



**City of Bellevue
Development Services Department
Land Use Division Staff Report**

Proposal Name: Sprint/Bellevue Crown Castle
Proposal Address: 14470 SE 24th Street

Proposal Description: Request for ACU approval to modify an existing Wireless Communications Facility (WCF). Modifications include providing new antenna mounts that will support 3 new antennas, 3 relocated antennas, and ancillary equipment. The facility will be co-located on an existing monopole. Additional equipment will be placed within the existing equipment shelter at the base of the pole.

File Number: 14-138383-LA, Administrative Conditional Use

Planner: Sally Nichols, Associate Planner

Applicant: Sprint
William Millhollin, NW Permits

Decisions Included: Administrative Conditional Use Approval (Process II, Land Use Code 20.30E)

State Environmental Policy Act Threshold Determination: Exempt

Director's Decision: **Approval with Conditions**
Michael A. Brennan, Director
Development Services Department

By: Carol V. Helland
Carol V. Helland, Land Use Director

Notice of Application: September 18, 2014
14-day Comment Period: October 2, 2014
Decision Publication Date: January 15, 2015
Appeal Deadline: January 29, 2015

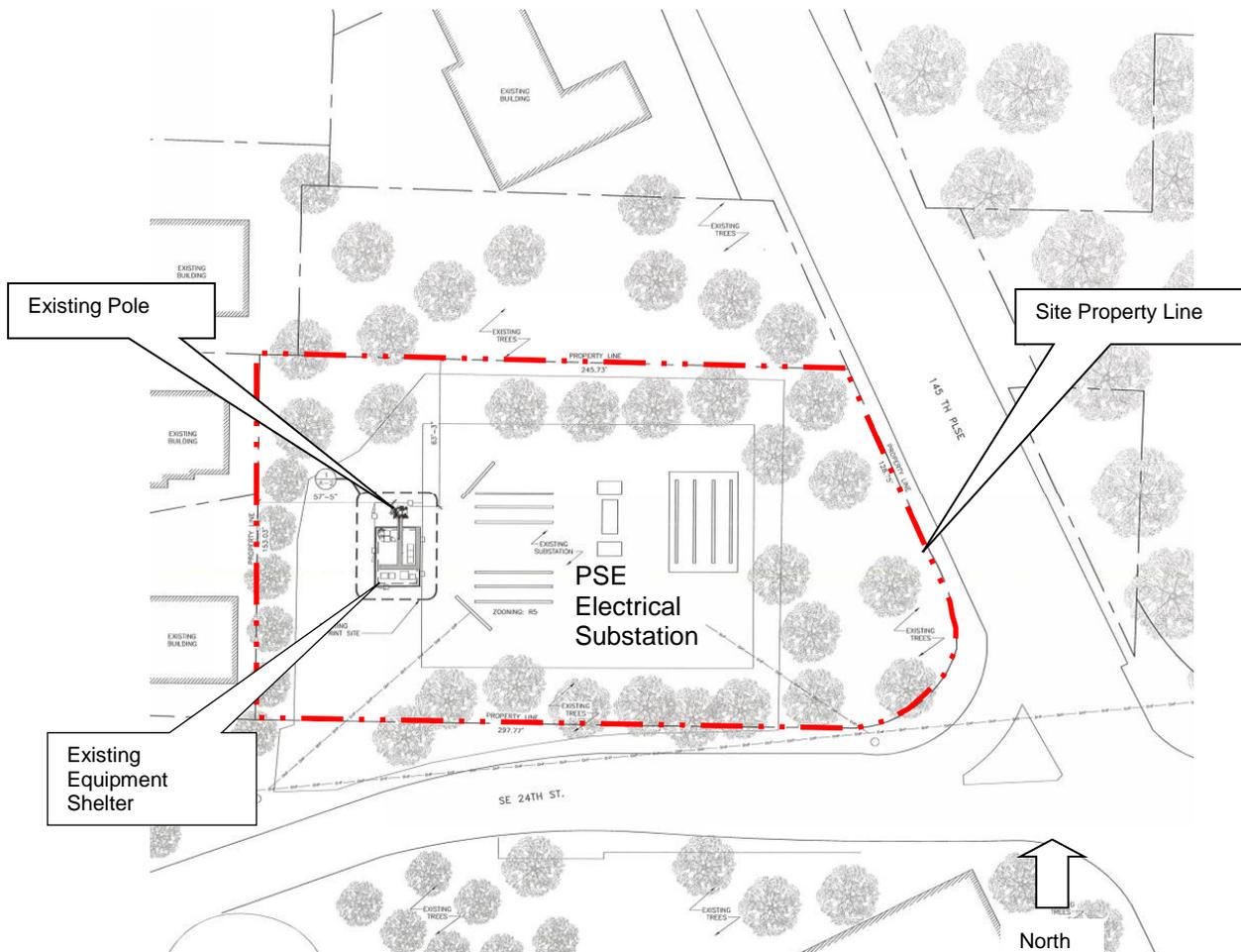
For information on how to appeal the project, visit the Permit Center at City Hall or call (425) 452-6864. Appeal of the decision must be received in the City Clerk's office by 5 p.m. on the date noted for the appeal deadline.

I. Request/Proposal Description

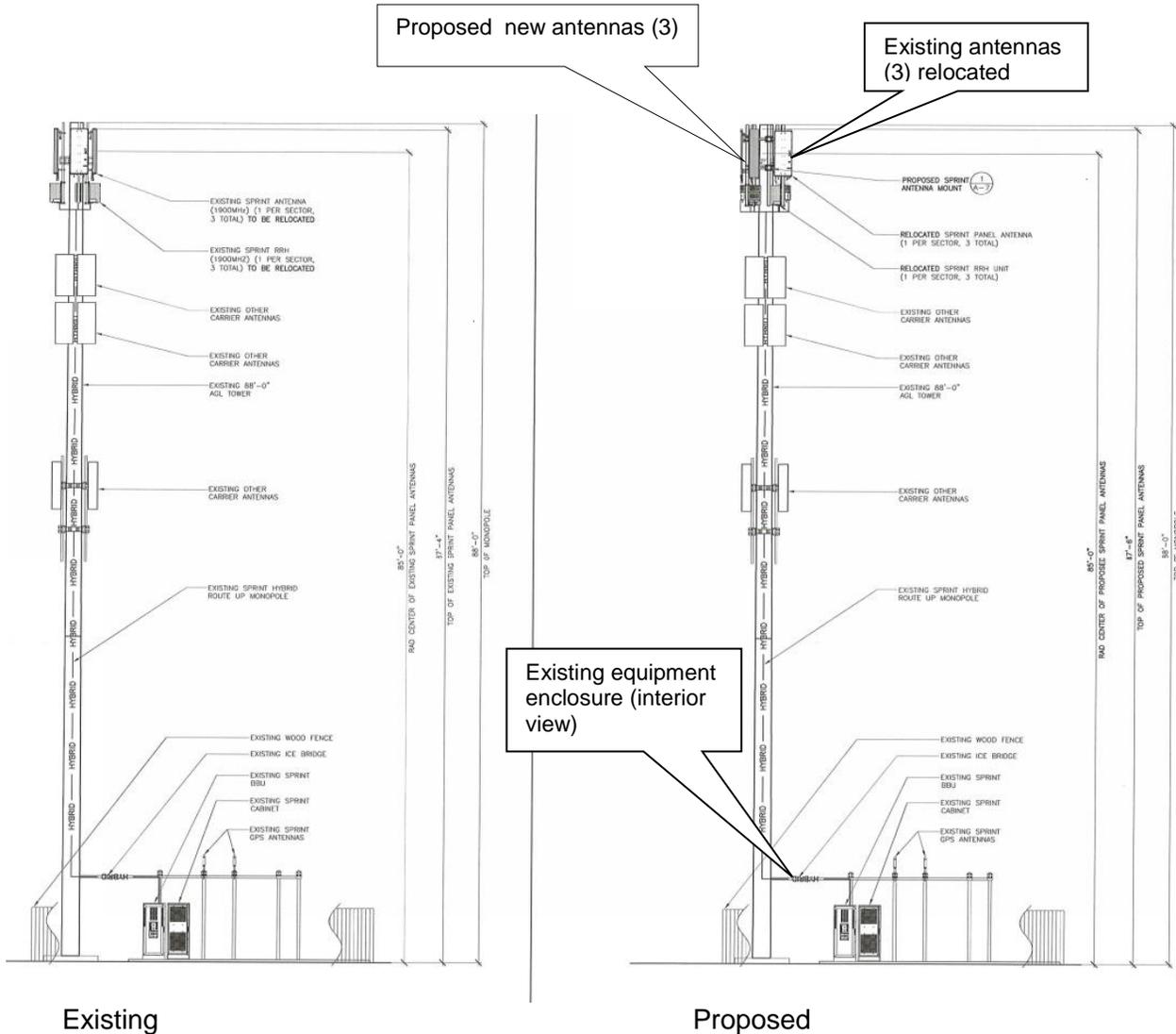
A. Request

The applicant (Sprint) is requesting Administrative Conditional Use approval to expand an existing wireless communications facility (WCF). The proposal includes relocating three existing antennas and installing three new LTE panel antennas on new pipe mounts attached to an existing 88-foot tall monopole. The pole, which lies within the Puget Sound Energy (PSE) College Substation property, supports additional antennas owned by other wireless carriers. The height of the pole will remain unchanged. Proposed new mechanical equipment, including one new equipment cabinet, will be placed in the existing, fenced equipment shelter at the base of the pole. The equipment area is also shared by the other WCF carriers. This WCF upgrade will allow the applicant to expand its high speed data networks to meet the needs of the Bellevue College Campus and residents of the Richards Road corridor and a portion of the 145th Place corridor.

Proposal Site Plan



West Elevation – Looking from adjacent single family neighborhood



B. Process:

The existing WCF was approved through a previous Conditional Use Permit (CU) – 02-149077-LB. Land Use Review is required for this expansion because the proposal will add antennas to the existing support structure (pole) within a residential land use district. However, because the WCF is not within 520-feet of any other WCF located either in the public right-of-way or on property owned by the City, the proposal will require review as a new ACU instead of a full Conditional Use. Per WAC 197-11-800 (25)(a)(i), the proposal is EXEMPT from SEPA review.

The ACU approval is a Process II decision made by the Director of the Development Services Department. The review includes public noticing with a minimum 14-day comment period. The Director's decision shall be written in a staff report to indicate whether the application has been approved, approved with conditions, or denied. The decision will be publically noticed with a mandatory 14-day appeal period. A Process II decision may be appealed and the appeal shall be heard at a public hearing before the City Hearing Examiner.

II. Site Description and Zoning

A. Site Description:

The PSE College Substation is located at 14470 SE 24th Street within the Eastgate subarea. The site is surrounded to the north and west by single-family homes. Across 145th Place SE to the east is a multi-family complex and across SE 24th Street to the south is Bellevue College's Early Family Learning and Childcare Center, along with a portion of the Bellevue College parking lot.

As part of the 2000 short plat that created the existing PSE Substation site and the three residential lots to the west, a Retained Vegetation Area (RVA) was created within the eastern and southern portions of the site. Additionally, a 15-foot landscape buffer was required around the boundary of the site.

Aerial Photograph Site Context



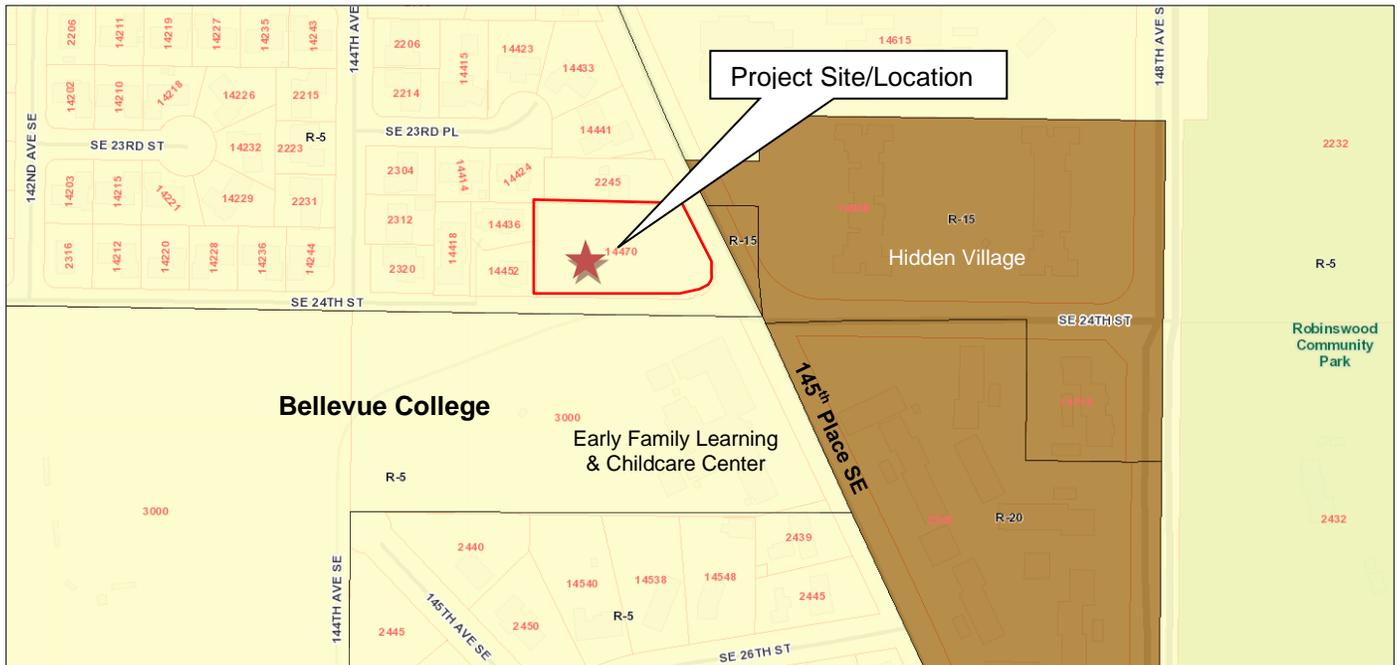
The existing pole and equipment shelter for all of the WCF's located on the pole (Sprint and other carriers) are located in the western half of the site. The wooden equipment shelter is directly adjacent to the substation fence. It is currently screened from surrounding properties with additional fencing to match the fence around the substation and the dense vegetation along the property line described above. The pole and all equipment and antennas on the pole has been painted dark green to better blend into the background created by mature evergreen trees on the site and on adjacent properties.

B. Zoning and Context

The pole is located within the R-5, single-family land use district. Adjacent uses include the following:

- North:** R-5: Single-family neighborhood
- South:** R-5: Bellevue College Campus. Directly across SE 24th Street is the Early Family Learning and Childcare Center for the College.
- East:** R-15: Multi-family housing complex – Hidden Village.
- West:** R-5: Single-family neighborhoods.

Zoning Map



III. Public Comments

The City initially notified the public of this proposal on September 18, 2014 with mailed notice and publication in the *Weekly Permit Bulletin*. One, double-sided public information sign was installed on the site on the same day. No comments were received at the time of this writing.

IV. Applicable Decision Criteria / Findings and Conclusions

Compliance with the decision criteria of Land Use Code Section 20.30E.140 (Administrative Conditional Use Permit) is discussed below.

A. The administrative conditional use is consistent with the Comprehensive Plan.

As conditioned, the proposal is consistent with the City of Bellevue's Comprehensive Plan regarding wireless communications facilities. The Comprehensive Plan Utilities Policies listed below are especially relevant to the City's decision on this application:

Policy UT-40: Requires the reasonable screening and/or architecturally compatible integration of all new above-ground facilities.

Policy UT-41: Protect Bellevue's aesthetic quality and infrastructure investment from unnecessary degradation caused by the construction of telecommunication infrastructure.

Policy UT-53: Requires all utility equipment support facilities to be aesthetically compatible with the area in which they are placed by using landscape screening and/or architecturally compatible details and integration.

Policy UT-55: Requires the placement of personal wireless communication facilities in a manner that minimizes the adverse impacts on adjacent land uses.

Finding: Significant improvements have been made with previous approvals and approved revisions to the WCF by Sprint and other carriers, including painting the pole and all equipment and antennas on the pole dark green. As conditioned, the six new and existing antennas and all ancillary equipment on the pole must be painted to match the existing support structure (pole). **Refer to Condition of approval regarding antenna color in Section VI of this report.**

Policy UT-43: Encourages consolidation on existing facilities where reasonably feasible and where such consolidation leads to fewer impacts than would construction of separate facilities.

Finding: The proposal involves addition of three antennas on a support structure that already supports multiple WCF's by multiple carriers. This reduces the need for an additional separate facility.

Policy UT-60: Minimize visual impact of personal wireless communication facilities by encouraging deployment in land use districts in the following preferred and descending order when possible, considering the provider's coverage needs: 1) Non-residential land use districts, except Transition Areas; 2) Transition Areas; 3) Multifamily (R-20 and R-30) districts; and 4) and Park site and Residential districts.

Finding: The location of this facility in a single-family land use district was previously approved through a Conditional Use Permit review. While the WCF is in an R-5 land use district, the facility has been located on a parcel that has a non-residential use – electrical substation.

Policy UT-61: Minimize visual impact of personal wireless communication facilities by encouraging system designs in the following preferred and descending order: 1) attached to public facility structures, building mounted, or integrated with utility poles, light standards, and signal supports; 2) co-located on utility poles, light standards, signal supports; and 3) free standing towers.

Finding: This proposal will be co-located on a previously-approved WCF support structure that supports multiple WCF's from multiple carriers. The location is also within an existing PSE substation site, where other utility facilities such as tall poles, wires, and ground equipment already exist.

B. The design is compatible with and responds to the existing or intended character, appearance, quality of development and physical characteristics of the subject property and immediate vicinity;

Finding: Previous approvals for this WCF ensured that the facility was compatible with the subject property and immediate vicinity. The addition of three antennas and relocation of three existing antennas will also be compatible due to the following:

- 1) The height of the pole will not be extended.
- 2) All antennas (existing and new), pipe mounts, and ancillary equipment will be painted dark green to match the existing pole.
- 3) The mechanical equipment will be located in the existing equipment shelter, which is already adequately screened with fencing to match the substation fencing and the dense vegetation throughout the site perimeter.
- 4) Coaxial cables shall be pulled tight.
- 5) The antenna mounts will be placed approximately six inches from the pole.

Refer to Condition of Approval regarding antenna mounting and cabling and antenna and equipment color in Section VI of this report.

C. The administrative conditional use will be served by adequate public facilities including streets, fire protection, and utilities.

Finding: The existing pole and WCF's on that pole is located within a PSE electrical substation and they are already served by adequate public facilities, including streets, fire protection, and utilities.

The Fire Department has reviewed this application and has determined that there are no substantial concerns. **Refer to Conditions of Approval regarding**

existing City of Bellevue radio systems and interference in Section VI of this Staff Report.

D. The administrative conditional use will not be materially detrimental to uses or property in the immediate vicinity of the subject property; and

Finding: The addition of three antennas and relocation of three existing antennas on new pipe mounts on Sprint's existing facility will result in a WCF that will not substantially change the impact of the existing WCF. A condition of approval will require that antennas, mounts, and all ancillary equipment be painted dark green to match the existing pole. By doing so, the project will not be materially detrimental to uses or property in the immediate vicinity.

Finally, the facility will be removed when it ceases to be operational or falls into disrepair and is not maintained, or if the utility support structure is removed or placed underground. **Refer to Condition of Approval regarding antenna and equipment color and the removal of abandoned sites in Section VI of this staff report.**

E. The administrative conditional use complies with the applicable requirements for a wireless communication facility as provided by the Land Use Code 20.20.195, including location and design preferences.

Finding: As conditioned, the proposed wireless facility complies with the location and design preferences as detailed in LUC 20.20.195. Further, the proposal meets all specific Land Use Code requirements applicable to non-exempt wireless communications facilities per LUC 20.20.195.D, as summarized below.

1. **Height:** The pole height will not be increased.
2. **WCF Location and Design**
 - a. **Preferred Location (LUC 20.20.195D.2.a):**
The location of this facility was previously approved via Sprint's original Conditional Use Approval Process (012-149077-LB).
 - b. **Preferred Facility Design (LUC 20.20.195D.2.b):**
The monopole design and equipment shelter were previously approved via Sprint's original Conditional Use Approval Process (012-149077-LB).
 - c. **Minimizing Adverse Impacts (LUC 20.20.195D.2.c):**
Impacts from siting in this location were previously approved via Sprint's original Conditional Use Approval Process (012-149077-LB).
3. **Dispersion Limits:** The applicant has verified that there are no other WCF's within 520 feet of this proposal in the public right of way.
4. **Development Standards:** The proposal includes the following development standards to ensure that the WCF minimizes the adverse

impacts, especially visual and aesthetic impacts, on the property where the facility is located and in the vicinity of the facility.

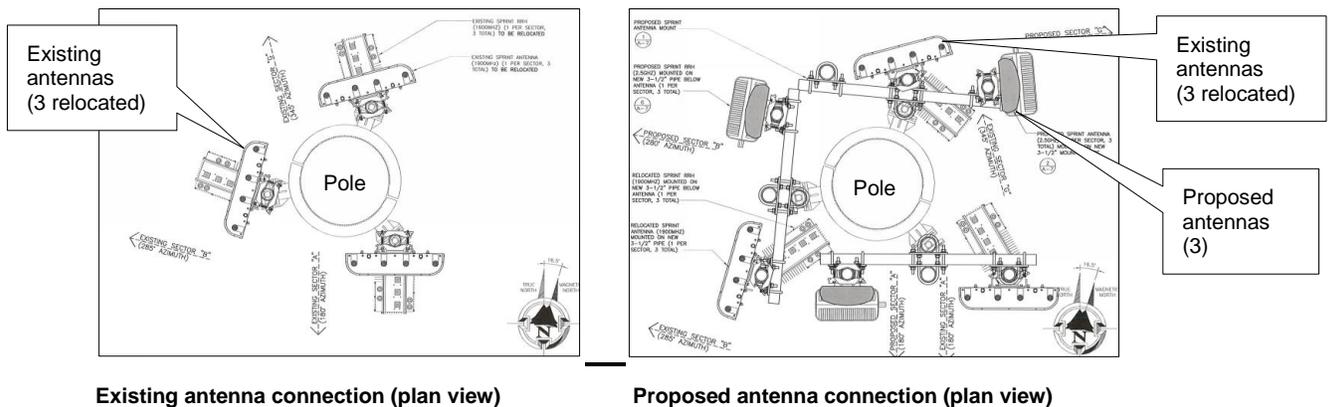
a. Screening Techniques:

- The new equipment required for the three new antennas will be located in the existing equipment shelter. The shelter was reviewed through a previous Conditional Use approval. It is adequately screened with fencing and required dense vegetation along the site's property lines.
- All coaxial cables shall be pulled tight to minimize visual impacts. The mechanical equipment will be connected to the pole via underground coaxial conduits.
- All antennas, ancillary equipment and pipe mounts attached to the pole, either existing or proposed, will be painted green to match the pole.

Refer to Conditions of Approval regarding antennas mounting and cabling and antenna and equipment color in Section VI of this report.

b. Design and configurations to minimize visual intrusion of the facility:

The panel antennas and microwave antennas on the proposed pole extension will have slender, flat profiles. The pipe mounts will be approximately six inches from the support structure (pole). However, in order to accommodate two antennas on each arm, the mounts will be approximately four feet long. All antennas, pipe mounts, and ancillary equipment will be painted dark green to match the existing pole to reduce the overall visual impact. **Refer to Condition of Approval regarding antenna mounting and cabling and antenna and equipment color in Section VI of this report.**



c. Construction and site restoration techniques:

There may be minor clearing to bury the underground coaxial conduits and to connect to necessary utilities. All work will be on private property and will not trigger a clearing and grading permit.

d. WCF Equipment:

WCF equipment in residential districts is required to be screened to minimize the visual impact of the equipment on adjacent land uses. The proposal equipment will be enclosed within the existing equipment shelter, which is adequately screened from adjacent properties by fencing and mature vegetation.

e. Co-location:

This proposal is for co-location of three new antennas on the existing pole. Additional co-location on the pole for other carriers may be a possibility, subject to technical feasibility. However, specific details or analysis with regards to future co-location have not been included as part of this proposal.

5. Radio Frequency Emissions: The Engineering Certification Letter submitted by ClearWire's radio frequency engineer states that the facility will comply with the radio frequency emission standards adopted by the Federal Communications Commission (FCC). This certification letter can be found in the project file at the Record's Office in Bellevue City Hall.

6. Setback Requirements for Freestanding Wireless Communication Facilities:

Setbacks requirements for the pole and equipment shelter were already satisfactorily reviewed for compliance with setback requirements of the LUC during the original CU approval for this site.

7. Independent Technical Review:

No such review was deemed necessary for this application.

8. Removal of Abandoned Antennas and Towers:

Refer to Condition of Approval regarding abandoned sites in Section VI of this report.

9. Removal Upon Under-grounding:

Does not apply to this proposal.

V. DECISION

After conducting the various administrative reviews associated with this proposal, including applicable land use consistency and City Code and Standard compliance reviews, the Director of the Development Services Department does hereby **APPROVE** the proposal subject to the following **CONDITIONS**:

VI. CONDITIONS OF APPROVAL:

The following conditions are imposed under authority referenced:

Compliance with Bellevue City Codes and Ordinances

The applicant shall comply with all applicable Bellevue City Codes, Standards, and Ordinances including but not limited to:

Applicable Codes, Standards & Ordinances

Clearing & Grading Code – BCC 23.76
Construction Codes – BCC Title 23
6864
Fire Code – BCC 23.11
Land Use Code – BCC Title 20
Noise Control – BCC 9.18
Sign Code – BCC Title 22
Right-of-Way Use Code 14.30
Utility Code – BCC Title 24

Contact Person

Janney Gwo, (425) 452-6190
Building Division, (425) 452-6864

Adrian Jones, (425) 452-6032
Sally Nichols, (425) 452-2727
Sally Nichols, (425) 452-2727
Sally Nichols, (425) 452-2727
Dottie Schmidt, (425) 452-2888
Mark Frazier, (425) 452-2022

1. Noise & Construction Hours

The proposal will be subject to normal construction hours of 7 a.m. to 6 p.m., Monday through Friday and 9:00 a.m. to 6:00 p.m. on Saturdays, except for Federal holidays and as further defined by the Bellevue City Code. Proximity to existing residential uses will be given special consideration. Upon written request to the Development Services Department (DSD), work hours may be extended to 10:00 p.m. if the criteria for extension of work hours as stated in BCC 9.18 can be met and the appropriate mitigation employed.

The use of best available noise abatement technology consistent with feasibility is required during construction to mitigate construction noise impacts to surrounding uses.

REVIEWER: Sally Nichols, Land Use
AUTHORITY: BCC 9.18.020.C & 9.18.040

2. Completion of Work/Facility Activation

The facility shall not be activated until all work included in the project scope and shown on the plans and specifications is completed.

REVIEWER: Sally Nichols, Land Use
AUTHORITY: LUC 20.40.425

3. Antenna Mounting and Cabling

The antennas shall be attached to the replacement pole such that no portion of the antenna extends above the height of the existing support structure (pole).

All proposed cabling shall be **pulled tightly** to minimize visual impacts.

REVIEWER: Sally Nichols, Land Use
AUTHORITY: LUC 20.20.195.B.1.a.v

4. Antenna and Equipment Color

All antennas (existing and proposed) and **all** associated equipment (including the pipe mounts, ancillary equipment and any existing equipment that is not currently painted green) shall be painted *dark green* to match the support structure (pole).

REVIEWER: Sally Nichols, Land Use
AUTHORITY: LUC 20.20.195.D.4.a

5. Right-of-Way Use Permit

Any use of the public right of way to accomplish the work required to add or upgrade facilities, will require a ROW Use Permit.

REVIEWER: Tim Stever, Right-of-Way
AUTHORITY: BCC 14.30.070 and 14.30.080

6. Existing Radio System & Interference

If this telecommunications system causes interference problems with any of the existing radio systems for the City of Bellevue, this system will be required to immediately shut down until the interference can be removed or corrected.

REVIEWER: Adrian Jones, Fire Department
AUTHORITY: FCC 90.672

7. Removal of Abandoned Sites

The owner of this facility shall provide the Director with copies of any notice of intent to cease operations that is provided to the Federal Communications Commission (FCC). All WCFs and the associated equipment shall be removed by the facility owner within 90 days of the date it ceases to be operational, or if the facility falls into disrepair and is not maintained. Disrepair includes structural features, paint, or general lack of maintenance, which could result in safety or visual impacts.

REVIEWER: Sally Nichols, Land Use
AUTHORITY: LUC 20.20.195.D.8

Attachments

Project Plans

At all new services & grounding trenches, provide "WARNING" tape at 12" below grade.

DIG ALERT
"CALL BEFORE YOU DIG"
1-800-424-5555
UTILITY NOTIFICATION CENTER OF WASHINGTON



2.5 LAUNCH BELLEVUE CC

SE13XC107/CCI# 880364

2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

LATITUDE: 47.589399/ 47° 35' 21.8364" (NAD 83) (GPS READING)
LONGITUDE: -122.146688/ 122° 8' 48.0768" (NAD 83) (GPS READING)

MONOPOLE
SEATTLE MARKET



PROJECT INFORMATION:

BELLEVUE CC
SE13XC107/CCI# 880364
2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE



SHEET TITLE: TITLE SHEET

SHEET NUMBER: T-1
REVISION: 1
SE13XC107

WASHINGTON STATE CODE COMPLIANCE:

ALL WORK AND MATERIALS SHALL BE PERFORMED AND 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 CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- 2012 IBC, STANDARDS AND AMENDMENTS-WAC 51-50;
- 2012 IMC, STANDARDS AND AMENDMENTS-WAC 51-52;
- 2012 IFC, STANDARDS AND AMENDMENTS-WAC 51-54A;
- 2012 UPC, STANDARDS AND AMENDMENTS-WAC 51-56;

ACCESSIBILITY REQUIREMENTS:

FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED IN ACCORDANCE WITH THE 2012 IBC BUILDING CODE.

CODE BLOCK

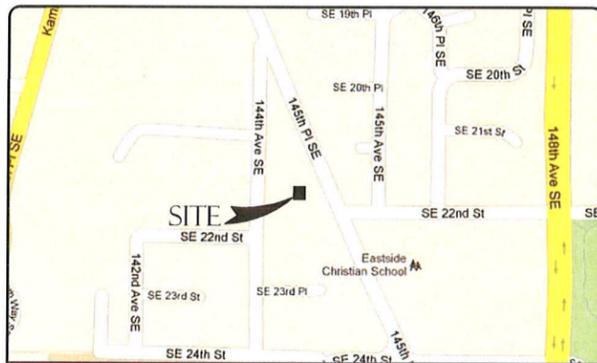
SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY

- INSTALL (3) NEW MOUNTING FRAMES (1 PER SECTOR)
- INSTALL (3) NEW PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) NEW RRH'S
- INSTALL (6) NEW JUNCTION CYLINDERS

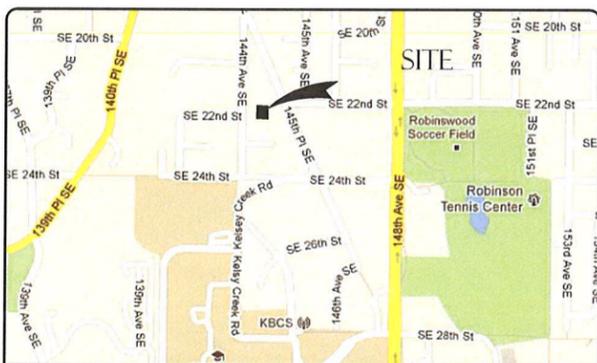
PROJECT DESCRIPTION

APPROVAL	SIGNATURE	DATE
SITE ACQUISITION MANAGER		
CONSTRUCTION MANAGER		
A&E MANAGER		
PLANNING CONSULTANT		
RF MANAGER		
RF ENGINEER		
PROPERTY OWNER		
SPRINT REPRESENTATIVE		
AAV MANAGER		

SIGNATURE BLOCK



AREA MAP



VICINITY MAP

- DEPART FROM SPRINT OFFICE BELLEVUE, WA
- HEAD NORTH ON 124TH AVE NE TOWARDS NE 2ND ST
 - TURN RIGHT ONTO NE 8TH ST
 - TURN RIGHT ONTO 140TH AVE NE
 - CONTINUE ONTO 145TH PL SE
 - DESTINATION WILL BE ON THE RIGHT
- 2351 145TH PL SE, BELLEVUE, WA 98007, USA

DRIVING DIRECTIONS

SHEET	DESCRIPTION
T-1	TITLE SHEET
N-1	GENERAL NOTES
A-1	SITE PLAN
A-2	ENLARGED SITE PLAN
A-3	EQUIPMENT PLAN
A-4	ANTENNA PLANS AND SCHEDULES
A-5	EXISTING & PROPOSED SOUTH ELEVATIONS
A-6	EXISTING & PROPOSED WEST ELEVATIONS
A-7	DETAILS
E-1	SCHEMATIC GROUNDING PLAN
E-2	GROUNDING DETAILS
E-3	GROUNDING DETAILS

SHEET INDEX

APPLICANT:
SPRINT SPECTRUM LLC
10545 WILLOWS RD NE, SUITE 200
REDMOND, WA 98052
CONTACT: KEVIN FOY
EMAIL: KEVIN.FOY@SPRINT.COM
PH: (206) 427-5856

PROPERTY INFORMATION:
PROPERTY OWNER: PUGET SOUND ENERGY
ADDRESS: 2351 145TH PL SE
BELLEVUE, 98007

TOWER OWNER: CROWN CASTLE
SITE ID: 880364
ZONING CLASSIFICATION: R-5
CONSTRUCTION TYPE: IIB
OCCUPANCY: U
JURISDICTION: CITY OF BELLEVUE
CURRENT USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
NEW USE: UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

PARCEL NUMBER(S):
883-890-0181

LEASE AREA:
718 SQ. FT

PROJECT SUMMARY

ARCHITECT:
THOMAS R. HOLLAND, AIA
PACIFIC TELECOM SERVICES, LLC
506 2ND AVE, SUITE 210
SEATTLE, WA 98104
CONTACT: PAUL DANNEBERG
PH: (206) 464-4413
EMAIL: PDANNEBERG@PTSWA.COM

STRUCTURAL ENGINEER:
B+T GROUP
1717 S BOULDER, SUITE 300
TULSA, OK 74119
CONTACT: VENU AMBATI
PH: (918) 587-4630
EMAIL: BTWO@BTGRP.COM

PROJECT MANAGER:
CROWN CASTLE USA
8432 154TH AVE NE, BLDG C
REDMOND, WA 98052
CONTACT: TOM GOODE
PH: (425) 202-0191
EMAIL: TOM.GOODE@CROWNCastle.COM

CONSTRUCTION MANAGER:
CROWN CASTLE USA
8432 154TH AVE NE, BLDG C
REDMOND, WA 98052
CONTACT: PAUL LONG
PHONE: (206) 388-9090

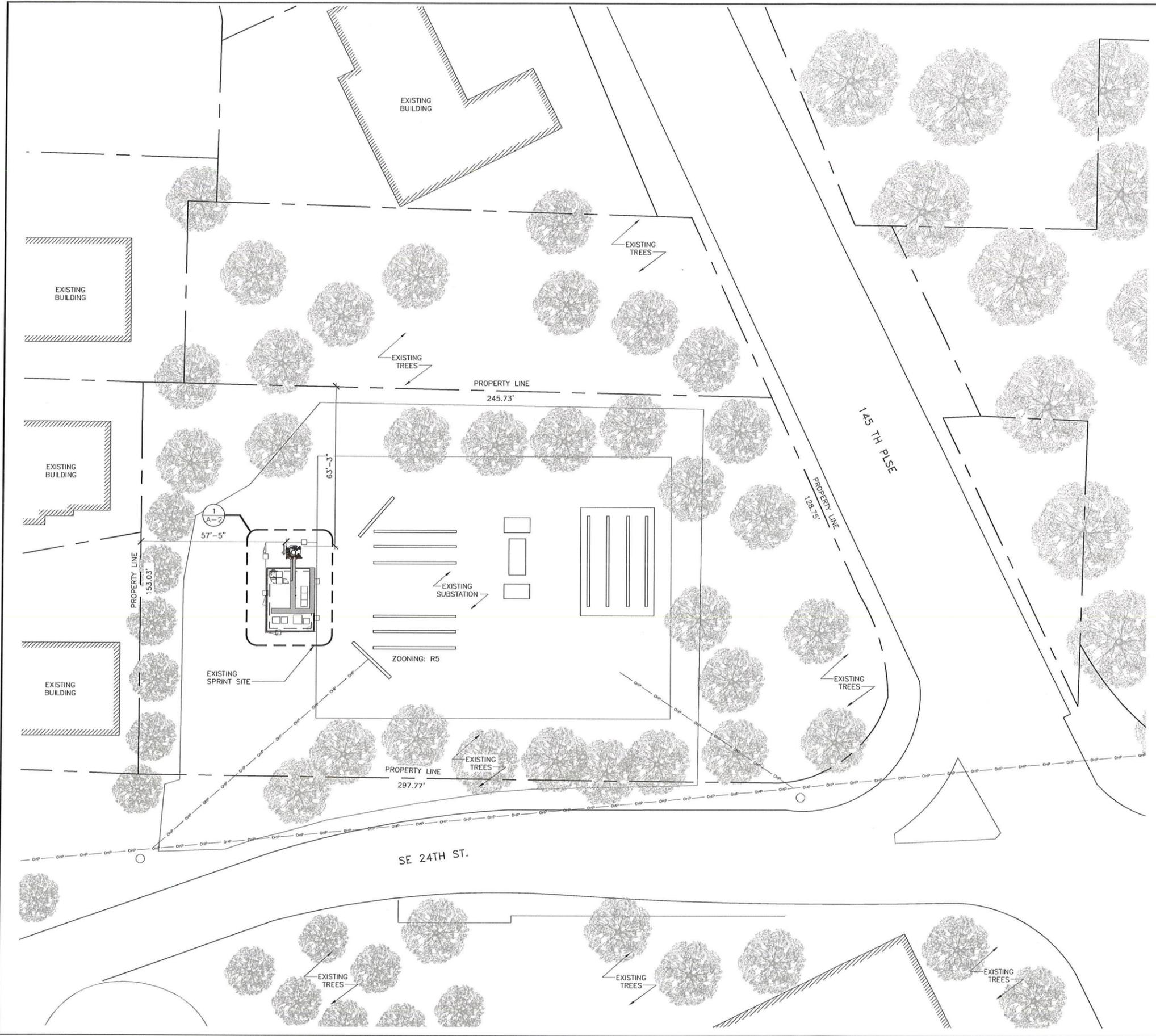
ZONING & PERMITTING:
CROWN CASTLE USA
8432 154TH AVE NE, BLDG C
REDMOND, WA 98052
CONTACT: RON MECKLER
PH: (425) 202-0203
EMAIL: RONALD.MECKLER@CROWNCastle.COM

ELECTRICAL COMPANY:
PUGET SOUND ENERGY
CONTACT: TIM GASSER
PH: 206-947-0335

TELCO COMPANY:
CENTURYLINK
8502 SOUTH STEELE ST
TACOMA, WA 98409

RF ENGINEER:
TBD

PROJECT TEAM



GENERAL NOTES
 THESE DRAWINGS WERE PRODUCED WITHOUT THE BENEFIT OF A CURRENT LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, SETBACKS AND EXISTING CONDITIONS ARE APPROXIMATE AND SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION.

Sprint

CROWN CASTLE

PTS
 PACIFIC TELECOM SERVICES, LLC
 506 2ND AVE, SUITE 210
 SEATTLE, WA 98104

PROJECT INFORMATION:

BELLEVUE CC
 SE13XC107/CCI# 880364
 2351 145TH PLACE SE
 BELLEVUE, WA 98007
 KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:

4072 REGISTERED ARCHITECT
Thomas R. Holland
 THOMAS R. HOLLAND
 STATE OF WASHINGTON
 REN. 02-18-15

Received
 DEC 08 2014
 SHEET TITLE: SITE PLAN

SHEET NUMBER: A-1	REVISION: 1
-----------------------------	----------------

24"x36" SCALE: 1" = 10'-0"
 11"x17" SCALE: 1" = 20'-0"

TRUE NORTH
 MAGNETIC NORTH
 16.5°

SITE PLAN | 1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



PTS
 PACIFIC TELECOM SERVICES, LLC
 506 2ND AVE, SUITE 210
 SEATTLE, WA 98104

PROJECT INFORMATION:

BELLEVUE CC
 SE13XC107/CCI# 880364
 2351 145TH PLACE SE
 BELLEVUE, WA 98007
 KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS				
REV.	DATE	DESCRIPTION	INITIALS	
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM	
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM	
1	10/01/14	JURISDICTIONAL COMMENTS	TJB	△

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:

4072 REGISTERED ARCHITECT
Thomas R. Holland
 THOMAS R. HOLLAND
 STATE OF WASHINGTON
 REN. 02-18-15

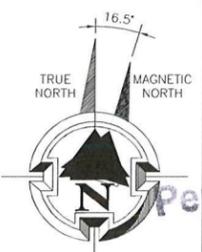
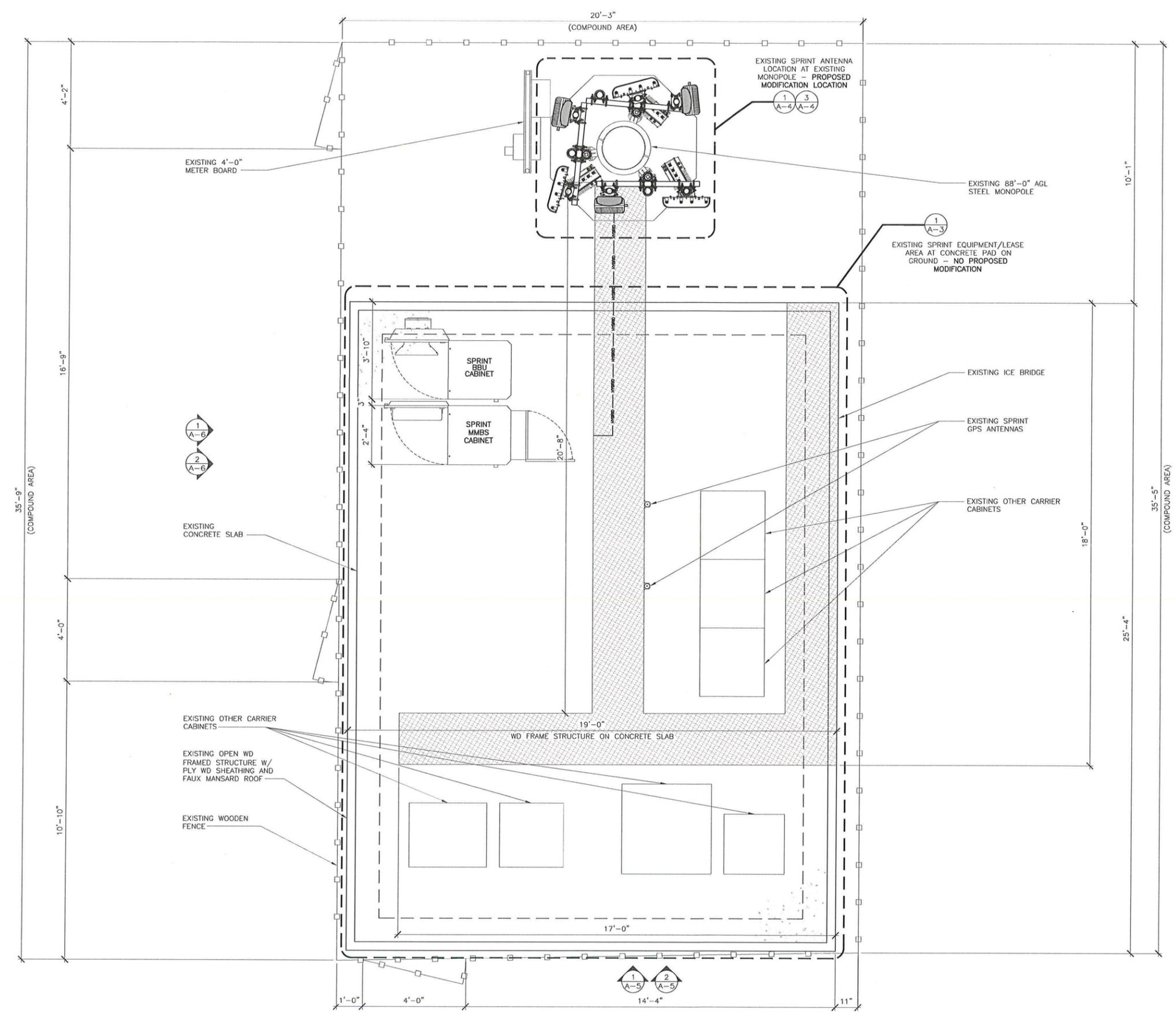
Received
 DEC 08 2014

SHEET TITLE: ENLARGED SITE PLAN

SHEET NUMBER: A-2

REVISION: 1

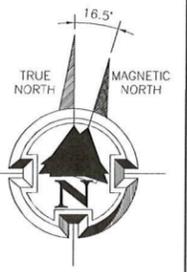
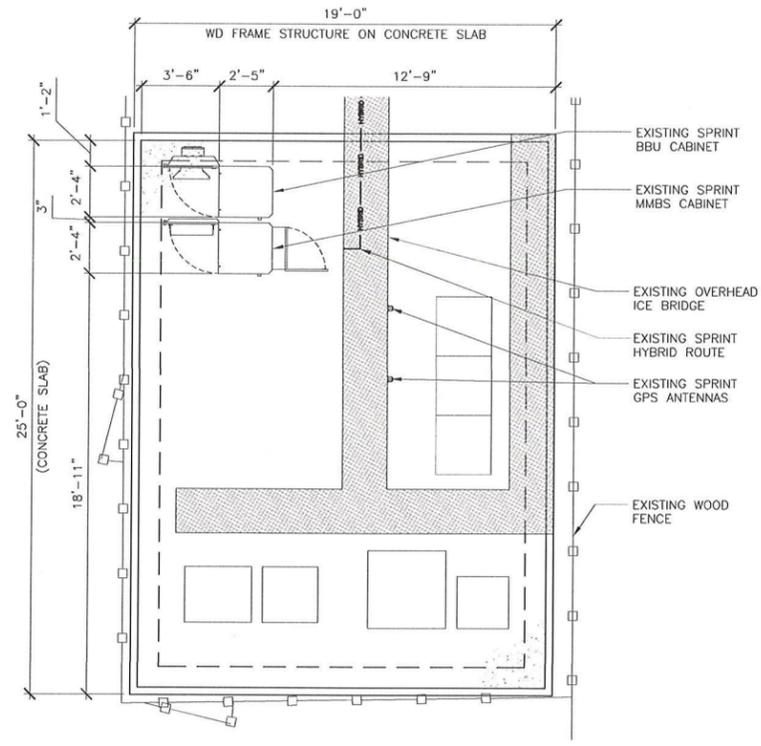
SE13XC107



24"x36" SCALE: 1/2" = 1'-0"
 11"x17" SCALE: 1/4" = 1'-0"

ENLARGED SITE PLAN | 1

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.



24"x36" SCALE: 1/4" = 1'-0"
 11"x17" SCALE: 1/8" = 1'-0"
 4' 3' 2' 1' 0' 4'

EQUIPMENT PLAN | 1

NOT USED | 2

NOT USED | 3

NOT USED | 4



PTS
 PACIFIC TELECOM SERVICES, LLC
 506 2ND AVE, SUITE 210
 SEATTLE, WA 98104

PROJECT INFORMATION:

BELLEVUE CC
 SE13XC107/CCI# 880364
 2351 145TH PLACE SE
 BELLEVUE, WA 98007
 KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

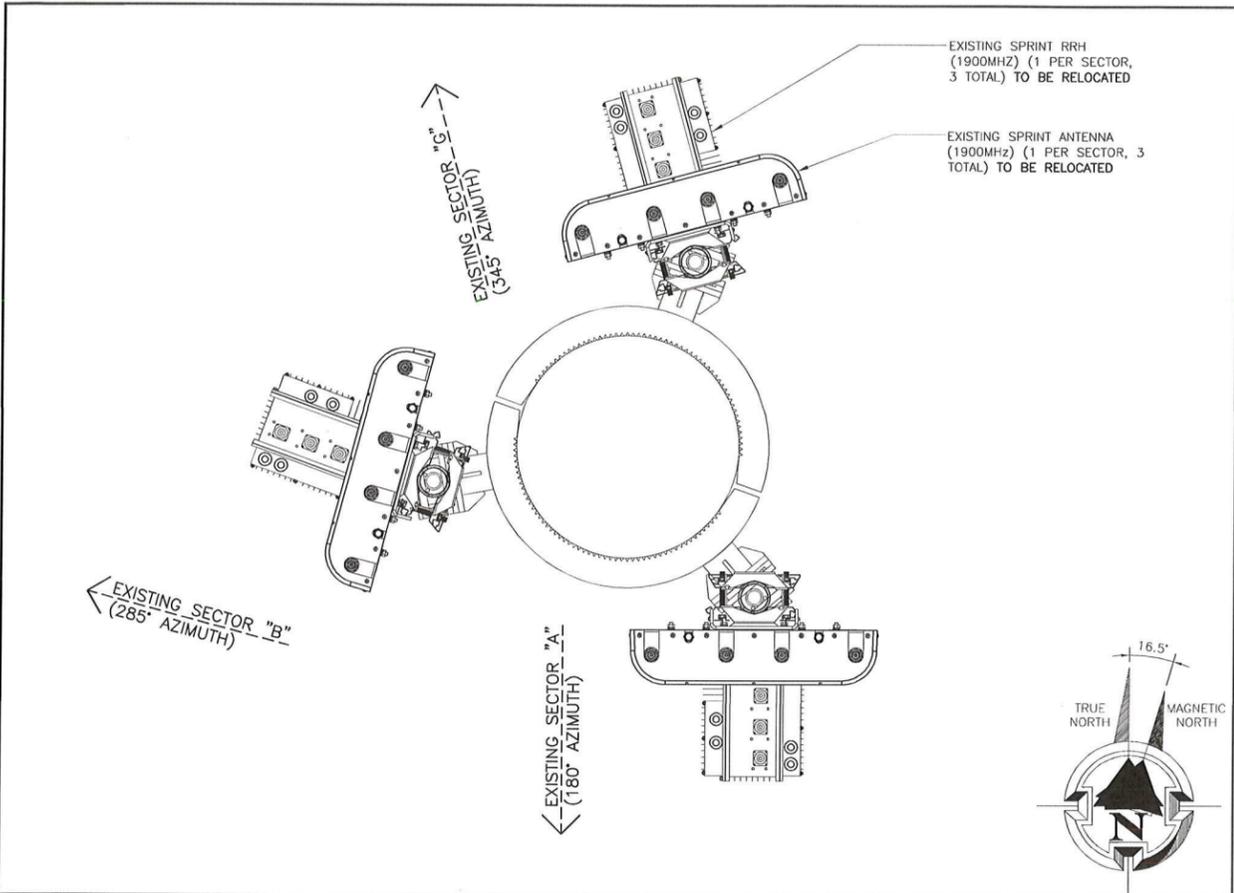
LICENSURE:

 4072 REGISTERED ARCHITECT
 THOMAS R. HOLLAND
 STATE OF WASHINGTON
 REN. 02-18-15

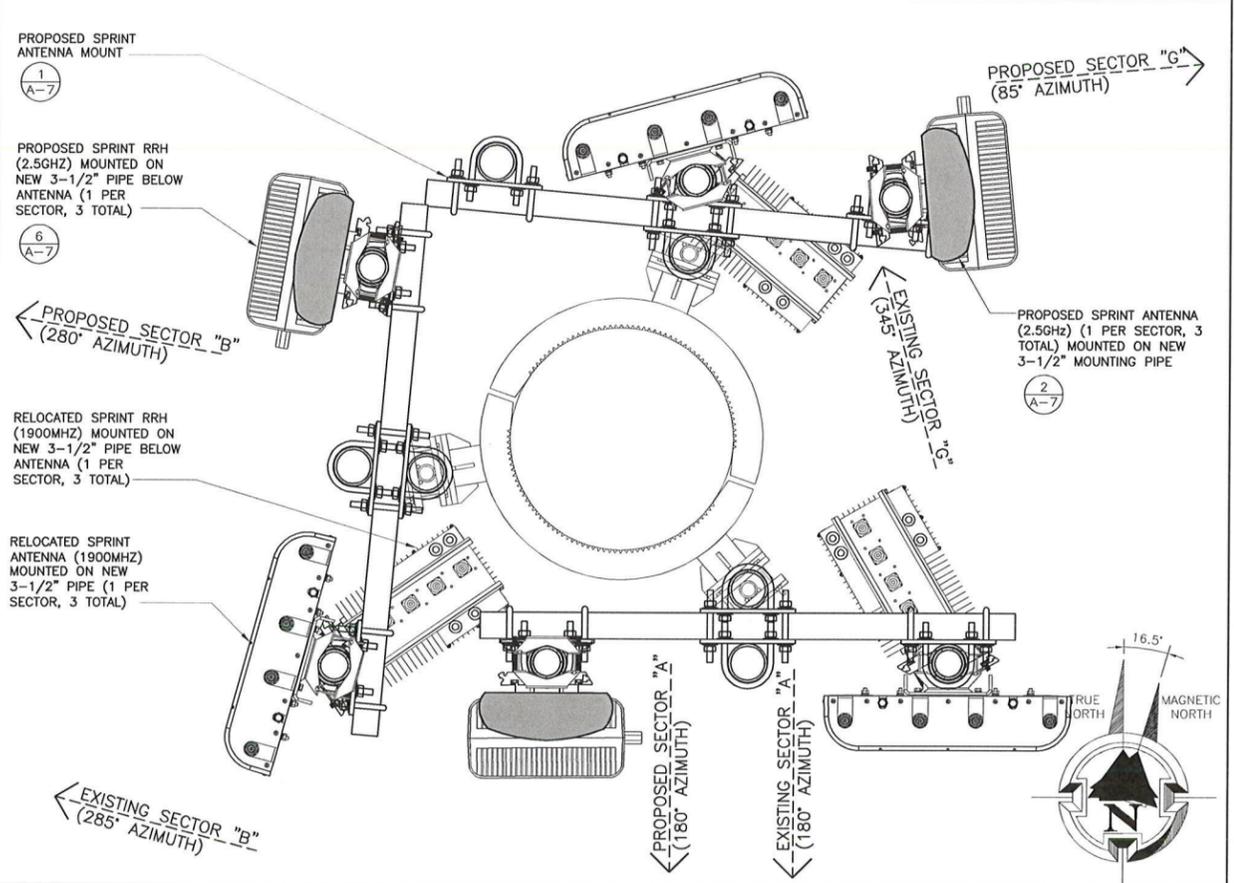
Received
 SHEET TITLE
 DEC 08 2014

EQUIPMENT PLAN

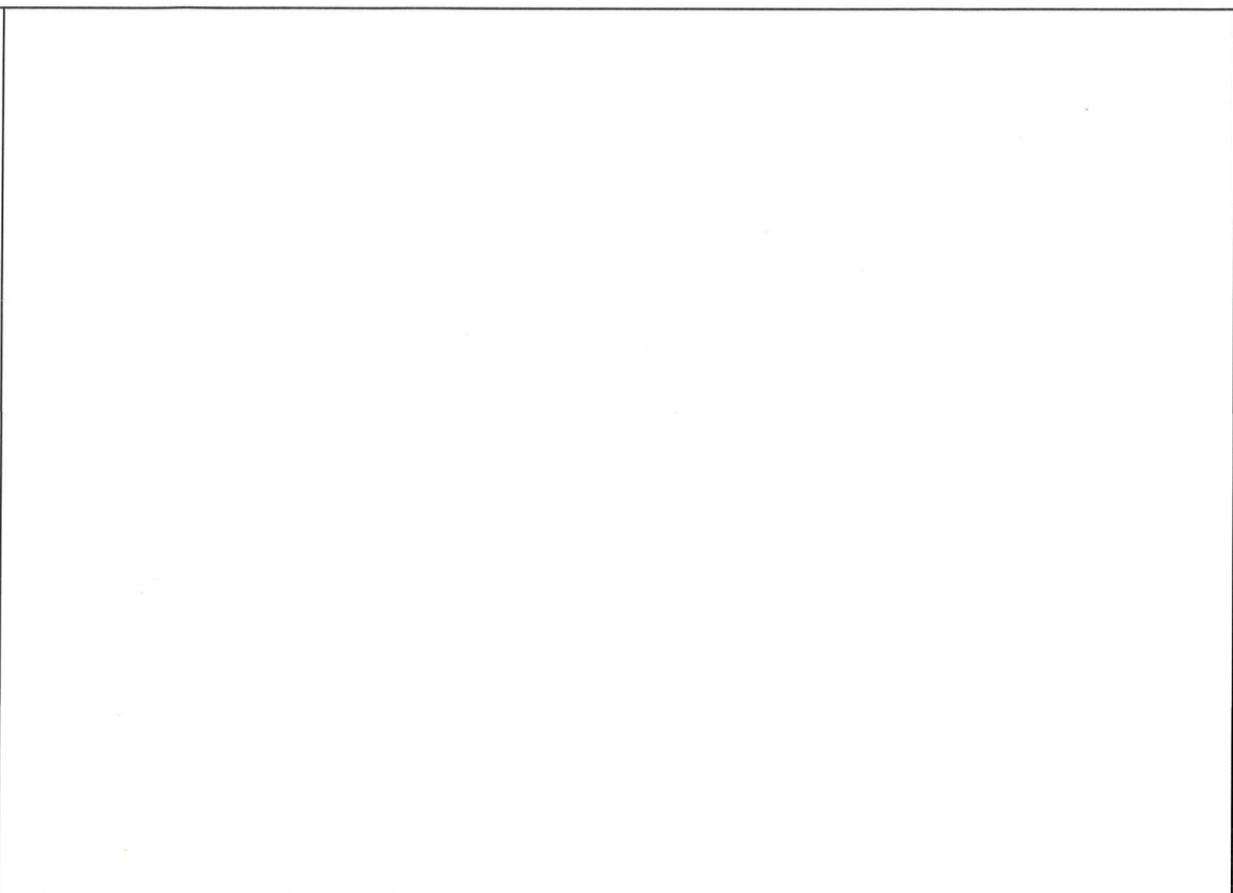
SHEET NUMBER: **A-3**
 REVISION: 1
 SE13XC107



24"x36" SCALE: 1-1/2" = 1'-0"
11"x17" SCALE: 3/4" = 1'-0"
EXISTING ANTENNA PLAN | 1



24"x36" SCALE: 1-1/2" = 1'-0"
11"x17" SCALE: 3/4" = 1'-0"
PROPOSED ANTENNA PLAN (FINAL) | 3



NOT USED | 2

RRU / HYBRID CABLE SCHEDULE										
SECTOR	RRU MODEL	RRU FREQUENCY	HYBRID CABLE LENGTH	HYBRID CABLE DIAMETER	JUMPER SIZE	JUMPER LENGTH	RET LENGTH	RET CABLE MANUFACTURER	RET CABLE MODEL NUMBER	SPLITTER MODEL
ALPHA	RRH-V3	2.5 GHz	150'	N/A	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-006	12" MEDUSA HFC
BETA	RRH-V3	2.5 GHz	150'	N/A	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-006	12" MEDUSA HFC
GAMMA	RRH-V3	2.5 GHz	150'	N/A	1/2"	6'	9.8'	COMMSCOPE	ATCB-B01-006	12" MEDUSA HFC



PTS
PACIFIC TELECOM SERVICES, LLC
506 2ND AVE, SUITE 210
SEATTLE, WA 98104

PROJECT INFORMATION:

BELLEVUE CC
SE13XC107/CCI# 880364
2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:

4072 REGISTERED ARCHITECT
Thomas R. Holland
THOMAS R. HOLLAND
STATE OF WASHINGTON
REN. 02-18-15

Received
SHEET TITLE: ANTENNA PLANS & SCHEDULES
DEC 08 2014

SHEET NUMBER: **A-4**
REVISION: 1
SE13XC107



PROJECT INFORMATION:

BELLEVUE CC
SE13XC107/CCI# 880364
2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

ISSUE DATE: 10-01-14

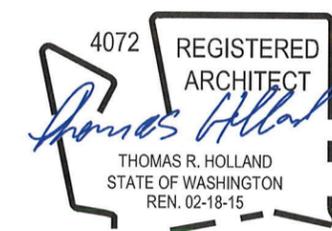
ISSUED FOR: CONSTRUCTION DWGS

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:



EXISTING & PROPOSED SOUTH ELEVATIONS

SHEET NUMBER: **A-5** REVISION: 1

SE13XC107

NOTE:
ALL NEW & INTERIM ANTENNAS, ANTENNA MOUNTS, ALL MOUNTING HARDWARE & NEW EQUIPMENT TO BE PAINTED DARK GREEN TO MATCH EXISTING MONOPOLE

PROPOSED SPRINT ANTENNA (2.5GHZ) (1 PER SECTOR, 3 TOTAL) MOUNTED ON NEW 3-1/2" MOUNTING PIPE

2
A-7

PROPOSED SPRINT RRH (2.5GHZ) MOUNTED ON NEW 3-1/2" PIPE BELOW ANTENNA (1 PER SECTOR, 3 TOTAL)

6
A-7

PROPOSED SPRINT ANTENNA MOUNT (1 A-7)

RELOCATED SPRINT PANEL ANTENNA (1 PER SECTOR, 3 TOTAL)

RELOCATED SPRINT RRH UNIT (1 PER SECTOR, 3 TOTAL)

EXISTING OTHER CARRIER ANTENNAS

EXISTING OTHER CARRIER ANTENNAS

EXISTING 88'-0" AGL TOWER

EXISTING OTHER CARRIER ANTENNAS

EXISTING SPRINT HYBRID ROUTE UP MONOPOLE

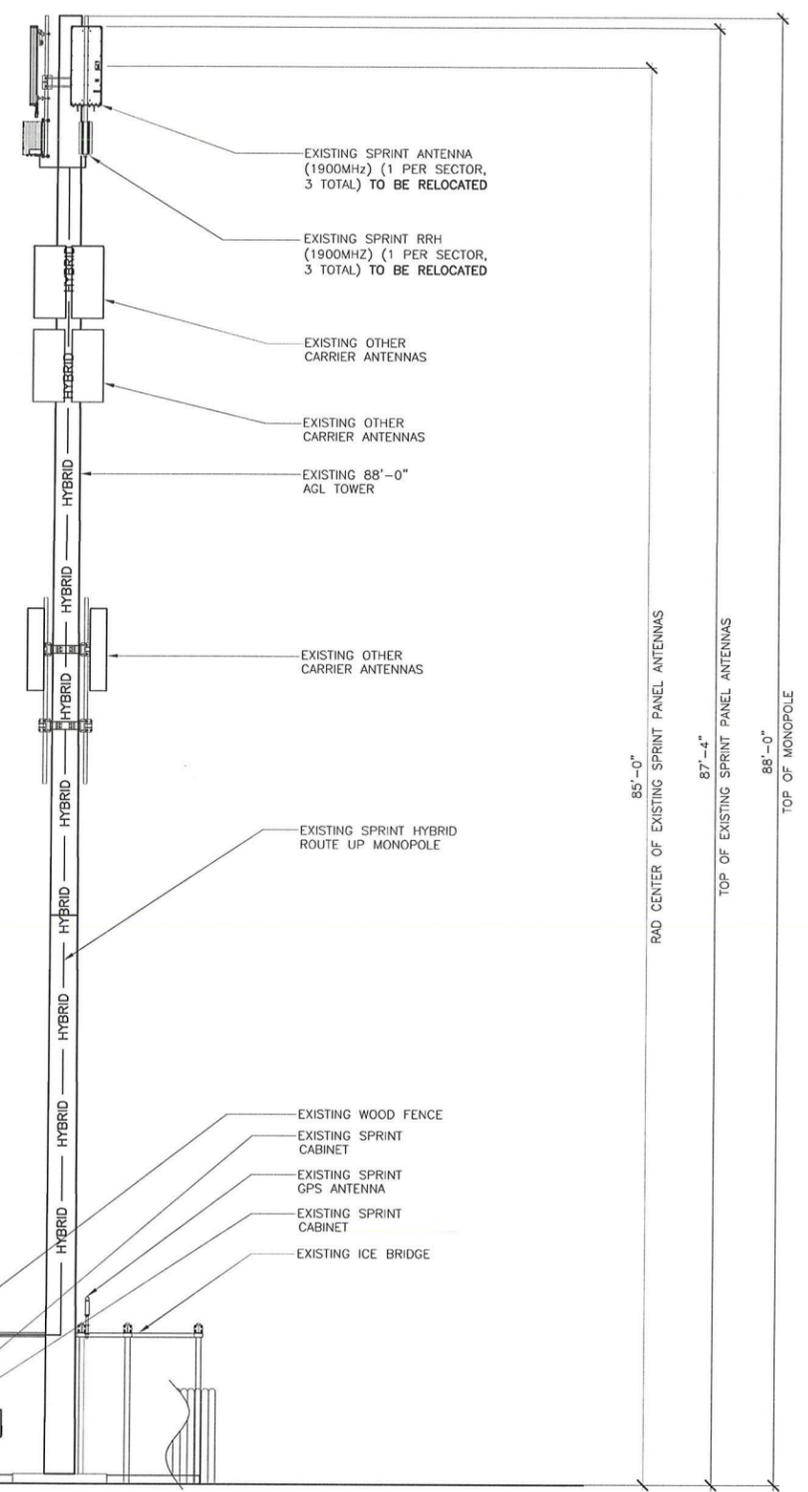
EXISTING WOOD FENCE

EXISTING SPRINT CABINET

EXISTING SPRINT GPS ANTENNA

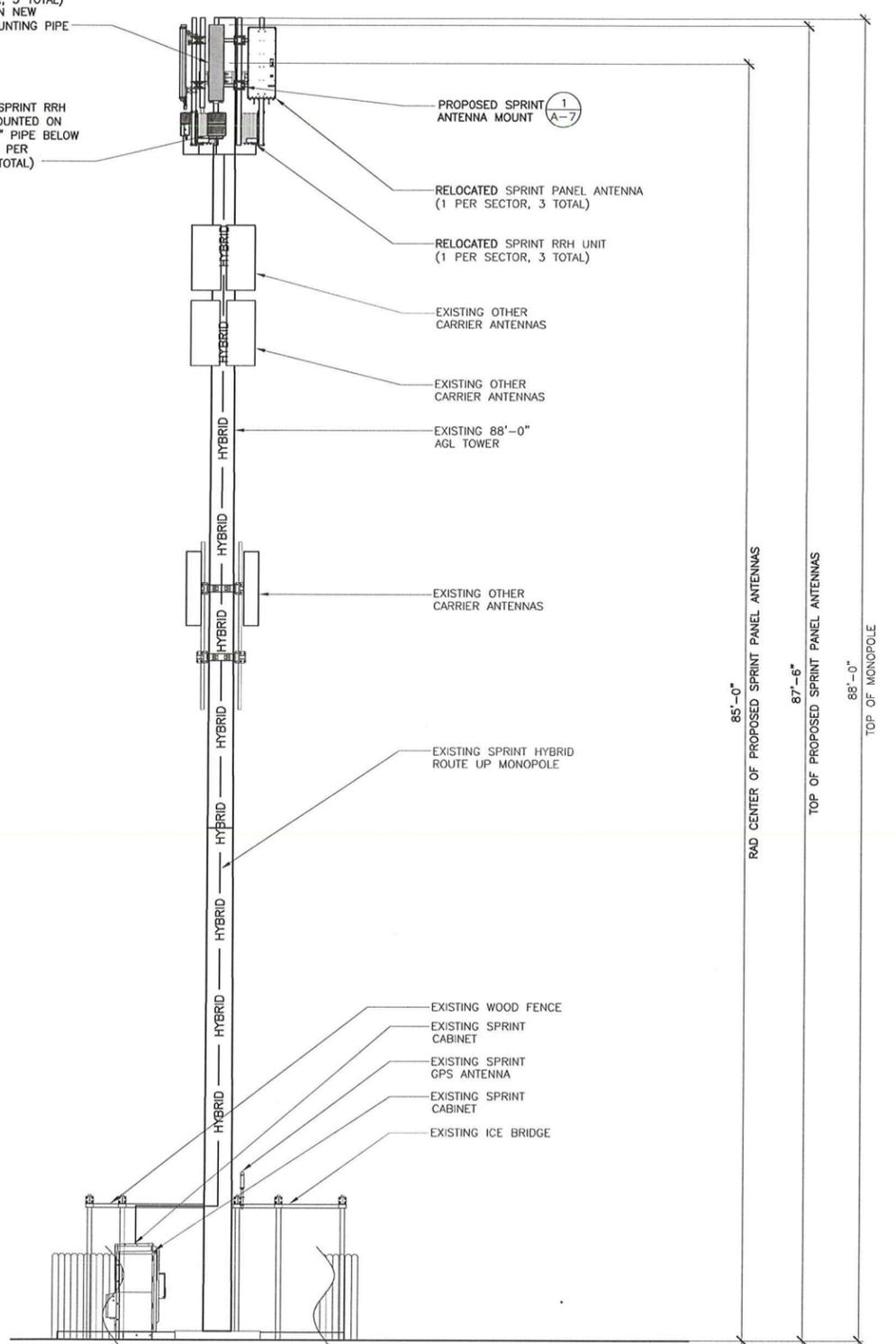
EXISTING SPRINT CABINET

EXISTING ICE BRIDGE



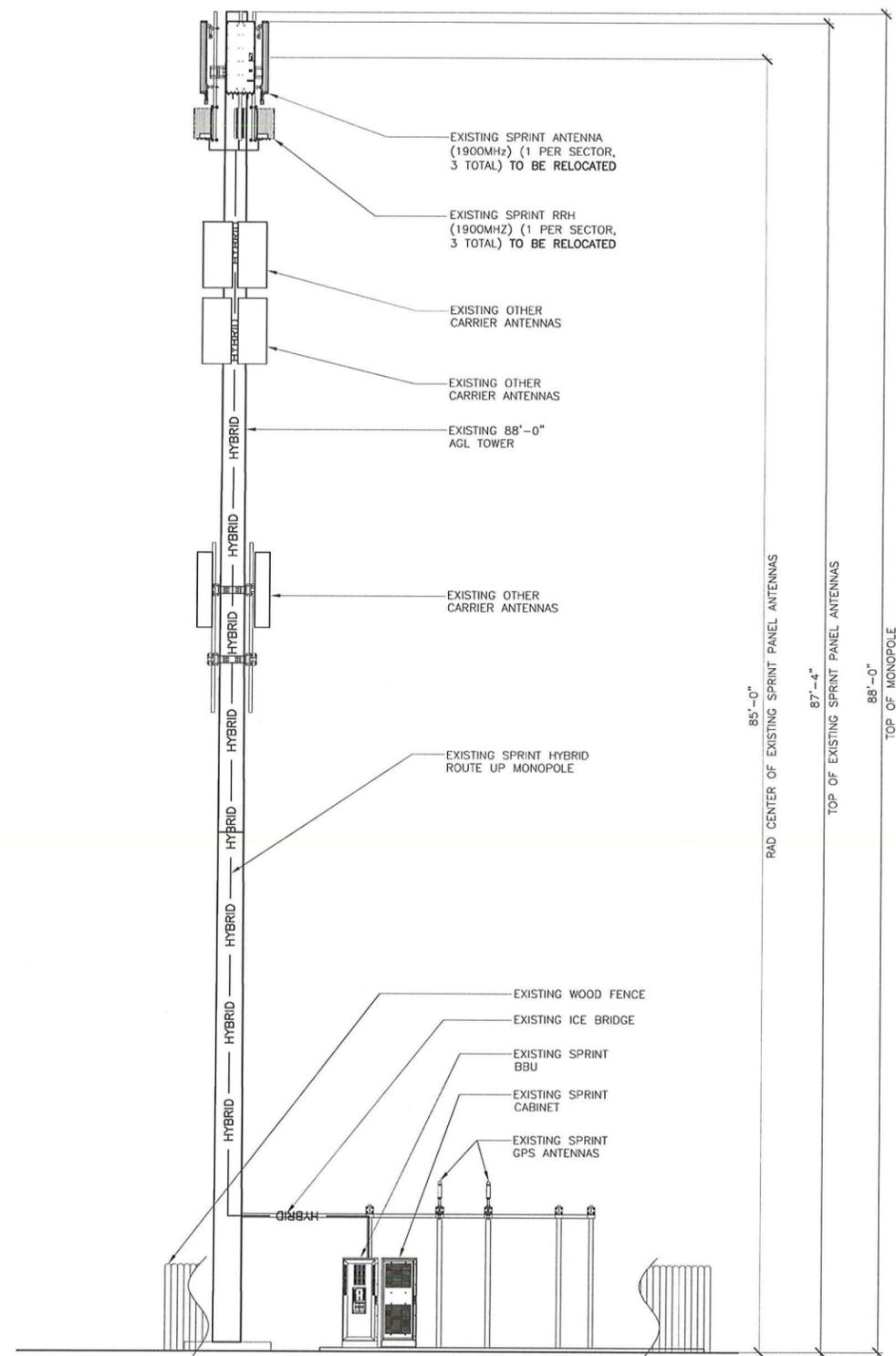
EXISTING SOUTH ELEVATION 1

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"



PROPOSED SOUTH ELEVATION 2

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"



PROPOSED SPRINT ANTENNA (2.5GHZ) (1 PER SECTOR, 3 TOTAL) MOUNTED ON NEW 3-1/2\"/>

2
A-7

PROPOSED SPRINT RRH (2.5GHZ) MOUNTED ON NEW 3-1/2\"/>

6
A-7

PROPOSED SPRINT ANTENNA MOUNT 1
A-7

RELOCATED SPRINT PANEL ANTENNA (1 PER SECTOR, 3 TOTAL)

RELOCATED SPRINT RRH UNIT (1 PER SECTOR, 3 TOTAL)

EXISTING OTHER CARRIER ANTENNAS

EXISTING OTHER CARRIER ANTENNAS

EXISTING 88'-0\"/>

EXISTING OTHER CARRIER ANTENNAS

EXISTING SPRINT HYBRID ROUTE UP MONOPOLE

EXISTING WOOD FENCE

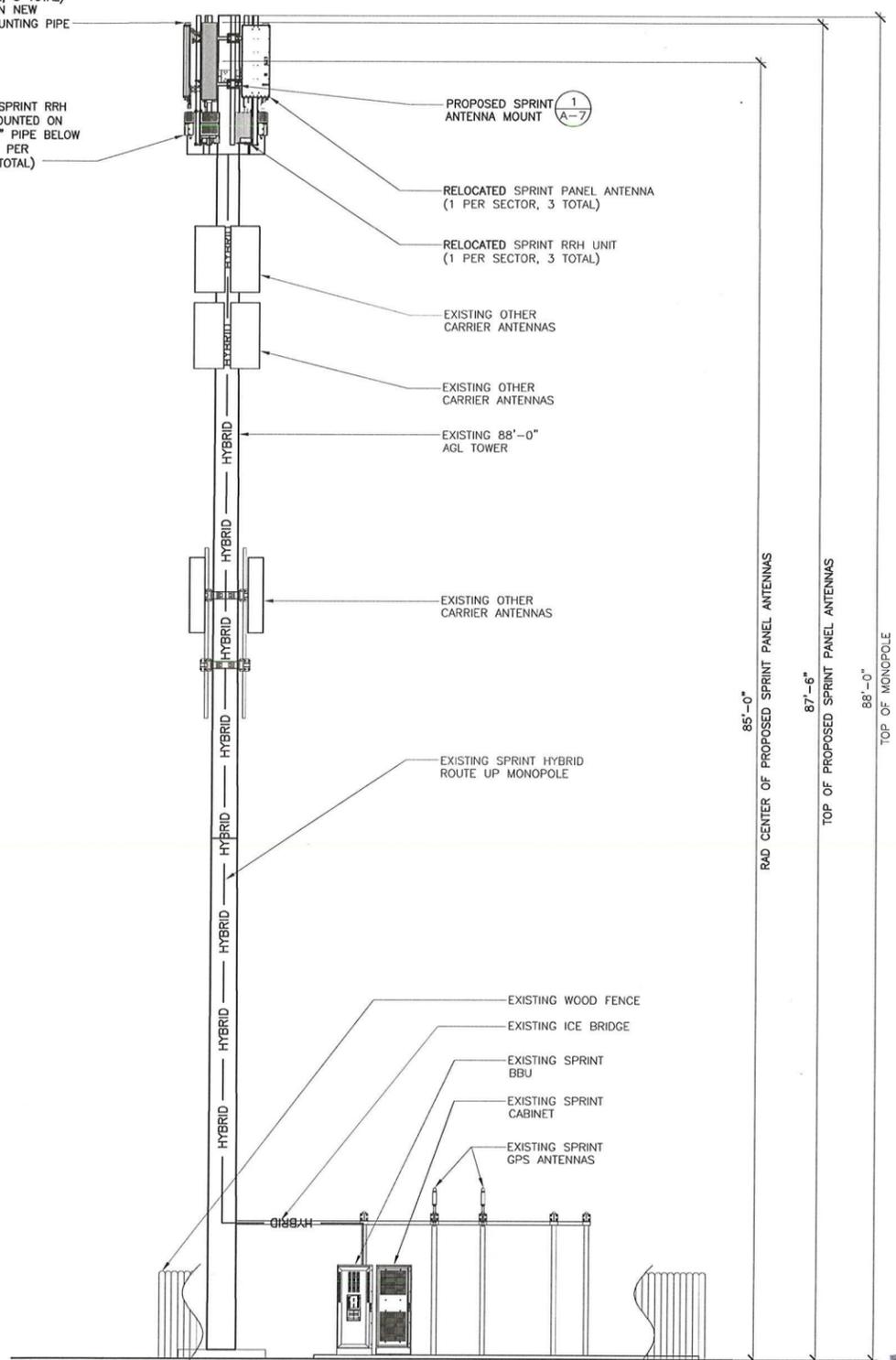
EXISTING ICE BRIDGE

EXISTING SPRINT BBU

EXISTING SPRINT CABINET

EXISTING SPRINT GPS ANTENNAS

NOTE:
ALL NEW & INTERIM ANTENNAS, ANTENNA MOUNTS, ALL MOUNTING HARDWARE & NEW EQUIPMENT TO BE PAINTED DARK GREEN TO MATCH EXISTING MONOPOLE



24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

EXISTING WEST ELEVATION 1

24"x36" SCALE: 3/16" = 1'-0"
11"x17" SCALE: 3/32" = 1'-0"

PROPOSED WEST ELEVATION 2



PTS
PACIFIC TELECOM SERVICES, LLC
506 2ND AVE, SUITE 210
SEATTLE, WA 98104

PROJECT INFORMATION:

BELLEVUE CC
SE13XC107/CCI# 880364
2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS				
REV.	DATE	DESCRIPTION	INITIALS	
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM	
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM	
1	10/01/14	JURISDICTIONAL COMMENTS	TJB	

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

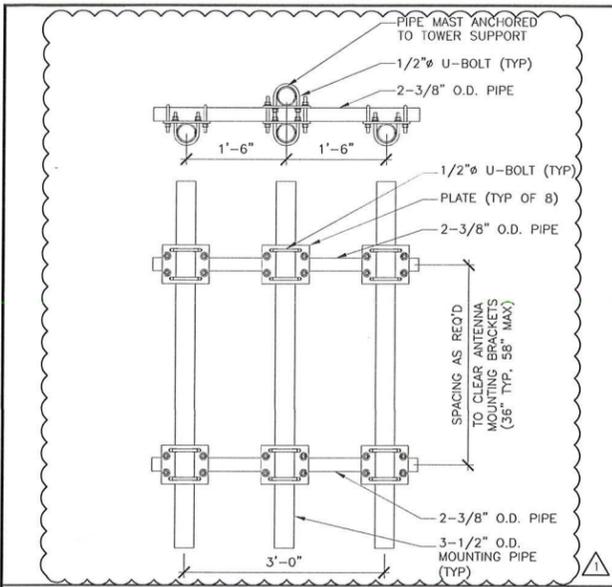
LICENSURE:



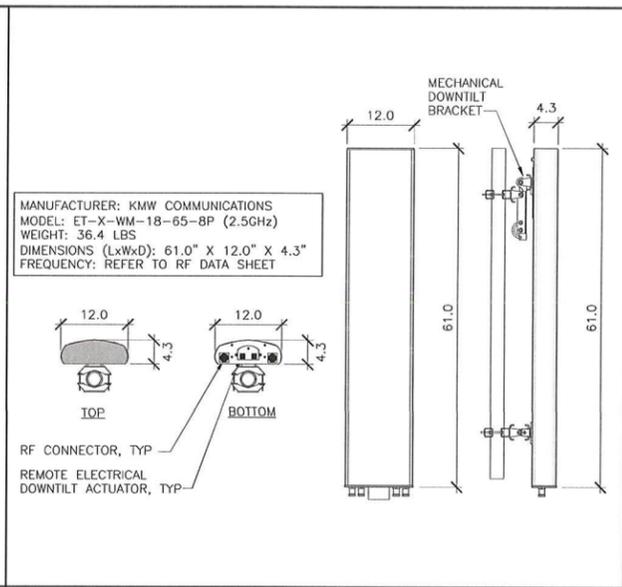
SHEET TITLE:
EXISTING & PROPOSED WEST ELEVATION

SHEET NUMBER: A-6
REVISION: 1
SE13XC107

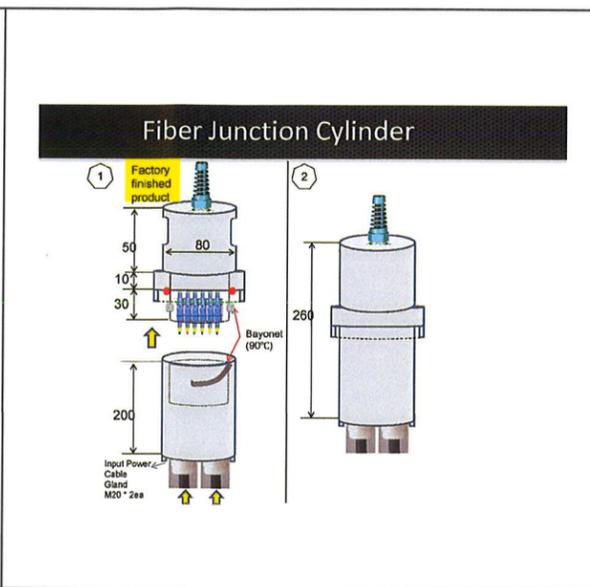
Received
DEC 08 2014
Permit Process



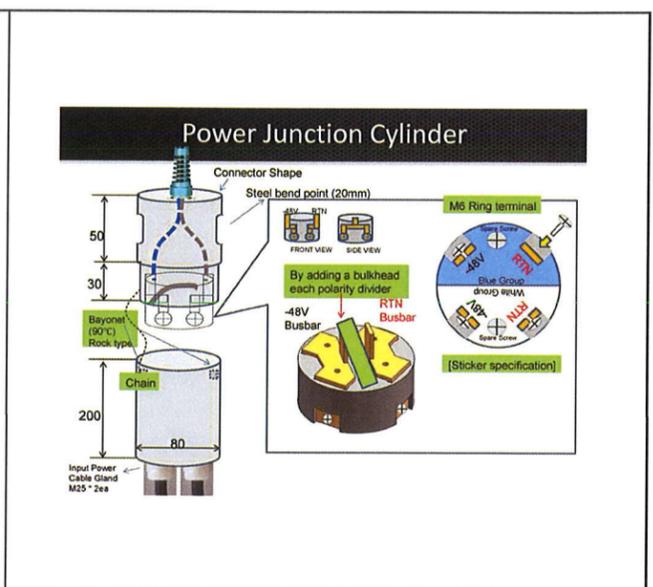
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
ANTENNA MOUNT DETAIL 1



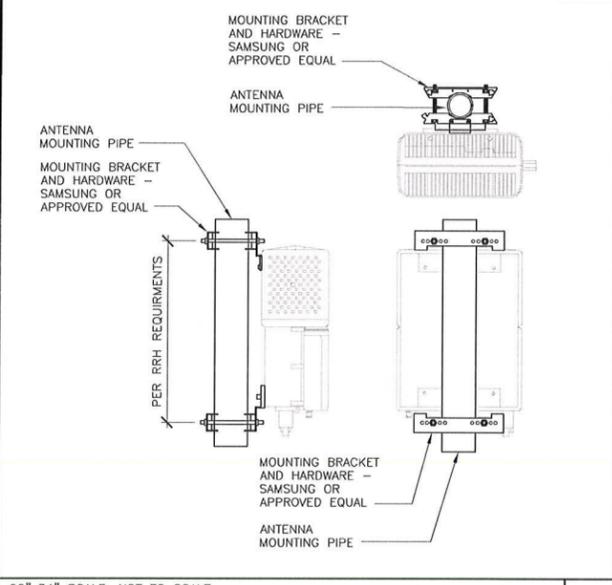
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
2.5GHZ ANTENNA 2



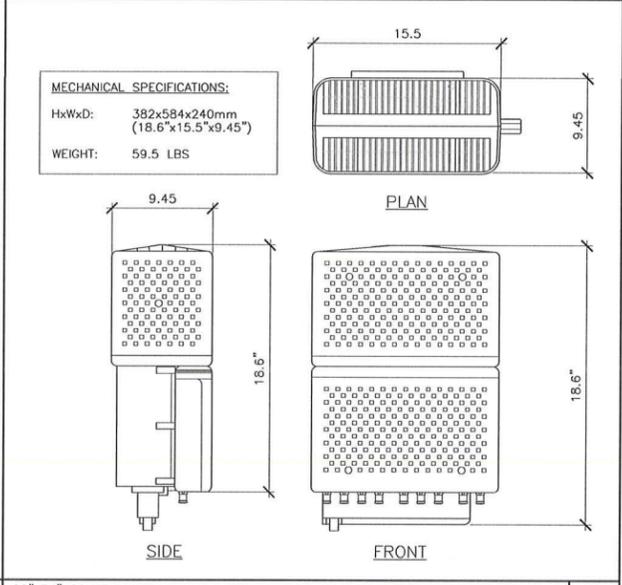
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
FIBER JUNCTION CYLINDER 3



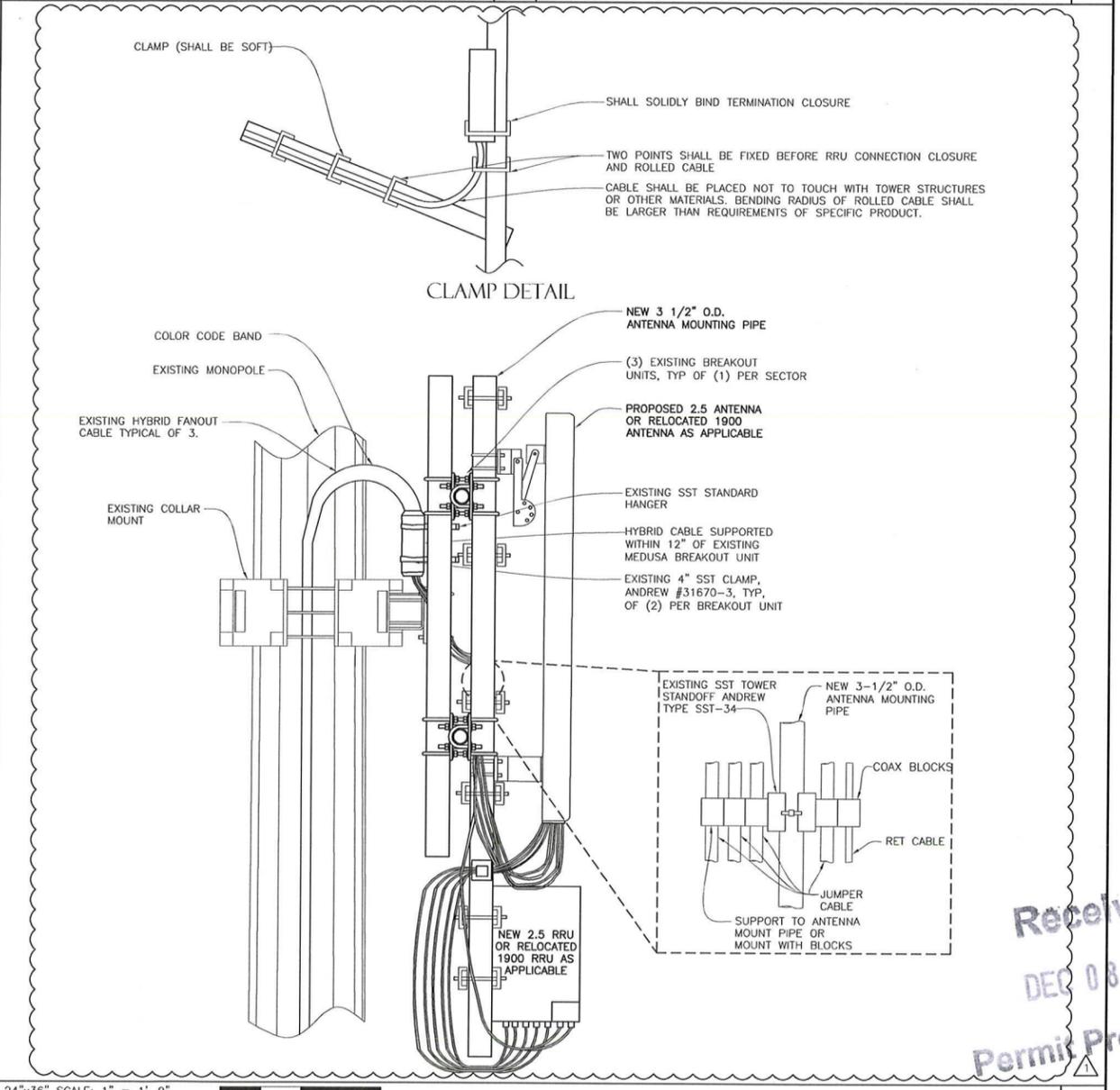
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
POWER JUNCTION CYLINDER 4



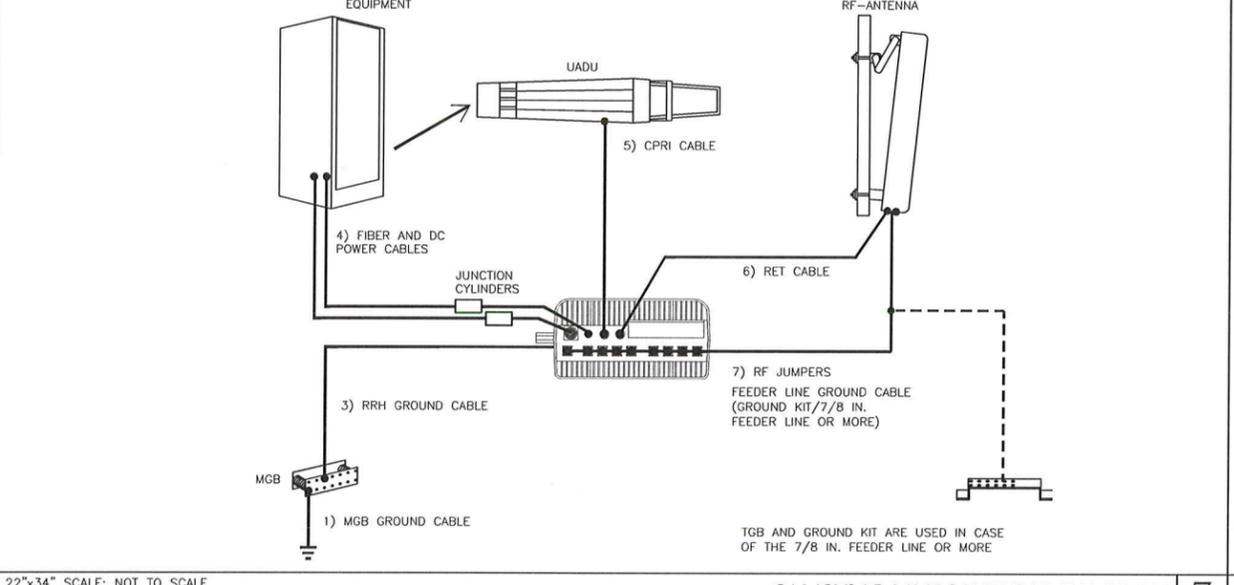
22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
RRH MOUNTING 5



22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
2.5GHZ RRH-V3 6



24"x36" SCALE: 1" = 1'-0"
11"x17" SCALE: 1/2" = 1'-0"
TYPICAL ANTENNA & RRH MOUNTING AND CABLING DETAIL 8

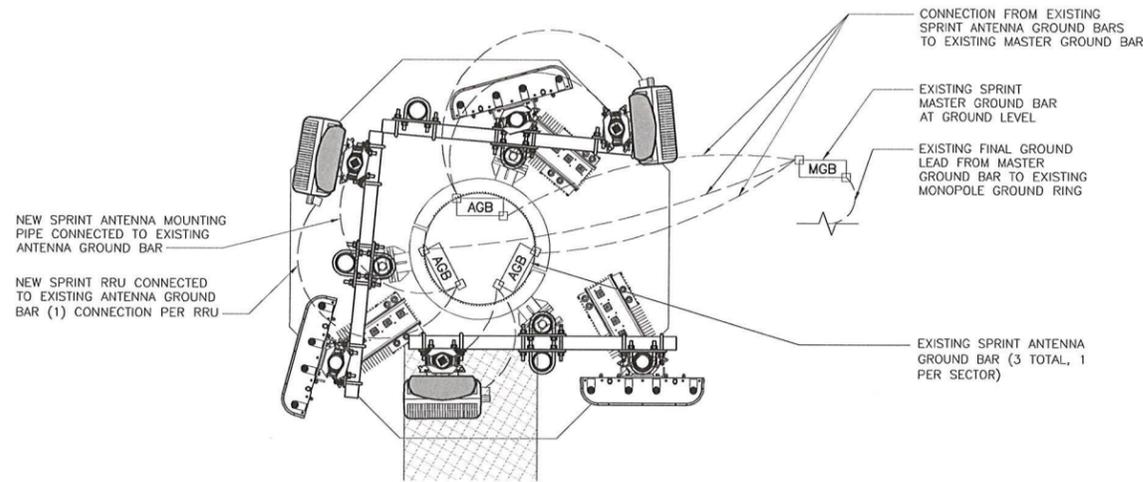


22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE
SAMSUNG MMBS WIRING DIAGRAM 7

REVISIONS				
REV.	DATE	DESCRIPTION	INITIALS	
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM	
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM	
1	10/01/14	JURISDICTIONAL COMMENTS	TJB	▲

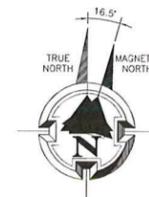
NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:
4072 REGISTERED ARCHITECT
Thomas R. Holland
THOMAS R. HOLLAND
STATE OF WASHINGTON
REN. 02-18-15



LEGEND

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION
- CGB COLLECTOR GROUND BAR
- MGB EXTERNAL GROUND BAR



24"x36" SCALE: 3/4" = 1'-0"
 11"x17" SCALE: 3/8" = 1'-0"
 1" 6" 0" 1"

SCHEMATIC GROUNDING PLAN 1

1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
2. GROUND ALL ANTENNA BASES, FRAMES, CABLE RUNS, AND OTHER METALLIC COMPONENTS USING GROUND WIRES AND CONNECT TO SURFACE MOUNTED BUS BARS. FOLLOW ANTENNA AND BTS MANUFACTURERS PRACTICES FOR GROUNDING REQUIREMENTS. GROUND COAX SHIELD AT BOTH ENDS AND EXIT FROM TOWER OR POLE USING MFR'S PRACTICES.
3. ALL GROUND CONNECTIONS SHALL BE EXOTHERMIC. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE GREEN INSULATED WIRE ABOVE GROUND.
4. CONTRACTOR TO VERIFY AND TEST GROUND TO SOURCE. GROUNDING AND OTHER OPERATIONAL TESTING WILL BE WITNESSED BY SPRINT SPECTRUM REPRESENTATIVE.
5. REFER TO DIVISION 16 GENERAL ELECTRIC; GENERAL ELECTRICAL PROVISION AND COMPLY WITH ALL REQUIREMENTS OF GROUNDING STANDARDS.
6. ELECTRICAL CONTRACTOR TO PROVIDE DETAILED DESIGN OF GROUNDING SYSTEM PER SPRINT STANDARD GROUNDING METHOD, AND RECEIVE APPROVAL OF DESIGN BY AUTHORIZED SPRINT SPECTRUM REPRESENTATIVE, PRIOR TO INSTALLATION OF GROUNDING SYSTEM. PHOTO DOCUMENT ALL EXOTHERMIC AND GROUND RING
7. NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.
8. ALL EXISTING GROUND BARS, WIRES & CONNECTIONS SHALL BE FIELD VERIFIED. ANY DEFICIENT ITEMS SHALL BE REPLACED AS REQUIRED TO ACHIEVE ADEQUATE GROUNDING REQUIRED BY SPRINT.

GENERAL GROUNDING NOTES

GROUNDING NOTES

1. EXOTHERMIC WELDS (2). 2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. EC SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "T") WITH 1" HIGH LETTERS.
3. ALL HARDWARE 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8 INCH DIAMETER OR LARGER.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION ON ALL GROUNDING TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
6. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
7. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
8. WEATHERPROOFING SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
9. SUPPLIED AND INSTALLED BY CONTRACTOR.
10. WHEN THE SCOPE OF WORK REQUIRES THE ADDITION OF A GROUNDING BAR TO AN EXISTING TOWER, THE SUBCONTRACTOR SHALL OBTAIN APPROVAL FROM THE TOWER OWNER PRIOR TO MOUNTING THE GROUNDING BAR TO THE TOWER.
11. EXTEND TWO (2) 2 AWG TINNED CU CONDUCTOR FROM BURIED GROUNDING RING AND CONNECT TO THE NEW TOWER. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR GROUNDING CONNECTIONS TO THE TOWER. (APPLICABLE TO NEW TOWERS ONLY.)
12. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BARS AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
13. EXPOSED GROUND WIRES TO BE NON METALLIC LIQUID TIGHT.



PROJECT INFORMATION:

BELLEVUE CC
 SEI3XC107/CCI# 880364
 2351 145TH PLACE SE
 BELLEVUE, WA 98007
 KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
0	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

LICENSURE:



Received
 DEC 10 2014
 Permit Processing

SHEET TITLE: SCHEMATIC GROUNDING PLAN

SHEET NUMBER: E-1 REVISION: 1

SEI3XC107

PROJECT INFORMATION:

BELLEVUE CC
SEI3XC107/CCI# 880364
2351 145TH PLACE SE
BELLEVUE, WA 98007
KING COUNTY

ISSUE DATE: 10-01-14

ISSUED FOR: CONSTRUCTION DWGS

REVISIONS

REV.	DATE	DESCRIPTION	INITIALS
A	04/25/14	ISSUED FOR 90% CONSTRUCTION	AM
O	05/23/14	ISSUED FOR 100% CONSTRUCTION	AM
1	10/01/14	JURISDICTIONAL COMMENTS	TJB

NOT FOR CONSTRUCTION UNLESS LABELED AS CONSTRUCTION SET

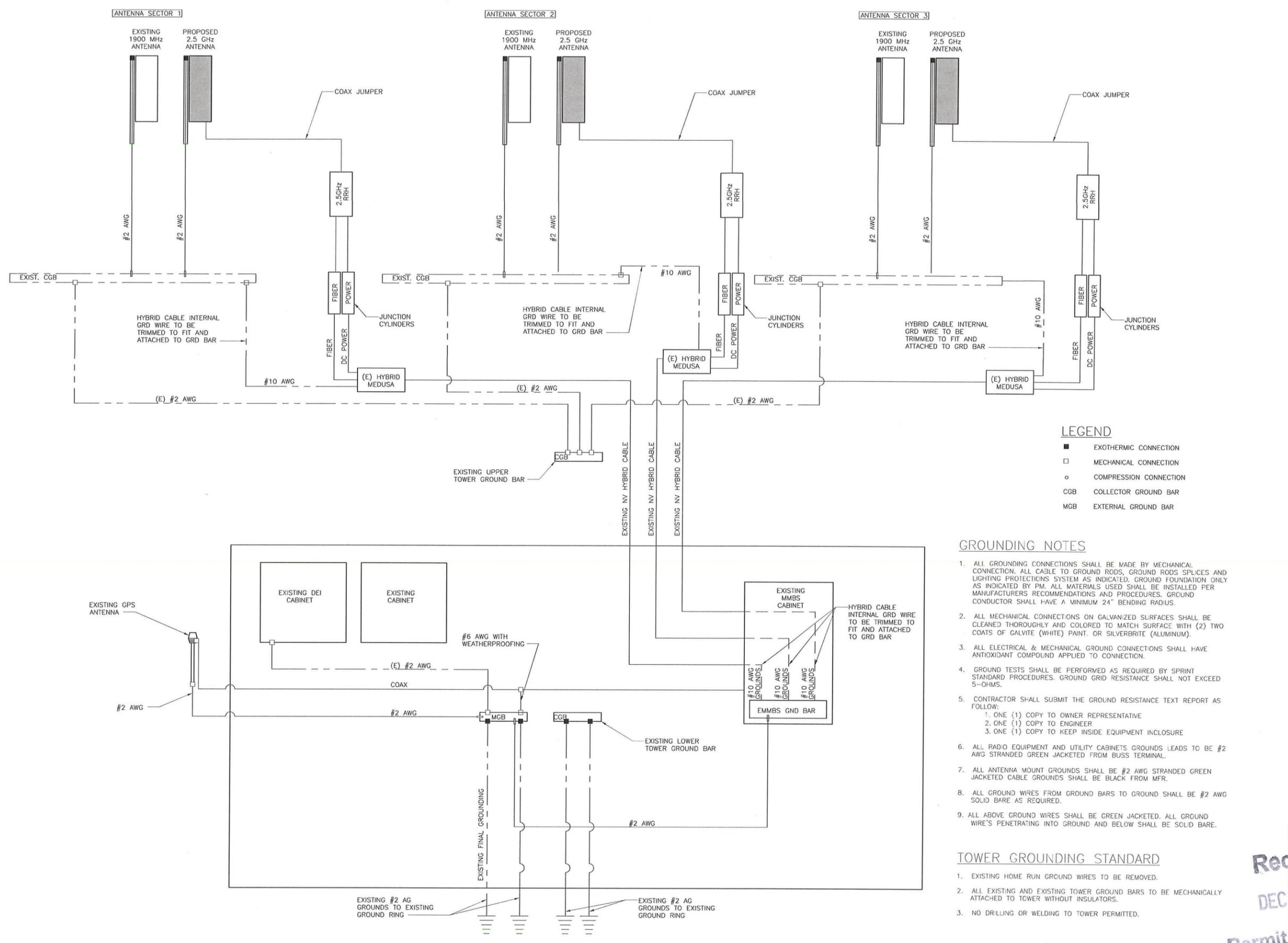
LICENSURE:



Received
DEC 08 2014
Permit Processing

SHEET TITLE: GROUNDING DETAILS

SHEET NUMBER: E-2
REVISION: 1
SEI3XC107



LEGEND

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- COMPRESSION CONNECTION
- CGB COLLECTOR GROUND BAR
- MGB EXTERNAL GROUND BAR

GROUNDING NOTES

1. ALL GROUNDING CONNECTIONS SHALL BE MADE BY MECHANICAL CONNECTION. ALL CABLE TO GROUND RODS, GROUND RODS SPLICES AND LIGHTING PROTECTIONS SYSTEM AS INDICATED. GROUND FOUNDATION ONLY AS INDICATED BY PM. ALL MATERIALS USED SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND PROCEDURES. GROUND CONDUCTOR SHALL HAVE A MINIMUM 24" BENDING RADIUS.
2. ALL MECHANICAL CONNECTIONS ON GALVANIZED SURFACES SHALL BE CLEANED THOROUGHLY AND COLORED TO MATCH SURFACE WITH (2) TWO COATS OF GALVITE (WHITE) PAINT, OR SILVERBRITE (ALUMINUM).
3. ALL ELECTRICAL & MECHANICAL GROUND CONNECTIONS SHALL HAVE ANTIOXIDANT COMPOUND APPLIED TO CONNECTION.
4. GROUND TESTS SHALL BE PERFORMED AS REQUIRED BY SPRINT STANDARD PROCEDURES. GROUND GRID RESISTANCE SHALL NOT EXCEED 5-OHMS.
5. CONTRACTOR SHALL SUBMIT THE GROUND RESISTANCE TEXT REPORT AS FOLLOW:
 1. ONE (1) COPY TO OWNER REPRESENTATIVE
 2. ONE (1) COPY TO ENGINEER
 3. ONE (1) COPY TO KEEP INSIDE EQUIPMENT INCLOSURE
6. ALL RADIO EQUIPMENT AND UTILITY CABINETS GROUNDS LEADS TO BE #2 AWG STRANDED GREEN JACKETED FROM BUSS TERMINAL.
7. ALL ANTENNA MOUNT GROUNDS SHALL BE #2 AWG STRANDED GREEN JACKETED CABLE GROUNDS SHALL BE BLACK FROM MFR.
8. ALL GROUND WIRES FROM GROUND BARS TO GROUND SHALL BE #2 AWG SOLID BARE AS REQUIRED.
9. ALL ABOVE GROUND WIRES SHALL BE GREEN JACKETED. ALL GROUND WIRE'S PENETRATING INTO GROUND AND BELOW SHALL BE SOLID BARE.

TOWER GROUNDING STANDARD

1. EXISTING HOME RUN GROUND WIRES TO BE REMOVED.
2. ALL EXISTING AND EXISTING TOWER GROUND BARS TO BE MECHANICALLY ATTACHED TO TOWER WITHOUT INSULATORS.
3. NO DRILLING OR WELDING TO TOWER PERMITTED.

22"x34" SCALE: NOT TO SCALE
11"x17" SCALE: NOT TO SCALE

