroid-Face	4.00 6.00 0.00	-20.0000	115.00	No Ice 1/2" Ice	2.42 2.62	1.52 1.69	0.07 0.09
RNSDC-7771-PF-48	B	From Centroid-Face	4.00 -6.00 0.00	15.0000	115.00	No Ice 1/2" Ice	3.18 3.40	1.20 1.35	0.02 0.04
Miscellaneous [NA 509-3]	C	None		0.0000	115.00	No Ice 1/2" Ice	11.84 16.96	11.84 16.96	0.28 0.30
Platform Mount [LP 303-1]	C	None		0.0000	115.00	No Ice 1/2" Ice	14.66 18.87	14.66 18.87	1.25 1.48
*									
BCR-80015-EDIN-3-25	C	From Centroid-Leg	4.00 -6.00 -5.00	0.0000	100.00	No Ice 1/2" Ice	8.02 12.17	8.02 12.17	0.04 0.15
BCR-80015-EDIN-3-25	C	From Centroid-Leg	4.00 -3.00 3.00	0.0000	100.00	No Ice 1/2" Ice	8.02 12.17	8.02 12.17	0.04 0.15
SBNHH-1D65C w/ Mount Pipe	A	From Centroid-Leg	4.00 6.00 4.00	0.0000	100.00	No Ice 1/2" Ice	11.70 12.42	9.85 11.38	0.08 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SBNHH-1D65C w/ Mount Pipe	B	From Centroid-Leg	4.00 6.00 4.00	0.0000	100.00	No Ice 1/2" Ice	11.70 12.42	9.85 11.38	0.08 0.17
SBNHH-1D65C w/ Mount Pipe	C	From Centroid-Leg	4.00 6.00 4.00	0.0000	100.00	No Ice 1/2" Ice	11.70 12.42	9.85 11.38	0.08 0.17
B25 RRH4x30-4R	A	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.30 2.50	1.82 2.01	0.06 0.08
B25 RRH4x30-4R	B	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.30 2.50	1.82 2.01	0.06 0.08
B25 RRH4x30-4R	C	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.30 2.50	1.82 2.01	0.06 0.08
RRH2X40-07-L-AT	A	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.38 2.58	1.26 1.43	0.05 0.07
RRH2X40-07-L-AT	B	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.38 2.58	1.26 1.43	0.05 0.07
RRH2X40-07-L-AT	C	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	2.38 2.58	1.26 1.43	0.05 0.07
DC6-48-60-18-8F	A	From Centroid-Leg	4.00 6.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.21 1.89	1.21 1.89	0.03 0.05
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Centroid-Leg	4.00 -3.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.90 2.73	1.90 2.73	0.03 0.04
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Centroid-Leg	4.00 -3.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.90 2.73	1.90 2.73	0.03 0.04
(2) 2.4" Dia x 8-ft Mount Pipe	C	From Centroid-Leg	4.00 -3.00 0.00	0.0000	100.00	No Ice 1/2" Ice	1.90 2.73	1.90 2.73	0.03 0.04
Platform Mount [LP 303-1]	C	None		0.0000	100.00	No Ice 1/2" Ice	14.66 18.87	14.66 18.87	1.25 1.48
*									
*									
1.9-in x 4-ft Pipe	A	From Face	0.50 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	0.76 1.01	0.76 1.01	0.01 0.02
1.9-in x 4-ft Pipe	B	From Face	0.50 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	0.76 1.01	0.76 1.01	0.01 0.02
Pipe Mount [PM 602-1]	C	From Face	0.50 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice	5.25 6.50	1.58 1.95	0.09 0.12
*									
*									
*									
*									
1.9-in x 4-ft Pipe	B	From Face	0.50 0.00 0.00	0.0000	48.00	No Ice 1/2" Ice	0.76 1.01	0.76 1.01	0.01 0.02
Pipe Mount [PM 601-1]	C	From Face	0.50	0.0000	48.00	No Ice	3.00	0.90	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00 0.00			1/2" Ice	3.74	1.12	0.08
*									
*									
Pipe Mount [PM 601-1]	B	From Face	0.50 0.00 0.00	0.0000	31.00	No Ice 1/2" Ice	3.00 3.74	0.90 1.12	0.07 0.08
*									
1.9-in x 4-ft Pipe	A	From Face	0.50 0.00 0.00	0.0000	30.00	No Ice 1/2" Ice	0.76 1.01	0.76 1.01	0.01 0.02
1.9-in x 4-ft Pipe	B	From Face	0.50 0.00 0.00	0.0000	30.00	No Ice 1/2" Ice	0.76 1.01	0.76 1.01	0.01 0.02
Pipe Mount [PM 602-1]	C	From Face	0.50 0.00 0.00	0.0000	30.00	No Ice 1/2" Ice	5.25 6.50	1.58 1.95	0.09 0.12
*									
Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	23.00	No Ice 1/2" Ice	3.00 3.74	0.90 1.12	0.07 0.08

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
UXA10-59	C	Paraboloid w/Shroud (HP)	From Face	1.00 0.00 0.00	0.0000		74.00	10.00	No Ice 1/2" Ice	78.54 79.85	0.79 1.20
*											
*											
UHX6-59/L	C	Paraboloid w/Shroud (HP)	From Face	1.00 0.00 0.00	-22.0000		48.00	6.46	No Ice 1/2" Ice	32.76 33.61	0.25 0.43
*											
*											
SSP4-23	B	Paraboloid w/o Radome	From Face	1.00 0.00 0.00	-14.0000		31.00	4.42	No Ice 1/2" Ice	15.32 15.90	0.10 0.18
*											
UXA10-59	C	Paraboloid w/Shroud (HP)	From Face	1.00 0.00 0.00	0.0000		30.00	10.00	No Ice 1/2" Ice	78.54 79.85	0.79 1.20
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	115 - 107.5	Pole	Max Tension	45	0.00	-0.00	0.00
			Max. Compression	26	-5.52	-0.02	0.30
			Max. Mx	8	-3.83	-31.72	-1.25
			Max. My	2	-3.86	1.13	28.90
			Max. Vy	20	-4.38	31.72	1.07
			Max. Vx	2	-3.98	1.13	28.90
			Max. Torque	8			1.64
L2	107.5 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-6.82	-0.02	0.23
			Max. Mx	20	-4.99	65.83	2.13
			Max. My	2	-5.02	2.31	60.03
			Max. Vy	20	-4.72	65.83	2.13
			Max. Vx	2	-4.33	2.31	60.03
			Max. Torque	8			1.64
L3	100 - 89.2083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.68	-0.02	-1.68
			Max. Mx	8	-9.36	-151.15	-4.83
			Max. My	14	-9.39	-4.24	-140.96
			Max. Vy	20	-7.88	150.89	3.41
			Max. Vx	2	-7.50	3.94	140.65
			Max. Torque	8			1.64
L4	89.2083 - 78.4167	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.22	-0.05	-1.85
			Max. Mx	8	-11.71	-238.99	-6.98
			Max. My	14	-11.73	-6.02	-224.56
			Max. Vy	20	-8.41	238.71	4.91
			Max. Vx	2	-8.04	5.74	224.44
			Max. Torque	22			0.93
L5	78.4167 - 67.625	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.84	-0.10	-5.10
			Max. Mx	8	-15.55	-343.31	-12.58
			Max. My	14	-15.48	-7.85	-333.61
			Max. Vy	20	-10.62	342.97	3.02
			Max. Vx	2	-11.93	7.57	333.34
			Max. Torque	20			6.36
L6	67.625 - 56.8333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.18	-0.16	-5.30
			Max. Mx	8	-18.73	-460.39	-17.75
			Max. My	2	-18.60	9.42	464.62
			Max. Vy	20	-11.09	460.01	1.62
			Max. Vx	2	-12.42	9.42	464.62
			Max. Torque	20			6.36
L7	56.8333 - 46.0417	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.70	-0.25	-6.76
			Max. Mx	8	-22.88	-583.61	-24.25
			Max. My	2	-22.74	11.72	602.41
			Max. Vy	20	-12.21	583.15	0.40
			Max. Vx	2	-14.10	11.72	602.41
			Max. Torque	8			-8.48
L8	46.0417 - 35.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.94	-0.35	-6.96
			Max. Mx	8	-26.98	-717.00	-32.77
			Max. My	2	-26.87	16.45	756.15
			Max. Vy	20	-12.54	716.52	4.05
			Max. Vx	2	-14.43	16.45	756.15
			Max. Torque	8			-8.48

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	35.25 - 26.4375	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.71	-1.01	-10.33
			Max. Mx	8	-32.05	-835.24	-42.44
			Max. My	2	-31.91	19.73	893.05
			Max. Vy	20	-14.68	834.85	2.03
			Max. Vx	2	-17.72	19.73	893.05
			Max. Torque	20			13.43
L10	26.4375 - 17.625	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.96	-1.10	-10.28
			Max. Mx	20	-36.18	964.90	-0.80
			Max. My	2	-36.09	23.14	1050.18
			Max. Vy	20	-14.87	964.90	-0.80
			Max. Vx	2	-17.93	23.14	1050.18
			Max. Torque	20			13.42
L11	17.625 - 8.8125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.59	-1.18	-10.38
			Max. Mx	20	-40.71	1096.08	-3.77
			Max. My	2	-40.67	26.50	1208.29
			Max. Vy	20	-14.95	1096.08	-3.77
			Max. Vx	2	-18.00	26.50	1208.29
			Max. Torque	20			13.37
L12	8.8125 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.42	-1.27	-10.44
			Max. Mx	20	-45.46	1227.80	-6.71
			Max. My	2	-45.46	29.78	1366.63
			Max. Vy	20	-14.99	1227.80	-6.71
			Max. Vx	2	-18.00	28.15	1287.46
			Max. Torque	20			13.37

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	51.42	0.02	-2.83
	Max. H_x	20	45.47	14.96	-0.33
	Max. H_z	3	34.10	0.37	17.97
	Max. M_x	2	1366.63	0.37	17.97
	Max. M_z	8	1223.15	-14.77	-0.91
	Max. Torsion	20	13.37	14.96	-0.33
	Min. Vert	19	34.10	12.31	-9.43
	Min. H_x	8	45.47	-14.77	-0.91
	Min. H_z	14	45.47	0.12	-16.82
	Min. M_x	14	-1310.28	0.12	-16.82
	Min. M_z	20	-1227.80	14.96	-0.33
	Min. Torsion	8	-12.92	-14.77	-0.91

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	37.89	0.00	0.00	5.10	-0.73	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45.47	-0.37	-17.97	-1366.63	29.78	-0.53
0.9 Dead+1.0 Wind 0 deg - No Ice	34.10	-0.37	-17.97	-1340.46	29.40	-0.53
1.2 Dead+1.0 Wind 30 deg - No Ice	45.47	6.57	-16.14	-1208.55	-557.55	0.27
0.9 Dead+1.0 Wind 30 deg - No Ice	34.10	6.57	-16.14	-1185.81	-545.24	0.25
1.2 Dead+1.0 Wind 60 deg - No Ice	45.47	11.91	-10.14	-737.47	-1002.78	5.16
0.9 Dead+1.0 Wind 60 deg - No Ice	34.10	11.91	-10.14	-724.43	-980.97	5.13
1.2 Dead+1.0 Wind 90 deg - No Ice	45.47	14.77	0.91	67.04	-1223.15	12.92
0.9 Dead+1.0 Wind 90 deg - No Ice	34.10	14.77	0.91	64.32	-1196.87	12.90
1.2 Dead+1.0 Wind 120 deg - No Ice	45.47	12.34	9.47	732.13	-1039.62	10.95
0.9 Dead+1.0 Wind 120 deg - No Ice	34.10	12.34	9.47	715.78	-1017.03	10.93
1.2 Dead+1.0 Wind 150 deg - No Ice	45.47	6.66	15.03	1167.02	-587.29	5.59
0.9 Dead+1.0 Wind 150 deg - No Ice	34.10	6.66	15.03	1141.61	-574.19	5.59
1.2 Dead+1.0 Wind 180 deg - No Ice	45.47	-0.12	16.82	1310.28	-14.54	0.30
0.9 Dead+1.0 Wind 180 deg - No Ice	34.10	-0.12	16.82	1281.85	-13.83	0.31
1.2 Dead+1.0 Wind 210 deg - No Ice	45.47	-6.67	14.92	1149.90	554.10	-5.32
0.9 Dead+1.0 Wind 210 deg - No Ice	34.10	-6.67	14.92	1124.93	542.37	-5.30
1.2 Dead+1.0 Wind 240 deg - No Ice	45.47	-12.31	9.43	702.39	1021.47	-11.48
0.9 Dead+1.0 Wind 240 deg - No Ice	34.10	-12.31	9.43	686.87	999.81	-11.46
1.2 Dead+1.0 Wind 270 deg - No Ice	45.47	-14.96	0.33	6.71	1227.80	-13.37
0.9 Dead+1.0 Wind 270 deg - No Ice	34.10	-14.96	0.33	5.27	1201.94	-13.35
1.2 Dead+1.0 Wind 300 deg - No Ice	45.47	-12.36	-10.51	-782.77	1032.46	-5.20
0.9 Dead+1.0 Wind 300 deg - No Ice	34.10	-12.36	-10.51	-768.71	1010.53	-5.18
1.2 Dead+1.0 Wind 330 deg - No Ice	45.47	-7.18	-16.22	-1225.36	609.99	-1.16
0.9 Dead+1.0 Wind 330 deg - No Ice	34.10	-7.18	-16.22	-1202.18	597.07	-1.15
1.2 Dead+1.0 Ice+1.0 Temp	51.42	0.00	0.00	10.44	-1.27	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	51.42	-0.04	-2.97	-215.89	2.24	-0.08
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	51.42	1.18	-2.64	-188.95	-97.96	0.11
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	51.42	2.11	-1.63	-110.13	-173.13	0.79
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	51.42	2.56	0.11	17.75	-207.69	1.78
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	51.42	2.16	1.54	128.29	-177.40	1.52
1.2 Dead+1.0 Wind 150	51.42	1.19	2.50	202.81	-101.10	0.80

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	51.42	-0.02	2.83	228.21	-2.63	0.05
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	51.42	-1.20	2.49	200.98	95.21	-0.74
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	51.42	-2.16	1.54	125.15	173.14	-1.57
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	51.42	-2.59	0.04	10.87	205.97	-1.84
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	51.42	-2.16	-1.67	-115.23	174.22	-0.80
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	51.42	-1.25	-2.65	-190.74	101.64	-0.24
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	37.89	-0.09	-4.38	-325.19	6.65	-0.13
Dead+Wind 30 deg - Service	37.89	1.60	-3.93	-287.18	-134.56	0.06
Dead+Wind 60 deg - Service	37.89	2.90	-2.47	-173.83	-241.60	1.25
Dead+Wind 90 deg - Service	37.89	3.60	0.22	19.81	-294.62	3.17
Dead+Wind 120 deg - Service	37.89	3.01	2.31	179.80	-250.47	2.69
Dead+Wind 150 deg - Service	37.89	1.62	3.66	284.40	-141.69	1.37
Dead+Wind 180 deg - Service	37.89	-0.03	4.10	318.82	-3.99	0.07
Dead+Wind 210 deg - Service	37.89	-1.62	3.63	280.26	132.68	-1.30
Dead+Wind 240 deg - Service	37.89	-3.00	2.30	172.66	245.05	-2.81
Dead+Wind 270 deg - Service	37.89	-3.64	0.08	5.30	294.70	-3.27
Dead+Wind 300 deg - Service	37.89	-3.01	-2.56	-184.74	247.74	-1.27
Dead+Wind 330 deg - Service	37.89	-1.75	-3.95	-291.24	146.16	-0.28

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-37.89	0.00	-0.00	37.89	-0.00	0.000%
2	-0.37	-45.47	-17.97	0.37	45.47	17.97	0.000%
3	-0.37	-34.10	-17.97	0.37	34.10	17.97	0.000%
4	6.57	-45.47	-16.14	-6.57	45.47	16.14	0.000%
5	6.57	-34.10	-16.14	-6.57	34.10	16.14	0.000%
6	11.91	-45.47	-10.14	-11.91	45.47	10.14	0.000%
7	11.91	-34.10	-10.14	-11.91	34.10	10.14	0.000%
8	14.77	-45.47	0.91	-14.77	45.47	-0.91	0.000%
9	14.77	-34.10	0.91	-14.77	34.10	-0.91	0.000%
10	12.34	-45.47	9.47	-12.34	45.47	-9.47	0.000%
11	12.34	-34.10	9.47	-12.34	34.10	-9.47	0.000%
12	6.66	-45.47	15.03	-6.66	45.47	-15.03	0.000%
13	6.66	-34.10	15.03	-6.66	34.10	-15.03	0.000%
14	-0.12	-45.47	16.82	0.12	45.47	-16.82	0.000%
15	-0.12	-34.10	16.82	0.12	34.10	-16.82	0.000%
16	-6.67	-45.47	14.92	6.67	45.47	-14.92	0.000%
17	-6.67	-34.10	14.92	6.67	34.10	-14.92	0.000%
18	-12.31	-45.47	9.43	12.31	45.47	-9.43	0.000%
19	-12.31	-34.10	9.43	12.31	34.10	-9.43	0.000%
20	-14.96	-45.47	0.33	14.96	45.47	-0.33	0.000%
21	-14.96	-34.10	0.33	14.96	34.10	-0.33	0.000%
22	-12.36	-45.47	-10.51	12.36	45.47	10.51	0.000%
23	-12.36	-34.10	-10.51	12.36	34.10	10.51	0.000%
24	-7.18	-45.47	-16.22	7.18	45.47	16.22	0.000%
25	-7.18	-34.10	-16.22	7.18	34.10	16.22	0.000%
26	0.00	-51.42	0.00	-0.00	51.42	-0.00	0.000%
27	-0.04	-51.42	-2.97	0.04	51.42	2.97	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
28	1.18	-51.42	-2.64	-1.18	51.42	2.64	0.000%
29	2.11	-51.42	-1.63	-2.11	51.42	1.63	0.000%
30	2.56	-51.42	0.11	-2.56	51.42	-0.11	0.000%
31	2.16	-51.42	1.54	-2.16	51.42	-1.54	0.000%
32	1.19	-51.42	2.50	-1.19	51.42	-2.50	0.000%
33	-0.02	-51.42	2.83	0.02	51.42	-2.83	0.000%
34	-1.20	-51.42	2.49	1.20	51.42	-2.49	0.000%
35	-2.16	-51.42	1.54	2.16	51.42	-1.54	0.000%
36	-2.59	-51.42	0.04	2.59	51.42	-0.04	0.000%
37	-2.16	-51.42	-1.67	2.16	51.42	1.67	0.000%
38	-1.25	-51.42	-2.65	1.25	51.42	2.65	0.000%
39	-0.09	-37.89	-4.38	0.09	37.89	4.38	0.000%
40	1.60	-37.89	-3.93	-1.60	37.89	3.93	0.000%
41	2.90	-37.89	-2.47	-2.90	37.89	2.47	0.000%
42	3.60	-37.89	0.22	-3.60	37.89	-0.22	0.000%
43	3.01	-37.89	2.31	-3.01	37.89	-2.31	0.000%
44	1.62	-37.89	3.66	-1.62	37.89	-3.66	0.000%
45	-0.03	-37.89	4.10	0.03	37.89	-4.10	0.000%
46	-1.62	-37.89	3.63	1.62	37.89	-3.63	0.000%
47	-3.00	-37.89	2.30	3.00	37.89	-2.30	0.000%
48	-3.64	-37.89	0.08	3.64	37.89	-0.08	0.000%
49	-3.01	-37.89	-2.56	3.01	37.89	2.56	0.000%
50	-1.75	-37.89	-3.95	1.75	37.89	3.95	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000636
2	Yes	6	0.00000001	0.00014843
3	Yes	5	0.00000001	0.00079176
4	Yes	7	0.00000001	0.00012261
5	Yes	6	0.00000001	0.00046745
6	Yes	7	0.00000001	0.00012408
7	Yes	6	0.00000001	0.00047656
8	Yes	6	0.00000001	0.00084428
9	Yes	6	0.00000001	0.00032370
10	Yes	7	0.00000001	0.00018005
11	Yes	6	0.00000001	0.00070087
12	Yes	7	0.00000001	0.00011740
13	Yes	6	0.00000001	0.00044547
14	Yes	5	0.00000001	0.00021257
15	Yes	5	0.00000001	0.00008077
16	Yes	7	0.00000001	0.00010686
17	Yes	6	0.00000001	0.00040651
18	Yes	7	0.00000001	0.00016728
19	Yes	6	0.00000001	0.00065290
20	Yes	6	0.00000001	0.00068139
21	Yes	6	0.00000001	0.00026358
22	Yes	7	0.00000001	0.00013720
23	Yes	6	0.00000001	0.00052505
24	Yes	7	0.00000001	0.00014312
25	Yes	6	0.00000001	0.00054638
26	Yes	4	0.00000001	0.00033583
27	Yes	5	0.00000001	0.00062710
28	Yes	5	0.00000001	0.00071274

29	Yes	5	0.00000001	0.00070952
30	Yes	5	0.00000001	0.00073659
31	Yes	5	0.00000001	0.00088430
32	Yes	5	0.00000001	0.00080512
33	Yes	5	0.00000001	0.00069018
34	Yes	5	0.00000001	0.00077170
35	Yes	5	0.00000001	0.00084503
36	Yes	5	0.00000001	0.00072233
37	Yes	5	0.00000001	0.00073353
38	Yes	5	0.00000001	0.00074122
39	Yes	4	0.00000001	0.00067976
40	Yes	5	0.00000001	0.00018117
41	Yes	5	0.00000001	0.00018737
42	Yes	5	0.00000001	0.00038963
43	Yes	5	0.00000001	0.00046575
44	Yes	5	0.00000001	0.00020100
45	Yes	4	0.00000001	0.00045607
46	Yes	5	0.00000001	0.00016220
47	Yes	5	0.00000001	0.00042775
48	Yes	5	0.00000001	0.00036730
49	Yes	5	0.00000001	0.00021834
50	Yes	5	0.00000001	0.00024164

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 107.5	20.271	50	1.4045	0.0184
L2	107.5 - 100	18.078	50	1.3918	0.0203
L3	100 - 89.2083	15.920	50	1.3611	0.0218
L4	89.2083 - 78.4167	12.926	50	1.2920	0.0211
L5	78.4167 - 67.625	10.107	50	1.2054	0.0206
L6	67.625 - 56.8333	7.541	50	1.0660	0.0180
L7	56.8333 - 46.0417	5.300	50	0.9156	0.0148
L8	46.0417 - 35.25	3.439	50	0.7311	0.0117
L9	35.25 - 26.4375	1.996	50	0.5452	0.0086
L10	26.4375 - 17.625	1.118	50	0.4070	0.0063
L11	17.625 - 8.8125	0.494	50	0.2692	0.0039
L12	8.8125 - 0	0.123	50	0.1334	0.0018

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.00	1/2" x 10' LROD	50	20.271	1.4045	0.0184	24799
100.00	BCR-80015-EDIN-3-25	50	15.920	1.3611	0.0218	10635
74.00	UXA10-59	50	9.022	1.1519	0.0198	4685
48.00	UHX6-59/L	50	3.746	0.7660	0.0123	3298
31.00	SSP4-23	50	1.540	0.4776	0.0077	3565
30.00	UXA10-59	50	1.442	0.4621	0.0075	3583
23.00	Pipe Mount [PM 601-1]	50	0.845	0.3534	0.0056	3755

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 107.5	85.442	24	5.9150	0.0784
L2	107.5 - 100	76.211	24	5.8599	0.0845
L3	100 - 89.2083	67.128	24	5.7305	0.0903
L4	89.2083 - 78.4167	54.512	24	5.4464	0.0875
L5	78.4167 - 67.625	42.629	24	5.0874	0.0852
L6	67.625 - 56.8333	31.801	24	4.5043	0.0743
L7	56.8333 - 46.0417	22.349	24	3.8667	0.0610
L8	46.0417 - 35.25	14.497	24	3.0868	0.0481
L9	35.25 - 26.4375	8.413	24	2.3007	0.0352
L10	26.4375 - 17.625	4.708	24	1.7165	0.0259
L11	17.625 - 8.8125	2.078	24	1.1338	0.0158
L12	8.8125 - 0	0.516	24	0.5609	0.0073

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
115.00	1/2" x 10' LROD	24	85.442	5.9150	0.0784	6178
100.00	BCR-80015-EDIN-3-25	24	67.128	5.7305	0.0903	2621
74.00	UXA10-59	24	38.050	4.8678	0.0817	1148
48.00	UHX6-59/L	24	15.793	3.2343	0.0504	789
31.00	SSP4-23	24	6.488	2.0153	0.0317	846
30.00	UXA10-59	24	6.073	1.9496	0.0307	849
23.00	Pipe Mount [PM 601-1]	24	3.558	1.4896	0.0227	889

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	115 - 107.5 (1)	TP18.09x16.47x2.41	7.50	0.00	0.0	118.7170	-3.81	1121.88	0.003
L2	107.5 - 100 (2)	TP19.71x18.09x2.41	7.50	0.00	0.0	130.9820	-4.98	1237.78	0.004
L3	100 - 89.2083 (3)	TP22.041x19.71x2.6295	10.79	0.00	0.0	160.3550	-9.34	1515.35	0.006
L4	89.2083 - 78.4167 (4)	TP24.372x22.041x2.6295	10.79	0.00	0.0	179.6110	-11.69	1697.32	0.007
L5	78.4167 - 67.625 (5)	TP26.703x24.372x1.551	10.79	0.00	0.0	122.5540	-15.50	1158.13	0.013
L6	67.625 - 56.8333 (6)	TP29.034x26.703x1.551	10.79	0.00	0.0	133.9120	-18.60	1265.46	0.015
L7	56.8333 -	TP31.365x29.034x1.2715	10.79	0.00	0.0	120.210	-22.73	1135.98	0.020

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	46.0417 (7)					0			
L8	46.0417 - 35.25 (8)	TP33.696x31.365x1.2715	10.79	0.00	0.0	129.521 0	-26.87	1223.97	0.022
L9	35.25 - 26.4375 (9)	TP35.5995x33.696x1.4022	8.81	0.00	0.0	150.642 0	-31.92	1423.57	0.022
L10	26.4375 - 17.625 (10)	TP37.503x35.5995x1.4022	8.81	0.00	0.0	159.027 0	-36.10	1502.81	0.024
L11	17.625 - 8.8125 (11)	TP39.4065x37.503x1.4123	8.81	0.00	0.0	168.571 0	-40.67	1593.00	0.026
L12	8.8125 - 0 (12)	TP41.31x39.4065x1.4123	8.81	0.00	0.0	177.016 0	-45.46	1672.81	0.027

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	115 - 107.5 (1)	TP18.09x16.47x2.41	32.05	470.29	0.068	0.00	470.29	0.000
L2	107.5 - 100 (2)	TP19.71x18.09x2.41	66.42	571.69	0.116	0.00	571.69	0.000
L3	100 - 89.2083 (3)	TP22.041x19.71x2.6295	152.25	785.04	0.194	0.00	785.04	0.000
L4	89.2083 - 78.4167 (4)	TP24.372x22.041x2.6295	240.60	983.68	0.245	0.00	983.68	0.000
L5	78.4167 - 67.625 (5)	TP26.703x24.372x1.551	348.44	773.66	0.450	0.00	773.66	0.000
L6	67.625 - 56.8333 (6)	TP29.034x26.703x1.551	474.33	923.52	0.514	0.00	923.52	0.000
L7	56.8333 - 46.0417 (7)	TP31.365x29.034x1.2715	612.13	907.34	0.675	0.00	907.34	0.000
L8	46.0417 - 35.25 (8)	TP33.696x31.365x1.2715	766.01	1053.26	0.727	0.00	1053.26	0.000
L9	35.25 - 26.4375 (9)	TP35.5995x33.696x1.4022	902.05	1292.06	0.698	0.00	1292.06	0.000
L10	26.4375 - 17.625 (10)	TP37.503x35.5995x1.4022	1056.86	1439.82	0.734	0.00	1439.82	0.000
L11	17.625 - 8.8125 (11)	TP39.4065x37.503x1.4123	1212.69	1606.21	0.755	0.00	1606.21	0.000
L12	8.8125 - 0 (12)	TP41.31x39.4065x1.4123	1368.80	1771.10	0.773	0.00	1771.10	0.000

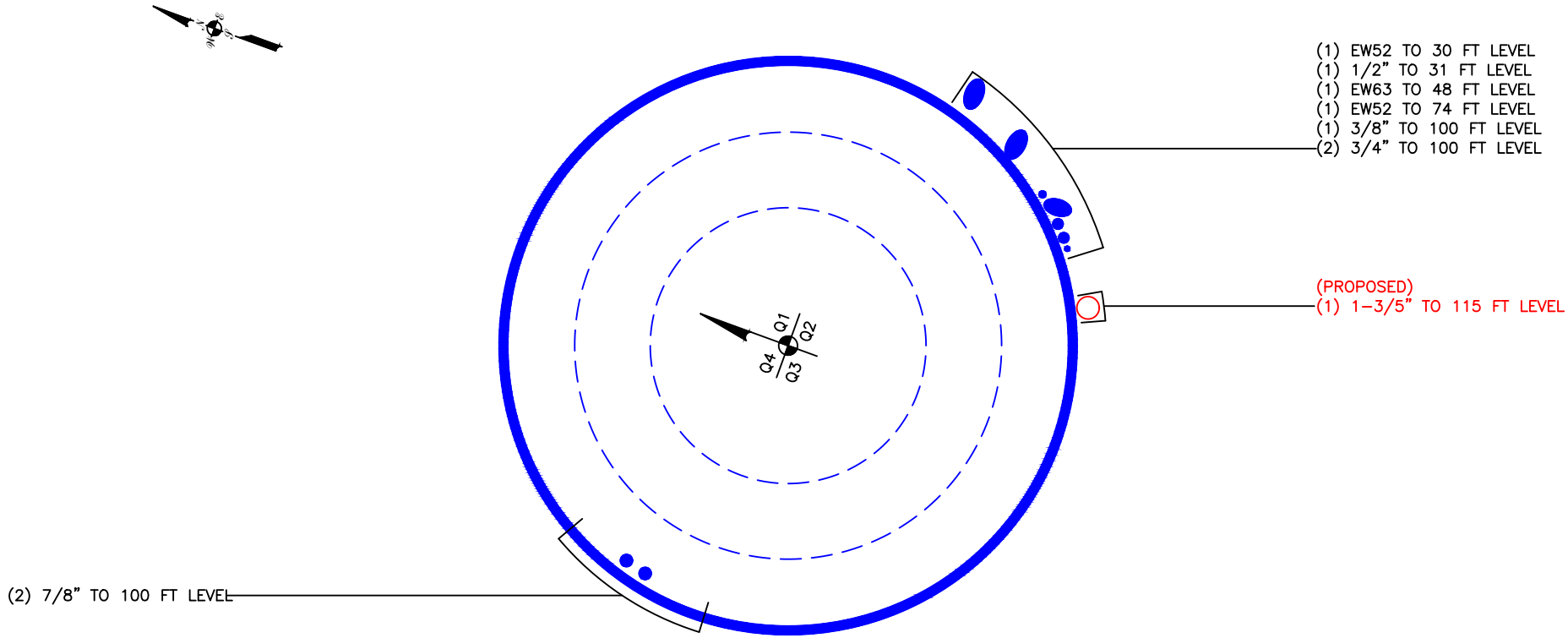
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	115 - 107.5 (1)	TP18.09x16.47x2.41	4.42	336.56	0.013	1.31	463.97	0.003
L2	107.5 - 100 (2)	TP19.71x18.09x2.41	4.76	371.33	0.013	1.31	564.80	0.002
L3	100 - 89.2083 (3)	TP22.041x19.71x2.6295	7.92	454.61	0.017	0.90	775.84	0.001
L4	89.2083 - 78.4167 (4)	TP24.372x22.041x2.6295	8.46	509.20	0.017	0.89	973.37	0.001
L5	78.4167 - 67.625 (5)	TP26.703x24.372x1.551	11.01	347.44	0.032	5.68	768.30	0.007

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L6	67.625 - 56.8333 (6)	TP29.034x26.703x1.551	12.43	379.64	0.033	0.80	917.31	0.001
L7	56.8333 - 46.0417 (7)	TP31.365x29.034x1.2715	14.12	340.79	0.041	1.81	901.67	0.002
L8	46.0417 - 35.25 (8)	TP33.696x31.365x1.2715	14.45	367.19	0.039	1.81	1046.76	0.002
L9	35.25 - 26.4375 (9)	TP35.5995x33.696x1.4022	17.51	427.07	0.041	1.18	1284.02	0.001
L10	26.4375 - 17.625 (10)	TP37.503x35.5995x1.4022	17.71	450.84	0.039	1.16	1430.94	0.001
L11	17.625 - 8.8125 (11)	TP39.4065x37.503x1.4123	17.77	477.90	0.037	1.16	1596.37	0.001
L12	8.8125 - 0 (12)	TP41.31x39.4065x1.4123	17.76	501.84	0.035	1.16	1760.33	0.001

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 858303 TOWER ID: C_BASELEVEL

APPENDIX C

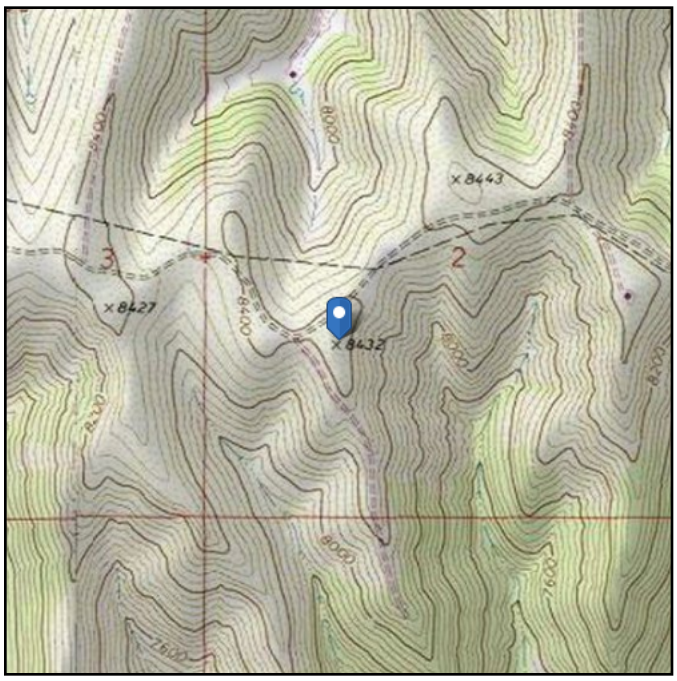
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 8426.13 ft (NAVD 88)
Latitude: 39.44231
Longitude: -109.24128



Wind

Results:

Wind Speed:	115 Vmph
10-year MRI	76 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Sun Aug 19 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Ice

Results:

Ice Thickness:	0.25 in.
Concurrent Temperature:	15 F
Gust Speed:	40 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Sun Aug 19 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

In the mountain west, ice thicknesses may exceed the mapped values in the foothills and passes. However, at elevations above 5,000 ft, freezing rain is unlikely.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

TOWER ENGINEERING PROFESSIONALS

Capacity:	PASS	
	96.6% @ -6.26-ft	

ZOD_Alltel_UT505_McCook Ridge (BU 858303)

TEP #:	74637.151529	
Analysis:	TLI	8/20/2018
Check:	KEH	8/20/2018

Prestressed Concrete Monpole Section Properties

Loading Per:	ANSI/TIA-222-H-2017
Load Case:	Wind (1.2 D + 1.0 W)

Tower Information

Height (AGL):	115.0	ft	**Tip OD:**	16.47	in
Embedment:	24.0	ft	**Tip ID:**	11.83	in
f'c:	10,500	psi	**OD Taper:**	0.216	in/ft
E,con:	5,098.8	ksi	**ID Taper:**	0.192	in/ft

Reinforcement Information

RF #	Type (PS/NPS)	A_{NET} (in^2)	Quantity	From (ft)	To (ft)	Grade (F_Y, f_{PU}) (ksi)	E (ksi)	Prestress (lb)	Losses (%)	Location (% of Thickness)	Angular Offset (°)
1	PS	0.153	28	-24.00	35.25	270	28,500	17,840	20.0%	50.0%	0.00°
2	PS	0.153	22	35.25	100.00	270	28,500	17,840	20.0%	50.0%	0.00°
3	PS	0.153	6	100.00	115.00	270	28,500	17,840	20.0%	50.0%	0.00°

Prestressed Concrete Pole Section Properties - First Run Gross Cross Section With Unfactored Loads

Section	Elevation (ft)	OD (in)	ID (in)	t (in)	I_G (in^4)	M_{CR} (k-in)	M_A (k-in)	I_{CR} (in^4)	I_{EFF} (in^4)	t_{EFF} (in)	Weight Multiplier
1	115.00	16.470	11.830	2.3200	2650.6	514.6					
	107.50	18.090	13.270	2.4100	3734.7	615.2	371.0	1501.9	3734.7	**2.4100**	**1.0000**
2	100.00	19.710	14.710	2.5000	5109.9	727.0					
	89.21	22.041	16.782	2.6295	7691.4	1902.9	1747.3	3925.1	7691.4	**2.6295**	**1.0000**
3	78.42	24.372	18.854	2.7590	11116.7	2230.1					
	67.63	26.703	20.926	2.8885	15545.3	2586.5	3965.9	7495.1	9728.2	**1.5510**	**1.7633**
4	56.83	29.034	22.998	3.0180	21149.8	2974.2					
	46.04	31.365	25.070	3.1475	28115.9	3395.3	8711.9	12721.0	13632.3	**1.2715**	**2.3211**
5	35.25	33.696	27.142	3.2770	36642.3	3852.0					
	26.44	35.600	28.834	3.3828	44909.4	4883.9	12093.6	20447.1	22058.2	**1.4022**	**2.2728**
6	17.63	37.503	30.526	3.4885	54479.8	5347.3					
	8.81	39.407	32.218	3.5943	65481.1	5838.3	15791.8	28596.0	30459.9	**1.4123**	**2.3989**
7	0.00	41.310	33.910	3.7000	78046.7	6357.9					
	-12.00	43.902	36.214	3.8440	97924.6	7113.6					
8	-24.00	46.494	38.518	3.9880	121331.0	7927.5					
9											
10											

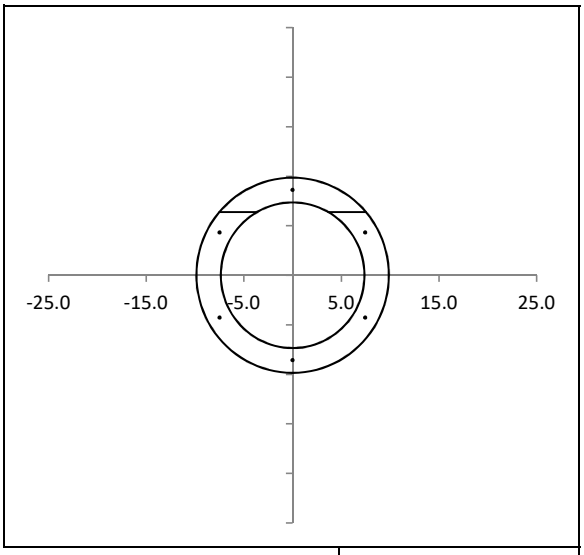
Section	Elevation (ft)	A (in^2)	I_{EFF} (in^4)	P_U (k)	L_B (ft)	ϕP_{CR} (k)	P_U / ϕP_{CR}	M_U (k-ft)	ϕM_N (k-ft)	M_U / ϕM_N	Capacity (%)
1	100.00	135.17	3734.7	5.0	100.00	25.2	0.20	66.4	143.7	0.46	62.9%
2	78.42	187.33	7691.4	11.7	78.42	81.0	0.14	240.6	488.5	0.49	60.7%
3	56.83	246.67	9728.2	18.6	56.83	182.0	0.10	474.3	677.5	0.70	76.4%
4	35.25	313.16	13632.3	26.9	35.25	573.0	0.05	766.0	861.4	0.89	89.2%
5	17.63	372.78	22058.2	36.1	17.63	2641.4	0.01	1056.9	1203.9	0.88	84.9%
6	0.00	437.17	30459.9	45.5	0.00	4131.3	0.01	1368.8	1392.6	0.98	94.7%
7	-6.26	461.20	87999.3	48.4	0.00	4358.3	0.01	1462.9	1458.8	1.00	96.6%

*Rating per TIA-222-H Section 15.5

Section Capacity - Elevation: 100.00-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	εps (in/in)	fpu (ksi)	Aps (in²)	Tps (k)
1	1.250	0.00148	270.0	0.153	6.446
2	5.552	0.00520	270.0	0.153	22.656
3	14.158	0.01263	270.0	0.153	40.214
4	18.460	0.01635	270.0	0.153	40.652
5	14.158	0.01263	270.0	0.153	40.214
6	5.553	0.00520	270.0	0.153	22.656

Section OD:	19.710-in	N.A. Depth:	3.472-in
Section ID:	14.710-in	Ac,comp:	19.37-in²
Section t:	2.500-in	Cc:	172.8-kip



ϕMn = 143.7 k-ft

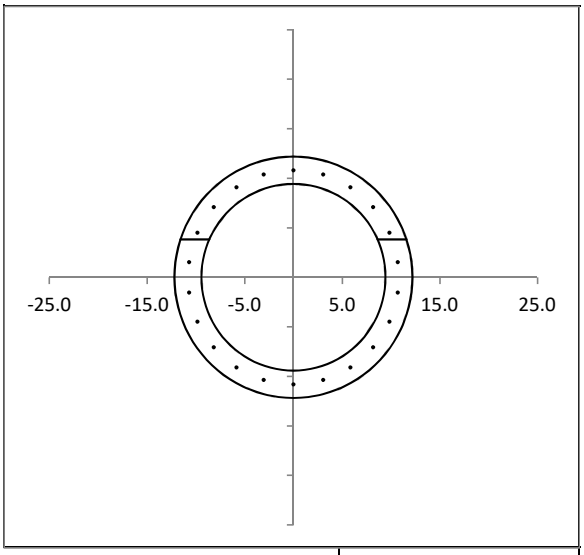
Other Reinforcing Bars					
Bar Number	Bar Depth (in)	εs (in/in)	fy (ksi)	As (in²)	Ts (k)

Section Capacity - Elevation: 78.42-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	ε_{ps} (in/in)	fpu (ksi)	Aps (in²)	Tps (k)
1	1.380	0.00110	270.0	0.153	4.807
2	1.817	0.00126	270.0	0.153	5.492
3	3.095	0.00172	270.0	0.153	7.490
4	5.109	0.00244	270.0	0.153	10.640
5	7.697	0.00337	270.0	0.153	14.687
6	10.648	0.00443	270.0	0.153	19.302
7	13.724	0.00553	270.0	0.153	24.112
8	16.675	0.00659	270.0	0.153	28.727
9	19.263	0.00752	270.0	0.153	32.774
10	21.277	0.00824	270.0	0.153	35.924
11	22.555	0.00870	270.0	0.153	37.605
12	22.993	0.00885	270.0	0.153	37.927
13	22.555	0.00870	270.0	0.153	37.605
14	21.277	0.00824	270.0	0.153	35.924
15	19.263	0.00752	270.0	0.153	32.774
16	16.675	0.00659	270.0	0.153	28.727
17	13.724	0.00553	270.0	0.153	24.112
18	10.648	0.00443	270.0	0.153	19.302
19	7.697	0.00337	270.0	0.153	14.687
20	5.109	0.00244	270.0	0.153	10.640
21	3.095	0.00172	270.0	0.153	7.490
22	1.817	0.00126	270.0	0.153	5.492

Section OD: 24.372-in
Section ID: 18.854-in
Section t: 2.759-in

N.A. Depth: 8.365-in
Ac,comp: 53.36-in²
Cc: 476.2-kip



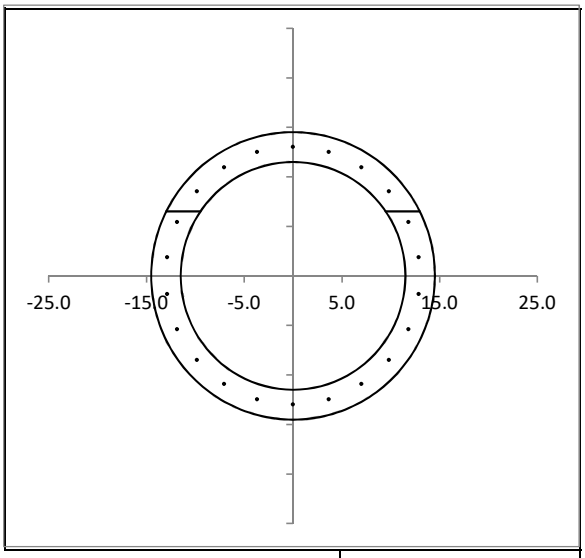
ϕMn = 488.5 k-ft

Other Reinforcing Bars					
Bar Number	Bar Depth (in)	ε_s (in/in)	fy (ksi)	As (in²)	Ts (k)

Section Capacity - Elevation: 56.83-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	εps (in/in)	fpu (ksi)	Aps (in²)	Tps (k)
1	1.509	0.00109	270.0	0.153	4.763
2	2.036	0.00129	270.0	0.153	5.625
3	3.574	0.00187	270.0	0.153	8.141
4	5.999	0.00278	270.0	0.153	12.108
5	9.113	0.00395	270.0	0.153	17.204
6	12.666	0.00528	270.0	0.153	23.016
7	16.368	0.00667	270.0	0.153	29.073
8	19.921	0.00800	270.0	0.153	34.886
9	23.035	0.00917	270.0	0.153	38.429
10	25.460	0.01008	270.0	0.153	39.293
11	26.998	0.01066	270.0	0.153	39.615
12	27.525	0.01085	270.0	0.153	39.703
13	26.998	0.01066	270.0	0.153	39.615
14	25.460	0.01008	270.0	0.153	39.293
15	23.035	0.00917	270.0	0.153	38.429
16	19.921	0.00800	270.0	0.153	34.886
17	16.368	0.00667	270.0	0.153	29.073
18	12.666	0.00528	270.0	0.153	23.016
19	9.113	0.00395	270.0	0.153	17.204
20	5.999	0.00278	270.0	0.153	12.108
21	3.574	0.00187	270.0	0.153	8.141
22	2.036	0.00129	270.0	0.153	5.625

Section OD:	29.034-in	N.A. Depth:	7.996-in
Section ID:	22.998-in	Ac,comp:	60.42-in²
Section t:	3.018-in	Cc:	539.2-kip



ϕMn = 677.5 k-ft

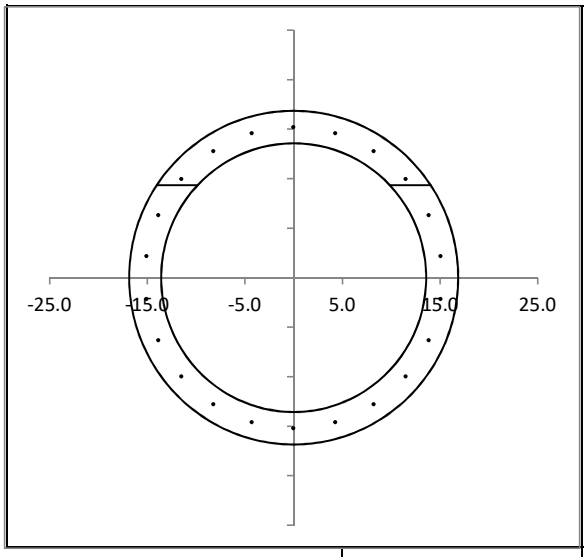
Other Reinforcing Bars					
Bar Number	Bar Depth (in)	εs (in/in)	fy (ksi)	As (in²)	Ts (k)

Section Capacity - Elevation: 35.25-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	ε_{ps} (in/in)	fpu (ksi)	Aps (in²)	Tps (k)
1	1.639	0.00113	270.0	0.153	4.909
2	2.255	0.00137	270.0	0.153	5.981
3	4.053	0.00209	270.0	0.153	9.112
4	6.888	0.00322	270.0	0.153	14.046
5	10.530	0.00467	270.0	0.153	20.385
6	14.683	0.00633	270.0	0.153	27.614
7	19.013	0.00806	270.0	0.153	35.149
8	23.166	0.00972	270.0	0.153	39.021
9	26.808	0.01117	270.0	0.153	39.827
10	29.643	0.01230	270.0	0.153	40.146
11	31.441	0.01302	270.0	0.153	40.286
12	32.058	0.01327	270.0	0.153	40.327
13	31.441	0.01302	270.0	0.153	40.286
14	29.643	0.01230	270.0	0.153	40.146
15	26.808	0.01117	270.0	0.153	39.827
16	23.166	0.00972	270.0	0.153	39.021
17	19.013	0.00806	270.0	0.153	35.149
18	14.683	0.00633	270.0	0.153	27.614
19	10.530	0.00467	270.0	0.153	20.385
20	6.888	0.00322	270.0	0.153	14.046
21	4.053	0.00209	270.0	0.153	9.112
22	2.255	0.00137	270.0	0.153	5.981

Section OD: 33.696-in
Section ID: 27.142-in
Section t: 3.277-in

N.A. Depth: 7.516-in
Ac,comp: 65.92-in²
Cc: 588.4-kip



ϕMn = 861.4 k-ft

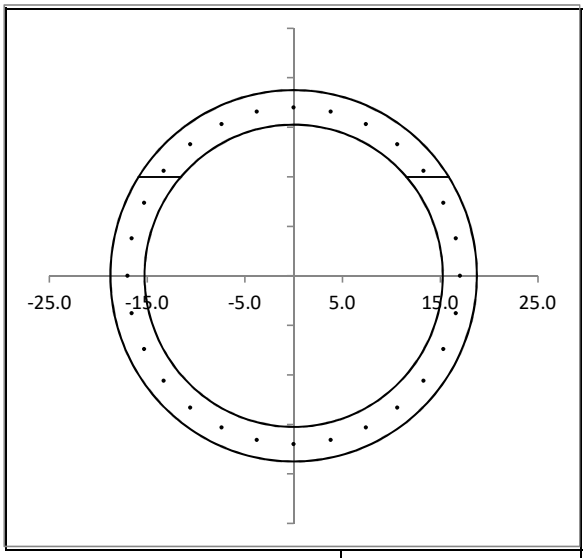
Other Reinforcing Bars					
Bar Number	Bar Depth (in)	ε_s (in/in)	fy (ksi)	As (in²)	Ts (k)

Section Capacity - Elevation: 17.63-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	ε_{ps} (in/in)	fpu (ksi)	Aps (in^2)	Tps (k)
1	1.744	0.00108	270.0	0.153	4.716
2	2.171	0.00123	270.0	0.153	5.352
3	3.428	0.00166	270.0	0.153	7.225
4	5.455	0.00235	270.0	0.153	10.244
5	8.148	0.00327	270.0	0.153	14.255
6	11.372	0.00437	270.0	0.153	19.059
7	14.967	0.00560	270.0	0.153	24.414
8	18.752	0.00689	270.0	0.153	30.052
9	22.536	0.00818	270.0	0.153	35.690
10	26.131	0.00941	270.0	0.153	38.726
11	29.355	0.01051	270.0	0.153	39.546
12	32.048	0.01143	270.0	0.153	39.916
13	34.075	0.01213	270.0	0.153	40.106
14	35.332	0.01256	270.0	0.153	40.200
15	35.759	0.01270	270.0	0.153	40.228
16	35.332	0.01256	270.0	0.153	40.200
17	34.075	0.01213	270.0	0.153	40.106
18	32.048	0.01143	270.0	0.153	39.916
19	29.355	0.01051	270.0	0.153	39.546
20	26.131	0.00941	270.0	0.153	38.726
21	22.536	0.00818	270.0	0.153	35.690
22	18.752	0.00689	270.0	0.153	30.052
23	14.967	0.00560	270.0	0.153	24.414
24	11.372	0.00437	270.0	0.153	19.059
25	8.148	0.00327	270.0	0.153	14.255
26	5.455	0.00235	270.0	0.153	10.244
27	3.428	0.00166	270.0	0.153	7.225
28	2.171	0.00123	270.0	0.153	5.352

Section OD: 37.503-in
Section ID: 30.526-in
Section t: 3.489-in

N.A. Depth: 8.781-in
Ac,comp: 82.30-in^2
Cc: 734.5-kip



ϕMn = 1203.9 k-ft

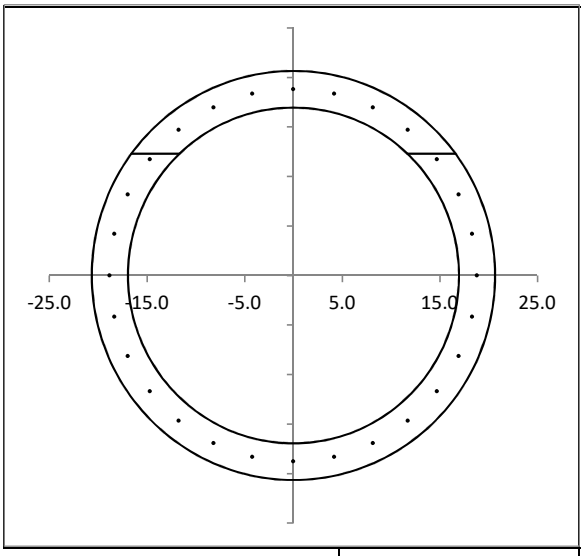
Other Reinforcing Bars					
Bar Number	Bar Depth (in)	ε_s (in/in)	fy (ksi)	As (in^2)	Ts (k)

Section Capacity - Elevation: 0.00-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	εps (in/in)	fpu (ksi)	Aps (in²)	Tps (k)
1	1.850	0.00112	270.0	0.153	4.877
2	2.321	0.00129	270.0	0.153	5.615
3	3.712	0.00179	270.0	0.153	7.794
4	5.953	0.00259	270.0	0.153	11.302
5	8.930	0.00366	270.0	0.153	15.965
6	12.496	0.00494	270.0	0.153	21.549
7	16.470	0.00637	270.0	0.153	27.773
8	20.655	0.00787	270.0	0.153	34.326
9	24.840	0.00937	270.0	0.153	38.684
10	28.814	0.01080	270.0	0.153	39.681
11	32.380	0.01208	270.0	0.153	40.095
12	35.357	0.01315	270.0	0.153	40.308
13	37.598	0.01396	270.0	0.153	40.425
14	38.989	0.01446	270.0	0.153	40.484
15	39.460	0.01463	270.0	0.153	40.503
16	38.989	0.01446	270.0	0.153	40.484
17	37.598	0.01396	270.0	0.153	40.425
18	35.357	0.01315	270.0	0.153	40.308
19	32.380	0.01208	270.0	0.153	40.095
20	28.814	0.01080	270.0	0.153	39.681
21	24.840	0.00937	270.0	0.153	38.684
22	20.655	0.00787	270.0	0.153	34.326
23	16.470	0.00637	270.0	0.153	27.773
24	12.496	0.00494	270.0	0.153	21.549
25	8.930	0.00366	270.0	0.153	15.965
26	5.953	0.00259	270.0	0.153	11.302
27	3.712	0.00179	270.0	0.153	7.794
28	2.321	0.00129	270.0	0.153	5.615

Section OD: 41.310-in
Section ID: 33.910-in
Section t: 3.700-in

N.A. Depth: 8.353-in
Ac,comp: 86.65-in²
Cc: 773.379-kip



ϕMn = 1392.6 k-ft

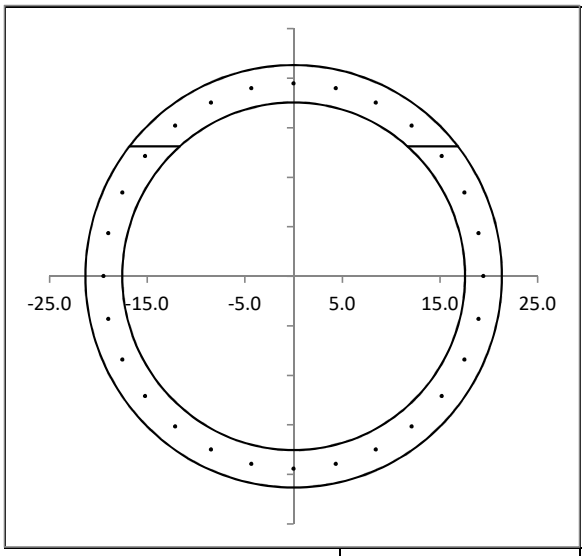
Other Reinforcing Bars					
Bar Number	Bar Depth (in)	εs (in/in)	fy (ksi)	As (in²)	Ts (k)

Section Capacity - Elevation: -6.26-ft

Prestressed/Post Tensioned Strands					
Strand Number	Strand Depth (in)	ε_{ps} (in/in)	fpu (ksi)	Aps (in^2)	Tps (k)
1	1.888	0.00113	270.0	0.153	4.945
2	2.375	0.00131	270.0	0.153	5.722
3	3.813	0.00184	270.0	0.153	8.013
4	6.130	0.00268	270.0	0.153	11.703
5	9.208	0.00381	270.0	0.153	16.608
6	12.895	0.00516	270.0	0.153	22.481
7	17.004	0.00666	270.0	0.153	29.028
8	21.331	0.00824	270.0	0.153	35.920
9	25.658	0.00982	270.0	0.153	39.103
10	29.767	0.01132	270.0	0.153	39.878
11	33.454	0.01267	270.0	0.153	40.221
12	36.533	0.01379	270.0	0.153	40.403
13	38.849	0.01464	270.0	0.153	40.504
14	40.287	0.01516	270.0	0.153	40.556
15	40.775	0.01534	270.0	0.153	40.572
16	40.287	0.01516	270.0	0.153	40.556
17	38.849	0.01464	270.0	0.153	40.504
18	36.533	0.01379	270.0	0.153	40.403
19	33.454	0.01267	270.0	0.153	40.221
20	29.767	0.01132	270.0	0.153	39.878
21	25.658	0.00982	270.0	0.153	39.103
22	21.331	0.00824	270.0	0.153	35.920
23	17.004	0.00666	270.0	0.153	29.028
24	12.895	0.00516	270.0	0.153	22.481
25	9.208	0.00381	270.0	0.153	16.608
26	6.130	0.00268	270.0	0.153	11.703
27	3.813	0.00184	270.0	0.153	8.013
28	2.375	0.00131	270.0	0.153	5.722

Section OD: 42.662-in
Section ID: 35.112-in
Section t: 3.775-in

N.A. Depth: 8.212-in
Ac,comp: 88.04-in^2
Cc: 785.8-kip



ϕMn = 1458.8 k-ft

Other Reinforcing Bars					
Bar Number	Bar Depth (in)	ε_s (in/in)	fy (ksi)	As (in^2)	Ts (k)

TOWER ENGINEERING PROFESSIONALS

ZOD_Alltel_UT05_McCook Ridge (BU 858303)

TEP #: 74637.176324

Analysis: TLI 8/20/2018

Check: KEH 8/20/2018

P33.4 x 0.3125

Reaction Input		
Elevation:	35.25	ft
Moment:	766.01	kip-ft
Axial:	26.87	kip
Shear:	14.45	kip
Torsion:	0.00	kip-ft

Section Properties		
Diameter:	33.40	in
Thickness:	0.3125	in
Area:	32.48	in^2
Material Properties		
F_y:	36	ksi
E:	29000	ksi

Check Bending

Z:	342.13	in^3		
S:	266.21	in^3		
ϕM_n:	830.91	kip-ft	87.8%	**PASS**

$$\varphi Mn = \begin{cases} F_y * Z \text{ for } (D/t) < 0.0714*(E/F_y) \\ ((0.0207 * E) / ((D/t)*F_y) + 1) * F_y * S \text{ for } (D/t) < 0.309 * (E/F_y) \\ ((0.33 * E) / (D/t)) * S \text{ for } (D/t) > 0.309 * (E/F_y) \end{cases}$$

F'_y:	36.00	ksi

$$F'_y := \begin{cases} F_y \text{ for } (D/t) < 0.114*(E/F_y) \\ ((0.0379 * E) / ((D/t)*F_y) + 2/3) * F_y \text{ for } (D/t) < 0.448 * (E/F_y) \\ ((0.337 * E) / (D/t)) \text{ for } (D/t) < 300 \end{cases}$$

Check Axial

ϕP_n:	1052.47	kip	2.4%	**PASS**

$0.9*F'_y*A_g$

Check Shear

ϕV_n:	307.05	kip	4.5%	**PASS**

$0.9*0.5*F_{nv}*A_g$

Check Torsion

C_t:	537.13	in^3		
ϕT_n:	8239.81	kip-ft	0.0%	**PASS**

$0.95*F_{nt}*C_t$

Interaction: 90.4% **PASS**

$(P_u/\varphi P_n) + (M_u/\varphi M_n) + [(V_u/\varphi V_n) + T_u/\phi T_n)]^2$

*Rating per TIA-222-H Section 15.5

Drilled Pier Foundation

BU # :	858303
Site Name:	ZOD_Alltel_UT05_McC
Order Number:	443529 Rev. 2

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	1369	
Axial Force (kips)	45	
Shear Force (kips)	18	

Pier Design Data		
Depth	24	ft
Ext. Above Grade	0	ft

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.26	-
Soil Safety Factor	8.19	-
Max Moment (kip-ft)	1462.85	-
Rating*	*15.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	68.18	-
End Bearing (kips)	2401.26	-
Weight of Concrete (kips)	84.82	-
Total Capacity (kips)	2469.44	-
Axial (kips)	129.82	-
Rating*	*5.0%*	-

Check Limitation	
Apply TIA-222-H Section 15.5:	☑

Soil Interaction Rating*	**15.5%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	n/a	ft	# of Layers: 3

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	6	2.67	120	150	0	45	0.000	0.000	0.28	0.28			Cohesionless
3	6	24	18	130	150	0	45	0.000	0.000	0.28	0.28	163.06		Cohesionless

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

SPECIAL USE LEASE AGREEMENT NO. 1765
(Telecommunications)

Fund: School

This Special Use Lease Agreement No. 1765 ("**Lease**") is made and entered into as of this 4th day of March, 2013 (the "**Effective Date**") by and among the STATE OF UTAH, acting by and through the SCHOOL AND INSTITUTIONAL TRUST LANDS ADMINISTRATION ("**Landlord**"), and NEW CINGULAR WIRELESS PCS, LLC, a Delaware limited liability company ("**Tenant**"). Landlord and Tenant are sometimes hereinafter referred to as the "**Party(ies)**".

RECITALS

A. WHEREAS, Landlord is the owner of certain real property located in Grand County, State of Utah, which property is more particularly described on Exhibit A attached hereto (the "**Subject Property**").

B. WHEREAS, Tenant desires to lease the Subject Property for the placement of Tenant's equipment, building(s) and tower(s) for the purpose of transmitting and receiving communications signals and for constructing, establishing, and maintaining a radio transmission tower facility for Tenant's use and that of its subtenants, licensees and customers (collectively, "**Customers**"), which facility includes tower(s), building(s), radio transmitting and receiving antennas, communications equipment, and related cables, wires, conduits, air conditioning equipment and other appurtenances which are more particularly described on Exhibit B attached hereto (the "**Telecommunications Facilities**").

NOW THEREFORE, in consideration of the mutual promises set forth herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. Subject Property. Landlord, in consideration of the rents hereinafter reserved and agreed to be paid by Tenant, hereby leases to Tenant the Subject Property, together with a non-exclusive right to use the existing unimproved road(s) located upon lands administered by Landlord within a part of Section 2, Township 16 South, Range 24 East, SLB&M, Grand County, Utah. The location of such access road(s) may be modified at Landlord's discretion. Any improvements or maintenance to be performed on such road(s) by Tenant shall be made at Tenant's sole cost and expense and shall only be conducted after first receiving written consent from Landlord.

2. Possession. Landlord and Tenant acknowledge and agree that Tenant's predecessor in interest and Landlord entered into that certain Special Use Lease Agreement No. 1024 dated February 27, 1995 ("Prior Lease"), pursuant to which Landlord leased the Subject Property to American Rural Cellular, dba Cellular One. . Tenant is the successor in interest to American Rural Cellular, dba Cellular One, and Tenant has been operating at the Subject Property pursuant to the terms of the Prior Lease. The Prior Lease is scheduled to expire on October 31, 2014. Landlord and Tenant wish to terminate the Prior Lease as of the Effective Date and execute this Lease to permit Tenant to continue to use the Subject Property in connection with its federally licensed communications business. Tenant desires to continue, and Landlord desires to grant to Tenant the right to continue to use the Subject Property in accordance with this Lease. Notwithstanding any other provisions of that Prior Lease, on the Effective Date, the terms of this Lease shall control and the Prior Lease shall have no further force and effect.

3. Lease Term. The original term of this Lease shall be for twenty (20) years, commencing on June 1, 2012 and expiring on May 31, 2032 (the "**Lease Term**").

4. Termination. So long as Tenant is not then in default under the Lease beyond any applicable cure period, Tenant shall have the option, at its election, to terminate the Lease by delivering notice to Landlord ("**Termination Notice**") and paying a termination fee equal to two (2) years of the then current annual Base Rent plus two (2) years of the then current annual Sublease Rent ("**Termination Fee**"). The Termination Notice shall not be effective unless accompanied by the Termination Fee.

5. Construction.

a. Tenant agrees that all improvements constructed on the Subject Property shall comply with applicable provisions of the Uniform Building Code, current edition, and the International Conference of Building Officials.

b. Tenant shall bear all expenses in connection with the development, improvement, construction, alteration and maintenance of the Subject Property and of all improvements thereon and shall indemnify, defend and hold Landlord harmless therefrom.

6. Use. Tenant agrees that only the Telecommunication Facilities shall be permitted on the Subject Property and the Subject Property shall only be used for wireless communications and for no other purpose. The Base Rent shall include rental for one tenant, whether Tenant is the actual tenant, or a third party that is the first co-located tenant or sublessee (the "**Base Tenant**"). Upon prior notice, Tenant agrees to permit Landlord free and unrestricted access to and upon the Subject Property at all reasonable times for all lawful and proper purposes not inconsistent with the intent of this Lease or with the reasonable exercise and enjoyment by the Tenant of the rights and privileges granted herein.

7. Rent.

a. Commencing on the Rent Commencement Date (as defined below), Tenant shall pay to Landlord an annual sum "**Base Rent**" equal to [redacted]

b. Base Rent shall be payable in annual installments on or before the first (1st) day of the first month of the Lease Term ("**Rent Commencement Date**"). All Base Rent and other payments to be made by Tenant to Landlord shall be made payable to Landlord and sent to Landlord at the place where notices to Landlord are required to be sent, unless Landlord shall direct otherwise by notice to Tenant. Base Rent for any partial lease year shall be prorated on a calendar month basis.

c. Landlord acknowledges the receipt of two checks totaling [redacted] for the Prior Lease Term of November 1, 2011, through October 31, 2012. Landlord further acknowledges that a prorated amount of [redacted] shall be applied to the Base Rent payment for the first two years of the Lease Term. The first year Base Rent payment shall be considered paid by [redacted] of the credit, which is payment for the first year of the Lease Term, and includes the [redacted] application fee and the [redacted] Lease processing charge. The remaining [redacted] of the credit shall be applied to the Base Rent payment for the second year of the Lease Term.

d. Tenant agrees that Landlord shall have the right to adjust the Base Rent at the end of the first five (5) year period of the Lease Term, and then every five (5) years thereafter. Said adjustment shall be calculated by whichever of the following methods Landlord determines, in its sole discretion, is in the best interest of its beneficiaries:

i. Fixed Percentage: The annual Base Rent will be increased by [redacted] over the Base Rent for the previous 5 years.

ii. Real Estate Appraisal. In year ten (10) of the Lease Term, Landlord may engage its own independent licensed appraiser to determine a fair market Base Rent. Landlord shall pay for the cost of the initial appraisal ("**Initial Appraisal**"). Should Landlord and Tenant be unable to agree as to fair market Base Rent based upon this Initial Appraisal, Tenant shall engage its own licensed appraiser, at its own expense, to complete an appraisal to determine fair market Base Rent ("**Tenant's Appraisal**"). The adjusted Base Rent shall be the average of the Initial Appraisal and Tenant's Appraisal.

8. Subleasing to Approved Sublessees and Associated Sublease Rent. Landlord hereby gives its prior consent for the co-location of up to four (4) additional cellular and wireless communication or internet service provider sublessees (the "**Approved Sublessees**") on the Subject Property, resulting in four (4) total pre-approved tenants or subtenants (including the Tenant). Tenant shall provide Landlord with prior written notice of an Approved Sublessee's co-location on the Subject Property. Tenant shall also provide Landlord with relevant information regarding an Approved Sublessee, as requested by Landlord. The terms of the sub-lease between Tenant and any Approved Sublessee(s) shall be subject to the approval of the parties thereto, and any Approved Sublessee or other sublessee or co-located tenant shall also be bound by all applicable terms and conditions of the Lease.

In addition to Base Rent, which is rent for use of the Subject Property by the Tenant, Tenant shall also pay Landlord additional subleasing rentals for use of the Subject Property by the Approved Sublessees (the "**Sublease Rent**") (together with Base Rent, the "Rent"). The Sublease Rent shall be equal to the greater of the following: (i) [redacted] of the annual Base Rent amount being charged to the Tenant, multiplied by the number of Approved Sublessees; or (ii) [redacted] of the Gross Sublease Revenue (defined below) paid to Tenant by the Approved Sublessees.

For purposes of this Lease, the "**Gross Sublease Revenue**" received shall mean the actual compensation received by the Tenant from any Approved Sublessees during their period of occupancy of the Subject Property, whether currently or in the future. Gross Sublease Revenue shall be paid in U.S. currency. As used herein, Gross Sublease Revenue exclusion includes taxes (to the extent applicable), utilities, capital improvements and third party reimbursements (e.g., tower monitoring costs) paid to Tenant by the Approved Sublessees. If this Lease expires or is otherwise terminated prior to the last day of a calendar year, the Sublease Rent due hereunder shall be prorated for such partial calendar year according to the number of actual days elapsed in such calendar year. Each calendar year shall be considered an independent accounting period for the purposes of determining the amount of any Sublease Rent due to the Landlord hereunder.

Tenant shall pay the Sublease Rent to Landlord in full on a quarterly basis not later than thirty (30) days following the expiration of the calendar quarter to which the Sublease Rent pertains. Tenant

shall keep full, complete and proper records and accounts of the Gross Sublease Revenue. All such records shall be kept for a period of at least three (3) years following the end of each Lease year.

9. Assignment.

a. Tenant may not assign all or part of this Lease without Landlord's prior written consent, Landlord's consent not to be unreasonably withheld, conditioned or delayed. Any attempted assignment without Landlord's consent shall be null and void, shall constitute a default under this Lease, and shall, at Landlord's election, result in the immediate termination of this Lease. In determining whether to grant approval for an assignment, Landlord may consider, among other items, the proposed assignee's financial condition, managerial capability, business reputation, nature of the proposed assignee's business, and the current fair market rental value of the Subject Property. Tenant shall pay any applicable administrative fees required by Landlord in connection with Landlord's review of the proposed assignment. Notwithstanding the foregoing, Tenant will have the right to assign, sell or transfer its interest under this Agreement without the approval or consent of Landlord, to Tenant's Affiliate or to any entity which acquires all or substantially all of the Tenant's assets in the market defined by the Federal Communications Commission in which the Property is located by reason of a merger, acquisition, or other business reorganization. Upon notification to Landlord of such assignment, transfer or sale, Tenant will be relieved of all future performance, liabilities and obligations under this Agreement.

b. Consent by the Landlord to an assignment or transfer shall not constitute a waiver of the Landlord's right to approve subsequent assignments or transfers. The acceptance by Landlord of payment or performance following an assignment or transfer shall not constitute consent to any assignment or transfer, and Landlord's consent shall be evidenced only in writing.

c. An assignment approved by Landlord shall not constitute a new lease but shall be a continuation of the existing Lease.

10. Expansion of Permitted Use. Subject to Sections 8 and 9 above, Tenant, its personnel, invitees, contractors, agents, subtenants and assigns may use the Subject Property, at no additional cost or expense, for the transmission and reception of any and all communications signals and to modify, supplement, replace, upgrade, expand, including the number and type(s) of antennas, or refurbish the equipment and/or improvements thereon (collectively, "Communications Facility"), or relocate the same within the Subject Property at any time during the term of the Agreement, in order to be in compliance with any current or future federal, state or local mandated application, including but not limited to emergency 911 communication services or for any other reason. Landlord shall reasonably cooperate in obtaining governmental and other use permits or approvals necessary or desirable for the foregoing permitted use. If Landlord does not comply with the terms of this section, Tenant will have the right to exercise any and all rights available to it under law and equity.

11. 24/7 Access. Landlord hereby grants to Tenant, its authorized subtenants, and to any public or private utility serving Tenant's Communications Facility or related equipment, access to the Subject Property twenty-four hours per day, seven days per week (24/7), for the installation, maintenance, repair, modification, alteration, or refurbishment of the Communications Facility or any equipment related to such Communications Facility as such access is deemed necessary by Tenant, in its sole discretion, without the requirement of notice by Tenant to Landlord.

12. Facility Report. Tenant agrees to provide Landlord with a list of all uses and frequencies and other relevant information regarding the operations on the Subject Property at such time as requested by Landlord.

13. Default. The following will be deemed a default by Landlord and a breach of this Lease: Landlord's failure to perform any term, condition or breach of any warranty or covenant under this Lease within forty-five (45) days after receipt of written notice from Tenant specifying the failure. No such failure, however, will be deemed to exist if Landlord has commenced to cure the default within such period and provided such efforts are prosecuted to completion with reasonable diligence. Delay in curing a default will be excused if due to causes beyond the reasonable control of Landlord. If Landlord remains in default beyond any applicable cure period, Tenant will have: (i) the right to cure Landlord's default and to deduct the costs of such cure from any monies due to Landlord from Tenant, and (ii) any and all other rights available to it under law and equity. Tenant shall be in default under this Lease: (a) if Tenant shall fail to pay Rent or other amounts due ("**monetary default**") and such failure to pay continues for 30 days following Tenant's receipt of notice of such nonpayment; or (b) if Tenant shall default in the performance or observance of any other provision of this Lease and such failure to perform continues for 45 days following Tenant's receipt of notice of such failure ("**non-monetary default**"). No such failure, however, will be deemed to exist if Tenant has commenced to cure such default within such period and provided that such efforts are prosecuted to completion with reasonable diligence. Delay in curing a default will be excused if due to causes beyond the reasonable control of Tenant. If Tenant remains in default beyond any applicable cure period, Landlord will have the right to exercise any and all rights and remedies available to it under law and equity including the following:

a. Re-enter the Subject Property, remove all persons and property, and repossess and enjoy such Subject Property.

b. Terminate this Lease and Tenant's right of possession of the Subject Property. Such termination shall be effective on the date Tenant receives notice. Upon such termination, Tenant shall immediately surrender possession of the Subject Property to Landlord and all improvements on the Subject Property shall be removed by Tenant in accordance with section 14 of this Lease.

c. Maintain this Lease in full force and effect and recover any Base Rent, royalty, or other consideration, including late fees, as it becomes due without terminating Tenant's right of possession regardless of whether Tenant shall have abandoned the Subject Property.

d. Seek damages for any and all violations or defaults with or without canceling this Lease. In the event Landlord deems the breach or default to constitute a threat to safety, life, or property, it may elect to intervene immediately, without notice, to remedy the breach or default and Tenant hereby agrees to repay Landlord for all costs in remedying the breach or default upon demand, together with interest thereon from the date of expenditure. Alternatively, Landlord may require Tenant itself to act immediately to remedy the breach or default, should Landlord deem it a threat to safety, life, or property.

e. Exercise any other right or remedy which Landlord may have at law or equity.

f. In the event Tenant fails to timely pay Rent or any other monetary obligation, Tenant shall be required to pay a late penalty fee equal to the amount set forth in the then current SITLA administrative rules.

Notwithstanding the foregoing, if any of the provisions of this Lease provide that Landlord will provide Tenant with notice of default and a period of time in which to cure the default prior to Landlord taking action on such, Landlord shall be bound to provide such notice and cure period.

The specified remedies to which the Parties may resort under the terms of this Lease are cumulative and are not intended to be exclusive of any other remedies or means of redress to which the Parties may lawfully be entitled in case of any breach or threatened breach by either Landlord or Tenant of any provision of this Lease.

14. Tenant's Equipment and Improvements upon Termination or Expiration. Upon the expiration or earlier termination of this Lease, Tenant shall have sixty (60) days to remove from the Subject Property all personal property, Equipment (as defined below), fixtures, and physical improvements attached to the Subject Property. Landlord acknowledges and agrees that during the Lease Term, all personal property, equipment, apparatus, fittings, building, fixtures and trade fixtures installed or stored on the Subject Property constitute personal property, not real property, and shall be the personal and exclusive property of Tenant, including, without limitation, all telecommunication equipment, towers, switches, cables, wiring and associated equipment or personal property (collectively, the "**Equipment**"). Following the date sixty (60) days after the expiration or termination of this Lease, in the event Tenant has not removed its Equipment, such Equipment shall be forfeited and become the property of Landlord subject only to any waiver of interests or security interests that have previously been approved by Landlord. Tenant, and Tenant's successors in interest, shall have the right to remove the Equipment at any time during the term of this Lease or within sixty (60) days of its earlier termination. Notwithstanding anything to the contrary contained in this Lease, Tenant may assign, mortgage, pledge, hypothecate or otherwise transfer without notice or consent its interest in this Lease to any financing entity, or agent on behalf of any financing entity to whom Tenant (i) has obligations for borrowed money or in respect of guaranties thereof, (ii) has obligations evidenced by bonds, debentures, notes or similar instruments, or (iii) has obligations under or with respect to letters of credit, bankers acceptances and similar facilities or in respect of guaranties thereof.

In the event the Tenant does not remove all personal property, Equipment, fixtures, and improvements within sixty (60) days of notice from the Landlord regarding the Lease expiration or Lease termination, then such property, Equipment, fixtures and improvements shall be deeded abandoned and Landlord may remove and dispose of any such property or improvements at Tenant's sole cost and expense.

15. Survival. Tenant agrees that all obligations of Tenant to be performed prior to the expiration or earlier termination shall not cease upon the termination or expiration of this Lease, and shall continue as obligations until fully performed. All clauses of this Lease which require performance beyond the termination or expiration date shall survive the termination or expiration date of this Lease. However, upon expiration or earlier termination of this Lease, the rights of Tenant and of all persons, firms, corporations, and entities claiming under Tenant in and to the Subject Property and all improvements thereon, unless specified otherwise in this Lease, shall cease.

16. Mechanics' Liens.

a. The parties agree, and notice is hereby given, that Tenant is not the agent of Landlord for the construction, alteration or repair of any improvements on the Subject Property, the same being done at the sole direction and expense of Tenant. All contractors, material men, mechanics, and laborers are hereby charged with notice that they must look only to Tenant for the payment of any charge for work done or material furnished on the Subject Property during the Lease Term. Tenant shall have no right, authority or power to bind Landlord or any interest of Landlord for the payment of any claim for labor or material, or for any charge or expense, incurred by Tenant as to improvements, alterations or repairs on or to the Subject Property, and Tenant shall post notices on the Subject Property during all construction work of any nature whatsoever that Landlord is not responsible for any material and labor used on the Subject Property.

b. Tenant shall not suffer or permit to be enforced against the Subject Property, or any part thereof, and shall indemnify and hold Landlord and the Subject Property harmless for, from, and

against (i) any mechanic's, material men's, contractor's or subcontractor's liens arising from, and (ii) any claim for damage growing out of the work of, any construction, repair, restoration, replacement, or improvement done by or on behalf of Tenant. Tenant shall pay or cause to be paid all of such liens, claims, or demands before any action is brought to enforce the same against the Subject Property. If a prohibited lien is filed against the Subject Property, then Tenant shall, at its expense, defend itself and Landlord against the same and shall pay and satisfy any adverse judgment that may be rendered thereon prior to execution thereof and in the event of any such contest Tenant shall at the request of Landlord provide such security and take such steps as may be required by law to release the Subject Property from the effect of such lien.

c. Protection of Landlord. NOTICE IS HEREBY GIVEN THAT LANDLORD SHALL NOT BE LIABLE FOR ANY LABOR OR MATERIALS FURNISHED OR TO BE FURNISHED TO TENANT UPON CREDIT, AND THAT NO MECHANIC'S OR OTHER LIEN FOR ANY SUCH LABOR OR MATERIALS SHALL ATTACH TO OR AFFECT THE SUBJECT PROPERTY. NOTHING IN THIS LEASE SHALL BE DEEMED OR CONSTRUED IN ANY WAY TO CONSTITUTE LANDLORD'S CONSENT OR REQUEST, EXPRESS OR IMPLIED, BY INFERENCE OR OTHERWISE, TO ANY CONTRACTOR, SUBCONTRACTOR, LABORER, EQUIPMENT OR MATERIAL SUPPLIER FOR THE PERFORMANCE OF ANY LABOR OR THE FURNISHING OF ANY MATERIALS OR EQUIPMENT FOR ANY CONSTRUCTION, NOR AS GIVING TENANT ANY RIGHT, POWER OR AUTHORITY TO CONTRACT FOR, OR PERMIT THE RENDERING OF, ANY SERVICES, OR THE FURNISHING OF ANY MATERIALS THAT WOULD GIVE RISE TO THE FILING OF ANY LIENS AGAINST THE FEE ESTATE. TENANT SHALL INDEMNIFY LANDLORD AGAINST ANY CONSTRUCTION UNDERTAKEN BY TENANT OR ANYONE CLAIMING THROUGH TENANT, AND AGAINST ALL PROHIBITED LIENS.

17. Payment of Taxes and Assessments. Tenant shall pay, prior to delinquency: (a) all taxes, assessments, levies, fees, fines, penalties and all other governmental charges, general and special, ordinary and extraordinary, foreseen and unforeseen, which, during the Lease Term, are imposed or levied upon or assessed against (i) the Subject Property arising out of Tenant's use, (ii) any Base Rent or any other sum payable by Tenant hereunder or (iii) this Lease, the leasehold estate hereby created or which arises in respect of the operation, possession or use of the Subject Property; and (b) all sales, transaction privilege or similar taxes imposed or levied upon, assessed against or measured by any Base Rent or other amounts payable to Landlord hereunder, but not income taxes. If Tenant fails to pay any of the foregoing before they become delinquent, Landlord, after notice to Tenant, may but has no obligation to pay such delinquent taxes, assessments, levies, fees, fines, penalties and governmental charges, and all expenditures and costs incurred thereby shall be payable hereunder within twenty (20) days after such notice to Tenant. Tenant will furnish to Landlord, promptly after demand therefore, proof of payment of all items referred to above which are payable by Tenant. If any such assessment may be legally paid in installments, Tenant may pay such assessment in installments.

18. Indemnity. Tenant agrees to protect, indemnify and save harmless Landlord, its agents and employees, from and against all claims, demands, damages, and causes of action of every kind or character on account of bodily injuries, death, or damage to property arising because of, for, out of, or in any way connected with the performance of this Lease, except where such claims, demands, damages, and causes of action have resulted from the sole negligence or intentional acts of the Landlord. Tenant shall defend all suits brought upon such claims and pay all costs and expenses incidental thereto, but Landlord shall have the right, at its option, to participate in the defense of any such suit without relieving

Tenant of any obligation hereunder. Tenant understands that the State of Utah statutes prohibit the Landlord from indemnifying the Tenant, its agents or employees from any claims or damages.

19. Insurance.

a. Casualty Insurance. Tenant will, at all times during the Lease Term and at the sole cost and expense of Tenant, keep all improvements, equipment, and fixtures on the Subject Property insured for the benefit of Landlord and Tenant, as co-insureds, to the extent of one hundred percent (100%) of the full replacement cost thereof against loss or damage from fire and other risks normally insured against in special perils insurance coverage. Notwithstanding the foregoing, Tenant shall not be required to insure the Subject Property or improvements thereon against earthquake or terrorist attack. If proceeds from any such casualty insurance are disbursed to Tenant due to damage on the Subject Property, Tenant shall use the disbursement to restore the Subject Property to its condition prior to the event causing such damage.

b. Liability Insurance. Tenant agrees to provide and maintain during the entire term of this Lease, at its sole expense, a policy of liability insurance naming Tenant and including Landlord as an additional insured party as respects this Lease under the policy. The policy shall fully insure against any and all loss, damage, liability, and injury incurred by any person, firm, corporation, or government entity arising out of the performance of this Lease, regardless of the fault of Tenant, its agents and employees, regardless of the fault of Landlord, its agents and employees, and regardless of the fault of third persons not parties to this Lease. The limits of the policy shall be $1,000,000.00 combined single limit per occurrence and $1,000,000.00 aggregate.

c. Workers Compensation. Tenant shall also maintain and keep in force workers compensation insurance covering all persons employed in connection with any activities on the Subject Property and with respect to whom death or bodily injury claims could be asserted against Landlord, Tenant, or the Subject Property.

d. Builder's Risk Insurance. If applicable, during any period of building construction, including the construction of the initial improvements and all alterations and restorations, Tenant shall provide and maintain Builder's Risk Insurance.

e. Other Insurance. Tenant, at the sole cost and expense of Tenant, shall at all times during the Lease Term, maintain in force such other and additional insurance policies as a prudent ground Tenant in the position of Tenant would maintain or as Landlord may require from time to time. Landlord shall be an additional insured on all such policies.

f. Policy Requirements. All insurance policies required or otherwise provided and maintained under this Section 19 shall:

i. Be approved by Landlord;

ii. Include Landlord as an additional insured as its interest may appear, except for workers compensation coverage;

iii. Be issued by a company or companies rated "A-" or better by the then most current edition of Best's Insurance Guide (or if such guide is no longer published, then having a comparable rating as specified by Landlord from time to time);

iv. Provide that Tenant shall provide written thirty (30) days prior notice to Landlord if any canceled required coverage is not replaced;

v. To the extent reasonably obtainable, expressly waive any right of subrogation against Landlord;

vi. Provide that the insurance coverage for the State or Landlord is primary and not contributing; that other insurance of the State or Landlord is excess over the insurance required by this Lease; and, the amount of the insurance company's liability or coverage limits required by this Lease shall not be reduced by the existence of other State or Landlord insurance.

g. Proof of Insurance. Upon the commencement date of this Lease, and thereafter not less than thirty (30) days prior to the expiration dates of the policies furnished pursuant to this Section 19, Tenant shall deliver to Landlord certificates. Failure to provide proof of insurance shall be a default under this Lease and Landlord shall have the right to exercise the remedies set forth in Section 13.

h. (intentionally deleted)

i) Notwithstanding the foregoing, Tenant shall have the right to self-insure the coverage required above. In the event Tenant elects to self-insure its obligation to include Landlord as an additional insured, the following provisions shall apply:

Additional Insured status

(i) shall be limited to bodily injury, property damage or personal and advertising injury caused, in whole or in part, by Tenant, its employees, agents or independent contractors;

(ii) shall not extend to claims for punitive or exemplary damages arising out of the acts or omissions of Landlord, its employees, agents or independent contractors or where such coverage is prohibited by law or to claims arising out of the gross negligence of Landlord, its employees, agents or independent contractors; and

(iii) shall not exceed Tenant's indemnification obligation under this Lease, if any.

Landlord shall promptly and no later than thirty (30) days after notice thereof provide Tenant with written notice of any claim, demand, lawsuit, or the like for which it seeks coverage pursuant to this Section and provide Tenant with copies of any demands, notices, summonses, or legal papers received in connection with such claim, demand, lawsuit, or the like; Landlord shall not settle any such claim, demand, lawsuit, or the like without the prior written consent of Tenant; and Landlord shall fully cooperate with Tenant in the defense of the claim, demand, lawsuit, or the like.

20. Warranties and Acknowledgments.

a. Rules. Tenant acknowledges that Tenant's use of the Subject Property is subject to the Enabling Act of Utah (Act of July 16, 1894, Ch. 138, 28 Stat. 107) and Article X of the Constitution of the State of Utah. The Tenant takes this Lease subject to the continued regulation of Landlord pursuant to the rules of the School and Institutional Trust Lands Administration now in effect or as they may be adopted hereafter.

b. Access. Tenant acknowledges that Landlord does not represent or warrant that access across state, federal, or private land is available to the Subject Property, nor will it attempt to obtain such access for Tenant. Additionally, Tenant acknowledges that Landlord has no obligation to maintain or provide access over any roads that may lead to the Subject Property.

c. Compliance. Tenant, in exercising the privileges granted by this Lease, shall comply with the provisions of all valid Federal, State, County, and Municipal laws, ordinances, and regulations which are applicable to the Subject Property and operations covered by this Lease.

21. Antiquities. It is hereby understood and agreed that all treasure-trove, all articles of antiquity, and critical paleontological resources in or upon the Subject Property are and shall remain the property of Landlord. Tenant agrees that all costs associated with archaeological and paleontological investigations on the Subject Property associated with the use of the Subject Property under this Lease that may be required by Landlord will be borne by Tenant. Tenant further agrees to cease all activity on the Subject Property and immediately notify Landlord if any discovery of human remains or a "site" or "specimen" as defined in Section 9-8-302 or 63-73-1 Utah Code Annotated (1953), as amended, is made on the Subject Property, and continue to cease all construction or maintenance therein until such time as the human remains, "site" or "specimen" in question has been treated to the satisfaction of Landlord.

22. Bond. Tenant agrees to furnish Landlord a reclamation bond in such type and by such date as Landlord may request. Further, it is expressly agreed that Landlord may at any time, upon thirty (30) days' notice by certified mail, require Tenant to furnish Landlord such additional reclamation bond as Landlord may deem to be in the best interest of the State of Utah, provided that the total bond amount shall not exceed [redacted]. Before Landlord releases the reclamation bond, Tenant shall rehabilitate the Subject Property in accordance with specifications provided by Landlord, which may include but are not limited to surface restoration and re-seeding.

23. Condemnation.

a. Termination and Distribution. If at any time during the term of this Lease, the whole or a portion of the Subject Property is taken by condemnation or other act of eminent domain (a "Taking" or "Taken"):

i. This Lease shall terminate and expire on the date of such Taking and Tenant shall pay within thirty (30) days after the date of Taking all Rents accrued to the date of Taking;

ii. Tenant shall comply with all of its other obligations under this Lease up to the date of Taking; and

iii. Tenant's share of any condemnation award shall be disbursed to Tenant.

b. Partial Taking.

i. If at any time during the term of this Lease title to less than the whole of the Subject Property has been Taken, Tenant shall have the right but not the obligation to continue this Lease. Tenant may, within thirty (30) days after receiving its share of the condemnation award, give notice of its election to terminate this Lease

ii. Landlord and Tenant shall have the right to participate in respect of their respective interests in any proceeding of purchase negotiations relating to any Taking. In case of any Taking, Tenant shall bear its proportionate share of all reasonable costs and fees, including reasonable counsel fees and expenses incurred in the determination and collection on any condemnation award. Landlord shall bear only such costs, expenses, and fees as it may authorize in writing.

24. Mineral Exploration. Landlord expressly reserves the right to lease the Subject Property to third parties for mineral exploration and/or development purposes and reserves the right to grant as much access across the surface as reasonably necessary to develop the mineral estate, including ingress and egress, so long as the aforementioned third parties do not interfere with Tenant's rights to the Subject Property or any other rights granted under this Lease.

25. Title. Landlord claims title in fee simple, but does not warrant to Tenant the validity of title to the Subject Property. Tenant shall have no claim for damages or refund against the Landlord for any claimed failure or deficiency of Landlord's title to said lands or for interference by any third party. Tenant takes possession subject to all existing encumbrances, rights-of-way, or encroachments as may exist or be of record. Possession is subject to a reservation by Landlord of rights-of-way as may be necessary to access other state land.

26. Water Rights. If Tenant shall initiate or establish any water right on the Subject Property, such right shall become an appurtenance of the Subject Property. Tenant agrees that any existing application to appropriate water on the Subject Property shall be transferred to the School and Institutional Trust Lands Administration after the application has been completed, without any cost to the State. It is expressly understood and agreed that this Lease does not confer any rights upon Tenant to use any water presently developed on the Subject Property.

27. Fire. Tenant shall at all times observe reasonable precautions to prevent fire on the Subject Property and shall comply with all applicable laws and regulations of any governmental agency having jurisdiction. In the event of a fire on the Subject Property caused by Tenant, its servants, employees, agents, subtenants, assignees or licensees which necessitates suppression action, Tenant agrees to reimburse Landlord for the cost of such fire suppression action.

28. Fencing. Tenant may fence the Subject Property at its own expense, but if there is no fence erected, Tenant shall have no right of action against any State grazing permittee by reason of a trespass upon the Subject Property. The right of Tenant to fence the Subject Property shall be subject to the Landlord's rights of access across State lands to other State lands.

29. Waste. Tenant shall neither commit nor permit any waste on the Subject Property. Tenant shall maintain the Subject Property in good condition and at its own expense, free from any

nuisance. Surface and subsurface areas will be cleaned of all trash, debris, and waste of any kind to the satisfaction of Landlord. Tenant shall maintain the Subject Property to standards of repair, orderliness, neatness, sanitation, and safety as required by law and applicable regulations.

30. Pollution. Tenant shall be bound by all of the environmental regulatory programs, including air quality, water pollution and water quality, solid and hazardous waste management and underground storage tanks, and other conditions as contained in the provisions, conditions, and rules and regulations developed under authority of Title 19, Utah Code Annotated (1953) as amended. Tenant agrees to indemnify Landlord for any damage which Landlord may suffer which arises out of the improper or unlawful disposal of refuse associated with the Subject Property as caused by Tenant.

31. Hazardous, Toxic, or Harmful Substances.

a. Tenant shall not make, or suffer to be made, any filling in of the Subject Property or any deposit of rock, earth, ballast, refuse, garbage, waste matter, chemical, biological or other wastes, hydrocarbons, any other pollutants, or other matter within or upon the Subject Property, except as approved in writing by Landlord. If Tenant fails to remove all non-approved fill material, refuse, garbage, wastes or any other of the above materials from the Subject Property, Tenant agrees that Landlord may, but is not obligated to, remove such materials and charge Tenant for the cost of removal and disposal.

b. Tenant shall not keep on or about the Subject Property any substances now or hereinafter designated as or containing components now or hereinafter designated as hazardous, toxic, dangerous, or harmful, and/or which are subject to regulation as hazardous, toxic, dangerous, or harmful by any federal, state or local law, regulation, statute or ordinance (hereinafter collectively referred to as "Hazardous Substances") unless such are necessary to carry out Tenant's permitted uses as defined herein and unless Tenant fully complies with all federal, state and local laws, regulations, statutes, and ordinances, now in existence or as subsequently enacted or amended and unless Tenant has notified Landlord of all Hazardous Substances necessary to carry out such purposes which will be kept or used on the Subject Property.

c. Tenant shall:

i. Immediately notify the Landlord of (i) all spills or releases of any Hazardous Substance affecting the Subject Property, (ii) all failures to comply with any federal, state or local law, regulation or ordinance, as now enacted or as subsequently enacted or amended, (iii) all inspections of the Subject Property by, or any correspondence, orders, citations, or notifications from any regulatory entity concerning Hazardous Substances affecting the Subject Property, (iv) all regulatory orders or fines or all response or interim cleanup actions taken by or proposed to be taken by any government entity or private party concerning the Subject Property; and

ii. On request, provide copies to Landlord of any and all correspondence, pleadings, and/or reports received by or required of Tenant or issued or written by Tenant or on Tenant's behalf with respect to the use, presence, transportation or generation of Hazardous Substances related to the Subject Property; and

iii. Be fully and completely liable to Landlord, and shall indemnify, defend, and save harmless Landlord and its agencies, employees, officers, and agents with respect to any and all damages, costs, fees (including attorneys' fees and costs), penalties (civil and criminal), and cleanup costs assessed against or imposed as a result of Tenant's use, disposal, transportation, generation and/or sale of Hazardous Substances.

32. Notices. Notices shall be in writing and shall be given by (a) personal delivery, (b) deposit in the United States mail, certified mail, return receipt requested (which receipt shall be preserved as evidence of delivery), postage prepaid, or c) overnight express delivery service, addressed or transmitted to Lessor and Lessee at the following addresses, or to such other addresses as either party may designate to the other in a writing delivered in accordance with the provisions of this Section:

If to Landlord:
School and Institutional Trust Lands Administration
Attn: Assistant Director - Surface
675 East 500 South, Suite 500
Salt Lake City, UT 84102

If to Tenant:
New Cingular Wireless, PCS, LLC
Attn: Network Real Estate Administration
Re: Cell Site # UT05
Cell Site Name ZAL - UT05_MCCOOK RIDGE (UT);
Fixed Asset No.: 10139540
12555 Cingular Way, Suite 1300
Alpharetta, GA 30004

With a required copy of the notice sent to the address above to AT&T Legal at:

If sent via certified or registered mail:

New Cingular Wireless, PCS, LLC
Attn: AT&T Legal Department
Re: Cell Site # 134798
Cell Site Name ZAL - UT05_MCCOOK RIDGE (UT);
Fixed Asset No: 10139540
P.O. Box 97061
Redmond, WA 98073-9761

If sent via nationally recognized overnight courier:

New Cingular Wireless, PCS, LLC
Attn: AT&T Legal Department
Re: Cell Site # 134798
Cell Site Name ZAL - UT05_MCCOOK RIDGE (UT);
Fixed Asset No: 10139540
16331 NE 72nd Way

Redmond, WA 98073-9761

A copy sent to the Legal Department is an administrative step which alone does not constitute legal notice.

All notices shall be deemed to have been delivered and shall be effective upon the date on which the notice is actually received, if notice is given by personal delivery or by overnight express delivery service, or on the third day after mailing if notice is sent through the United States mail.

33. Force Majeure. The Tenant's failure to comply with any of the obligations under this Lease shall be excused only if due to causes beyond Tenant's control and without the fault or negligence of the Tenant, including acts of God, acts of the public enemy, acts of any government, fires, floods, epidemics and strikes. Tenant's obligation to pay rentals will not be suspended by any event of force majeure.

34. No Partnership. Landlord is not a partner nor a joint venturer with Tenant in connection with the activities conducted and business carried on under this Lease and Landlord shall have no obligation with respect to Tenant's debts or other liabilities.

35. Time is of the Essence. Time is expressly declared to be of the essence in this Lease and each and every covenant of Tenant hereunder.

36. Amendments. Any amendments, revisions, supplements, or additions to this Lease or the attached exhibits, if applicable, shall be made in writing executed by the parties hereto, and neither Landlord nor Tenant shall be bound by verbal or implied agreements.

37. Entire Agreement. This Lease contains the entire agreement of the parties hereto with respect to the matters covered hereby, and no other agreement, statement or promise made by any party hereto, or to any employee, officer or agent of any party hereto, which is not contained herein, shall be binding or valid.

38. Invalidity. If any term or provision of this Lease or the application thereof to any person or circumstance shall to any extent prove to be invalid, unenforceable, void, or illegal, the remainder of this Lease, or the application of such term or provision to persons or circumstances other than those as to which it is invalid or unenforceable, shall be not affected thereby, and each term and provision of this Lease shall be valid and be enforced as written to the fullest extent permitted by law.

39. Lease Subject to Law. This Lease is issued pursuant to and subject to the terms and provisions of Title 53C, Utah Code Annotated, the School and Institutional Trust Lands Management Act of 1994, as amended. This Lease is subject to the rules of the School and Institutional Trust Lands Administration now or hereafter in force.

40. Governing Law; Venue. The terms, conditions, covenants, and agreements herein contained shall be governed, construed, and controlled according to the laws of the state of Utah. Any action brought in connection with this Lease shall be brought in the Third District Court for Salt Lake County, Utah, subject, however, to any legal requirement for prior exhaustion of administrative remedies.

41. Survey Monuments. Tenant shall take reasonable precautions to protect, in place, all public land survey monuments and private property corners.

42. No Waiver of Conditions. Waiver by Landlord of any default of Tenant or failure of Landlord to timely enforce any provisions of this Lease shall not constitute a waiver of or constitute a bar to subsequent enforcement of the same or other provisions of this Lease. No provision in this Lease shall be construed to prevent Landlord from exercising any legal or equitable remedy it may otherwise have.

43. Attorney's Fees. If any action is brought because of a default under or to enforce or interpret this Lease, each party shall pay their own attorneys' fees.

44. Inspection. The State of Utah and the Landlord, and their authorized representatives shall have the right, at any reasonable times during the Lease Term, and upon notice to Tenant, to enter upon the Subject Property, or any part thereof, to inspect the same and all buildings and other improvements erected and placed thereon.

45. Tax Immunity. Nothing contained in this Lease shall be deemed to constitute a waiver of applicable laws providing tax immunity to trust property or any interest therein or income therefrom.

46. No Waiver of Sovereign Immunity. By this Lease, Landlord does not waive, limit, or modify any sovereign immunity from suit except as specifically provided herein.

47. Memorandum of Lease. Either party will, at any time upon fifteen (15) days prior written notice from the other, execute, acknowledge and deliver to the other a recordable Memorandum of Lease substantially in the form of Exhibit C. Either party may record this memorandum at any time, in its absolute discretion.

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

IN WITNESS WHEREOF, the Parties have caused this Lease to be executed this 1st day of March . 2013 .

Landlord:

STATE OF UTAH
SCHOOL AND INSTITUTIONAL
TRUST LANDS ADMINISTRATION
675 East 500 South, Suite 500
Salt Lake City, Utah 84102-2818

By: _____
KEVIN S. CARTER, DIRECTOR

Approved as to Form
John E. Swallow
ATTORNEY GENERAL
By: _____
Special Assistant Attorney General

Tenant:

NEW CINGULAR WIRELESS PCS, LLC,
a Delaware limited liability company
12555 Cingular Way
Suite 1300
Alpharetta, GA 3004

By: AT&T Mobility Corporation
Its: Manager

By: _____

Name: Dennis Neal

Title: Area Mgr, RE + Construction
1/14/13

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

STATE OF UTAH)
: §
COUNTY OF SALT LAKE)

On the 1 day of March, 2013 personally appeared before me Kevin S. Carter, who being by me duly sworn did say that he is the Director of the School and Institutional Trust Lands Administration, and the signer of the above instrument, who duly acknowledged that he executed the same.

Given under my hand and seal this 1 day of March, 2013

NANNETTE JOHNSON
Notary Public State of Utah
My Comm. Exp: Aug. 9, 2015
Comm. Number: 612636

My commission ~~expires~~: 8-9-15

Notary Public, residing at: S.L.Co.

STATE OF Colorado)
) SS.
COUNTY OF Arapahoe)

I certify that I know or have satisfactory evidence that Dennis Neal is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Area Mgr, RE Construction of AT&T Mobility Corporation, the Manager of New Cingular Wireless PCS, LLC, a Delaware limited liability company, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

DATED: 1/14/2013.

Notary Seal

ERIN McLAUGHLIN
NOTARY PUBLIC
STATE OF COLORADO

MY COMMISSION EXPIRES 4/20/2015

Erin McLaughlin
(Signature of Notary)

Erin McLaughlin
(Legibly Print or Stamp Name of Notary)
Notary Public in and for the State of CO
My appointment expires: 4/20/2015

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

EXHIBIT A
LEGAL DESCRIPTION

TOWNSHIP 16 SOUTH, RANGE 24 EAST, SLB&M
SECTION 2: (WITHIN)

Beginning at a point West along the Quarter Section Line 3876.37 feet and South 791.90 feet from the East Quarter Corner of Section 2, Township 16 South, Range 24 East, SLB&M; and running thence South 06°32'57" West 145.95 feet; thence West 138.00 feet; thence North 145.00 feet; thence East 154.65 feet to the point of beginning. Contains 21,216.89 sq/ft or 0.49 acres, m / l.

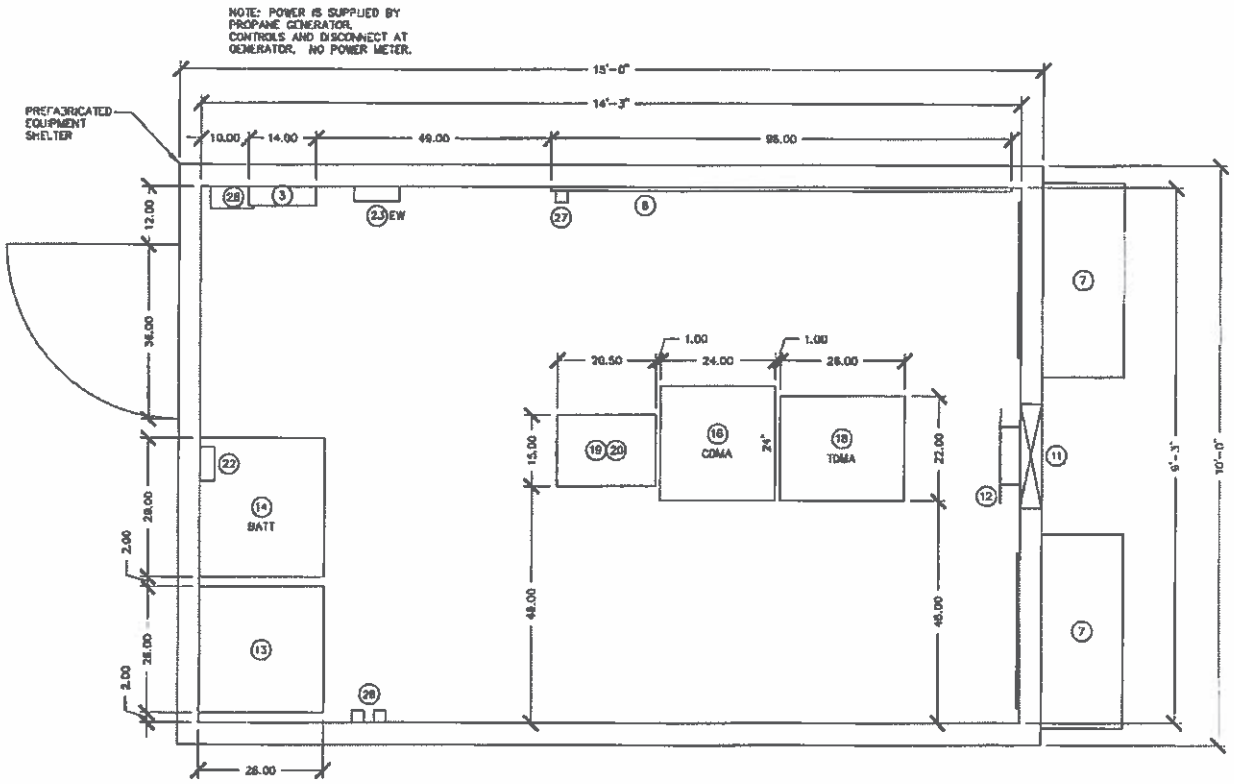
Containing 0.49 acres, more or less.

In Grand County, Utah

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

EXHIBIT B
DESCRIPTION OF TELECOMMUNICATION FACILITIES

[SEE ATTACHED]



SCALE: 1/2" = 1'-0"
(WHEN PLOTTED 11"X17")

EQUIPMENT PLAN

EQUIPMENT LEGEND

1. COMMERCIAL AC METER
2. SERVICE BREAKER
3. AC MAIN BREAKER PANEL
4. TRANSFER SWITCH (AUTOMATIC)
5. TRANSFER SWITCH (MANUAL)
6. PORTABLE GENERATOR PLUG
7. HVAC UNIT
8. TELCO PLYWOOD BACKBOARD
9. TELCO CABINET (UTILITY DEMARK)
10. NIU (S)
11. CABLE ENTRANCE PANEL (WAVEGUIDE PORT)
12. GROUND BAR
13. RECTIFIER / DC DISTRIBUTION PANEL
14. BATTERIES
15. RF CABINET (GSM)
16. RF CABINET (CDMA)
17. RF CABINET (OTHER)
18. RF CABINET, OUT OF SERVICE / DISCONNECTED
19. 19" RACK
20. MICROWAVE EQUIP
21. DSX
22. HVAC/ENVIRONMENTAL CONTROLS
23. EYEWASH & FIRST AID
24. WAVEGUIDE/COAX DEHYDRATOR
25. TOWER LIGHT CONTROLS
26. SHELTER HIGH/LOW TEMP
27. ALARM PUNCHDOWN BLOCK(S)
28. SURGE ARRESTOR

NORTH

9'-3" X 14'-3" (I.D.) SHELTER

Wasatch Electric
A Division of Dynalectric
An EMCOR Company

SITE NAME: McCOOK RIDGE
SITE NUMBER: 1320013S1

at&t

NO.	DATE	REVISIONS	SHEET BY/ADD BY
0	2/28/06	SITE AUDIT EQUIPMENT LAYOUT	JG MR
SCALE:	AS SHOWN		

1

AT&T WIRELESS SITE AUDIT

EQUIPMENT PLAN

Cell Site No.: 134798
Cell Site Name: ZAL - UT05_MCCOOK RIDGE
Fixed Asset No. 10139540
Market: CO / UT / WY / MT / S. ID
Address: Bitter Creek Canyon Rd

EXHIBIT C
MEMORANDUM OF LEASE

THIS DOCUMENT PREPARED BY:
Md7, LLC
10590 West Ocean Air Drive, Suite 300
San Diego, CA 92130

WHEN RECORDED RETURN TO:
New Cingular Wireless PCS, LLC
12555 Cingular Way, Suite 1300
Alpharetta GA 30004
Attn: Network Real Estate Administration

Parcel #:

SPACE ABOVE FOR RECORDER'S USE

Grantor:	State of Utah, acting by and through the School and Institutional Trust Lands Administration	
Grantee:	New Cingular Wireless, PCS, LLC, a Delaware limited liability company	
Legal Description:	Official legal description attached as Exhibit 1	
Tax Serial No.:		
Cell Site Name & #:	UT05	Fixed Asset #: 10139540
State:	UT	County: Grand

MEMORANDUM OF LEASE

This Memorandum of Lease is entered into on this ____ day of _____, 201__, by and between State of Utah, acting by and through the School and Institutional Trust Lands Administration, having a mailing address at 675 East 500 South, Suite 500, Salt Lake City, UT 84102 (hereinafter referred to as "**Landlord**") and New Cingular Wireless, PCS, LLC, a Delaware limited liability company, having a mailing address of 12555 Cingular Way, Suite 1300, Alpharetta, GA 30004 (hereinafter referred to as "**Tenant**").

1. Landlord and Tenant entered into a certain Special Use Lease Agreement No. ____ dated _____ ____, 201__ (hereinafter, collectively, the "**Lease**") for the purpose of installing, operating and maintaining a communications facility and other improvements at Landlord's real property located in the City of Green River, County of Grand, commonly known as Section 2, Township 16 South, Range 24 East. All of the foregoing are set forth in the Lease.

2. The Lease term is twenty (20) years commencing on June 1, 2012.

3. The portion of the land being leased to Tenant (the "**Subject Property**") is described in **Exhibit 1** annexed hereto.

4. This Memorandum of Lease is not intended to amend or modify, and shall not be deemed or construed as amending or modifying, any of the terms, conditions or provisions of the Lease, all of which are hereby ratified and affirmed. In the event of a conflict between the provisions of this Memorandum of Lease and the provisions of the Lease, the provisions of the Lease shall control. The Lease shall be binding upon and inure to the benefit of the parties and their respective heirs, successors, and assigns, subject to the provisions of the Lease.

[NO MORE TEXT ON THIS PAGE - SIGNATURES TO FOLLOW ON NEXT PAGE]

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease as of the day and year first above written.

LANDLORD:
State of Utah, acting by and through the School and Institutional Trust Lands Administration

By: _____
Kevin S. Carter, Director

Date: March 1, 2013

TENANT:
New Cingular Wireless, PCS, LLC,
a Delaware limited liability company

By: AT&T Mobility Corporation
Its: Manager

By: _____

Print Name: Dennis Neal

Title: Area Mgr, RE & Construction

Date: 1/14/2013

Approved as to Form
John E. Swallow
ATTORNEY GENERAL
By: _____

LANDLORD ACKNOWLEDGEMENT

STATE OF UTAH)
)ss.
COUNTY OF Salt Lake)

The foregoing instrument was acknowledged before me this 1 day of March 2013, by Kevin Carter, the Director of School & Institutional Trust Lands Administration

Notary Seal

NANNETTE JOHNSON
Notary Public State of Utah
My Comm. Exp: Aug. 9, 2015
Comm. Number: 612535

(Signature of Notary)

My Commission Expires: 8-9-15

TENANT ACKNOWLEDGEMENT

STATE OF ~~UTAH~~ Colorado)
)ss.
COUNTY OF Arapahoe)

The foregoing instrument was acknowledged before me this 14th day of January 2013, by Dennis Neal, the Area Mgr. RE & Construction of AT&T Mobility Corporation.

Notary Seal

ERIN McLAUGHLIN
NOTARY PUBLIC
STATE OF COLORADO
MY COMMISSION EXPIRES 4/20/2015

(Signature of Notary)

My Commission Expires: 4/20/2015

Prepared by:
Md7, LLC
10590 W. Ocean Air Drive, Suite 300
San Diego, CA 92130

EXHIBIT 1

DESCRIPTION OF SUBJECT PROPERTY

to the Memorandum of Lease dated _____, 201__, by and between State of Utah, acting by and through the School and Institutional Trust Lands Administration, as Landlord, and New Cingular Wireless, PCS, LLC, a Delaware limited liability company, as Tenant.

Street Address: Section 2, Township 16 South, Range 24 East, SLB&M

That certain Subject Property (and access and utility easements) on a portion of the real property described as follows:

TOWNSHIP 16 SOUTH, RANGE 24 EAST, SLB&M
SECTION 2: (WITHIN)

Beginning at a point West along the Quarter Section Line 3876.37 feet and South 791.90 feet from the East Quarter Corner of Section 2, Township 16 South, Range 24 East, SLB&M; and running thence South 06°32'57" West 145.95 feet; thence West 138.00 feet; thence North 145.00 feet; thence East 154.65 feet to the point of beginning. Contains 21,216.89 sq/ft or 0.49 acres, m / l.

Containing 0.49 acres, more or less.

In Grand County, Utah

McCook
Revised 3/10/94
SULA 1024

SPECIAL USE LEASE AGREEMENT NO. 1024

Fund: School

The STATE OF UTAH, acting by and through the SCHOOL AND INSTITUTIONAL TRUST LANDS ADMINISTRATION, LESSOR, hereby leases to American Rural Cellular, dba Cellular One, LESSEE, P.O. Box 185, Roosevelt, UT 84066, the following described tract of State land in Grand County, Utah to-wit:

Township 16 South, Range 24 East SLB&M
Section 2: NW4SW4NE4SW4

TO HAVE AND TO HOLD for a term of 20 years, beginning as of November 1, 1994, subject to any and all existing valid rights in said land and subject also to the following terms and conditions. LESSOR and LESSEE enter into this Special Use Lease Agreement for the purpose that LESSEE develop the land in the manner hereinafter described and consistent with the principles and objectives of land development expressed and implicit in the Enabling Act of Utah (Act of July 16, 1894, Ch. 138, 28 Stat. 107) and Article X of the Constitution of the State of Utah. The LESSEE takes this lease subject to the continued regulation of the School and Institution Trust Lands Administration pursuant to the rules of the Administration as they may be adopted hereafter.

1. Purpose of Lease. The subject tract shall be used by LESSEE for the purpose of a cellular telecommunication site. All improvements constructed on the subject tract shall comply with the applicable provisions of the Uniform Building Code, Current Edition and the International Conference of Building Officials.

2. Rental. LESSEE shall pay to the LESSOR as rental for the subject tract the sum of [redacted] per annum for the first three year period of this lease. LESSOR acknowledges the receipt of [redacted] which is payment of this rental for the year 1994 November 1 through October 31, 1995, and which includes the [redacted] application fee. Failure to pay the rental for a period of one month from the date such rent is due, and upon expiration of a written notice from LESSOR to LESSEE requiring performance within thirty (30) days, shall constitute a default and entitle the LESSOR to forfeit the LESSEE's interest in the lease and all improvements or to take other legal remedies available at law.

3. Due Diligence. LESSEE agrees that at the end of five (5) years from the date of this lease, and, if necessary, for each two (2) year period thereafter, if LESSEE has not developed the land as proposed in Paragraph (1), LESSEE shall then be required to show that it has exercised due diligence toward development of the land. If LESSEE fails to satisfy LESSOR that it has acted diligently, then LESSEE agrees that LESSOR may at its option, terminate this lease agreement as to any or all the land leased hereunder. In the event LESSOR so terminates, LESSEE's interest in the land shall revert to the State.

4. Rental Adjustments. LESSEE agrees that LESSOR shall have the right to adjust the annual rentals provided for in Paragraph 2 at the end of the first 3 year period, and every 3 years thereafter, as LESSOR shall deem to be reasonably necessary in the best interest of the State. Said adjustment shall be calculated by one of the following methods as determined by the LESSOR:

a. At the end of any 3 year period, the increase shall be tied to the annual percentage of increase index established by the Board of Trustees for the School and Institutional Trust Lands Administration pursuant to Administration rule R850-30-400(4), or by any replacement rule that shall be then in effect. The base rental to be adjusted shall be multiplied by the sum of the indices established for the years in the review period.

b. At the end of any 3 year period, the Administration may make a preliminary appraisal of the subject property. The value of the subject property as determined by this appraisal, multiplied by the current prime rate, as published by Zion's First National Bank, will be the adjusted annual rental.

5. Compliance. LESSEE, in exercising the privileges granted by this lease, shall comply with the provisions of all valid Federal, State, County, and Municipal laws, ordinances, and regulations which are applicable to the subject tract and operations covered by this lease.

6. Assignment. The acquisition or assumption by another party under an agreement with the LESSEE of any right or obligation of the LESSEE under this lease shall be ineffective as to the LESSOR unless and until LESSOR shall have been notified of such agreement and shall have approved the same in writing, which approval shall not be unreasonably withheld, and in no case shall such approval operate to relieve the LESSEE of the responsibilities or liabilities assumed by LESSEE hereunder or be given unless such other party is acceptable to LESSOR as a LESSEE, and assumes in writing all of the obligations of the LESSEE under the terms of this lease as to the balance of the term thereof, or acquires the rights in trust as security and subject to such conditions as may be necessary for the protection of the public interests.

7. Survey Monuments. LESSEE shall take reasonable precautions to protect, in place, all public land survey monuments and private property corners.

8. Access. LESSEE agrees to permit LESSOR free and unrestricted access to and upon the subject tract at all reasonable times for all lawful and proper purposes not inconsistent with the intent of this lease or with the reasonable exercise and enjoyment by the LESSEE of the rights and privileges granted herein.

9. Antiquities. It is hereby understood and agreed that all treasure-trove and all articles of antiquity in or upon the subject lands are and shall remain the property of the State of Utah. LESSEE shall report any discovery of a "site" or "Specimen" to LESSOR and the Division of State History in compliance with the provisions of Section 9-8-305, Utah Code Annotated (1953), as amended and take such action as may be required for the protection of said site or specimen.

10. Default. In the event of a default or breach by LESSEE and LESSEE's failure to cure such default or breach, LESSOR may at any time and with or without notice do any one or more of the following:

a. Re-enter the Lease Premises, remove all persons and property, and repossess and enjoy such premises.

b. Terminate this Lease and LESSEE's right of possession of the Lease Premises. Such termination shall be effective upon LESSOR's giving written notice and upon receipt of such notice LESSEE shall immediately surrender possession of the Lease Premises to LESSOR. Upon such termination, all improvements on the premises shall, at LESSOR's discretion, be forfeited and become the property of the LESSOR subject only to any previously approved waiver of interest or security interest.

c. Maintain this Lease in full force and effect and recover any rental, royalty, or other consideration as it becomes due without terminating LESSEE's right of possession regardless of whether LESSEE shall have abandoned the Lease Premises.

d. The LESSOR may seek damages for any and all violations or defaults with or without canceling this lease. In the event LESSOR deems the breach or default to constitute a threat to safety, life, or property it may elect to intervene immediately, without notice, to remedy the breach or default and LESSEE hereby agrees to repay LESSOR for all costs in remedying the breach or default upon demand, together with interest thereon from the date of expenditure at the rate set forth in this Lease. Alternatively, LESSOR may require LESSEE itself to act immediately to remedy the breach or default, should LESSOR deem it a threat to safety, life, or property.

e. Exercise any other right or remedy which LESSOR may have at law or equity.

11. Survival. LESSEE agrees that all obligations of LESSEE to be performed prior to the expiration or earlier termination shall not cease upon the termination or expiration of this lease, and shall continue as obligations until fully performed. All clauses of this lease which require performance beyond the termination or expiration date shall survive the termination or expiration date of this lease. However, upon expiration or earlier termination of this Lease, the rights of LESSEE and of all persons, firms, corporations, and entities claiming under

LESSEE in and to the premises and all improvements hereon, unless specified otherwise in this Lease, shall cease.

12. Lessor's Right to Cure Defaults. If LESSEE fails to perform and is in default of any undertaking or promise contained herein, including those set forth in any plan of development, the LESSOR shall have the option, but is not obligated, to make such performance after giving 10 days written notice to the LESSEE. The LESSOR's costs and expense to correct LESSEE's failure to perform shall be reimbursed by LESSEE and shall be immediately due and payable, together with interest accruing from the date such cost or expense is incurred.

13. Remedies Cumulative. The specified remedies to which the LESSOR may resort under the terms of this lease are cumulative and are not intended to be exclusive of any other remedies or means of redress to which LESSOR may lawfully be entitled in case of any breach or threatened breach by LESSEE of any provision of this lease.

14. Force Majeure. The LESSEE's failure to comply with any of the obligations under this lease shall be excused only if due to causes beyond LESSEE's control and without the fault or negligence of the LESSEE, including acts of God, acts of the public enemy, acts of any government, fires, floods, epidemics and strikes.

15. State Law. This lease is made pursuant to the provisions of all applicable laws and subject to the rules and regulations of the departments and agencies of the State of Utah presently in effect and to such laws, rules and regulations as may be hereafter promulgated by the State.

16. Bond. LESSEE agrees to furnish LESSOR a performance and reclamation bond in such type and amount and by such date as LESSOR may request. Further, it is expressly agreed that LESSOR may at any time, upon 30 days notice by certified mail, require LESSEE to furnish LESSOR such additional performance and reclamation bond as LESSOR may deem to be in the best interest of the State of Utah.

17. Removal of Improvements. LESSEE shall have the right to remove any improvements and any personal property placed on the lands by LESSEE, provided that the same shall be removed within ninety (90) days after the expiration of the term of this lease, provided that the LESSEE shall properly restore any damage caused thereby to the subject tract or any improvements remaining thereon; provided further, that LESSOR shall also have the right to retain without compensation to LESSEE, but with costs of removal and disposal chargeable to LESSEE, those improvements and items of personal property left upon the leased premises beyond ninety (90) days after the expiration of this lease.

18. Liability. LESSEE agrees to protect, indemnify and save harmless the LESSOR, its agents and employees, from and

against all claims, demands, damages, and causes of action of every kind or character on account of bodily injuries, death, or damage to property arising because of, for, out of, or in any way connected with the performance of this agreement, except where such injury, death, or damage has resulted from the sole negligence of the LESSOR, without negligence or willful act on the part of the LESSEE, its agents, employees, or subcontractors, it being the intent of this provision that the LESSEE indemnify the LESSOR and its agents and employees regardless of whether or not such injury, death, or damage is caused in part by the LESSOR, its agents and employees. LESSEE shall defend all suits brought upon such claims and pay all costs and expenses incidental thereto, but the LESSOR shall have the right, at its option, to participate in the defense of any such suit without relieving the LESSEE of any obligation hereunder.

19. Liability Insurance. LESSEE agrees to provide and maintain during the performance of the contract, at its sole expense, a policy of liability insurance naming the LESSEE and the LESSOR as insured parties under the policy. The policy shall fully insure against any and all loss, damage, liability, and injury incurred by any person, firm, corporation, or government entity arising out of the performance of this contract, regardless of the fault of the LESSEE, its agents and employees, regardless of the fault of the LESSOR, its agents and employees, and regardless of the fault of third persons not parties to this contract. The limits of the policy shall be no less than $250,000 for each claim of an individual and $500,000 for each occurrence. LESSEE shall provide a copy of said policy to the LESSOR.

20. Condemnation.

a. Total taking.

(i) Termination and distribution. If at any time during the term of this lease, the whole or the premises is taken by condemnation or other act of eminent domain (a "Taking" or "Taken"):

(a) this lease shall terminate and expire on the date of such Taking and LESSEE shall pay within thirty (30) days after the date of Taking all lease rentals accrued to the date of Taking;

(b) LESSEE shall comply with all of its other obligations under this lease up to the date of Taking; and

(c) LESSEE's share of any condemnation award shall be disbursed to LESSEE.

b. Partial taking.

(i) Continuation of Lease. If at any time during the term of this lease title to less than the whole of the premises has

been Taken, LESSEE shall have the right but not the obligation to continue this lease. LESSEE may, within thirty (30) days after receiving its share of the condemnation award, give notice of its election to terminate this lease, provided that each mortgagee consents in writing to such termination.

(ii) Proceedings. LESSOR, LESSEE, and any mortgagee shall have the right to participate in respect of their respective interests in any proceeding of purchase negotiations relating to any Taking. In case of any Taking, LESSEE shall bear its proportionate share of all reasonable costs and fees, including reasonable counsel fees and expenses incurred in the determination and collection on any condemnation award. LESSOR shall bear only such costs, expenses, and fees as it may authorize in writing.

22. Assignment and Sublease. LESSEE shall not assign this lease, in whole or in part, nor sublease the leased premises, nor allow unauthorized or commercial use of the premises without obtaining the prior written consent of LESSOR.

a. In granting such approval, LESSOR reserves the right to change the terms and conditions of this lease as it may affect the sublessee/assignee. The LESSOR shall be entitled to consider, among other items, the proposed sublessee's/assignee's financial condition, managerial capability, business reputation, nature of the proposed sublessee's/assignee's business, the then current fair market rental value of the premises, and such other factors as may reasonably bear upon the suitability of the sublessee/assignee or transferee as a tenant of the premises or the holder of this Lease.

b. Approval may also be conditioned on, among other items, additional payment to reimburse the LESSOR for any additional costs of management or losses of payments resulting from the assignment.

c. Consent of the LESSOR to an assignment or transfer shall not constitute a waiver of the LESSOR's right to approve subsequent assignments or transfers. The acceptance by LESSOR of payment or performance following an assignment or transfer shall not constitute consent to any assignment or transfer, and LESSOR's consent shall be evidenced only in writing.

d. An assignment does not constitute a new lease but is continuation of the existing lease.

23. Mineral Exploration. LESSOR expressly reserves the right to lease said lands to third parties for mineral exploration and/or development purposes together with the right to grant the mineral LESSEE reasonable access by ingress and egress to and from the mineral estate through the surface estate in connection with mineral exploration and/or development, but without damage to improvements made by LESSEE.

24. Title. LESSOR claims title in fee simple, but does not warrant to LESSEE the validity of title to the leased premises. LESSEE shall have no claim from damages or refund against the LESSOR for any claimed failure or deficiency of LESSOR's title to said lands or for interference by any third party. LESSEE takes possession subject to all existing encumbrances, rights-of-way, or encroachments as may exist or be of record. Possession is subject to a reservation of rights-of-way as may be necessary to access other state land.

25. Water Rights. If LESSEE shall initiate or establish any water right on the leased premises, such right shall become an appurtenance of the leased premises. LESSEE agrees that any existing application to appropriate water on said State land shall be transferred to the School and Institutional Trust Lands Administration after the application has been completed, without any cost to the State. It is expressly understood and agreed that this lease does not confer any rights upon LESSEE to use any water presently developed on the subject lands.

26. Fire. LESSEE shall at all times observe reasonable precautions to prevent fire on the leased premises and shall comply with all applicable laws and regulations of any governmental agency having jurisdiction. In the event of a fire on the leased premises proximately caused by LESSEE, its servants, employees, agents, sublessees, assignees or licensees which necessitates suppression action, LESSEE agrees to reimburse LESSOR for the cost of such fire suppression action.

27. Fencing. LESSEE may fence the leased premises at his own expense, but if there is no fence erected, LESSEE shall have no right of action against any other State grazing permittee by reason of a trespass upon the leased premises. The right of LESSEE to fence the leased premises shall be subject to the LESSOR's rights of access across state lands to other state lands.

28. Insolvency of Lessee. If the LESSEE becomes insolvent, bankrupt, or has a receiver appointed, the LESSOR may terminate this lease. Insolvency as used herein will mean the inability of the LESSEE to meet obligations as they come due.

29. Sanitation and Pollution. LESSEE shall comply with any and all valid sanitation and pollution regulations prescribed by any governmental agency having jurisdiction; and the LESSEE agrees to indemnify LESSOR for any damage which LESSOR may suffer which arises out of the improper or unlawful disposal of refuse associated with said land.

30. Waste. LESSEE shall neither commit nor permit any waste on the said leased lands. LESSEE shall maintain said lands in good condition and at its own expense, free from any nuisance. Surface and subsurface areas will be cleaned of all trash,

debris, and waste of any kind to the satisfaction of the LESSOR. LESSEE shall maintain the leased premises to standards of repair, orderliness, neatness, sanitation, and safety as required by law and applicable regulations.

31. Pollution. LESSEE shall be bound by all of the environmental regulatory programs, including air quality, water pollution and water quality, solid and hazardous waste management and underground storage tanks, and other conditions as contained in the provisions, conditions, and rules and regulations developed under authority of Title 19, Utah Code Annotated (1953) as amended.

32. Hazardous, Toxic, or Harmful Substances.

a. LESSEE shall not make, or suffer to be made, any filling in of the premises or any deposit of rock, earth, ballast, refuse, garbage, waste matter, chemical, biological or other wastes, hydrocarbons, any other pollutants, or other matter within or upon the premises, except as approved in writing by the LESSOR. If the LESSEE fails to remove all non-approved fill material, refuse, garbage, wastes or any other of the above materials from the premises, the LESSEE agrees that the LESSOR may, but is not obligated to, remove such materials and charge the LESSEE for the cost of removal and disposal.

b. LESSEE shall not keep on or about the premises any substances now or hereinafter designated as or containing components now or hereinafter designated as hazardous, toxic, dangerous, or harmful, and/or which are subject to regulation as hazardous, toxic, dangerous, or harmful by any federal, state or local law, regulation, statute or ordinance (hereinafter collectively referred to as "Hazardous Substances") unless such are necessary to carry out LESSEE's permitted use under paragraph 1 and unless LESSEE fully complies with all federal, state and local laws, regulations, statutes, and ordinances, now in existence or as subsequently enacted or amended and unless LESSEE has notified LESSOR of all Hazardous Substances necessary to carry out such purposes which will be kept or used on the property.

c. LESSEE shall:

(1) Immediately notify the LESSOR of (i) all spills or releases of any Hazardous Substance affecting the premises, (ii) all failures to comply with any federal, state or local law, regulation or ordinance, as now enacted or as subsequently enacted or amended, (iii) all inspections of the premises by, or any correspondence, orders, citations, or notifications from any regulatory entity concerning Hazardous Substances affecting the premises, (iv) all regulatory orders or fines or all response or interim cleanup actions taken by or proposed to be taken by any government entity or private party concerning the premises; and

(2) On request, provide copies to the LESSOR of any and all correspondence, pleadings, and/or reports received by or required of LESSEE or issued or written by LESSEE or on LESSEE's behalf with respect to the use, presence, transportation or generation of Hazardous Substances related to the premises.

d. LESSEE shall be fully and completely liable to the LESSOR, and shall indemnify, defend, and save harmless LESSOR and its agencies, employees, officers, and agents with respect to any and all damages, costs, fees (including attorneys' fees and costs), penalties (civil and criminal), and cleanup costs assessed against or imposed as a result of LESSEE's use, disposal, transportation, generation and/or sale or Hazardous Substances or that of LESSEE's employees, agents, assigns, sublessees, contractors, subcontractors, licensees or invitees, and for any breach of this subsection.

33. No Partnership. The LESSOR is not a partner nor a joint venturer with the LESSEE in connection with the activities conducted and business carried on under this lease and the LESSOR shall have no obligation with respect to the LESSEE's debts or other liabilities.

34. Time of Essence. Time is expressly declared to be of the essence of this lease and each and every covenant of LESSEE hereunder.

35. Amendments. Any amendments, revisions, supplements, or additions to this Lease or the attached exhibits shall be made in writing executed by the parties hereto, and neither LESSOR nor LESSEE shall be bound by verbal or implied agreements.

36. Entire Agreement. This written lease or its successor or replacement contains the entire agreement of the parties hereto with respect to the matters covered hereby, and no other agreement, statement or promise made by any party hereto, or to any employee, officer or agent of any party hereto, which is not contained herein, shall be binding or valid.

37. Invalidity. If any term or provision of this Lease or the application thereof to any person or circumstance shall to any extent prove to be invalid, unenforceable, void, or illegal, the remainder of this Lease, or the application of such term or provision to persons or circumstances other than those as to which it is invalid or unenforceable, shall be not affected thereby, and each term and provision of this Lease shall be valid and be enforced as written to the fullest extent permitted by law.

38. Lease Subject to Law. This lease is issued pursuant to and subject to the terms and provisions of the Utah Trust Land Management Act of 1988, as amended. This lease is subject to the rules of the Board of State Lands and Forestry now or hereafter in force and to the orders of the Director of the School and Institutional Trust Lands Administration now or hereafter in

force, when not inconsistent with the express and specific provisions herein.

39. Consent to Suit. The LESSEE consents to suit in the courts of the LESSOR in any dispute arising under the terms of this lease or as a result of operations carried on under this lease. Service of process in any such action is hereby agreed to be sufficient if sent by certified mail to the LESSEE at the last known address of LESSEE appearing on the LESSOR's records.

40. Venue. The LESSEE agrees for itself, its heirs, successors and assigns that any suit brought by the LESSEE, its heirs, successor or assigns concerning this lease may be maintained only in the Utah State District Court of Salt Lake County.

41. Controlling Law. This lease shall be governed by and construed according to the laws of the State of Utah.

42. No Waiver of Conditions. Waiver by the LESSOR of any default of the LESSEE or failure of the LESSOR to timely enforce any provisions of this lease shall not constitute a waiver of or constitute a bar to subsequent enforcement of the same or other provisions of this lease. No provision in this lease shall be construed to prevent the LESSOR from exercising any legal or equitable remedy it may otherwise have.

43. Right to Audit. The LESSOR has the right to audit the LESSEE's performance of the terms and conditions of this lease. Nevertheless, it is the continuing duty of the LESSEE to faithfully perform all of the terms, conditions, and obligations of this lease, including, but not limited to, the duty to properly calculate and render to the LESSOR any and all amounts due. Any term, condition, provision, or obligation subject to change or interpretation shall be deemed self-executing, and shall in no way shift or relieve the LESSEE of its continuing duties and obligations.

44. Attorney's Fees. In the event the LESSOR shall prevail in any action or suit for the enforcement of any provision of this lease or concerning this lease in any manner, the LESSEE shall pay to the LESSOR a reasonable attorney's fee on account thereof.

45. Lessor's Lien. LESSOR shall have at all times a valid lien for all rentals and other sums of money becoming due hereunder from LESSEE, upon all goods, wares, equipment, fixtures, furniture and other personal property of LESSEE situated on the Premises, and such property shall not be removed therefrom without the consent of the LESSOR until all arrearages in rent as well as any and all other sums of money then due to LESSOR hereunder shall first have been paid and discharged. Upon the occurrence of any event of default by LESSEE, LESSOR may, in addition to any other remedies providing herein or by law, enter upon the Premises and take possession of any and all goods,

wares, equipment, fixtures, furniture and other personal property of LESSEE situated on the Premises without liability for trespass or conversion, and sell the same with or without notice at public or private sale, with or without having such property at the sale, at which LESSOR or its assigns may purchase, and apply the proceeds thereof less any and all expenses connected with the taking of possession and sale of the property, as a credit against any sums due by LESSEE to LESSOR. Any surplus shall be paid to LESSEE and LESSEE agrees to pay any deficiency forthwith. Alternatively, the lien hereby granted may be foreclosed in the manner and form provided by law for foreclosure of security interest or in any other form provided by law. The statutory lien for rent is not hereby waived, the express contractual lien herein granted being in addition and supplementary thereto. Anything herein to the contrary notwithstanding, purchase money financing of LESSEE's removable trade fixtures and equipment shall not be a default. LESSEE will execute upon LESSOR's request a financing statement and security agreement evidencing LESSOR's security interest in LESSEE's personal property and warrants to LESSOR that there are no prior liens or security interest on said personal properties.

46. Notice. Any notice contemplated herein to be served upon LESSEE shall be in writing and shall be deemed sufficient if deposited in the United States mail, postage prepaid and certified or registered, and addressed as follows:

American Rural Cellular
dba Cellular One
P.O. Box 185
Roosevelt, UT 84066

or at any such other address as LESSEE may from time to time designate by written notice to LESSOR.

47. Responsibilities of Successors. The provisions hereof shall inure to and be binding upon the successors and assigns of LESSEE.

48. IN WITNESS WHEREOF, the State of Utah, by and through the School and Institutional Trust Lands Administration, has caused these presents to be executed this 27 day of February, 19 95 by the Director.

LESSOR: STATE OF UTAH
SCHOOL AND INSTITUTIONAL
TRUST LANDS ADMINISTRATION
3 Triad Center, Suite 400
355 West North Temple
Salt Lake City, Utah 84180-1204

By: _____
Scott Hirschi, Director

LESSEE: American Rural Cellular
dba Cellular One
P.O. Box 185
Roosevelt, UT 84066

By: _____

APPROVED AS TO FORM:
JAN GRAHAM
ATTORNEY GENERAL

BY: _____
STEVEN F. ALDER

SULA No. 1024
Page 13

STATE OF UTAH)
: ss.
COUNTY OF SALT LAKE)

On the ______ day of ______________, 19____, personally appeared before me Scott Hirschi, who being by me duly sworn did say that he is the Director of the School and Institutional Trust Lands Administration, and the signer of the above instrument, who duly acknowledged that he executed the same.

Given under my hand and seal this ______ day of ____________, 19____.

____
Notary Public, residing at:

My Commission Expires:

STATE OF Utah)
: ss.
COUNTY OF Duchesne)

On the 15th day of February, 1995, personally appeared before me Alfred G Stringham, who being by me duly sworn did say that he is the General Manager of American Rural Cellular, and said Alfred G Stringham acknowledged to me that said company executed the same.

Given under my hand and seal this 15th day of February, 1995.

____
Notary Public, residing at:

My Commission Expires:

T-MOBILE SITE NUMBER:

DN02488A

T-MOBILE SITE NAME:

BOOK CLIFFS RIDGE

CCI SITE#:

858303

SITE ADDRESS:

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

APPROVAL SIGNATURE BLOCK

THE FOLLOWING PARTIES HAVE REVIEWED THESE DOCUMENTS:

SITE ACQUISITION SPECIALIST:	APPROVED: ☐ REJECTED: ☐	DATE:
RF ENGINEER:	APPROVED: ☐ REJECTED: ☐	DATE:
CONSTRUCTION MANAGER:	APPROVED: ☐ REJECTED: ☐	DATE:
OPERATIONS:	APPROVED: ☐ REJECTED: ☐	DATE:
PROJECT MANAGER:	APPROVED: ☐ REJECTED: ☐	DATE:

DRAWINGS ARE NO LONGER TO BE "APPROVED WITH COMMENTS" - IF YOU HAVE ANY REDLINES TO THESE DRAWINGS THEN YOU MUST SELECT REJECTED.

T-Mobile

T-MOBILE SITE NUMBER: DN02488A
T-MOBILE SITE NAME: BOOK CLIFFS RIDGE
SITE TYPE: MONOPOLE
TOWER HEIGHT: 100.0 FT

CROWN CASTLE BU #: 858303
SITE ADDRESS: BITTER CREEK CANYON RD. GREEN RIVER, UT 84540
COUNTY: GRAND
JURISDICTION: COUNTY OF GRAND, UT

T-MOBILE 2018 NSD LAT: 39° 26' 32.30", LONG: -109° 14' 28.60"

SITE INFORMATION

SITE NAME:	ZOD_ALLTEL_UT05_MCCOOK_RIDGE
SITE ADDRESS:	BITTER CREEK CANYON RD GREEN RIVER, UT 84540
COUNTY:	GRAND
MAP/PARCEL #:	----
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	39° 26' 32.30"
LONGITUDE:	-109° 14' 28.60"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	8,432 FT
CURRENT ZONING:	----
JURISDICTION:	COUNTY OF GRAND, UT
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	VB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	STATE OF UTAH 675 EAST 500 SOUTH, SUITE 500 SCHOOL AND INSTITUTIONAL TRUST LAND ADMINISTRATION SALT LAKE CITY, UT 84102
TOWER OPERATOR:	CROWN CASTLE, USA 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 121 W. ELECTION ROAD, SUITE 330 DRAPER, UT 84020
CROWN CASTLE APPLICATION ID:	443529
ELECTRIC PROVIDER:	---- ----
TELCO PROVIDER:	---- ----

PROJECT TEAM

DESIGNER FIRM:	BROADUS SERVICES 4 COUNTRY PLACE CIRCLE DALWORTHINGTON GARDENS, TX 76016 PH: (817) 349-3449
ENGINEER FIRM:	JACOB GORALSKI, PLLC 1106 COLBI ST. KENNEDALE, TX 76060 PH: (817) 456-2621 CONTACT: JACOB GORALSKI, PLLC
CROWN CASTLE CONTACTS:	116 INVERNESS DR. EAST STE# 280 ENGLEWOOD, CO 80112 GRANT STEINHAUSER - PROJECT MANAGER GRANT.STEINHAUSER@CROWNCASTLE.COM (720) 450-3009 WALT RAYPOLE - CONSTRUCTION MANAGER WALT.RAYPOLE@CROWNCASTLE.COM (719) 466-9629 BRANDON SAENZ - A&E PROJECT MANAGER BRANDON.SAENZ.CONTRACTOR@CROWNCASTLE.COM (720) 450-3003
T-MOBILE CONTACTS :	MACKENZIE KEYS - MACKENZIE.KEYS2@T-MOBILE.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	EQUIPMENT SITE PLAN
C-1.2	FINAL SITE PLAN
C-1.3	EQUIPMENT PLAN & DIMENSION PLAN
C-2	TOWER ELEVATION & ANTENNA PLAN
C-3	EQUIPMENT ELEVATION
C-4	PLUMBING & CABLE SPECIFICATIONS
C-5	EQUIPMENT DETAILS
C-6	EQUIPMENT DETAILS
C-7	EQUIPMENT DETAILS
C-8	MOUNT SPECIFICATION
E-1	ELECTRICAL PLAN
E-2	ELECTRICAL SPECIFICATIONS
G-1	EQUIPMENT AND ANTENNA GROUNDING PLAN
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO PROPOSE AN ANTENNA MODIFICATION ON AN EXISTING WIRELESS SITE.

TOWER SCOPE OF WORK:

- INSTALL (6) PANEL ANTENNAS
- INSTALL (6) RRUs
- INSTALL (1) COVP
- INSTALL (1) HYBRID CABLE LINES
- INSTALL NEW PLATFORM MOUNT

GROUND SCOPE OF WORK:

- INSTALLATION OF NEW 8'-0"x8'-0" MODULAR EQUIPMENT PLATFORM WITHIN A NEW 10'-0"x15'-0" LEASE AREA WITHIN THE EXISTING FENCED COMPOUND

DESIGN PACKAGE BASED ON THE RFDS
REVISION: R0.1
DATE: 4/19/2018 1:47:45 PM

DESIGN PACKAGE BASED ON THE APPLICATION
ID: 443529
REVISION: 2

LOCATION MAP

DRIVING DIRECTIONS FROM T-MOBILE LOCAL OFFICE (121 W. ELECTION ROAD, SUITE 330, DRAPER UT 84020): HEAD WEST TOWARD S ELECTION RD TURN RIGHT TOWARD S ELECTION RD TURN LEFT ONTO S ELECTION RD TURN LEFT ONTO LONE PEAK PKWY USE THE 2ND FROM THE LEFT LANE TO TURN LEFT ONTO W 12300 S SLIGHT RIGHT TO MERGE ONTO I-15 S TOWARD PROVO TAKE EXIT 272 FOR UT-52/800 N TOWARD US-189 USE THE MIDDLE LANE TO TURN SLIGHTLY LEFT TOWARD W 800 N CONTINUE STRAIGHT ONTO W 800 N USE THE LEFT LANE TO TAKE THE RAMP ONTO US-189 N/E PROVO CANYON RD TURN RIGHT ONTO US-40 TURN RIGHT ONTO US-191 N/US-40 E/E 200 N/MAIN ST TURN RIGHT ONTO UT-88 S CONTINUE ONTO SEEP RIDGE RD TURN LEFT ONTO BLM 194/BOOK CLIFFS RIDGE RD SLIGHT RIGHT TURN LEFT SLIGHT RIGHT DESTINATION WILL BE ON THE LEFT

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2012 IBC
MECHANICAL	2012 IMC
ELECTRICAL	2014 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: BY TOWER ENGINEERING PROFESSIONALS
PROJECT# 74637.176324
DATED: AUGUST 20, 2018

MOUNT ANALYSIS: BY OTHERS

CALL COLORADO ONE CALL
(800) 922-1987
CALL 3 WORKING DAYS
BEFORE YOU DIG!

SITE PHOTO

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

JACOB GORALSKI, PLLC
CONSULTING ENGINEER
JACOB GORALSKI, PLLC
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(817) 456-2621

SHEET NUMBER: T-1
REVISION: 0

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED- NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8"ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S RECOMMENDED PROCEDURE. 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 CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALLS.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.

5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET A.S.T.M. SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F'm) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF A.S.T.M. C270 TYP. "S" MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET A.S.T.M. SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR-	
SUBCONTRACTOR-	GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER-	T-MOBILE
TOWER OWNER-	CROWN CASTLE
OEM-	ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND CROWN CASTLE.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
BTCW	BARE TINNED COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

- SOLID GROUND BUS BAR
- SOLID NEUTRAL BUS BAR
- SUPPLEMENTAL GROUND CONDUCTOR
- 2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- CHEMICAL GROUND ROD
- TEST WELL
- DISCONNECT SWITCH
- METER
- EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
- MECHANICAL CONNECTION
- GROUNDING WIRE

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY CROWN CASTLE.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
21. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. 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) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, 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) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "T-MOBILE".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.
30. INSTALL PULL BOXES TO THE MAIN SERVICE FEEDER CONDUIT RUN, AS NEEDED TO COMPLY WITH NEC AND UTILITY COMPANY REQUIREMENTS

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

NEC INSULATOR COLOR CODE

DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1Ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	+	*RED-POLARITY MARK AT TERMINATION
VDC NEG	-	*BLACK-POLARITY MARK AT TERMINATION
240V OR 208V, 3Ø	PHASE A	BLACK
	PHASE B	RED(ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3Ø	PHASE A	BROWN
	PHASE B	ORANGE OR PURPLE
	PHASE C	YELLOW

* SEE NEC 210.5(C)(1) AND (2)

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_
MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

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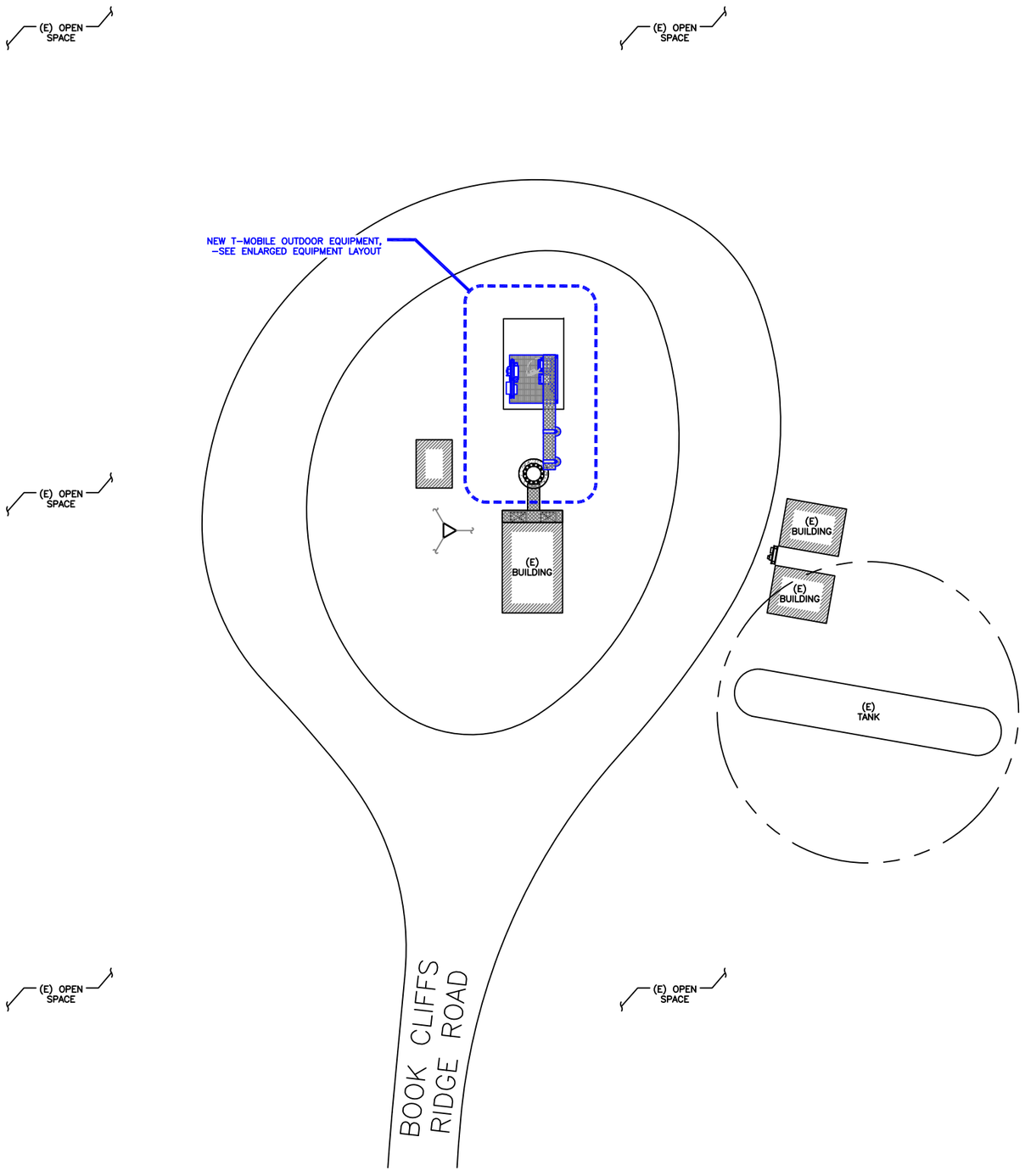
SHEET NUMBER: T-2

REVISION: 0



1 OVERALL SITE PLAN

SCALE: 16' 12' 8' 4' 0 16' 1/16"=1'-0" (FULL SIZE) 1/32"=1'-0" (11x17)

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

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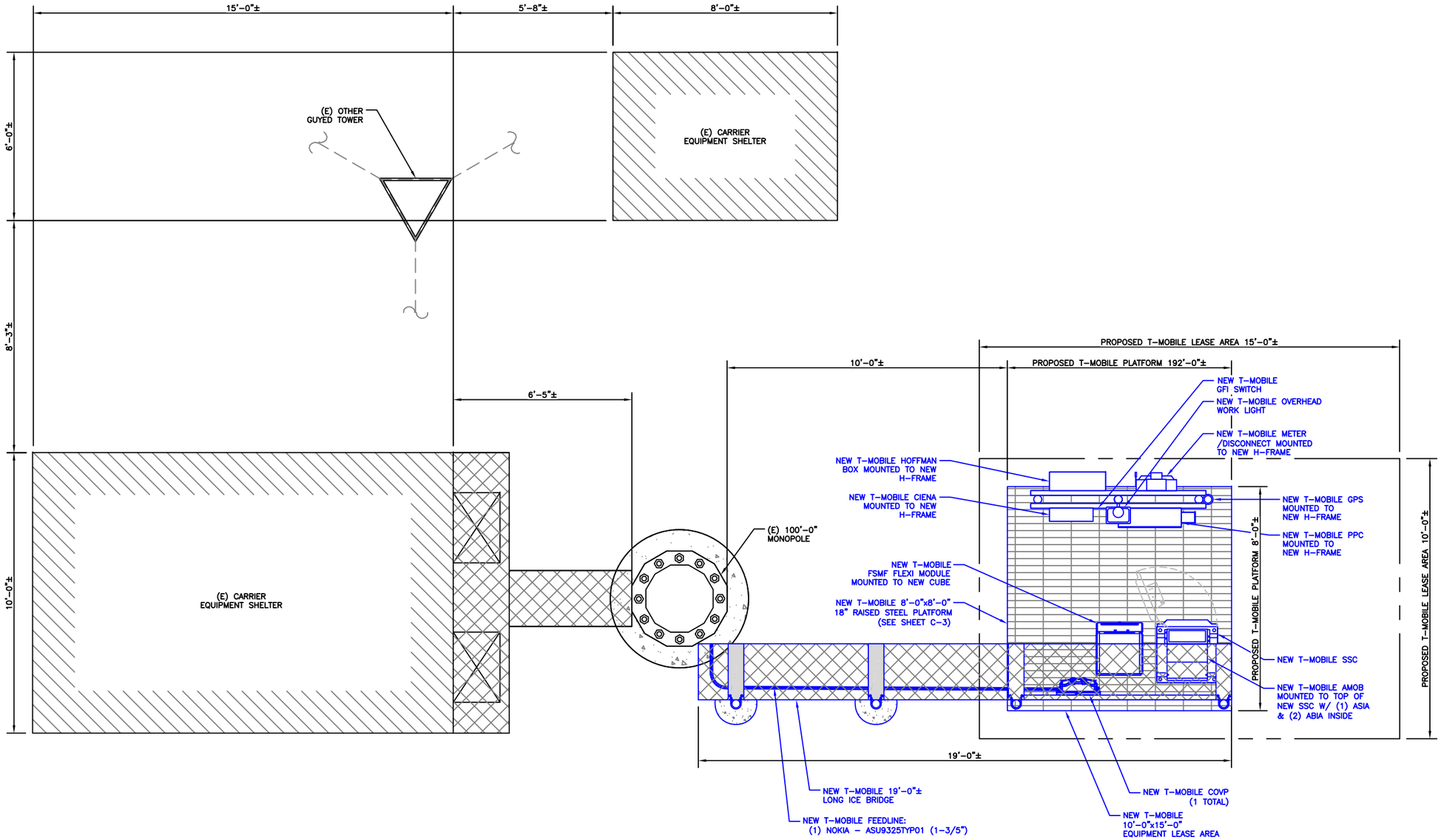
SHEET NUMBER: C-1.1

REVISION: 0



1 FINAL SITE PLAN

SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

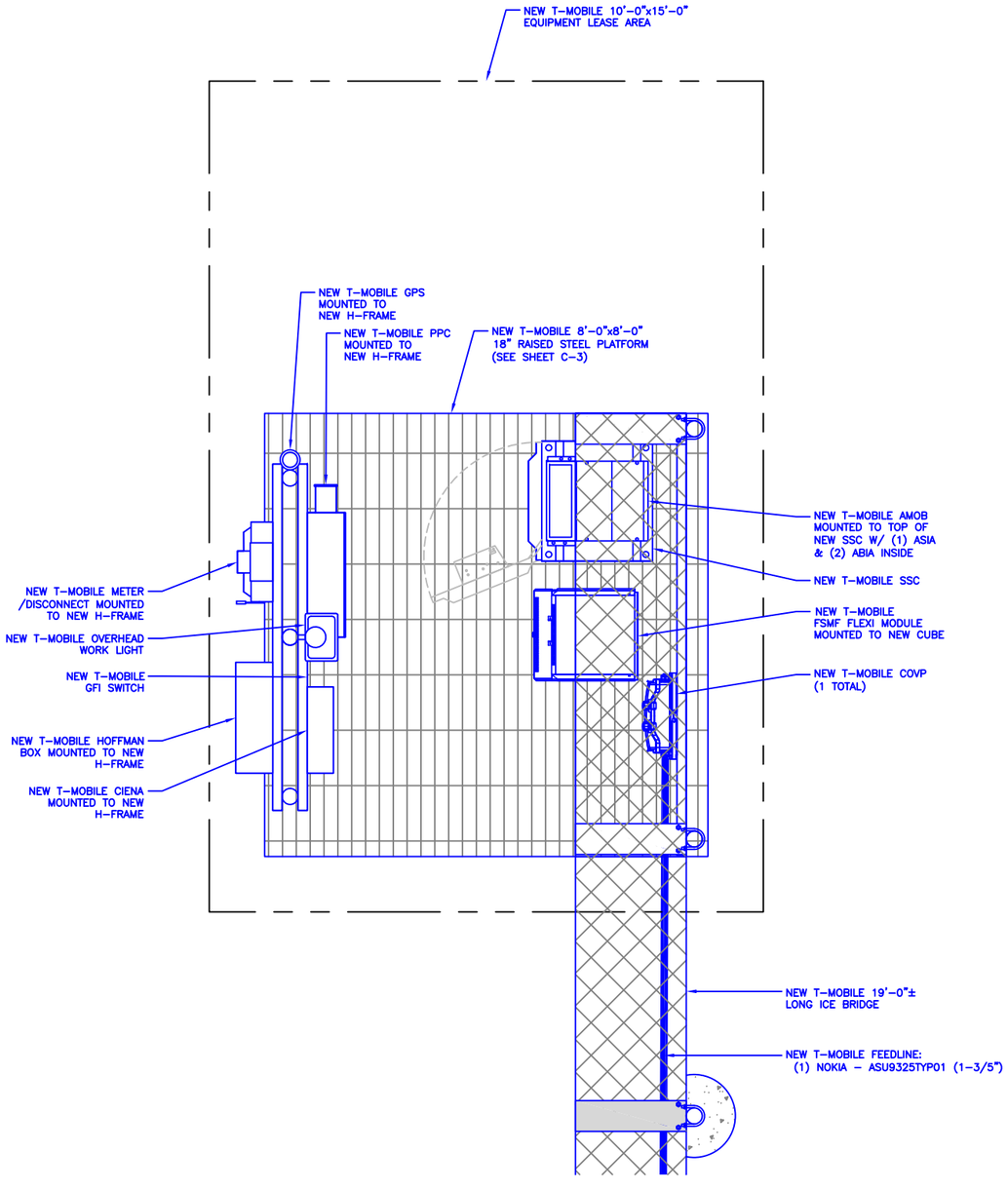
PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

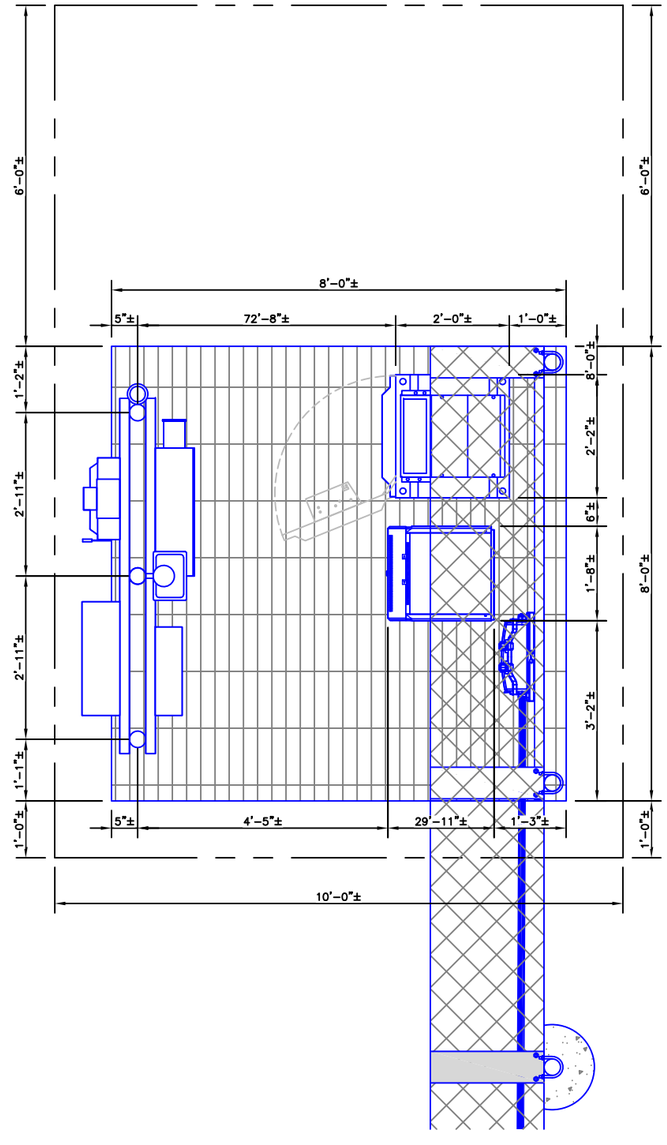
JACOB GORALSKI, PLLC
CONSULTING ENGINEER
JACOB GORALSKI, PLLC
UT PE# 9226401-2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: C-1.2

REVISION: 0



1 EQUIPMENT PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)



2 DIMENSION PLAN
SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

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KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: C-1.3
REVISION: 0

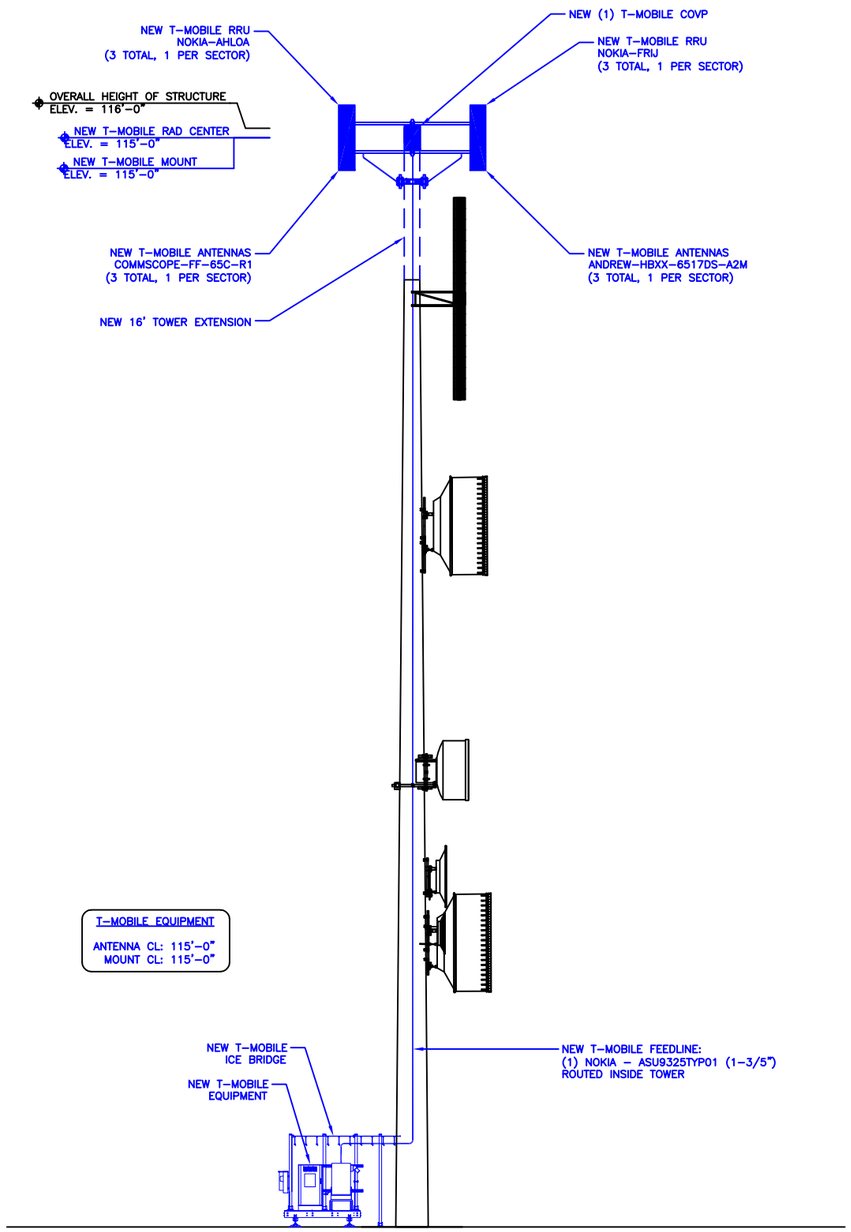
REFER TO STRUCTURAL EVALUATION BY:
TOWER ENGINEERING PROFESSIONALS
PROJECT# 74637.176324
DATED: AUGUST 20, 2018

INSTALLER NOTE:

DIRECT TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB.

NOTE:

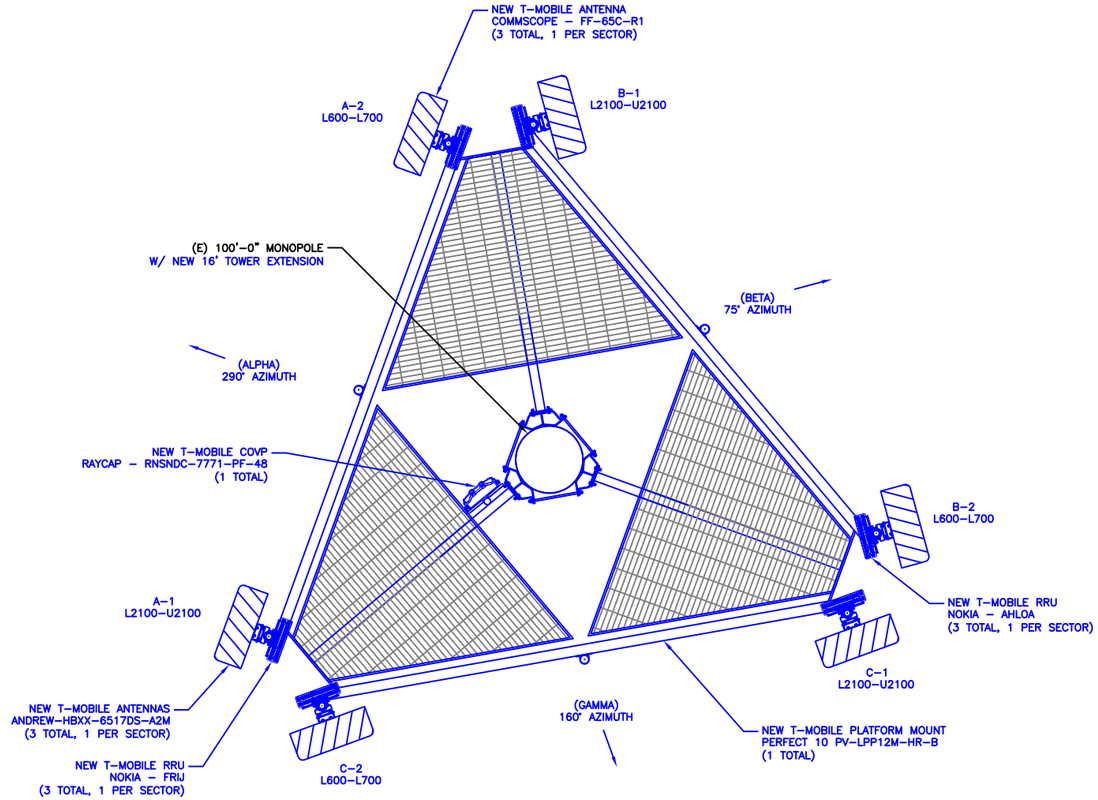
CROWN TO DETERMINE FINAL RAD CENTER AT LATER DATE. APP & RFDS TO MATCH DRAWINGS



1 FINAL ELEVATION
SCALE: NOT TO SCALE

ANTENNA SCHEDULE						
SECTOR	ALPHA		BETA		GAMMA	
ANTENNA POSITION	A-1	A-2	B-1	B-2	C-1	C-2
ANTENNA TYPES	L2100-U2100	L700-L600	L2100-U2100	L700-L600	L2100-U2100	L700-L600
AZIMUTH	290°	290°	75°	75°	160°	160°
RAD CENTER (AGL)	115'-0"	115'-0"	115'-0"	115'-0"	115'-0"	115'-0"
MODEL	ANDREW-HBXX-6517DS-A2M	COMMSCOPE - FF-65C-R1	ANDREW-HBXX-6517DS-A2M	COMMSCOPE - FF-65C-R1	ANDREW-HBXX-6517DS-A2M	COMMSCOPE - FF-65C-R1
FEEDER LENGTH	±150'-0"	±150'-0"	±150'-0"	±150'-0"	±150'-0"	±150'-0"
FEEDER TYPE	HYBRID CABLE	HYBRID CABLE	HYBRID CABLE	HYBRID CABLE	HYBRID CABLE	HYBRID CABLE

2 ANTENNA SCHEDULE
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

N

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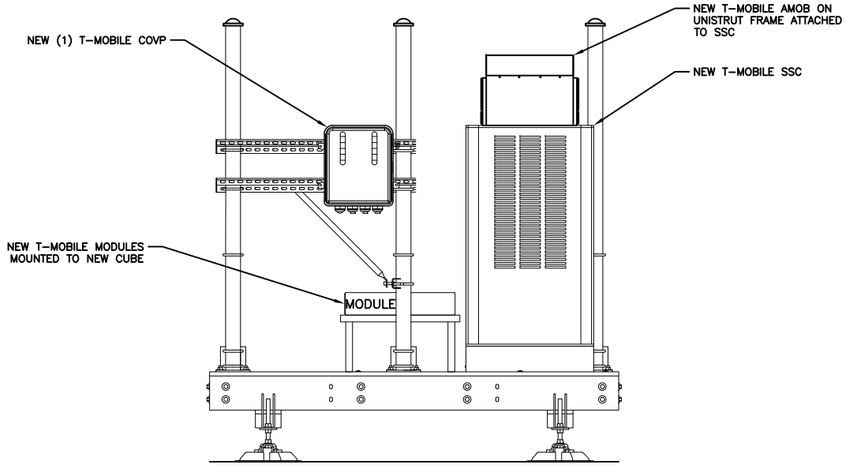
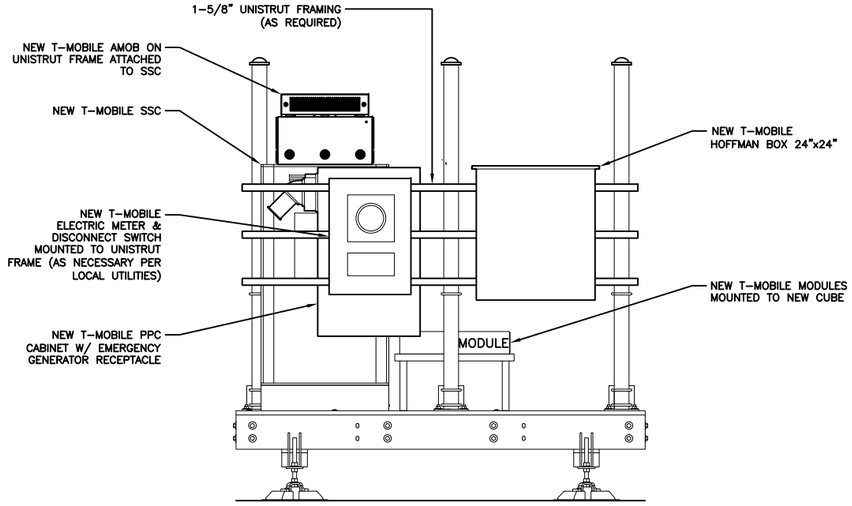
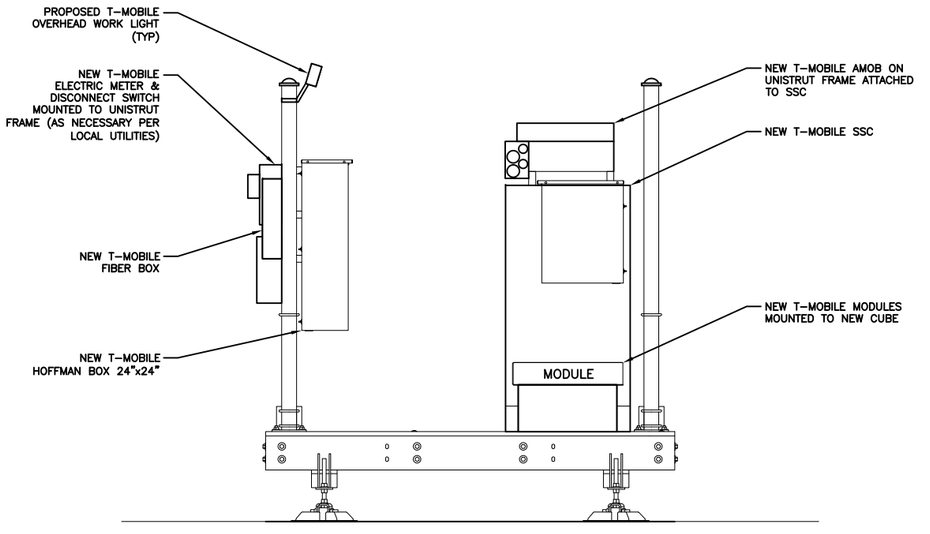
SHEET NUMBER: C-2
REVISION: 0



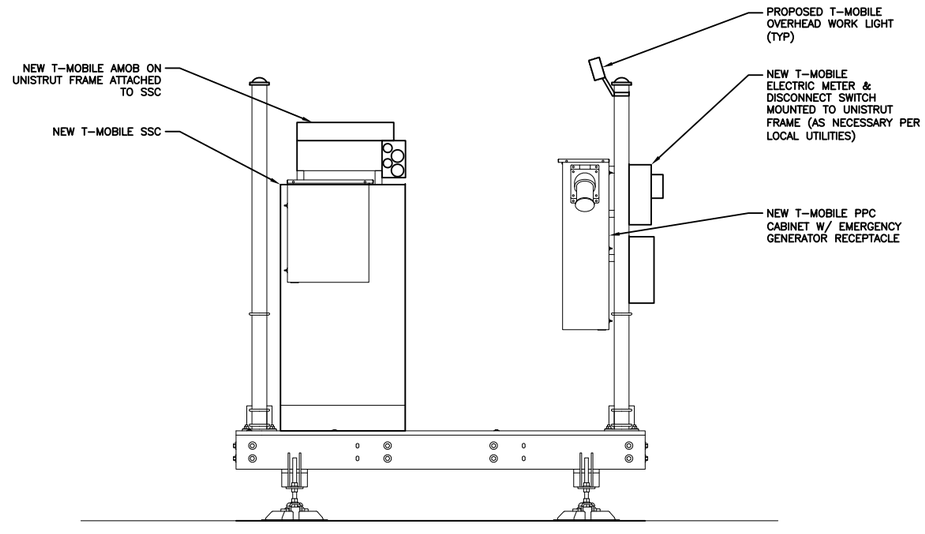
1 EQUIPMENT ELEVATION–NORTH
SCALE: NOT TO SCALE



2 EQUIPMENT ELEVATION–SOUTH
SCALE: NOT TO SCALE



3 EQUIPMENT ELEVATION–WEST
SCALE: NOT TO SCALE



4 EQUIPMENT ELEVATION–EAST
SCALE: NOT TO SCALE

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AURORA, CO 80011

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ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

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EXISTING 100.0 FT MONOPOLE

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PROFESSIONAL ENGINEER
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JACOB GORALSKI
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9/10/2018

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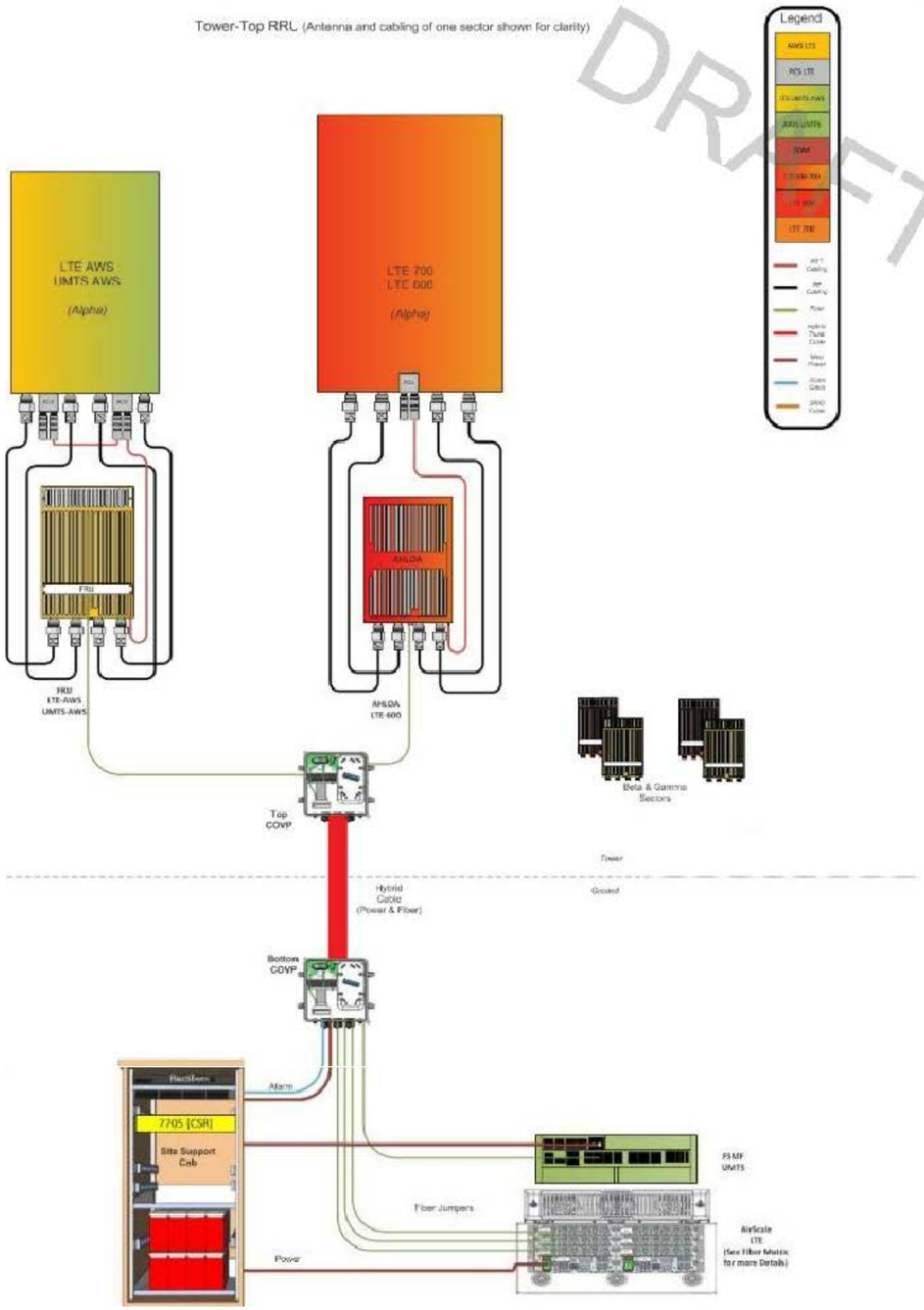
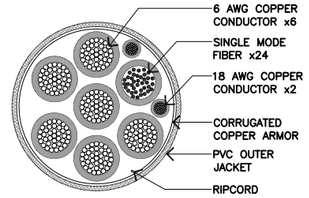
SHEET NUMBER: C-3
REVISION: 0

Tower-Top RRL (Antenna and cabling of one sector shown for clarity)



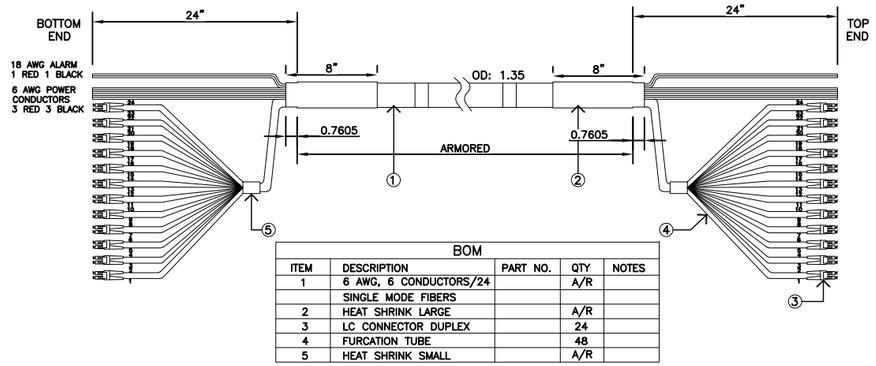
1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

CABLE TYPE	NUMBER, SIZE (AWG)	6/C #6 + 2/C #18
	VOLTAGE	600
	OUTER JACKET	PVC
	SHIELDING	CORRUGATED COPPER
	MAX SHIELD RESISTANCE (ohm/ft @ 20 c)	0.0035
	DRAIN	N/A
	RIPCORD	KEVLAR
	DC CONDUCTOR MATERIAL	COPPER
	DC CONDUCTOR SIZE (AWG)	6
	MAX DC RESISTANCE (ohm/1000 ft)	0.411 @ 20°C
	COLOR CODE	BLACK/RED
	ALARM CONDUCTOR MATERIAL	COPPER
	ALARM CONDUCTOR SIZE (AWG)	18
	MAX DC RESISTANCE (ohm/1000 ft)	6.7
	COLOR CODE	TBD
	FIBER CABLES	SM
	OUTER DIAMETER (in) – NOMINAL	1.24
	WEIGHT (lb/ft)	1.05
	MINIMUM BEND RADIUS (in)	15
	BEND MOMENT (lb/ft)	TBD
	TENSILE STRENGTH (lb)	325
	CRUSH RESISTANCE, FOTP–41 (N/mm)	22
	STRENGTH MEMBER	NO
	OPERATING TEMPERATURE RANGE (LOW)	–40°C
	OPERATING TEMPERATURE RANGE (HIGH)	+80°C
FIBER TYPE		LOW WATER PEAK, SINGLE MODE, LOOSE TUBE
FIBER STANDARD COMPLIANCE		ITU–T REC. G.652.D, G657.A2
		IEC 60793–2–50 TYPE B.1.3 & TYPE B.6 A&B
FIBER COATING DIAMETER (um)		.242 +/– 0.007mm 0.9 +/– 0.0005mm
FIBER COUNT		24
NUMBER OF FIBER SUBUNITS		1
FIBER COUNT EACH UNITS		24
FIBER OUTER JACKETS		FR JACKET
MAX ATTENUATION, 1310 mm (dB/Km)		LESS THAN EQUA 0.5
MAX ATTENUATION, 1550 MM (dB/Km)		LESS THAN EQUA 0.5



NOTE: CABLE CROSS SECTION NOT DRAWN TO SCALE

CABLE TYPE: 6/#6, 2/#18, 24 FIBER		
CABLE ASSY LENGTH (L)	TOLERANCE (FT)	PACKAGING METHOD
50	+0.50 / –0.50	COIL
100	+1.00 / –1.00	REEL
125	+1.25 / –1.25	REEL
150	+1.50 / –1.50	REEL
175	+1.75 / –1.75	REEL



BOM				
ITEM	DESCRIPTION	PART NO.	QTY	NOTES
1	6 AWG, 6 CONDUCTORS/24		A/R	
	SINGLE MODE FIBERS			
2	HEAT SHRINK LARGE		A/R	
3	LC CONNECTOR DUPLEX		24	
4	FURCATION TUBE		48	
5	HEAT SHRINK SMALL		A/R	

NOTES:
1. DIMENSIONS ARE IN INCHES.
2. 12 DUPLEX LC CONNECTORS PER END, 4 DUPLEX LC CONNECTORS PER GROUP, TOTAL OF 3 GROUPS.
3. TOTAL OF 12 PAIRS OF SINGLE MODE FIBERS.
4. TOTAL OF 6 AC CABLES 3 RED & 3 BLACK.
5. TOP END AND BOTTOM END ARE IDENTICAL.
6. EACH AND EVERY FIBERS MUST BE LABELED FROM #1 TO #24 AT BOTH ENDS.
7. LABEL BOTH ENDS WITH: SERIAL NUMBER, PART NUMBER AND CUSTOMER NAME.
8. INSERTION LOSS AND RETURN LOSS SHALL BE MEASURED 100%%% SAMPLING FOR ALL PRODUCTION.
9. TEST AND MEASUREMENT REPORT SHALL BE FURNISHED WITH CABLE ASSEMBLY.
10. ALL CONNECTORS SHALL BE SHIPPED WITH FURRULES PROTECTED WITH REMOVABLE CAPS.
11. ALL FIBER BREAKOUT WILL BE PROTECTED FROM WATER PENETRATION.

COLORS IDENTIFIED AT THE BASE OF EACH BOOT IDENTICAL AT BOTH ENDS

FIBER	COLOR	FIBER	COLOR
1	BLUE	13	RED
2	BLUE	14	RED
3	ORANGE	15	BLACK
4	ORANGE	16	BLACK
5	GREEN	17	YELLOW
6	GREEN	18	YELLOW
7	BROWN	19	PURPLE
8	BROWN	20	PURPLE
9	GREY	21	TAN
10	GREY	22	TAN
11	WHITE	23	PINK
12	WHITE	24	PINK

2 CABLE SPECIFICATIONS
SCALE: NOT TO SCALE

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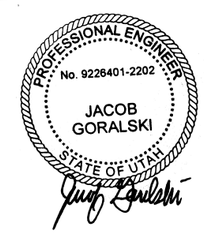

9/10/2018

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UT PE# 9226401–2202
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(817) 456–2621

SHEET NUMBER: C-4

REVISION: 0

HBXX-6517DS-VTM | HBXX-6517DS-A2M

4-port sector antenna, 4x 1710–2180 MHz, 65° HPBW, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain, dBi	19.0	19.1	19.2
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS (First Lobe), dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	21	22	21
CPR at Sector, dB	10	11	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 18.4 3 ° | 18.7 6 ° | 18.4	0 ° | 18.4 3 ° | 18.7 6 ° | 18.5	0 ° | 18.7 3 ° | 18.9 6 ° | 18.6
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
USLS, beampeak to 20° above beampeak, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9

1 ANDREW–HBXX–6517DS–A2M
SCALE: NOT TO SCALE

FF-65C-R1

4-port sector antenna, 4x 617–806 MHz, 65° HPBW, 1x RET, 600MHz-Ready Antenna Technology

Electrical Specifications

Frequency Band, MHz	617–698	698–806
Gain, dBi	15.4	15.6
Beamwidth, Horizontal, degrees	64	63
Beamwidth, Vertical, degrees	10.3	9.2
Beam Tilt, degrees	2–13	2–13
USLS (First Lobe), dB	19	17
Front-to-Back Ratio at 180°, dB	33	31
Isolation, dB	28	28
Isolation, Intersystem, dB	28	28
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc		-153
Input Power per Port at 50°C, maximum, watts	250	250
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	617-698	698–806
Gain by all Beam Tilts, average, dBi	15.0	15.3
Gain by all Beam Tilts Tolerance, dB	±0.6	±0.5
Gain by Beam Tilt, average, dBi	2 ° | 14.8 8 ° | 15.1 13 ° | 15.0	2 ° | 15.0 8 ° | 15.4 13 ° | 15.2
Beamwidth, Horizontal Tolerance, degrees	±3.3	±4
Beamwidth, Vertical Tolerance, degrees	±0.6	±0.7
USLS, beampeak to 20° above beampeak, dB	17	14
Front-to-Back Total Power at 180° ± 30°, dB	22	22
CPR at Boresight, dB	18	20
CPR at Sector, dB	4	10

2 COMMSCOPE – FF–65C–R1
SCALE: NOT TO SCALE

RF Module	FRIG	FRIJ
TX frequency range	2110 – 2155 MHz	2110 – 2200 MHz
RX frequency range	1710 – 1755 MHz	1710 – 1780 MHz
Output power	4×30 W/2×60 W	4×40 W
DL instantaneous BW	45 MHz	90 MHz
UL instantaneous BW	45 MHz	70 MHz
Antenna connectors	7/16 female connectors	4.3-10 connectors
Weight	24 kg (52.91 lbs)	21 kg (46.3 lbs)
Height/Width/Depth	18.09 in/15.74 in/6.47 in	23.6 in/5 in/16.1 in

3 NOKIA – FRIJ
SCALE: NOT TO SCALE

AirScale Dual RRH 4T4R B12/71 240W AHLOA

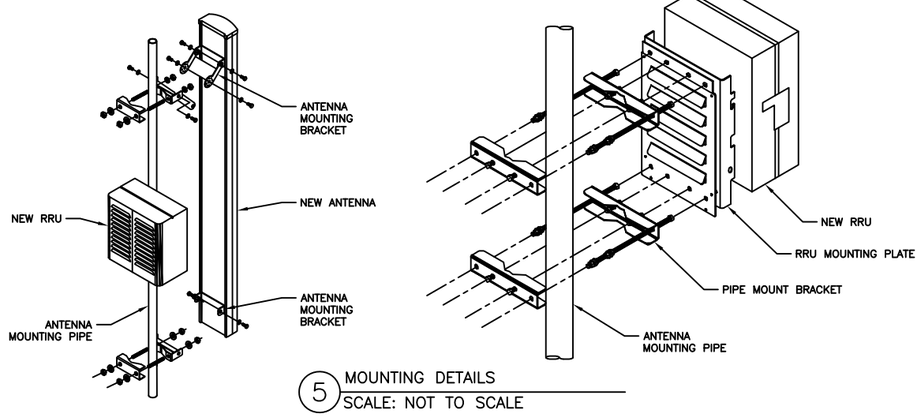
DRAFT

4 NOKIA – AHLOA
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRUs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRU PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.

NOTE:
ANTENNA NOT SHOWN FOR CLARITY



5 MOUNTING DETAILS
SCALE: NOT TO SCALE

DATA SHEET

DC Surge Protection for RRH/RFM (High-Capacity Junction Box)

ASU9338TYP01 (RNSNDC-7771-PF-48)

Overvoltage Protection & Fiber Management Junction Box

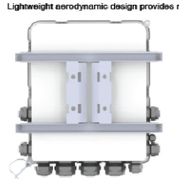
The deployment of Remote Radio Head (RRH) and Remote Flexi Modules (RFM) architecture poses unique challenges to the mobile telecom industry. Raycap's innovative RRH protection solutions mitigate the risk of damage due to lightning and provide high levels of availability and reliability to radio equipment.

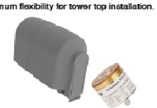
Features

- Employs the Strikesorb® 30-V1-HV Surge Protective Device (SPD) specifically designed for the Remote Radio Head (RRH) and Remote Flexi Modules (RFM) installation environment and certified for use in DC applications and at low DC operating voltages (48V).
- The **Strikesorb 30-V1-HV is a Class I SPD, certified by VDE per the IEC 61643-1 standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb 30-V1-HV is able to withstand direct lightning currents of up to 5kA (10/350) and induced surge currents of up to 60kA (8/20).**
- Provides very low let through / clamping voltage - unique for a Class I product - as it does not employ spark gaps or other switching elements. Strikesorb offers unique protection levels to the RRH equipment as well as the Base Band Units.
- Stock unit ships with all glands necessary for use with hybrid cable. This includes the top and base of towers, and the central unit on roof top applications.
- **Fully recognized to the UL 1449 3rd Edition Safety Standard.**
- **Patent pending design**

Benefits

- Offers unique maintenance-free protection against direct lightning currents.
- **Protects up to 9 RRHs/RFMs and connects up to 18 fiber pairs.**
- **Utilizes an IP 67 rated enclosure, allowing for indoor or outdoor installation on a roof or tower top.**
- **Configurable cable ports are designed to accommodate NSN high-capacity/ low-capacity hybrid trunk cables (combined power and fiber optic), Coax Reuse, and NSN hybrid jumper cables.**
- **Lightweight aerodynamic design provides maximum flexibility for tower top installation.**





DC1-48-60-18U

G02-00-187 120504

6 RAYCAP – RNSDC–7771–PF–48
SCALE: NOT TO SCALE

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0	08-28-2018	JAS	FINAL	ELG

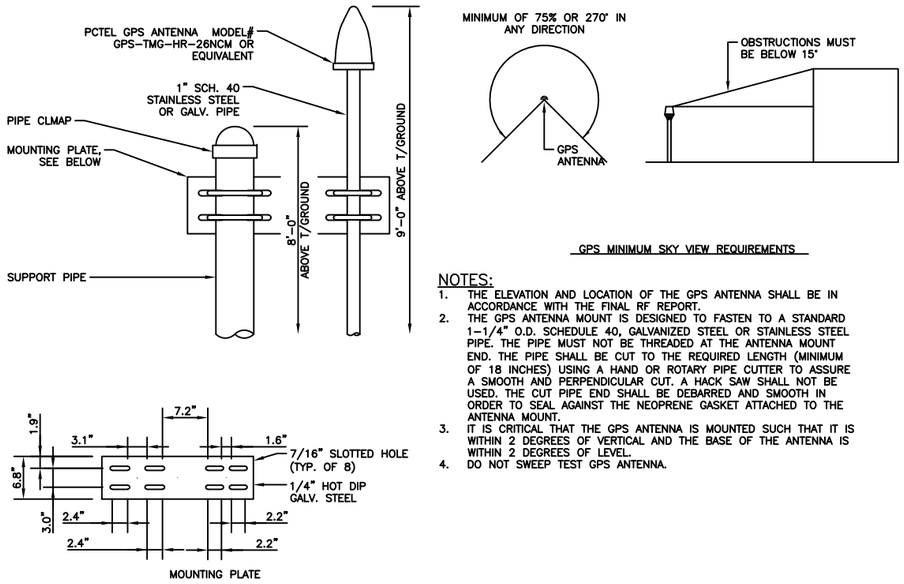
PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

JACOB GORALSKI, PLLC
CONSULTING ENGINEER
JACOB GORALSKI, PLLC
UT PE# 9226401–2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456–2621

SHEET NUMBER: C-5

REVISION: 0

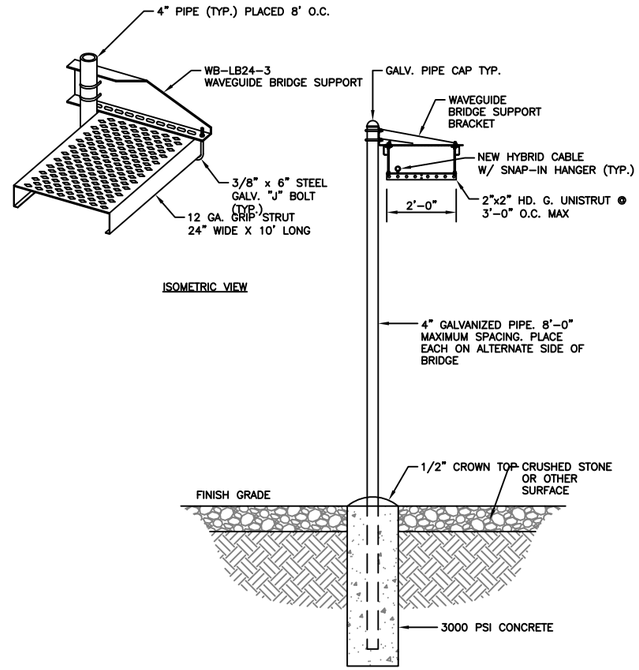


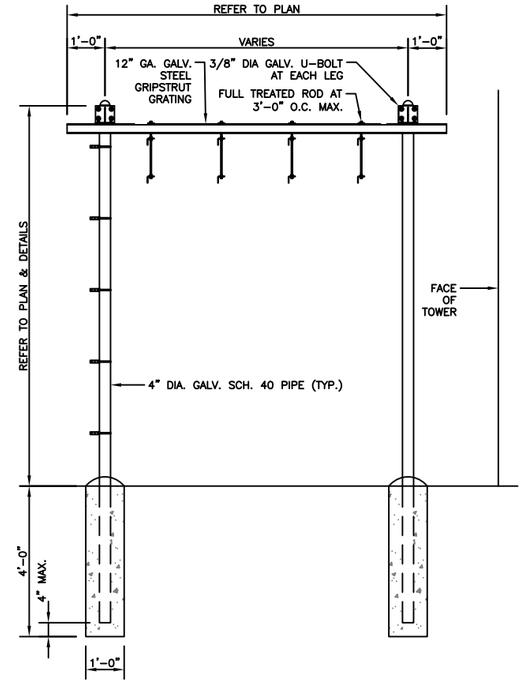
GPS MINIMUM SKY VIEW REQUIREMENTS

NOTES:

1. THE ELEVATION AND LOCATION OF THE GPS ANTENNA SHALL BE IN ACCORDANCE WITH THE FINAL RF REPORT.
2. THE GPS ANTENNA MOUNT IS DESIGNED TO FASTEN TO A STANDARD 1-1/4" O.D. SCHEDULE 40, GALVANIZED STEEL OR STAINLESS STEEL PIPE. THE PIPE MUST NOT BE THREADED AT THE ANTENNA MOUNT END. THE PIPE SHALL BE CUT TO THE REQUIRED LENGTH (MINIMUM OF 18 INCHES) USING A HAND OR ROTARY PIPE CUTTER TO ASSURE A SMOOTH AND PERPENDICULAR CUT. A HACK SAW SHALL NOT BE USED. THE CUT PIPE END SHALL BE DEBARRED AND SMOOTH IN ORDER TO SEAL AGAINST THE NEOPRENE GASKET ATTACHED TO THE ANTENNA MOUNT.
3. IT IS CRITICAL THAT THE GPS ANTENNA IS MOUNTED SUCH THAT IT IS WITHIN 2 DEGREES OF VERTICAL AND THE BASE OF THE ANTENNA IS WITHIN 2 DEGREES OF LEVEL.
4. DO NOT SWEEP TEST GPS ANTENNA.

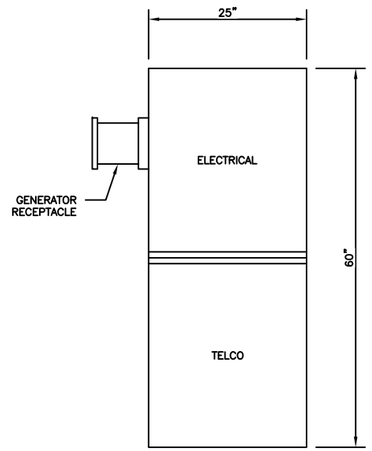
1 GPS ANTENNA DETAIL
SCALE: NOT TO SCALE





2 ICE BRIDGE DETAIL
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE



POWER PEDESTAL CABINET
200 A POWER TRANSFER CABINET W/O TELCO

GENERAL		
CONSTRUCTION:		SINGLE LAYER AL. ENCLOSURE, TYPE 3R
DIMENSIONS (WxHxD):		20 x 40 x 10 INCH
WEIGHT:		APPROX. 75 LBS (WITHOUT PACKAGING)
FINISH:		POLYESTER POWDER PAINT
DOOR LATCH:		3-POINT LATCHING, PAD LOCKABLE
SAFETY:		UL50 (CABINET)
ENVIRONMENT		
OPERATING TEMPERATURE:		-40°C TO +46°C (-40°F TO 115°F)
HUMIDITY (RELATIVE):		95%, NON-CONDENSING (MAX.)
PROTECTION CLASS:		TYPE 3R
AC SECTION		
	VOLTAGE:	240/120V SINGLE PHASE (3 WIRE + GROUND)
	CURRENT:	200A
	AIC RATING:	UTILITY 65,000 AMPS, PANLOC 10,000 AMPS
		GENERATOR INTERFACE: PANLOC™ (LEFT MOUNT)
		SERVICE DISCONNECT: SQUARE D 200 AMP
		MANUAL TRANSFER SWITCH
OTHER FEATURES		LOAD CENTER: SQUARE D 200 AMP, QO SERIES, 24 POSITION
		SURGE PROTECTION DEVICE (SPD) - 1 EA. AC DATA 2080
		SQUARE D 30 AMP, 2 POLE BREAKER FOR SPD
		GROUND BAR
		SILKSCREENED DEAD-FRONT
		CAPTIVE DEAD-FRONT FASTENERS

NOTE:

1. WEIGHT OF CABINET IS 150 LBS.
2. NORTHERN TECHNOLOGIES, INC. PPC#CS7S2-W836-R OR APPROVAL EQUAL. SEE PPC CABINET DIAGRAM (1/E-2) FOR BREAKER REQUIREMENTS.

NOTE:

1. WEIGHT OF CABINET IS 150 LBS.
2. NORTHERN TECHNOLOGIES, INC. PPC#CS7S2-W836-R OR APPROVAL EQUAL. SEE AC PANEL FOR BREAKER REQUIREMENTS.

4 PPC UNIT
SCALE: NOT TO SCALE

T-Mobile
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AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

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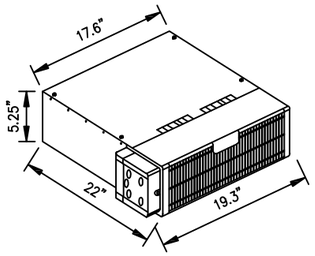
(817) 456-2621

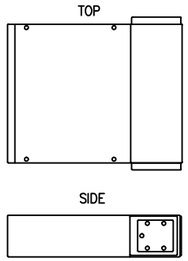
SHEET NUMBER: C-6

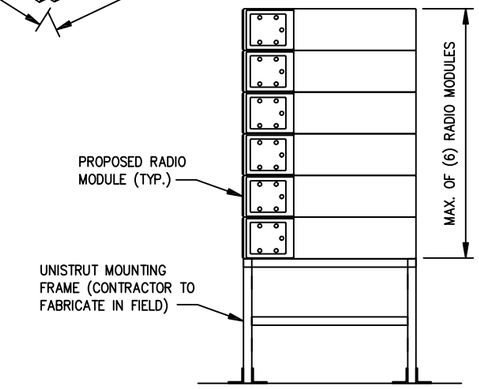
REVISION: 0

NOKIA FLEX SYSTEM RADIO MODULES:
FBBC, FRIA, FRIE, FSME, FSMF, FXFB, FXFC

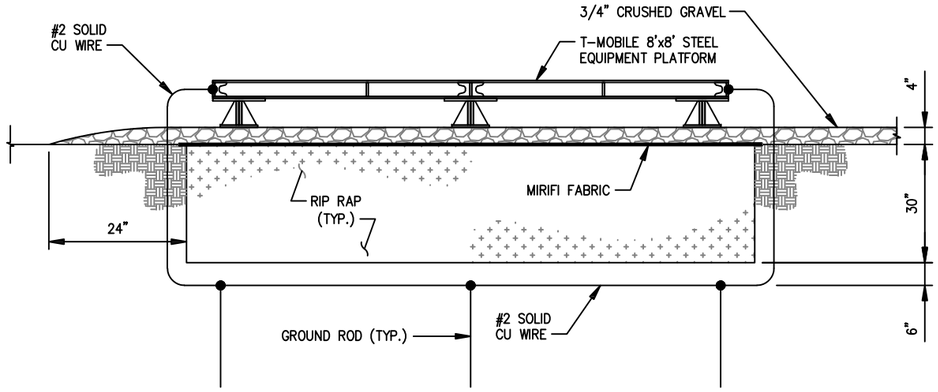
CLEARANCES: FRONT: 23.6"
BACK: 8"
TOP: 1.2"
SIDES: 4"
WEIGHT: 44 lbs.
NOTE: MODULE CAN BE INSTALLED VERTICALLY AND HORIZONTALLY







1 NOKIA FLEXI SYSTEM / RADIO MODULE STACKED SLEEVE DETAIL
SCALE: NOT TO SCALE



NOTE:
ROAD BASE BACKFILL COMPACTED ±95%

2 STEEL EQUIPMENT PLATFORM GROUND DETAIL
SCALE: NOT TO SCALE

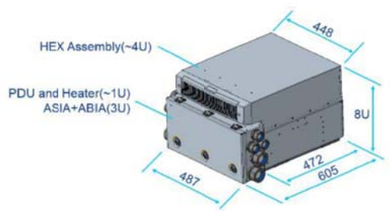
AirScale Subrack Outdoor AMOB datasheet

Datasheet

Environmental protection	IP55

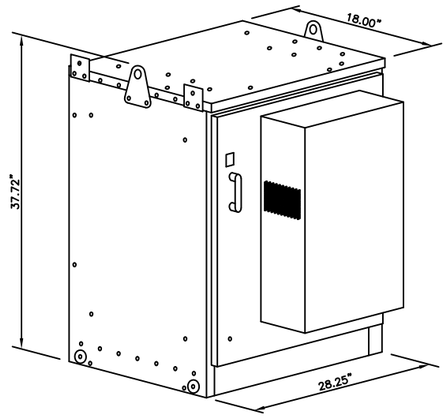
Feature description:

- Outdoor Subrack for AirScale System Module Indoor plug-in units
- High performance Heat Exchanger "HEX"
- Compatible with Flexi BTS mechanics stack/plinth/wall/pole/rack installation
- Compatible with the 3rd part 19" racks and cabinets if it follows clearances and airflow requirements
- Possible to install AMOB inside FCOA cabinet
- Service doors on front and rear sides



Height	8U (354 mm)
Width (front cover)	487mm
Width (cabinet)	448mm (fits into 19 inch rack) 487mm (without conduit plugs or fittings)
Depth	Total 605mm (472mm from rack mounting surface)
Weights	23 kg AMOB enclosure 3 kg ASIA (Core Module) 2 kg ABIA (Expansion Module) 32 kg ½ Capacity (1 Core + 3 Expansion) 41 kg Full Capacity (2 Core + 6 Expansion)
Ingress Protection	IP55
Operating Temperature	-40°C up to +55°C (without solar radiation)
Installation Temperature	-20°C ~ +55°C
Airflow Direction	Back to front airflow direction supported for Horizontal(FCOA, 19" rack, Flexi stack) Front to back airflow direction supported for Vertical(wall and pole mounting case)
Clearances for cooling	40 mm Minimum on the back and front side
Cold start	~2h from -40°C to -5°C *Optional 2nd heater can be added to meet NAM requirement, cold start from -40°C to -5°C in 1 hour instead of 2 hours
Nominal supply voltage Input voltage range	-40.5 ... -57 V DC Extended Service Voltage Range supported -36Vdc .. -60Vdc Floating
Volume	104.5L
Mass capacity	Support Max 18Kg inside
Power consumption	Typical max ~265W (all fans at highest speed) Cold start ~600W (heater On 55W + fans at low speed)
Conduit cabe entry	2x1.5" + 3x 1" on each left and right side

3 AMOB SPECIFICATIONS
SCALE: NOT TO SCALE



NOTES:
1. WEIGHT OF CABINET (WITHOUT BATTERIES) IS 232 LBS.
2. BASE FRAME NOT SHOWN.

4 200AMP SITE SUPPORT CABINET
SCALE: NOT TO SCALE

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AURORA, CO 80011

CROWN CASTLE
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ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

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ISSUED FOR:

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KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: C-7
REVISION: 0

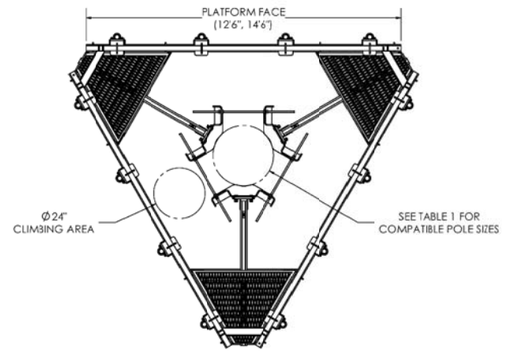
PV-LPP
L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

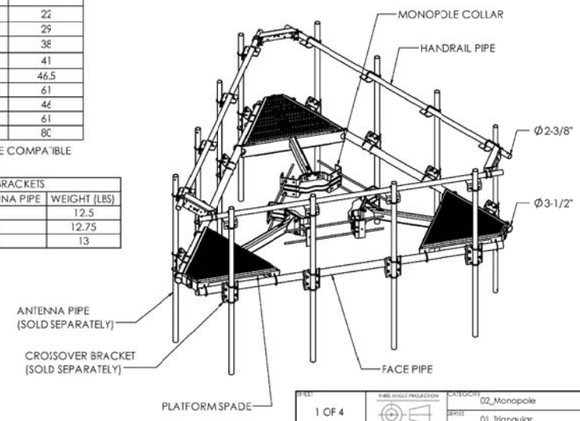
TABLE 1: PLATFORM CONFIGURATIONS					INCLUDED PARTS								
PART NUMBER	DESCRIPTION	MIN POLE OD	MAX POLE OD	WEIGHT (LBS)	PIPE-312X150	PIPE-312X174	PIPE-238X150	PIPE-238X174	PV-RM1045	PV-RM3060	PV-LPP1201	PV-LPP1401	PV-LPPH	PV-PHK12-B
PV-LPP12M-B	12'6" FACE PLATORM	10"	34"	1267	3	-	-	-	1	-	3	-	1	0
PV-LPP14M-B	14'6" FACE PLATFORM	10"	35"	1365	-	3	-	-	1	-	-	3	1	0
PV-LPP14L-B	14'6" FACE PLATFORM, LARGE POLE	33"	60"	1370	-	3	-	-	-	1	3	-	1	0
PV-LPP12MHR-B	12'6" FACE PLATFORM W/ HANDRAIL	10"	34"	1522	3	-	3	-	1	-	3	-	1	1
PV-LPP14MHR-B	14'6" FACE PLATFORM W/ HANDRAIL	10"	35"	1641	-	3	-	3	1	-	-	3	1	1
PV-LPP14L-HR-B	14'6" FACE PLATFORM W/ HANDRAIL, LARGE POLE	33"	60"	1647	-	3	-	3	-	1	3	-	1	1

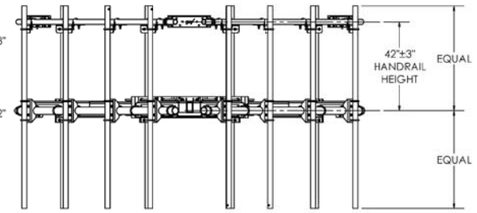
TABLE 2: ANTENNA PIPE OPTIONS***			
OD	LENGTH	ANTENNA PIPE	WEIGHT (LBS)
2-3/8"	72"	PIPE-238X72	22
	96"	PIPE-238X96	29
	126"	PIPE-238X126	38
2-7/8"	84"	PIPE-278X84	41
	96"	PIPE-278X96	46.5
	126"	PIPE-278X126	61
3-1/2"	72"	PIPE-312X72	46
	96"	PIPE-312X96	61
	126"	PIPE-312X126	80

***PLATFORM WITH HANDRAIL KITS ARE COMPATIBLE WITH 2-3/8" OD HANDRAIL PIPE ONLY

TABLE 3: CROSSOVER BRACKETS		
PART NUMBER	COMPATIBLE ANTENNA PIPE	WEIGHT (LBS)
PV-XP-2030-HD	2-3/8" OD	12.5
PV-XP-2530-HD	2-7/8" OD	12.75
PV-XP-3030-HD	3-1/2" OD	13







SHEET: 1 OF 4	THIRD ANGLE PROJECTION	CATEGORY: 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
5/4/2018	SCALE: 1:36	SERIES: 01_Triangular	6	VZW LOADING	1/19/17
DIMENSIONS ARE IN INCHES TOLERANCES (U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE ± 1/4", BEND ±2° ALL OTHERS: ±1/16"		TYPE: PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
		BY: DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED: SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS: APPROVED	REV	DESCRIPTION	DATE

PERFECT VISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

DOCUMENT NUMBER: LPP-ENG-01-R7 | REV: 7

MOUNT CLASSIFICATIONS:

REFERENCE STRUCTURAL LETTER (LPP-STL-01-R1) FOR ADDITIONAL LOADING REQUIREMENTS

MOUNT CLASSIFICATION INFORMATION:
- MAX STRUCTURE HEIGHT: 400ft
- STRUCTURE CLASS: I OR II
- EXPOSURE CATEGORY: B OR C
- TOPOGRAPHIC CATEGORY: 1
- DESIGN WIND PRESSURE (NO ICE): 135psf
- DESIGN WIND PRESSURE (ICED): 15psf
- DESIGN ICE THICKNESS: 2.75in Radial

APPROVED MOUNT CLASSIFICATIONS*

APPROVED MOUNT CLASSIFICATIONS (4 PIPE)						
		REQUIRED EXTREME WIND LOAD (LBS)				
		700	750	1150	1550	1800
REQUIRED EXTREME ICE LOAD (LBS)	0	M750R(0)-4[6]	M750R(0)-4[6]	M1150R(0)-4[6]	M1550R(0)-4[6]	M1800R(0)-4[6]
	600	M750R(600)-4[6]	M750R(600)-4[6]	M1150R(600)-4[6]	M1550R(600)-4[6]	M1800R(600)-4[6]
	800	M750R(800)-4[6]	M750R(800)-4[6]	M1150R(800)-4[6]	M1550R(800)-4[6]	M1800R(800)-4[6]
	1100	M750R(1100)-4[6]	M750R(1100)-4[6]	M1150R(1100)-4[6]	M1550R(1100)-4[6]	M1800R(1100)-4[6]
	1250	M750R(1250)-4[6]	M750R(1250)-4[6]	M1150R(1250)-4[6]	M1550R(1250)-4[6]	M1800R(1250)-4[6]

- HEAVY-5

APPLIES TO ALL PV-LPP12M, PV-LPP14M, AND PV-LPP14L SERIES PLATFORMS WITH ANTENNAS AND APPURTENANCES SYMMETRICALLY MOUNTED ABOUT THE PLATFORM CENTERLINE.

POLE THICKNESS LIMITATIONS:
ON POLES WITH WALL THICKNESS EQUAL TO OR GREATER THAN THE VALUES LISTED BELOW, THE PERFECT VISION PV-LPP MOUNT SERIES IS STRUCTURALLY CAPABLE OF SUPPORTING THE ABOVE LOADING SCENARIOS WITHOUT THE NEED FOR AN ADDITIONAL KICKER BRACE.

FOR THIN WALL POLES, USE PV-PKBK PLATFORM KICKER BRACE TO AVOID POLE CRIMPING FAILURES. KICKER BRACE CAN BE INSTALLED ABOVE OR BELOW PLATFORM.

POLE THICKNESS LIMITATIONS	
MOUNT CLASSIFICATION	MINIMUM POLE THICKNESS
M750R-4[6]	1/4"
M800R-4[6]	1/4"
M900R-4[6]	1/4"
M950R-4[6]	1/4"
M1000R-4[6]	5/16"
M1400R-4[6]	5/16"
M1000R(i)-4[6]	5/16"
M1150R(i)-4[6]	5/16"

PLATFORM EPA:

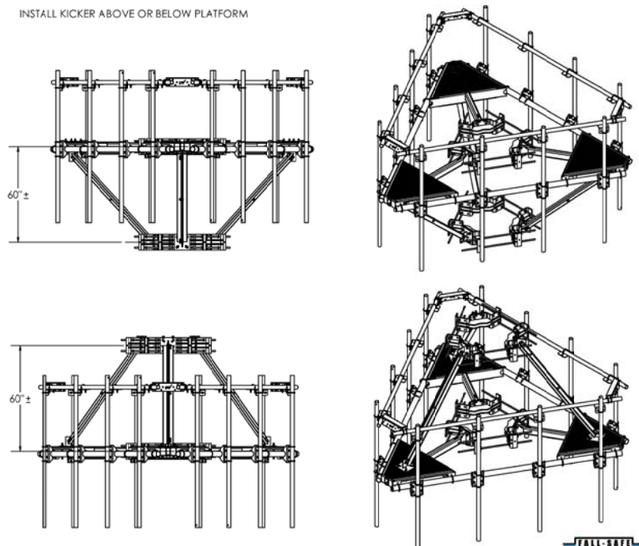
PLATFORM EPA		
PLATFORM TYPE	NO ICE (FT^2)	1/2" RADIAL ICE (FT^2)
12'6" FACE	20.3*	25.8*
12'6" FACE WITH HANDRAIL	34.4**	43.0**
14'6" FACE	22.1*	28.1*
14'6" FACE WITH HANDRAIL	36.8**	46.2**

*DOES NOT INCLUDE CROSSOVER PLATES OR ANTENNA PIPES
**DOES NOT INCLUDE ANTENNA PIPES

KICKER ATTACHMENT:

SEE CLASSIFICATIONS SECTION FOR KICKER REQUIREMENT DETAILS.

INSTALL KICKER ABOVE OR BELOW PLATFORM



SHEET: 2 OF 4	THIRD ANGLE PROJECTION	CATEGORY: 02_Monopole	7	UPDATED LOADING, TEMPLATE	1/16/18
5/4/2018	SCALE: 1:48	SERIES: 01_Triangular	6	VZW LOADING	1/19/17
DIMENSIONS ARE IN INCHES TOLERANCES (U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE ± 1/4", BEND ±2° ALL OTHERS: ±1/16"		TYPE: PV-LPP_LIFE Mount	5	HEAVY-5 LOADING	6/13/16
		BY: DJN	4	L.I.F.E. MOUNT™ UPDATE	2/22/16
		CHECKED: SJS	3	REDESIGNED COLLAR	12/30/15
		STATUS: APPROVED	REV	DESCRIPTION	DATE

PERFECT VISION MANUFACTURING

L.I.F.E. MOUNT™ LOW PROFILE PLATFORM

DOCUMENT NUMBER: LPP-ENG-01-R7 | REV: 7

1 PERFECT 10 PV-LPP12M-HR-B
SCALE: NOT TO SCALE

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_
MCCOOK_RIDGE

BITTER CREEK CANYON RD.
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EXISTING 100.0 FT
MONOPOLE

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KENNEDALE, TX 76060
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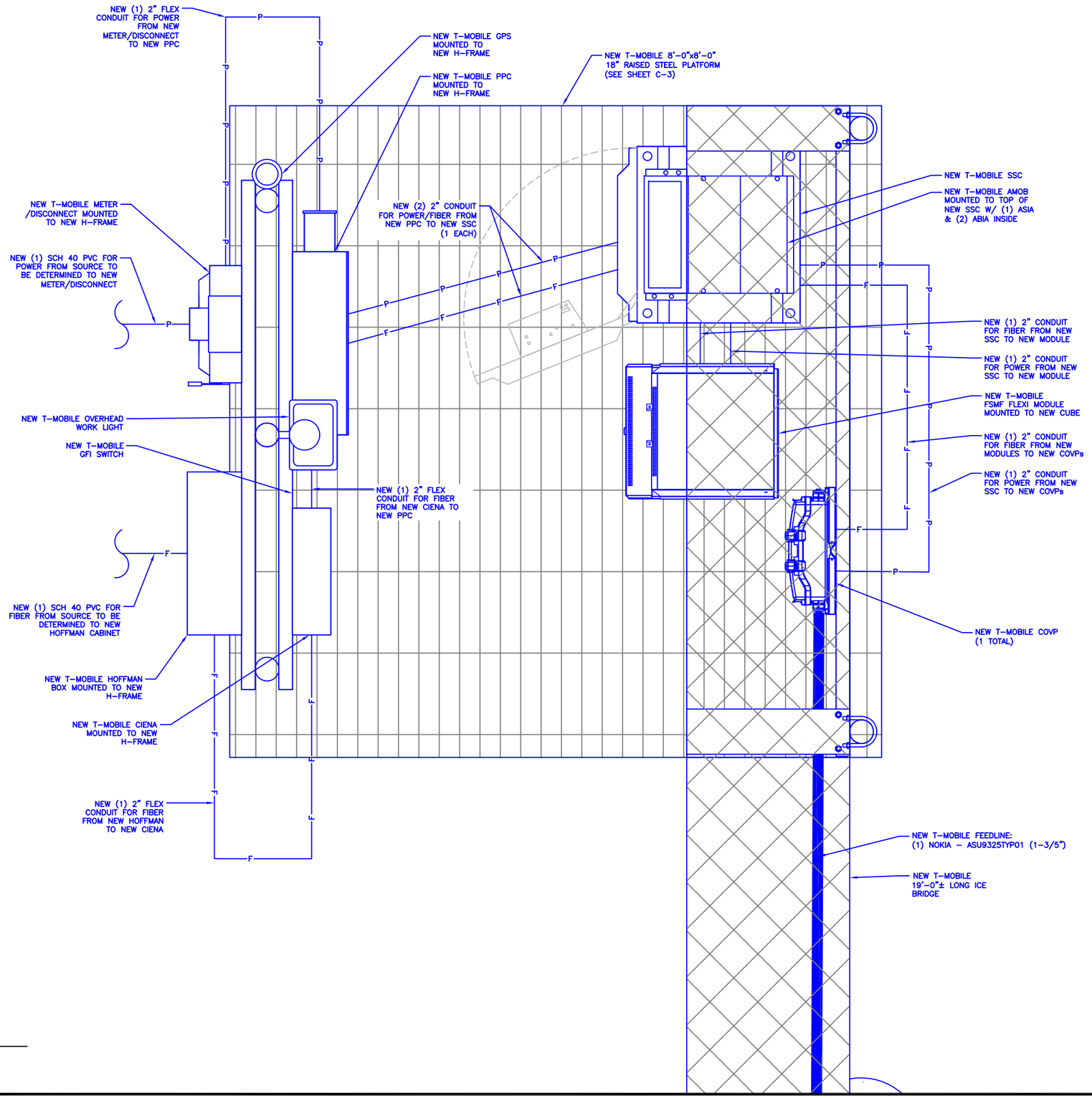
SHEET NUMBER: C-8

REVISION: 0



1 ELECTRICAL PLAN
SCALE: NOT TO SCALE

T-Mobile
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AURORA, CO 80011

CROWN CASTLE
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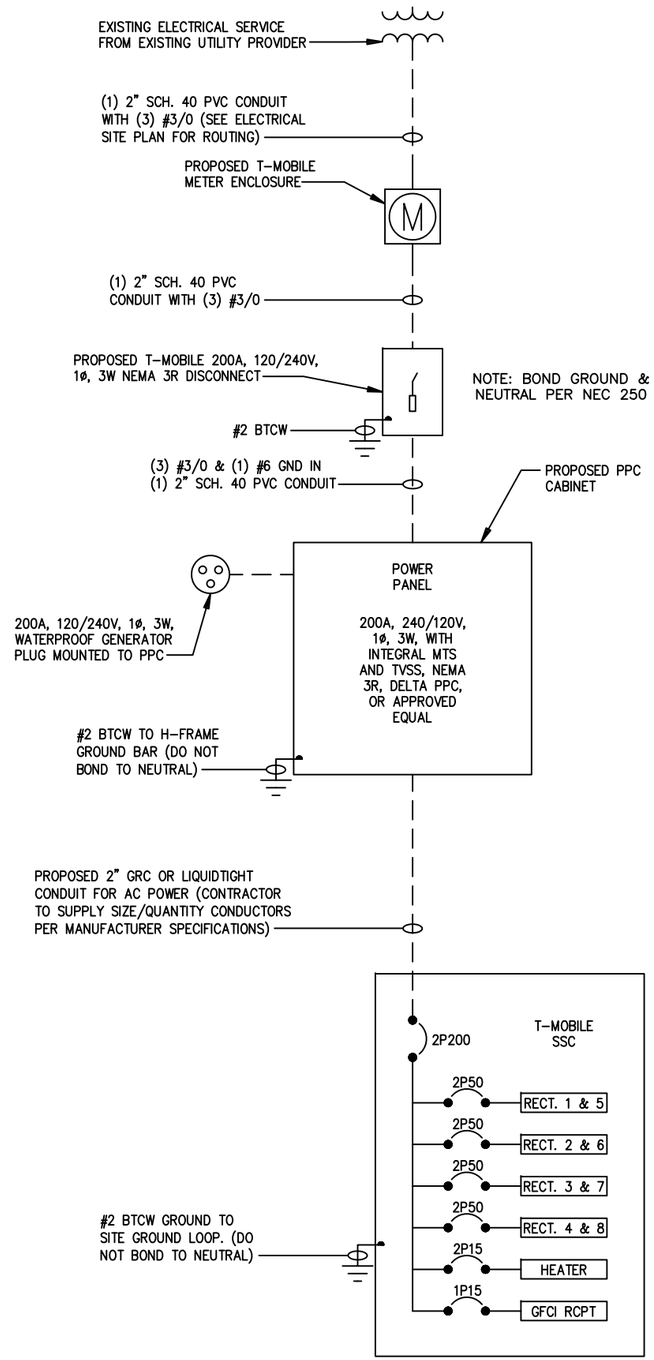
UT PE# 9226401-2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: E-1

REVISION: 0



NOTE:
CONTRACTOR TO COORDINATE WITH LOCAL UTILITY PROVIDER PRIOR TO CONSTRUCTION

1 ELECTRICAL ONE LINE DIAGRAM
SCALE: NOT TO SCALE

PANEL: PPC

120/240 VOLTS, 1 PHASE, 3 WIRE, S/N, 200A AMP MCB NEMA 3R ENCL
MINIMUM AIC RATING – 22,000A

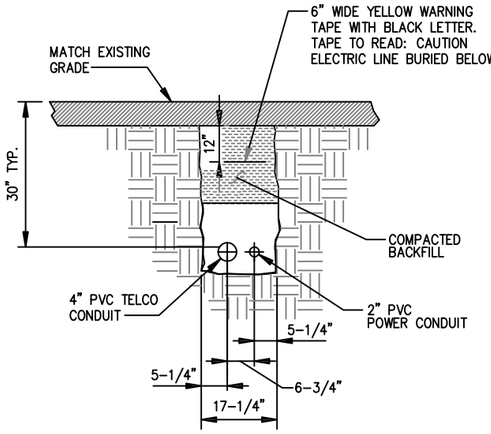
DESCRIPTION	BKR	POLE	CKT	VA	Φ	VA	CKT	POLE	BKR	DESCRIPTION
SURGE PROTECTOR	30	2	1	--	A	50	2	1	10	FAN
2P BRANCH	--	--	3	--	B		4			SPACE
RECEPTACLE/LIGHTS	15	1	5	230	A		6			SPACE
SPACE	20	1	7		B	1000	8	2	20	HEATER
SPACE			9		A	1000	10	--	--	2P BRANCH
SPACE			11		B	15,000	12	2	200	(N) DELTA SUPPORT CABINET
SPACE			13		A	15,000	14	--	--	--
SPACE			15		B	--	16	--	--	2P BRANCH
SPACE			17		A	--	18	--	--	--
SPACE			19		B	--	20	--	--	--
SPACE			21		A	--	22	--	--	--
SPACE			23		B	--	24	--	--	--

PANEL LOAD CALCULATIONS:

LIGHTS:	50 VOLTAMPS x 1.25 =	63 VA
RECEPTACLE:	180 VOLTAMPS x 1.00 =	180 VA
MISC. EQUIPMENT:	32050 VOLTAMPS x 1.00 =	32,050 VA

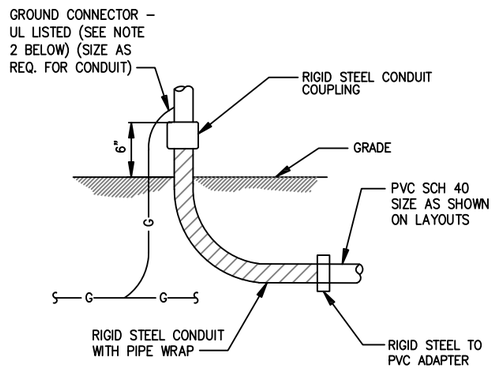
TOTAL CALCULATED CONNECTED LOAD: 32,280 VA
TOTAL CALCULATED DEMAND LOAD: 32,293 VA
TOTAL CALCULATFD DFMAND LOAD· 135A 120/240V 1PH 3W

2 BREAKER PANEL SCHEDULE
SCALE: NOT TO SCALE



NOTE:
NUMBER AND SIZE OF CONDUITS MAY VARY. SEE DWG E-1 FOR CONDUIT SIZE AND LOCATION. CONFIRM DIMENSIONS SHOWN WITH UTILITY COMPANY

3 CONDUIT TRENCH DETAIL
SCALE: NOT TO SCALE



NOTES:
1. ALL CONDUIT ABOVE GRADE MUST BE RIGID STEEL OR LIQUIDTIGHT.
2. ALL NEW STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 G90 AFTER FABRICATION.
3. FIELD ABRASIONS SHALL BE TOUCH UP PAINTED WITH ZINC RICH GALVANIZING REPAIR PAINT IN ACCORDANCE WITH ASTM A780.
4. ALL EXPOSED ENDS OF CONDUITS SHALL HAVE WEATHER PROOF CAPS. DO NOT USE DUCT TAPE.
5. PROVIDE 200LB. TEST PULL WIRES IN EACH TELEPHONE AND POWER CONDUIT. STUB CONDUITS INTO ENCLOSURE AND LABEL.

4 UNDERGROUND CONDUIT STUB-UP
SCALE: NOT TO SCALE

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

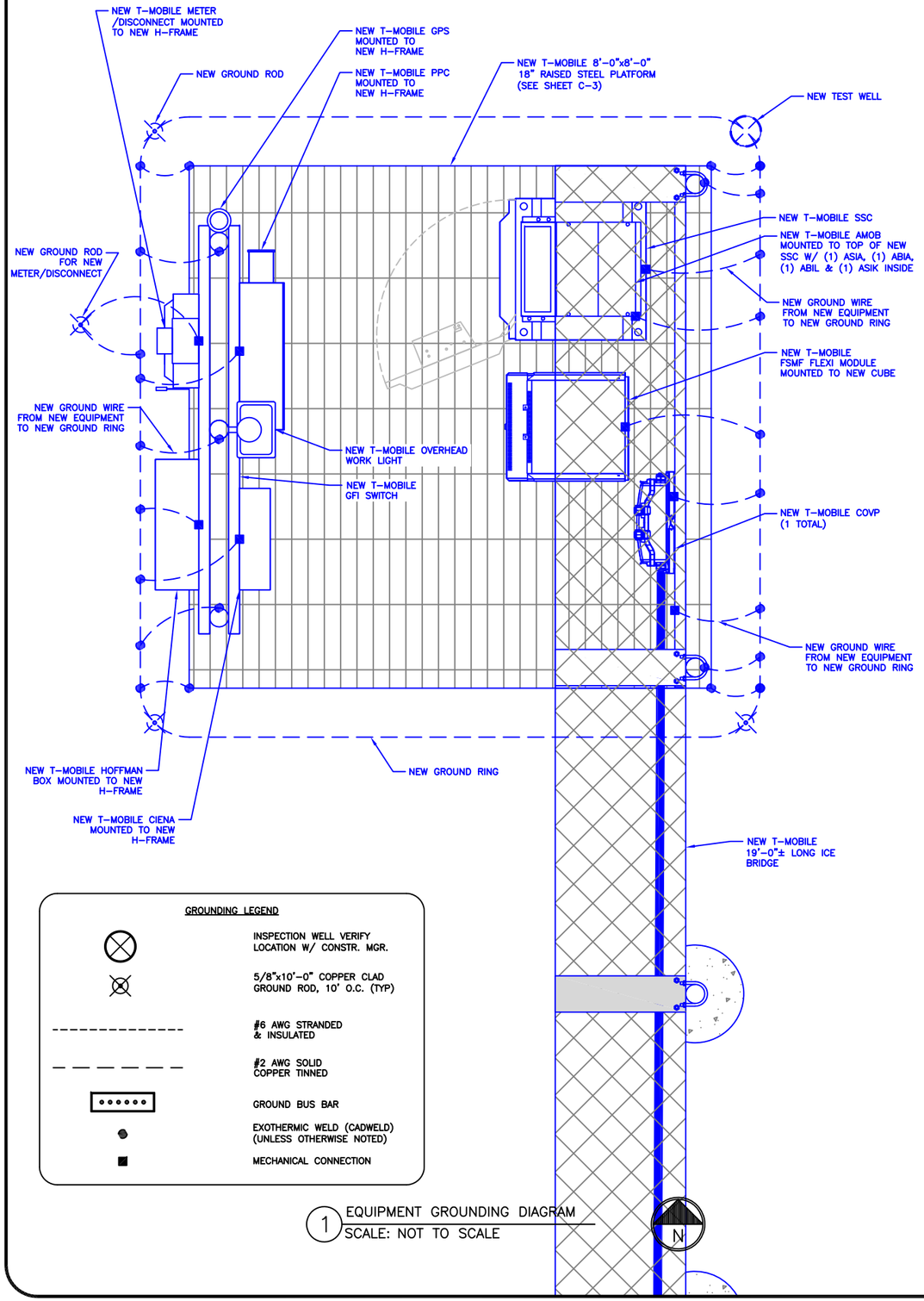
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

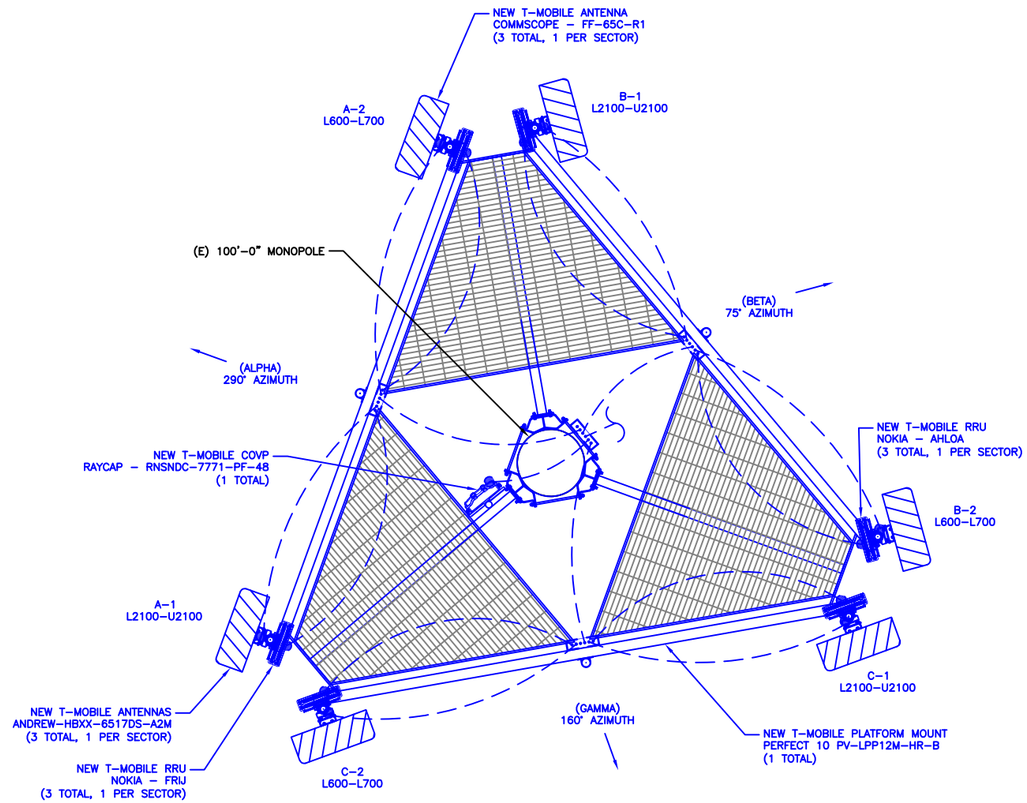
9/10/2018

JACOB GORALSKI, PLLC
CONSULTING ENGINEER
JACOB GORALSKI, PLLC
UT PE# 9226401-2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: E-2
REVISION: 0



1 EQUIPMENT GROUNDING DIAGRAM
SCALE: NOT TO SCALE



2 ANTENNA GROUNDING PLAN
SCALE: NOT TO SCALE

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
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BU #: **858303**
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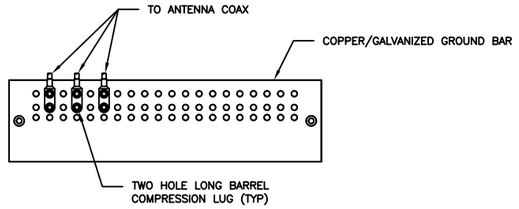
UT PE# 9226401-2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456-2621

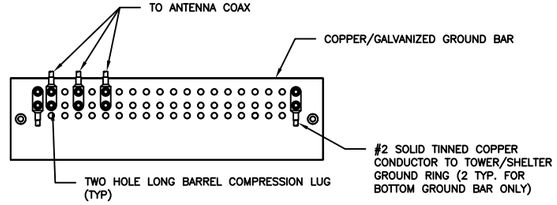
SHEET NUMBER: **G-1**
REVISION: **0**



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

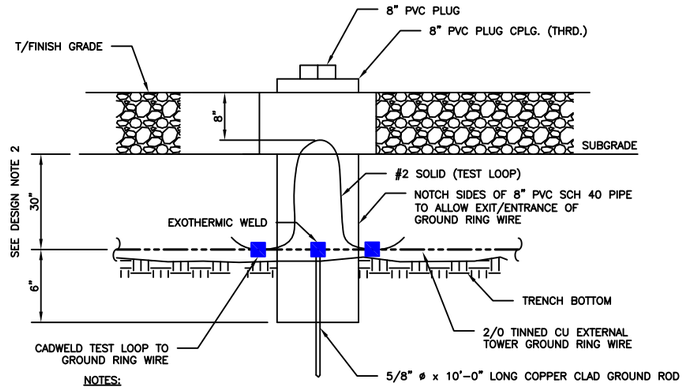
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

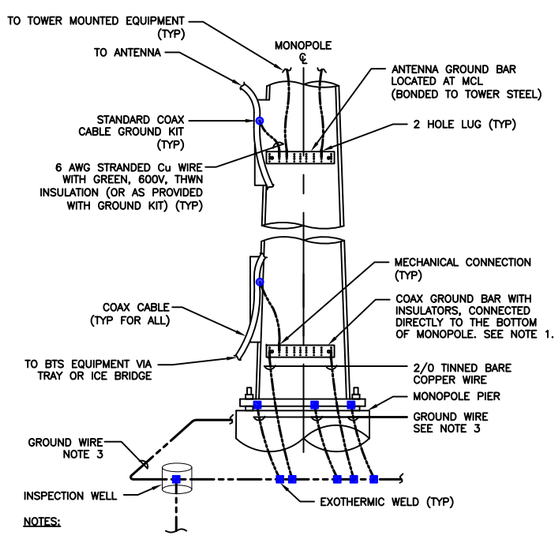
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

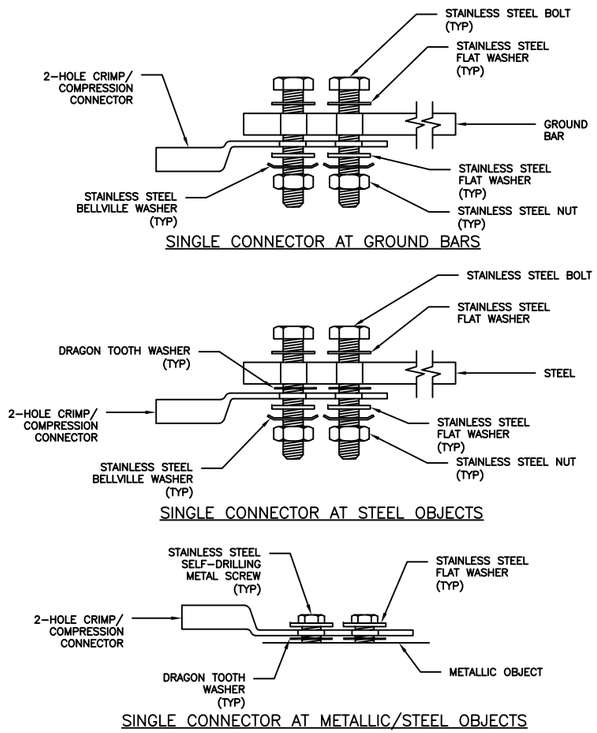
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



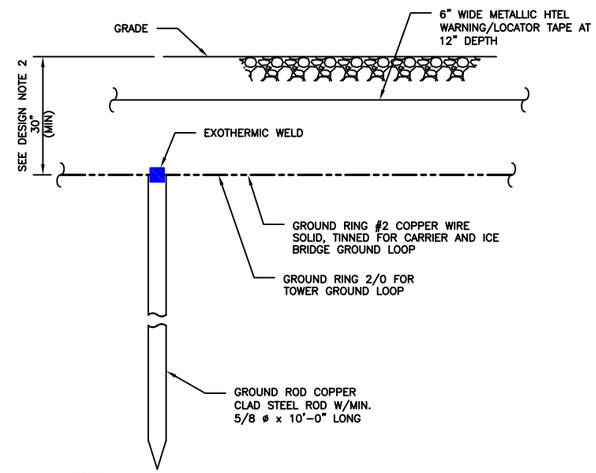
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
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AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
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BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

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ISSUED FOR:

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PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

JACOB GORALSKI, PLLC
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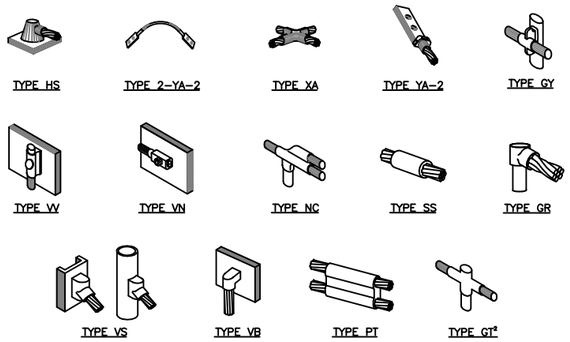
KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: G-2
REVISION: 0

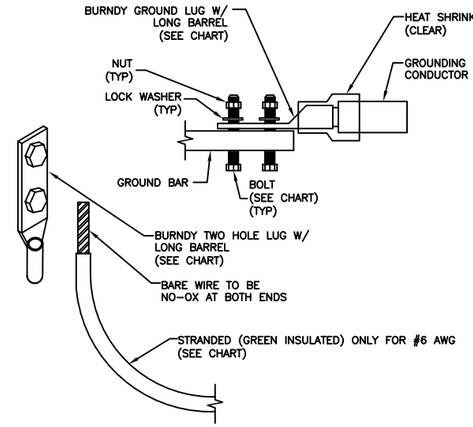


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

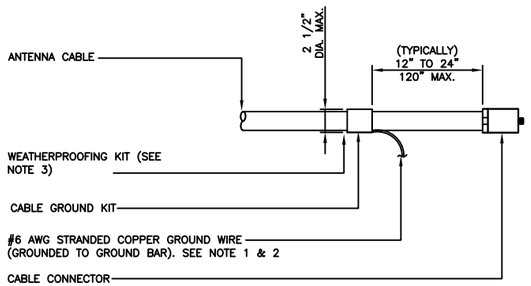
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

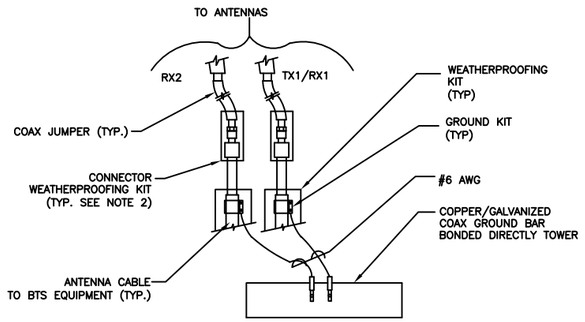
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

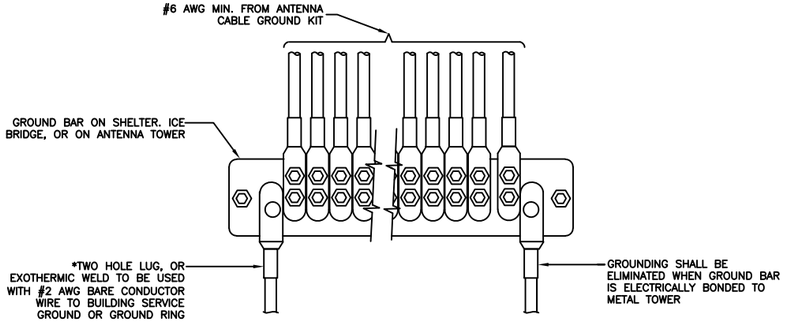
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



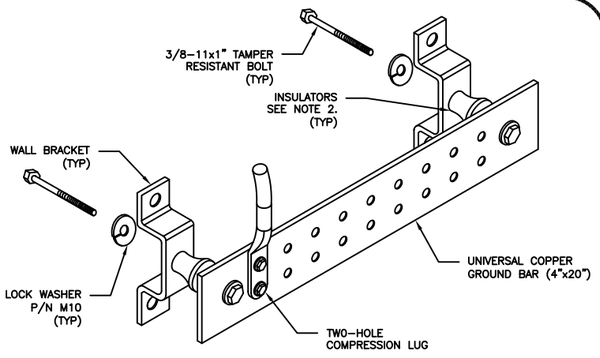
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



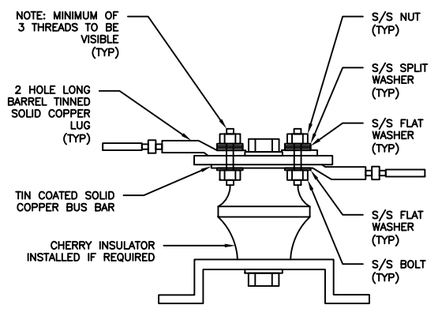
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



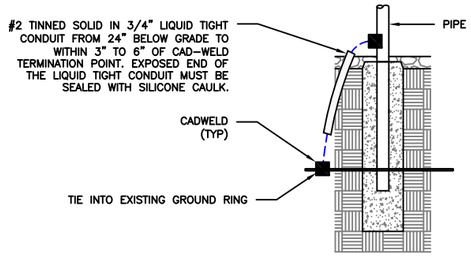
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
18400 E. 22ND AVENUE
AURORA, CO 80011

CROWN CASTLE
116 INVERNESS DR. EAST STE# 280
ENGLEWOOD, CO 80112

T-MOBILE SITE NUMBER:
DN02488A

BU #: **858303**
ZOD_ALLTEL_UT05_ MCCOOK_RIDGE

BITTER CREEK CANYON RD.
GREEN RIVER, UT 84540

EXISTING 100.0 FT MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	07-10-2018	JAS	PRELIMINARY	ELG
0	08-28-2018	JAS	FINAL	ELG

PROFESSIONAL ENGINEER
No. 9226401-2202
JACOB GORALSKI
STATE OF UTAH

9/10/2018

JACOB GORALSKI, PLLC
CONSULTING ENGINEER
JACOB GORALSKI, PLLC
UT PE# 9226401-2202
1106 COLBI ST.
KENNEDALE, TX 76060
(817) 456-2621

SHEET NUMBER: G-3
REVISION: 0

Restart

Restart Another Entry

Print Receipt

Merchant Simple Receipt | Customer Simple Receipt | Event Receipt

GRAND COUNTY Utah Clerk

Grand County Clerk

Marriage License:	$30.00	**Quantity:** 0	**Item Subtotal:**	$0.00

Clerk Fees

Certified Copy:	$6.00	**Quantity:** 0	**Item Subtotal:**	$0.00
Copy Certification:	$2.00	**Quantity:** 0	**Item Subtotal:**	$0.00
Copies:	$0.10	**Quantity:** 0	**Item Subtotal:**	$0.00
Building Permit:	$0.00		**Item Subtotal:**	$0.00
Name				
Permit Number				
Business License:	$0.00		**Item Subtotal:**	$0.00
Business Name				
Owners Name				
Misc:	$550.00		**Item Subtotal:**	$550.00

Description CONDITIONAL USE PERMIT- T MOBILE CELL TOWER (BITTERCREEK)

Total: $550.00

Payer's Information

CROWN CASTLE

, ,

Payment Information:

Account: BChk *8134
JPMORGAN CHASE
TAMPA, FL 33610
800-677-7477

Please be aware that card payments will be described as
CountyUT 800-764-0844 Clinton UT

Submission Receipt:

Subtotal:	$550.00
Processing Fee:	$0.75
Total:	$550.75

Processing Date: 27 Sep 2018 10:09 am MDT
Payment processed successfully.
Confirmation #: 5bad0c19-SIP-67736

DRAFT

Grand County Planning Commission

October 9, 2018

A regular meeting of the Grand County Planning Commission convened on the above date at the Grand County Courthouse, 125 E. Center St., Moab, UT 84532

Members Present: Chair Gerrish Willis, Vice Chair Robert O'Brien, Christine "Cricket" Green, Kevin Walker, Abby Scott, and Rachel Nelson (Emily Campbell via conference call)
Members Absent:
Staff Present: Kenny Gordon, Kaitlin Myers, JD McClanahan, and Zacharia Levine
Council Liaison: Mary McGann

Meeting was called to order at 5:03 PM by Gerrish Willis.

Citizens to be heard: Michael Liss. HDH does not conform with general plan.

Assured Housing (Public Hearing). In November 2016, the planning commission forwarded a favorable recommendation to the county council for an assured housing ordinance that applied an affordable housing mitigation requirement to all residential and commercial developments above a given threshold. At the time, the county lacked some key pieces of information needed to justify adoption of the ordinance. The county council ordered staff to oversee the hiring of a consultant to gather additional information and conduct a series of economic analyses to improve the validity, accuracy, and appropriateness of an assured housing policy.

Two reports were produced by BAE Economics, a nationally renowned firm who has conducted similar analyses for communities ranging in size and typology from Truckee, CA to New York City, NY. The Phase 1 Report detailed a feasibility analysis to determine if various land use types could accommodate an affordable housing requirement while still allowing a developer to earn a reasonable yield on cost and return on cost. The Phase 2 Report detailed a nexus analysis for the "feasible" land use types identified in Phase 1 to verify the relationship between a new development and increased demand for affordable housing.

Using the findings of BAE's Phase 1 and Phase 2 reports, staff has been working with legal counsel to update the draft assured housing ordinance. Included in this packet is the most current version of the proposed assured housing ordinance, which would mandate an affordable housing requirement for new lodging related developments and certain classes of single family residences.

In addition to the overall concept of an assured housing policy, issues the planning commission may want to consider include:

- Excluding moderate-income housing units as a way to satisfy the assured housing requirement (Discussion provided during meeting.)
- Inclusion of certain single family residences as an applicable use type
- Inclusion of a sunset clause
- Others as deemed necessary by the planning commission and public

The Chair opened the public hearing.

Staff explains and suggests a consideration to drop moderate income housing units from conversion table. Robert O'Brien, moves to drop moderate income housing units from conversion table. Seconded by Rachel Nelson. For 4, against 3 (Cricket Green, Emily Campbell, & Gerrish Willis). Motion carries. Emily Campbell moves to forward a favorable recommendation to County Council as amended. Seconded by Kevin Walker. For 6, against 1 (Cricket Green). Motion carries.

The Chair moves for a 4 minute break.

Review of Sandstone Cliffs. This application is submitted by Kevin Carroll. The subject property is located off Munsey Lane, zoned Rural Residential, and includes a total of 24.4 acres. The Applicant proposes division of the subject property into 15 residential lots. Surrounding properties are used for residential uses and zoned Rural Residential and Large Lot Residential.

Kevin Walker pointed out that contour intervals on the plat were not called out or labeled. Commission requested that the Musey to tank trail be shown on plat. Commission requested to review plat showing "steep slope" areas and building envelopes. Emily Campbell moves to table the review of the Sandstone Cliffs Subdivision. Robert O'Brien seconded. For 6, against 1 (Cricket Green). Motion carries.

Approval of Minutes: September 11, 2018: Corrections suggested by Robert O'Brien. Motion to approve the September 11, 2018 meeting minutes with corrections by Kevin Walker, Seconded by Robert O'Brien. For 6, against 0, 1 abstained (Abby Scott). The September 11, 2018 were approved with corrections.

September 25, 2018; Corrections suggested by Gerrish Willis. Motion to approve the September 25, 2018 meeting minutes with corrections by Kevin Walker, Seconded by Abby Scott. For 7, against 0. The September 11, 2018 were approved with corrections.

Future Considerations:

Community Development Department Update:

County Council Liaison report::

Adjournment: Motion to adjourn meeting by Kevin Walker, all were unanimous. Adjourned at 8:00 pm.