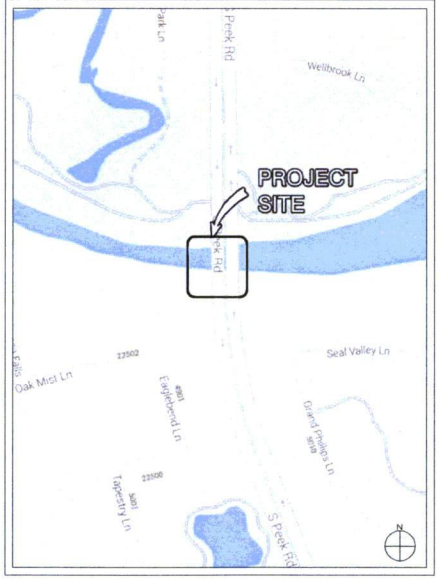
C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-002-01 - PROJECT.rvt

4/18/2014 6:16:46 AM

CROWN CASTLE

PROJECT NAME:	VERIZON - CINCO RANCH
PROJECT ADDRESS:	PEEK RD. & WILLOW FORK DRAINAGE DITCH
PROJECT TYPE:	WOOD POWER POLE
HUB AREA:	CINCO RANCH, TX
NODE #(s):	CCR-002-01
COORDINATES:	LAT: 29.722200, LONG: -95.767760

VICINITY MAP



PROJECT TEAM

ARCHITECT
Company: SHIFT CONSULTING
Address: 7333 E. MONTE VISTA RD. SCOTTSDALE, AZ 85257
Phone Number: 480.264.0829
Fax Number: 480.264.0163
Contact: CHRIS MYERS

STRUCTURAL
Company: WSC
Address: 2734 E PROMINENT CT. S. SALEM, OR 97302
Phone Number: 503.587.0101
Fax Number:
Contact:

RF ENGINEER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

FIBER ENGINEERING
Company: ICTX
Address: 419 CENTURY PLAZA, STE. 250 HOUSTON, TX 77073
Phone Number: 832.465.4510
Fax Number:
Contact:

GENERAL CONTRACTOR
Company: T.B.D.
Address:
Phone Number:
Fax Number:
Contact:

PROJECT MANAGER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE COMMUNITY OF CINCO RANCH, TEXAS. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY IN RESIDENTIAL AREAS. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

A SUBJECT NODE WILL CONSIST OF GROUND MOUNTED EQUIPMENT AND INSTALLATION OF AN ANTENNA MOUNTED ON WOOD POLES SPECIFICALLY ENGINEERED TO SUPPORT THE PROPOSED NETWORK ANTENNAS. THE RADIO EQUIPMENT WILL BE MOUNTED INSIDE CONCEALEMENT CAGES ON THE GROUND, ALONG WITH A SEPARATE METER PEDESTAL.

PROJECT SUMMARY

PROJECT NAME:
VERIZON - CINCO RANCH

PROJECT AREA:
CINCO RANCH, TX

JURISDICTION:
FORT BEND COUNTY ENGINEERING DEPT.
1124 BLUME RD.
ROSENBERG, TX 77471
PH: 281.633.7500
CONTACT: JOHNNY ORTEGA

HANDICAPPED REQUIREMENTS:
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.

PLUMBING REQUIREMENTS:
- FACILITY HAS NO PLUMBING.

POWER COMPANY:
CENTERPOINT ENERGY
5431 HIGHWAY BLVD.
KATY, TX 77494
PH: 281.520.6275
CONTACT: KEN CORTEZ

APPLICANT:
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
CONTACT: BRUCE POTTER

CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2008 NATIONAL ELECTRICAL CODE (NEC)
2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)

KEY MAP AREA:
485-Y

T1.1-Sheet Index

Sheet #	Sheet Description	Page
T1.1	TITLE SHEET	1
T1.2	GENERAL NOTES ABBREVIATIONS AND SYMBOLS	2
T1.3	EQUIPMENT SPECIFICATIONS	3
A1.2	SITE PLAN, EQUIPMENT AND ANTENNA PLAN	4
A1.3	POLE ELEVATION, PROPOSED	5
D1.1	CONSTRUCTION DETAILS	6
D1.2	CONSTRUCTION DETAILS	7
E1.1	ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES	8

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.2014

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11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	3.7.2014	CENTERPOINT REVISIONS
	4.17.2014	CENTERPOINT REVISIONS

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-002-01
PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603
IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE
TITLE SHEET

SHEET NUMBER: T1.1
PAGE: 1 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-002-01 - PROJECT.rvt

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1. RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
3. CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
4. ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
5. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
6. ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
7. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
8. TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
9. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
10. OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
11. CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
12. ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
13. CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT, THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIOINS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
15. THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

GENERAL PROJECT NOTES — SCALE: NTS — 10

A/C	AIR CONDITIONING
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATELY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
BLK	BLOCK
BOB	BOTTOM OF BLOCK
B/S	BUILDING STANDARD
CLG	CEILING
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CO	COMPANY
DBL	DOUBLE
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EPB	ELECTRICAL PULL BOX
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXT	EXTERIOR
FIN	FINISH
FLUOR	FLUORESCENT
FLR	FLOOR
FT	FOOT, FEET
GA	GAUGE
GALV	GALVANIZE(D)
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GRND	GROUND
GWB	GYPSUM WALL BOARD
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTING AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIA
IN	INCH
INFO	INFORMATION
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MFR	MANUFACTURER
MGR	MANAGER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OPP	OPPOSITE
PL	PROPERTY LINE
PLY	PLYWOOD
PR	PAIR
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
RCP	REFLECTED CEILING PLAN
REQD	REQUIRED
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RX	RECEIVE SIGNAL
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SY	SQUARE YARD
THRU	THROUGH
TNND	TINNED
T.O.	TOP OF
TOB	TOP OF BLOCK
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TS	TUBE STEEL
TX	TRANSMIT SIGNAL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
URH	UNIVERSAL RADIO HEAD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
WDW	WINDOW
W/O	WITHOUT
WP	WORKING POINT
WTR	WATER

— – — – —	CENTER LINE
—— – – ——	PROPERTY LINE
—— – – ——	RIGHT-OF-WAY
— -F- — -F- —	FIBER
— -G- — -G —	GAS
— -P- — -P- —	POWER
— -S- — -S —	SANITARY SEWER
— SD- — -SD —	STORM DRAIN
— W- — -W —	WATER
—P——P—	LIGHT CIRCUIT POWER

3	REVISION
A.1	KEY NOTE
1 / 4	DETAIL REFERENCE
5 / A-2	ELEVATION REFERENCE
17 / A-3	SECTION REFERENCE
	ELEVATION MARKER
A.5	PHOTOSIM REFERENCE
##	ANTENNA AZIMUTH

1 — VIEW NUMBER
A-02 — SHEET NUMBER / SHEET GROUP

ABBREVIATIONS AND SYMBOLS — SCALE: NTS — 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.2014

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-002-01

PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

SHEET NUMBER	PAGE
T1.2	2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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SPECIFICATIONS

ION-M7P/17P - Product Specification

Electrical

Power Supply

Mains power, Vac: 85 to 264; 115 to 230

Power consumption, watts: max. temp., fully loaded 150; room temp., idle 200

Optical Link

Optical Link

Connectors: 12000LAPC II

Optical return loss, dB: 45

Fibre type: Single mode 9/125 µm

Optical link budget, dB: 0 to 16

Composite input power @ CFBx master side, dBm: 700 MHz 5.0 nominal; AWS1700/2100 5.0 nominal

RF Interface

BTS Side (SMA)

Number of connectors: Standard 700 MHz 4; AWS1700/2100 4

System optimized for BTS power, dBm: 23; 46

Commercial 700 MHz

Frequency range, MHz: Uplink 698 to 716; Uplink 776 to 787; Downlink 728 to 757

Output power per carrier, dBm:

Number of Carriers	1	2	4	8
UL	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input IOP3, dBm**: BTS optimized 11 min; Noise figure optimized 18 min

Noise Figure, dB**: BTS optimized +10 max; Noise figure optimized +4 max; +4.5 typical

AWS1700/2100

Frequency range, MHz: Uplink 1710 to 1755; Downlink 2110 to 2155

Output power per carrier, dBm:

Number of Carriers	1	2	4	8
CDMA	43	40	37	34
LTE	43	40	37	34
UMTS	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input IOP3, dBm**: BTS optimized 12 min; Noise figure optimized 18 min

Noise Figure, dB**: BTS optimized +11 max; Noise figure optimized +4 max; +4.5 typical

System Supervision and Control

Commands: RF on/off; 4 external control pairs

Alarms: Summary; Power Supply; Optical UL and DL failure; RF UL and DL failure; Temperature; 4 external alarm inputs

Supervision: Composite output power

SPECIFICATIONS

ION-M7P/17P - Product Specification

Mechanical***

Height, width, depth mm (in): 831 x 356 x 147 (32.7 x 14 x 5.8)

Weight: kg (lb): 20 (44)

Environmental

Operating temperature range: °C: -33 to +50

Ingress protection: RF port IP67; fan port IP55

Ordering Information

ION-M7P/17P (Mx7p4472)

Depending on the selected options and the configuration the ordering numerical number varies or identifying suffix

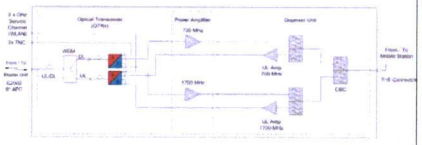
Extension Unit Options

No connection to extension unit possible.

- 2 dB reduction of Port @ carrier bandwidth - 1 MHz
- from Reference point 0 to 4
- spacing required 40 mm (1.38 in) around unit

All figures are typical values, unless otherwise stated.

Cabinet of ION-M7P/17P Remote Unit



ION-M7P/17P Remote Unit Design Principle - Combined Antenna Port

RADIO SPECIFICATIONS — SCALE: N.T.S. — 18

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (MHz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°

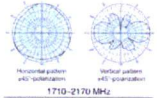
General specifications

Frequency range	698–894 MHz; 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3 < -150 dBc
Polarization	+45° upper and lower band; -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intersystem / intersystem	>30 dB; >40 dB (698–894 // 1710–2170 MHz)
Radome color	Brown or grey
Weight	46 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load: Side	at 90 mph (145kph): 50 lbf (738 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole, using a custom mounting bracket supplied by the customer

See reverse for order information.

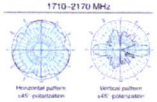
*Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of this catalog for further details.

698–894 MHz



Horizontal pattern +45° polarization — Vertical pattern +45° polarization

1710–2170 MHz



Horizontal pattern +45° polarization — Vertical pattern +45° polarization

Specifications	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi	6.1 dBi (with 1-4 dB rolls, typical)	7 dBi	7.5 dBi (with 0-10 dB rolls, typical)	8.3 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half power)	30° (half power)	19° (half power)	17° (half power)	17.5° (half power)

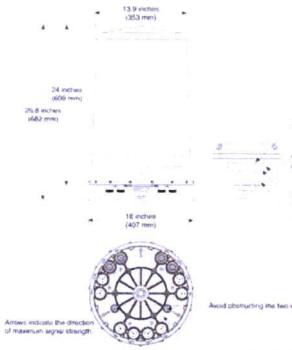
TÜV 11250-U — RoHS — Lead Free

Kathrein Inc., Scala Division · Post Office Box 4580, Medford, OR 97501 (USA) · Phone (541) 779-6500 · Fax (541) 779-3991
Email: communications@kathrein.com · Internet: www.kathrein-scala.com

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna



Order Information

Model	Description
840 10510	Brown Dualband X pol Omni Antenna
840 10511	Grey Dualband X pol Omni Antenna

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com

Kathrein Inc., Scala Division · Post Office Box 4580, Medford, OR 97501 (USA) · Phone (541) 779-6500 · Fax (541) 779-3991
Email: communications@kathrein.com · Internet: www.kathrein-scala.com

ANTENNA SPECIFICATIONS — SCALE: N.T.S. — 12

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1220 AUGUSTA DR.
HOUSTON, TX 77057
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PROJECT NAME

VERIZON - CINCO RANCH

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NODE #:CCR-002-01

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HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE — DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

SHEET NUMBER T1.3 — **PAGE** 3 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

CASE #

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KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A02	PROPOSED CROWN CASTLE UNDERGROUND COAX CONDUIT (APPROXIMATE LOCATION, F.V.)	20/D1.1
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/A1.3
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	N/A	
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1
U01	PROPOSED CROWN CASTLE UNDERGROUND POWER ROUTE (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2
U02	PROPOSED CROWN CASTLE UNDERGROUND FIBER ROUTE BY OTHERS (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2

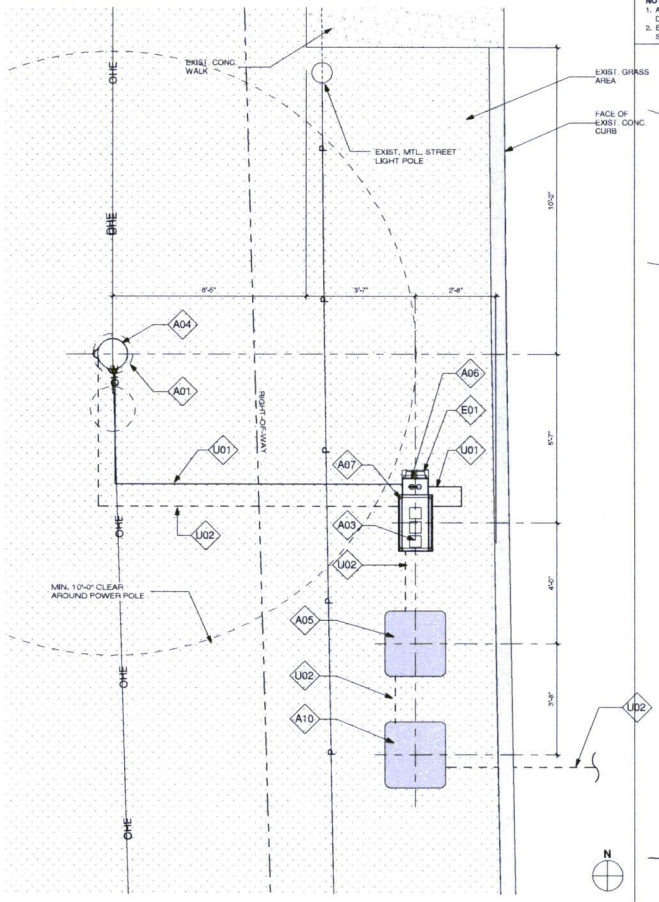
LATITUDE:	29.722200
LONGITUDE:	-95.767760
POLE TYPE:	WOOD POWER POLE
POLE ID #:	N/A

GENERAL NOTES

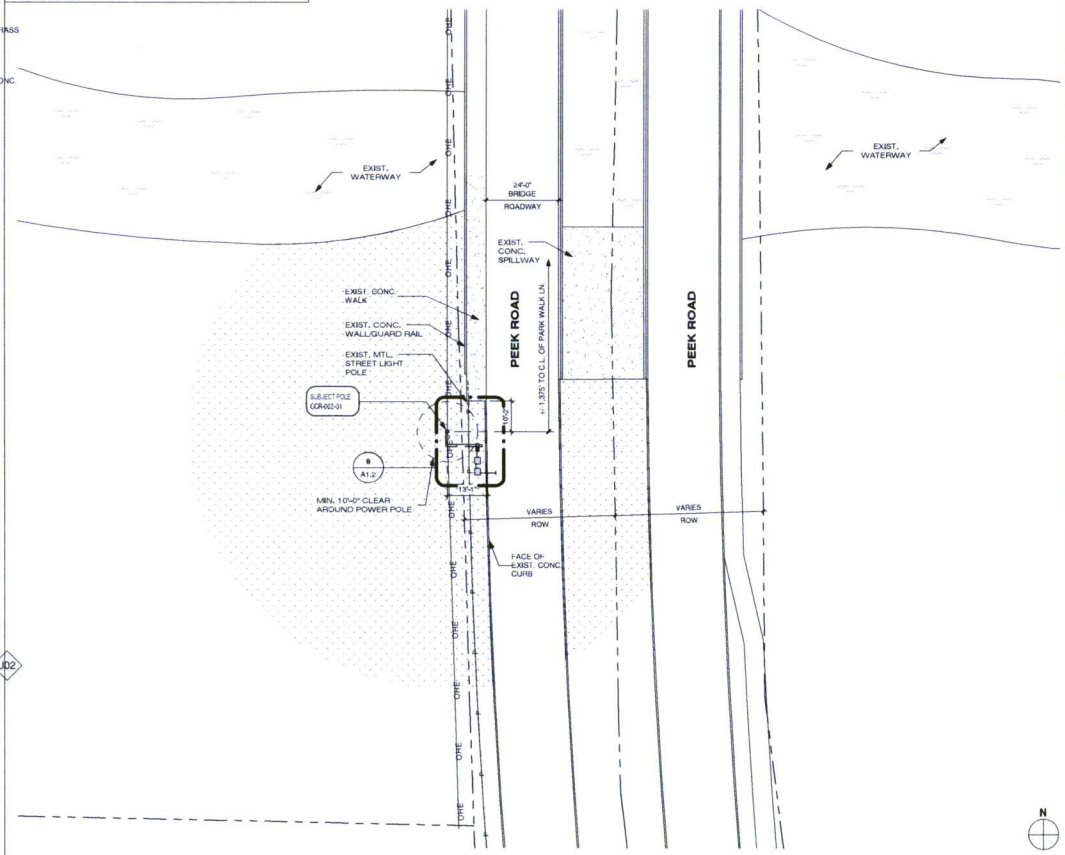
1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
2. CONTRACTOR TO FIELD LOCATE EXIST. UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY. VERIFY ALL DIMENSIONS.
6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

811 CALL TWO WORKING DAYS BEFORE YOU DIG.
UNDERGROUND SERVICE ALERT OF TEXAS
1-800-545-6005

NOTES:
1. ANY DAMAGE TO EXISTING GUTTER, CURB, SIDEWALK AND ROADWAY DURING CONSTRUCTION TO BE REPAIRED OR REPLACED.
2. EXISTING VEGETATION DAMAGED IN CONSTRUCTION TO BE REPLACED BY SAME SPECIES.



EQUIPMENT AND ANTENNA PLAN 1/2" = 1'-0" 8



OVERALL SITE PLAN 1" = 20'-0" 20

4/18/2014 6:16:42 AM

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.2014

RECORD DRAWING DRAFTING ONLY

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7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.264.0820
fax: 480.264.0163

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DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	3.7.2014	CENTERPOINT REVISIONS
	4.17.2014	CENTERPOINT REVISIONS

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-002-01
PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER 120603
IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
SITE PLAN, EQUIPMENT AND ANTENNA PLAN

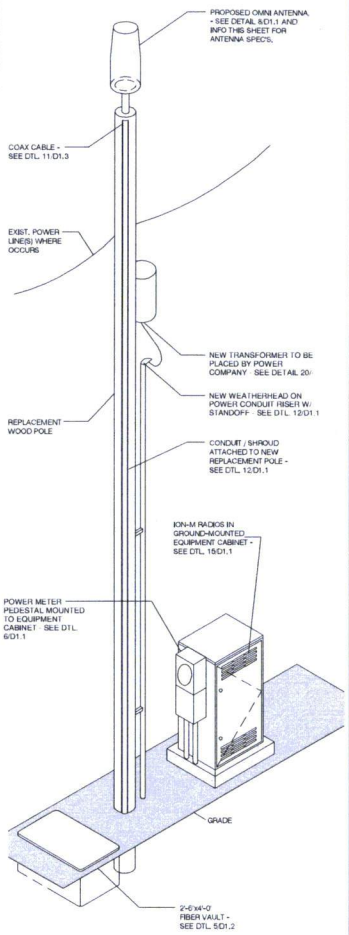
SHEET NUMBER A1.2
PAGE 4 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-002-01 - PROJECT.rvt



NOTES:

1. FIBER VAULT, POWER METER PEDESTAL AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE RECONFIGURED TO SUIT PROJECT LOCATION
2. ISOMETRIC IS A SCHEMATIC DESIGN ONLY.

WD. POLE ISOMETRIC — SCALE: N.T.S. — 4

MODEL:	KATHREIN SCALA #40 19510
LENGTH:	24.0"
WIDTH:	16.0"D
DEPTH:	N/A
WEIGHT:	45.0 LBS

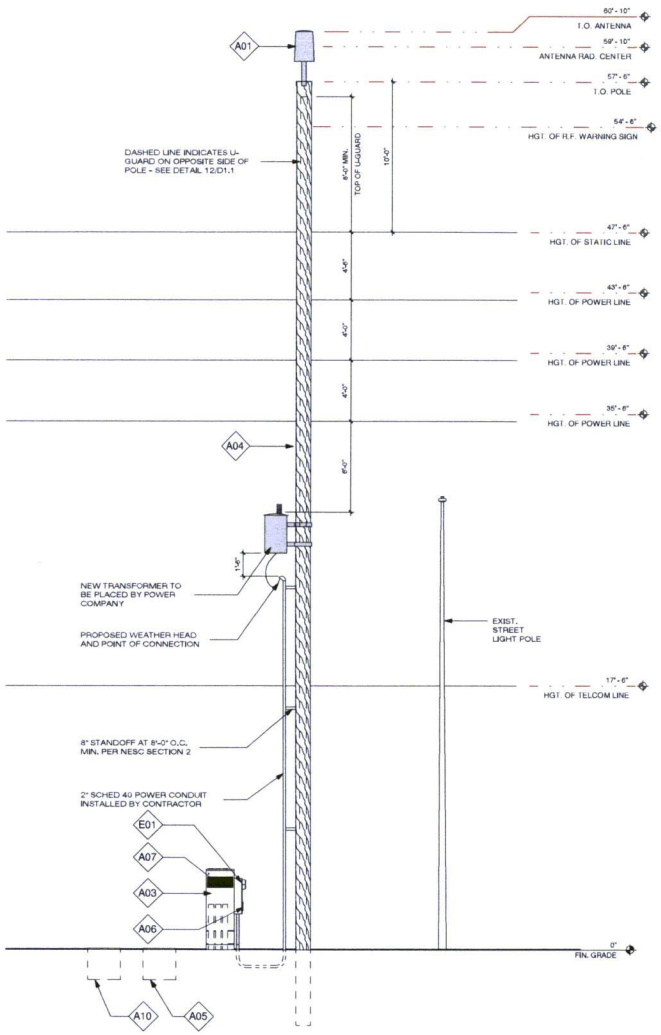
PROPOSED PANEL ANTENNA SPECS

PROPOSED POLE WIDTH = 24"Ø
PROPOSED POLE HEIGHT = 57' - 6"
(+ 2' 0" ANTENNA AND 1' 4" ANTENNA MAST)

POLE INFO

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A03	PRCIPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/-
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	PROPOSED CROWN CASTLE CONCELEMENT SHROUD	8/D1.1
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1



POLE ELEVATION (PROPOSED) — SCALE: 1/4" = 1' 0" — 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-002-01

PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

POLE ELEVATION, PROPOSED

SHEET NUMBER	PAGE
A1.3	5 OF 8

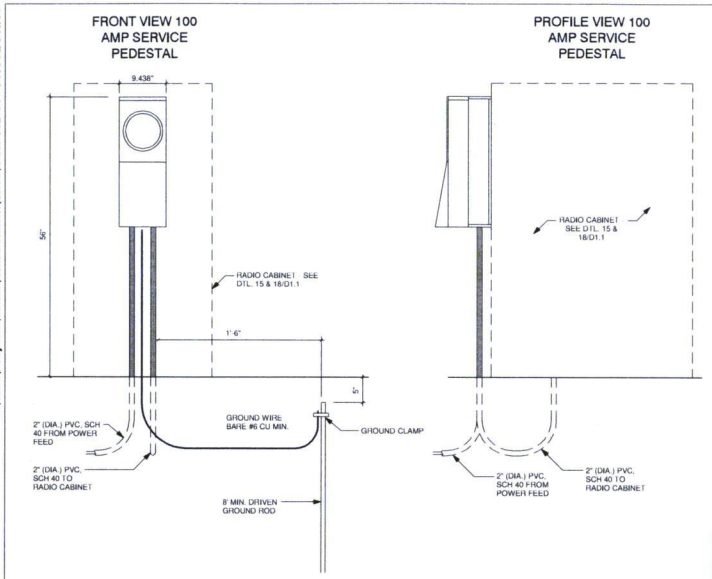
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

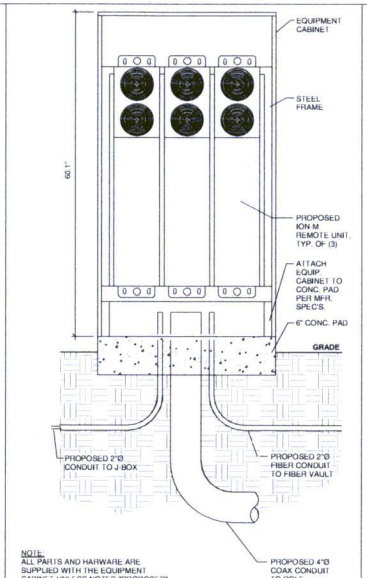
CASE #

4/18/2014 6:16:42 AM

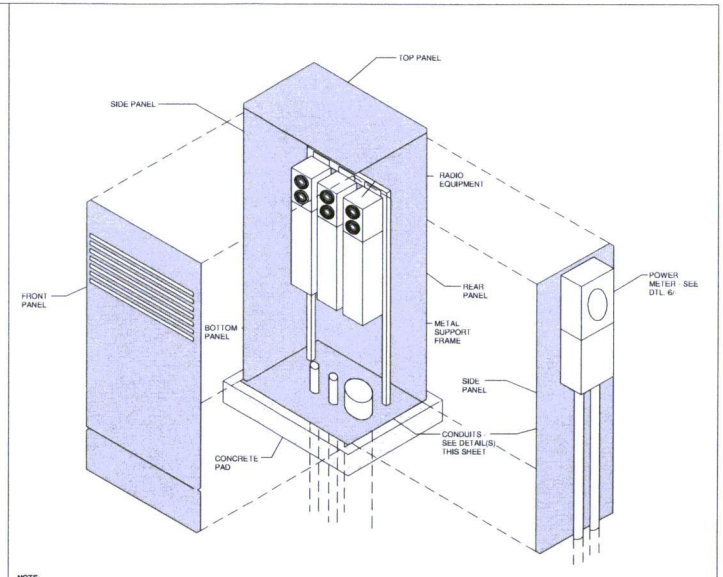
C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-002-01 - PROJECT.rvt



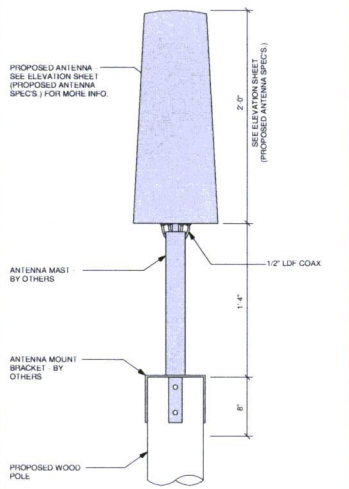
POWER METER - MOUNTED TO RADIO CABINET — SCALE: 1" = 1'-0" — 6



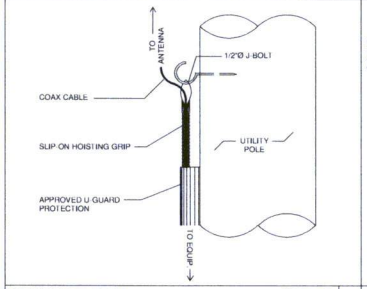
EQUIPMENT CABINET SECTION — SCALE: N.T.S. — 10



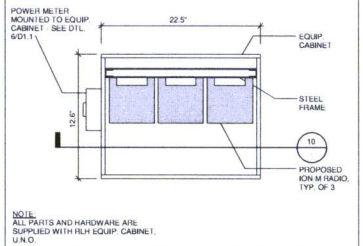
EQUIPMENT ENCLOSURE — SCALE: N.T.S. — 18



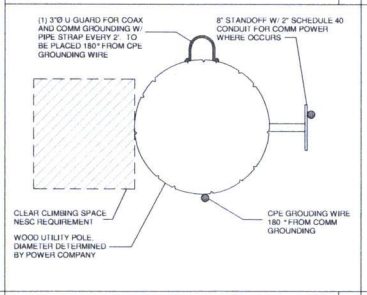
ANTENNA MOUNTING DETAIL — SCALE: NTS — 8



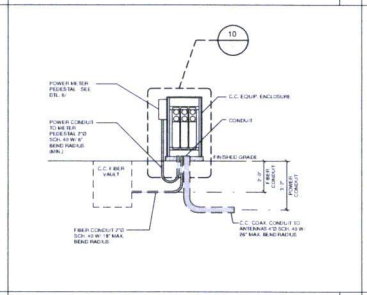
COAX HANGER DETAIL — SCALE: N.T.S. — 11



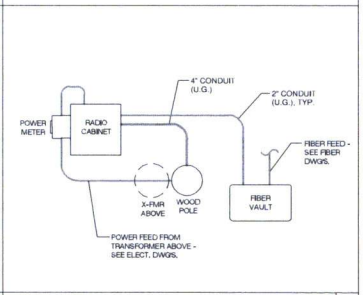
EQUIPMENT ENCLOSURE PLAN — SCALE: N.T.S. — 15



POLE PLAN TYP. DETAIL — SCALE: N.T.S. — 12



CONDUIT AND POWER RISER DIAGRAM — SCALE: N.T.S. — 16



CONDUIT ROUTE — SCALE: N.T.S. — 20

4/18/2014 6:16:43 AM

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-002-01

PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

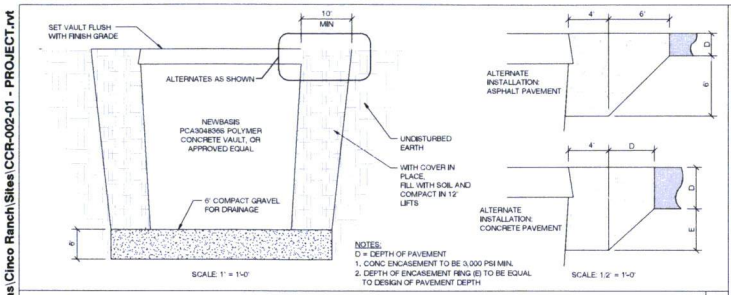
CONSTRUCTION DETAILS

SHEET NUMBER	PAGE
D1.1	6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #



SCALE: 1' = 1'-0'

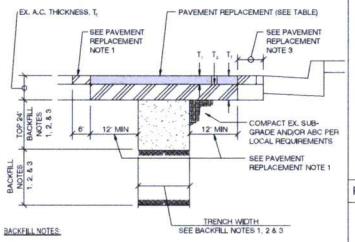
NOTES:
D = DEPTH OF PAVEMENT
1. CONC ENCASEMENT TO BE 3,000 PSI MIN.
2. DEPTH OF ENCASEMENT RING (E) TO BE EQUAL TO DESIGN OF PAVEMENT DEPTH

SCALE: 1/2" = 1'-0'

VAULT INSTALLATION

SCALE: AS NOTED | 5

EXISTING PAVEMENT THICKNESS, T_1	ASPHALT CONCRETE (A.C.) PAVEMENT REPLACEMENT		
	A.C. SINGLE COURSE OR SURFACE COURSE, T_1	A.C. BASE COURSE, T_2	TOTAL THICKNESS, T_t
$T_1 \leq 3'$	3' MINIMUM	NONE	3' MINIMUM
$T_1 > 3'$	2' MINIMUM	2' MINIMUM	T_1 (MATCH EXIST)



BACKFILL NOTES:

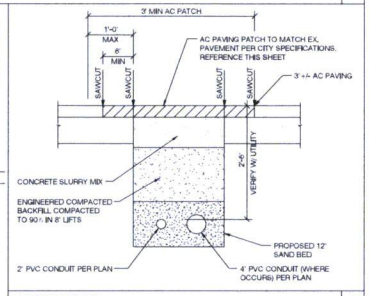
1. TRENCHES LESS THAN 24' IN WIDTH - 1/2 SACK CSLM. FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE (ABC) LAYER IN PAVEMENT STRUCTURE OR 6' BELOW PAVEMENT IN FULL DEPTH PAVEMENT STRUCTURES. CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
2. TRENCHES 24' TO 6' IN WIDTH - 1/2 SACK CSLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24' OF THE TRENCH. FOR BALANCE OF BACKFILL.
3. TRENCHES OVER 6' IN WIDTH - FULL DEPTH OF BACKFILL.
4. TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLIATIVE, 1:1 DILUTION RATIO, 0.50 GAL/SY APPLICATION RATE.
5. CSLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
6. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

PAVEMENT REPLACEMENT NOTES:

1. T'-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE 'T' CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4' AND THICKER.
   A. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE 'T'-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER. MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE A MINIMUM OF 6' ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.
A. FOR NEW AND OVERLAID PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF LOCAL CITY/TOWN CODE AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE 'T'-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER. MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET. FOR PAVEMENTS LESS THAN 4' THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.
B. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS. MATCH EXISTING A.C. DEPTH, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.
2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
3. IF PAVEMENT REMNANT IS LESS THAN 36', REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS, FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

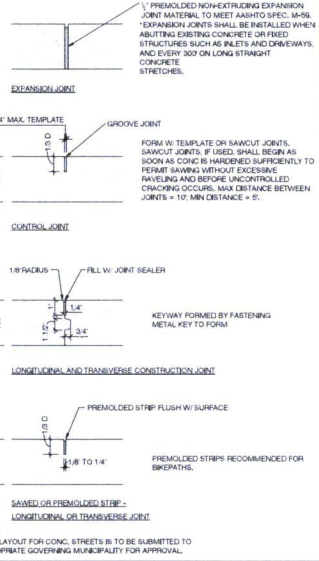
TRENCH AND PATCHING REQUIREMENTS

SCALE: N.T.S. | 4



POWER TRENCH

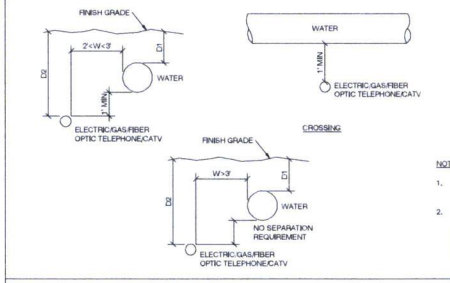
SCALE: 3/4" = 1'-0" | 6



NOTE:
JOINT LAYOUT FOR CONC. STREETS IS TO BE SUBMITTED TO APPROPRIATE GOVERNING MUNICIPALITY FOR APPROVAL.

CONCRETE JOINT DETAILS

SCALE: 1 1/2" = 1'-0" | 8



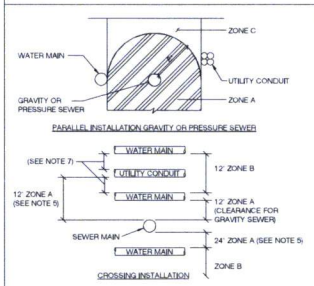
LEGEND:
D1 = 3' MIN. FOR PIPE < 12" DIA
4' MIN. FOR PIPE = 12" DIA
5' MIN. FOR PIPE > 12" DIA
D2 = MINIMUM COVER
W = HORIZONTAL SEPARATION

NOTES:

1. ELECTRIC SEPARATION REQUIREMENTS ARE FOR PRIMARY ELECTRIC CONDUCTORS ONLY, FOR SERVICE CONDUCTORS SEE PLANS.
2. PRIMARY ELECTRIC, GAS, TELEPHONE, CABLE TV OR FIBER OPTIC LINES SHALL NOT CROSS ABOVE A WATER LINE WITHOUT WRITTEN APPROVAL FROM THE CITY'S WATER RESOURCES DEPARTMENT. IF THIS APPROVAL IS OBTAINED, DOUBLE UTILITY LOCATOR STRIPS AND ABC SLURRY CONFORMING TO LOCAL CITY/TOWN SPECIFICATIONS ARE REQUIRED.

MINIMUM UTILITY SEPARATION REQUIREMENTS

SCALE: NTS | 15



NOTES:

1. SEPARATION DISTANCES AND/OR EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS.
2. SEE CROSS INSTALLATION DETAIL ON THIS SHEET FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
   A. NO WATER MAINS OR UTILITY CONDUITS SHALL FALL WITHIN ZONE A.
   B. EXTRA PROTECTION WILL BE REQUIRED WHEN THE WATER MAIN FALLS WITHIN ZONE B. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING SANITARY SEWER MAINS WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE. DUCTILE IRON PIPE SHALL COMPLY WITH THE REQUIREMENTS FOR SEWER INSTALLATION. IN A CROSSING, THE NUMBER OF JOINTS SHALL BE HELD TO A MINIMUM WITH ONE FULL JOINT OF PIPE CENTERED OVER/UNDER THE OTHER. AN ALTERNATIVE PROTECTION MAY CONSIST OF ENCASING SEWER MAINS IN REINFORCED CONCRETE.
   C. NO ADDITIONAL PROTECTION WILL BE REQUIRED OUTSIDE OF ZONES A AND B.
   D. WATER MAINS PERMITTED IN ZONE C ONLY WITH WRITTEN PERMISSION FROM THE WATER RESOURCES DEPARTMENT.
3. SEPARATION REQUIREMENTS FOR 4" OR 6" INDIVIDUAL HOUSE SERVICE CONNECTIONS SHALL COMPLY WITH THE PLUMBING CODES ADOPTED BY THE LOCAL CITY/TOWN.
4. RECLAIMED WATER SHALL BE CONSIDERED AS POTABLE WATER WHEN PLACED NEXT TO A SANITARY SEWER AND CONSIDERED A PRESSURE OR FORCED SANITARY SEWER MAIN, WHEN PLACED NEXT TO A POTABLE WATER MAIN.
5. ZONE A IS 24' WHERE WATER MAINS AND UTILITY CONDUITS CROSS PRESSURE SEWER MAINS.
6. REFERENCE LOCAL CITY/TOWN STANDARD DETAILS.

SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES

SCALE: NTS | 16

NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennae.

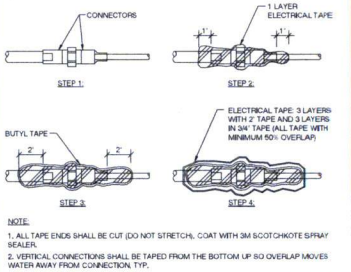
RF EXPOSURE AT 2 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 2 FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: (866) 446-3984 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE: _____

CROWN CASTLE

FCC RF EXPOSURE SIGN

SCALE: N.T.S. | 18



NOTE:
1. ALL TAPE ENDS SHALL BE CUT (DO NOT STRETCH). COAT WITH 3M SCOTCHKOTE SPRAY SEALER.
2. VERTICAL CONNECTIONS SHALL BE TAPED FROM THE BOTTOM UP SO OVERLAP MOVES WATER AWAY FROM CONNECTION, TYP.

CABLE CONNECTOR WATERPROOFING

SCALE: N.T.S. | 19

(3/8" TEXT HEIGHT)
CROWN CASTLE
(1/4" TEXT HEIGHT)
NODE SITE ID:
(1/4" TEXT HEIGHT)
IN CASE OF EMERGENCY CONTACT
NOC: 800.708.7011
(3/16" TEXT HEIGHT)
FACILITY COMPLIES WITH FCC EMISSION REQUIREMENTS.
FACILITY DESIGN APPROVED BY THE THE (LOCAL CITY/TOWN)

NOTE: 4" x 6 1/2" STICKER

NODE IDENTIFICATION SIGNAGE

SCALE: N.T.S. | 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.2014

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DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	3.7.2014	CENTERPOINT REVISIONS
	4.17.2014	CENTERPOINT REVISIONS

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-002-01
PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603
IN HOUSE: DRAWN BY: RA, CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER: D1.2
PAGE: 7 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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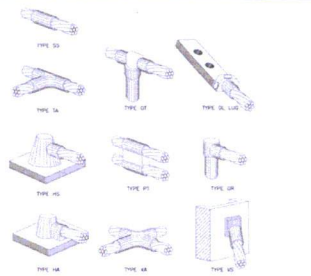


CADWELD DETAILS

SCALE: N.T.S. | 1

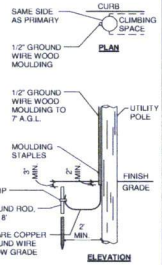
NOTES:
1. WOOD MOULDING SHALL BE INSTALLED IN WORKING SPACE TO PROTECCT THE LINEWORKER ON SAME SIDE AS PRIMARY.

2. STAPLE GROUND WIRE AT APPROPRIATE INTERVALS AND JUST ABOVE AND BELOW WOOD MOULDING.

3. INSTALL WOOD MOULDING WITH GALV. STAPLES AT 3'-0" O.C. 3" FROM TOP AND BOTTOM - ALLOW FOR EXPANSION.

4. PROPOSED 8' GROUND ROD 6' CLEAR OF ALL EXISTING GROUND RODS - CALL FOR UTILITY LOCATE PRIOR TO INSTALLATION.

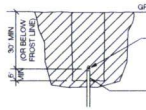
5. IF SAW CUT IS REQUIRED, CUT A 24"x24" OPENING FOR GROUND ROD INSTALL - REPAIR CONCRETE 2 SACK MIN. - REPAIR NEAT AND FLUSH WITH EXIST. SURFACE.



GROUNDING AT WOOD POLE

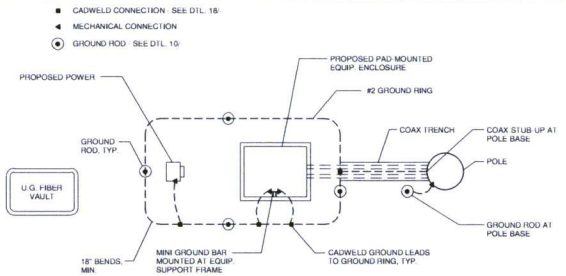
SCALE: N.T.S. | 5

NOTES:
1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS SHALL BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE:
   1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT. 3/8"Ø BOLT AND LOCKWASHER.



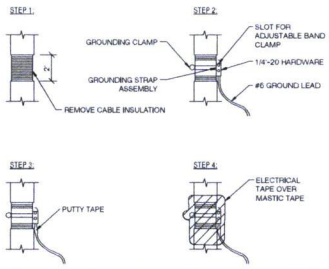
GROUND ROD DETAIL

SCALE: NTS | 9



TYPICAL GRADE-MOUNTED EQUIPMENT GROUNDING SCHEMATIC @ WOOD POLE

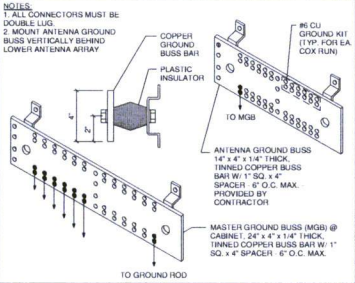
SCALE: NTS | 17



COAXIAL CABLE GROUNDING

SCALE: NTS | 2

NOTES:
1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.



GROUND BUSS BAR DETAIL

SCALE: NTS | 6

PANEL A

AMPACITY: **60** | MAINS: **MCB** | KAIC: **10** | RATING: **LINK FAULT CALC**
VOLTAGE: **120/240V** | NEMA: **3R** | MOUNTING: **SURF** | CIRCUITS: **8**

PANEL A	NO.	M	C	N	R	L	CB	PHASE		CB	L	R	N	C	M	NO.	LOAD
CONVENIENCE RECEPTACLE	1				0.36		20/1	0.91		20/1			0.55			2	RADIO EQUIPMENT
CONVENIENCE RECEPTACLE	3				0.36		20/1		0.91	20/1			0.55			4	RADIO EQUIPMENT
EXHAUST FAN	5	0.36					20/1	0.36		20/1						6	SPARE
BUSSED SPACE	7								0.36	20/1					0.36	8	SUPPLY FAN

LIGHTING LOAD @ 125% =	0.00	0.00	KVA
RECEPTACLES (1ST 10KVA @ 100% + REMAINDER @ 50%) =	0.36	0.36	KVA
NON-CONTINUOUS LOAD @ 125% =	0.55	0.55	KVA
CONTINUOUS LOAD @ 125% =	0.00	0.00	KVA
MOTORS + 25% OF LARGEST MOTOR =	0.45	0.45	KVA
TOTAL PANEL A DEMAND =	1.36	1.36	KVA
TOTAL DEMAND AMPS =	11.33	11.33	KVA

PER NEC 210.4(B)

PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

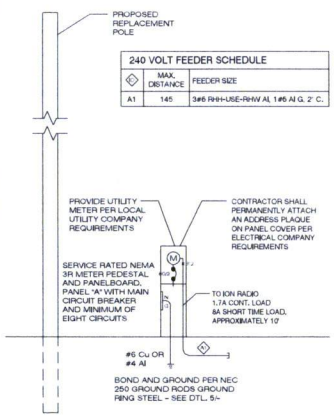
ELECTRICAL PANEL SCHEDULES

SCALE: NTS | 14

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT (UNDERGROUND) AND IMC CONDUIT ABOVE GROUND.
6. PROVIDE 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NSR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
10. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
11. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POTHOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
12. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
13. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS.
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

ELECTRICAL NOTES

SCALE: NONE | 18



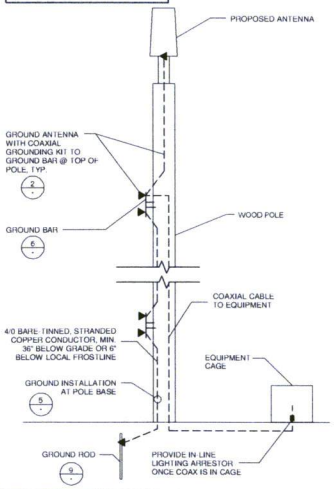
240 VOLT FEEDER SCHEDULE		
◇	MAX. DISTANCE	FEEDER SIZE
A1	145	3#6 RHH-USE-RHW AL 1#6 Al G. 2" C.

NOTES:
1. ECTO FIELD VERIFY SITE CONDITION.
2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
4. PROVIDE ADEQUATE SERVICE CONDUCTOR LENGTH AT THE BASE OF THE RISER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND CONNECT TO UTILITY COMPANY SECONDARY LINES WITH A 12" DRIP LOOP.
5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
6. ALL WIRE TO BE THHN OR THWN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
7. FUTURE BREAKERS IN PANEL B SHALL BE SERIES RATED WITH THEIR RESPECTIVE UPSTREAM REMOTE MAIN PROTECTIVE DEVICE. A TWO TIER (22K/10KVA) SYSTEM IS SPECIFIED.
8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.

ONE-LINE DIAGRAM

SCALE: NTS | 4

- ■ CADWELD - SEE DTL. 1/-
- ◀ MECHANICAL CONNECTION
- GROUND BAR (GB) 14" x 4" x 1/4" COPPER
- MASTER GROUND BAR (GB) 24" x 4" x 1/4" COPPER
- GROUND



GROUNDING SCHEMATIC - WOOD POLE

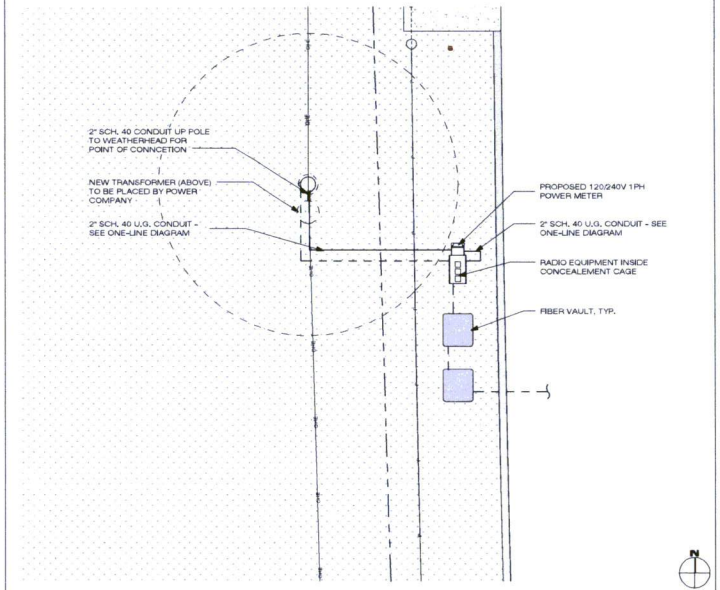
SCALE: NTS | 8

FAULT CURRENT CALCULATION

FAULT	F1	F2	F3	F4	F5
LOCATION	CSU POS	PANEL @ 20'	PANEL @ 155'	PANEL @ 240'	PANEL @ 370'
AFC (FROM SOURCE)	49300	49300	49300	49300	49300
CONDUCTOR SIZE		#6	#4	#2	#1/0
CONDUCTOR TYPE		AL	AL	AL	AL
LENGTH		20	155	240	370
# OF SETS		1	1	1	1
TYPE OF CONDUIT		PVC	PVC	PVC	PVC
C VALUE		1482	2350	3730	5838
VOLTAGE PRIMARY		240	240	240	240
VOLTAGE SECONDARY (XFMR)					
XFMR IMPEDENCE					
XFMR KVA					
Y FACTOR		5.54	27.10	26.43	26.04
MULTIPLIER		0.15	0.04	0.04	0.04
CALCULATED FAULT CURENT	49300	7533	1756	1797	1823
RATED (SERIES / FULLY)		FULLY @ 10K	FULLY @ 10K	FULLY @ 10K	FULLY @ 10K

FAULT CURRENT CALCULATION

SCALE: NTS | 12



ELECTRICAL PLAN

1/4" = 1'-0" | 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 459.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.2014

SHIFT
Shift Companies, LLC
7333 E. NORTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.294.0829
fax: 480.294.0163

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RELEASE	
DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	3.7.2014	CENTERPOINT REVISIONS
	4.17.2014	CENTERPOINT REVISIONS

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-002-01
PEEK RD. & WILLOW FORK DRAINAGE DITCH

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES

SHEET NUMBER	PAGE
E1.1	8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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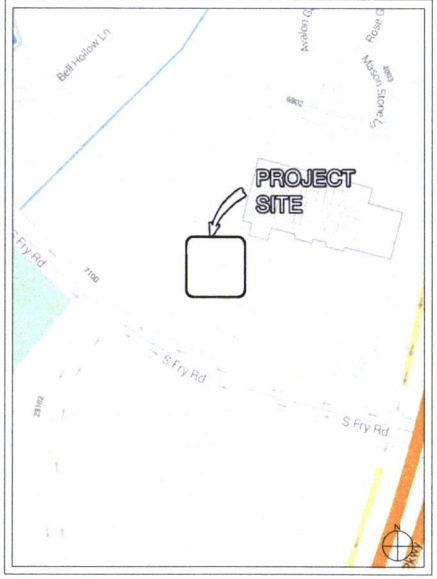
CROWN CASTLE

PROJECT NAME:	VERIZON - CINCO RANCH
PROJECT ADDRESS:	HOME DEPOT PARKING LOT, N. OF FRY RD.
PROJECT TYPE:	WOOD POLE
HUB AREA:	CINCO RANCH, TX
NODE #(s):	CCR-008-01
COORDINATES:	LAT: 29.715860, LONG: -95.776210

VICINITY MAP



PROJECT TEAM

ARCHITECT
Company: SHIFT CONSULTING
Address: 7333 E. MONTE VISTA RD. SCOTTSDALE, AZ 85257
Phone Number: 480.264.0829
Fax Number: 480.264.0163
Contact: CHRIS MYERS

STRUCTURAL
Company: WSC
Address: 2734 E PROMINENT CT, S. SALEM, OR 97302
Phone Number: 503.587.0101
Fax Number:
Contact:

RF ENGINEER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

FIBER ENGINEERING
Company: ICTX
Address: 419 CENTURY PLAZA, STE. 250 HOUSTON, TX 77073
Phone Number: 832.465.4510
Fax Number:
Contact:

GENERAL CONTRACTOR
Company: T.B.D.
Address:
Phone Number:
Fax Number:
Contact:

PROJECT MANAGER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE COMMUNITY OF CINCO RANCH, TEXAS. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY IN RESIDENTIAL AREAS. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

A SUBJECT NODE WILL CONSIST OF GROUND MOUNTED EQUIPMENT AND INSTALLATION OF AN ANTENNA MOUNTED ON WOOD POLES SPECIFICALLY ENGINEERED TO SUPPORT THE PROPOSED NETWORK ANTENNAS. THE RADIO EQUIPMENT WILL BE MOUNTED INSIDE CONCEALEMENT CAGES ON THE GROUND, ALONG WITH A SEPARATE METER PEDESTAL.

PROJECT SUMMARY

PROJECT NAME:
VERIZON - CINCO RANCH

PROJECT AREA:
CINCO RANCH, TX

JURISDICTION:
FORT BEND COUNTY ENGINEERING DEPT.
1124 BLUME RD.
ROSENBERG, TX 77471
PH: 281.633.7500
CONTACT: JOHNNY ORTEGA

HANDICAPPED REQUIREMENTS:
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.

PLUMBING REQUIREMENTS:
- FACILITY HAS NO PLUMBING.

POWER COMPANY:
CENTERPOINT ENERGY
5431 HIGHWAY BLVD.
KATY, TX 77494
PH: 281.520.6275
CONTACT: KEN CORTEZ

APPLICANT:
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
CONTACT: BRUCE POTTER

CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2008 NATIONAL ELECTRICAL CODE (NEC)
2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)

KEY MAP AREA:
525B

T1.1-Sheet Index

Sheet #	Sheet Description	Page
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T1.2	GENERAL NOTES ABBREVIATIONS AND SYMBOLS	2
T1.3	EQUIPMENT SPECIFICATIONS	3
A1.2	SITE PLAN, EQUIPMENT AND ANTENNA PLAN	4
A1.3	POLE ELLEVATION, PROPOSED	5
D1.1	CONSTRUCTION DETAILS	6
D1.2	CONSTRUCTION DETAILS	7
E1.1	ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES	8

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

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NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PLAN CHECK #

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-008-01
HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER 120603
IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
TITLE SHEET

SHEET NUMBER T1.1
PAGE 1 OF 8

CASE #

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

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1. RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
3. CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
4. ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
5. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
6. ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
7. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
8. TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
9. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
10. OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
11. CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
12. ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
13. CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIONS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
15. THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

GENERAL PROJECT NOTES — SCALE: NTS — 10

A/C	AIR CONDITIONING
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATELY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
BLK	BLOCK
BOB	BOTTOM OF BLOCK
B/S	BUILDING STANDARD
CLG	CEILING
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CO	COMPANY
DBL	DOUBLE
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EPB	ELECTRICAL PULL BOX
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXT	EXTERIOR
FIN	FINISH
FLUOR	FLUORESCENT
FLR	FLOOR
FT	FOOT, FEET
GA	GAUGE
GALV	GALVANIZE(D)
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GRND	GROUND
GWB	GYPSUM WALL BOARD
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTING AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIA
IN	INCH
INFO	INFORMATION
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MFR	MANUFACTURER
MGR	MANAGER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OPP	OPPOSITE
PL	PROPERTY LINE
PLY	PLYWOOD
PR	PAIR
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
RCP	REFLECTED CEILING PLAN
REQD	REQUIRED
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RX	RECEIVE SIGNAL
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SY	SQUARE YARD
THRU	THROUGH
TNND	TINNED
T.O.	TOP OF
TOB	TOP OF BLOCK
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TS	TUBE STEEL
TX	TRANSMIT SIGNAL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
URH	UNIVERSAL RADIO HEAD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
WDW	WINDOW
W/O	WITHOUT
WP	WORKING POINT
WTR	WATER

— – — — – —	CENTER LINE
—— – – ——	PROPERTY LINE
—— – – ——	RIGHT-OF-WAY
— -F- — -F- —	FIBER
— -G- — -G —	GAS
— -P- — -P —	POWER
— -S- — -S —	SANITARY SEWER
— SD- — -SD —	STORM DRAIN
— W- — -W —	WATER
—P——P—	LIGHT CIRCUIT POWER

3	REVISION
A/1	KEY NOTE
1 / S1	DETAIL REFERENCE
8 / A-2	ELEVATION REFERENCE
17 / A-3	SECTION REFERENCE
	ELEVATION MARKER
A.5	PHOTOSIM REFERENCE
##°	ANTENNA AZIMUTH

1 / A-0.2 — VIEW NUMBER; SHEET NUMBER; SHEET GROUP

ABBREVIATIONS AND SYMBOLS — SCALE: NTS — 20

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

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1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

SHEET NUMBER T1.2 **PAGE** 2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-008-01 - PROJECT(Recovery).rvt

4/18/2014 7:22:32 AM

SPECIFICATIONS

ION-M7P/17P - Product Specification

Electrical

Power Supply

Mains power, Vac: 85 to 264; 115 or 230

Power consumption, watts: max. temp. fully loaded 190; noise temp. idle 350

Optical Link

Optical Link

Connectors: 12000/APC E

Optical return loss, dB: 65

Fibre type: Single mode 9/125 µm

Optical link budget, dB: 0 to 16

Composite input power @ OTRx master side, dBm: 700 MHz 3.0 nominal; AWS1700/2100 3.0 nominal

RF Interface

BTS Side (SMA)

Number of connectors: Standard 4; 700 MHz 4; AWS1700/2100 4

System optimized for BTS power, dBm: 23; 16

Commercial 700 MHz

Frequency range, MHz: Uplink 698 to 716; Uplink 776 to 787; Downlink 728 to 757

Output power per carrier, dBm

Number of Carriers	1	2	4	8
CW	43	40*	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.1

Spurious emission: < -13 dBm / 1 MHz

Input IC3P3, dBm**: IC3 optimized 31 max; Noise figure optimized 19 max

Noise figure, dB**: IC3 optimized +11 max; Noise figure optimized +6 max; +4.5 typical

AWS1700/2100

Frequency range, MHz: Uplink 1710 to 1755; Downlink 2110 to 2155

Output power per carrier, dBm

Number of Carriers	1	2	4	8
CDMA	43	40	37	34
LTE	43	40	37	34
UMTS	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input IC3P3, dBm**: IC3 optimized 12 max; Noise figure optimized 18 max

Noise figure, dB**: IC3 optimized +11 max; Noise figure optimized +6 max; +4.5 typical

System Supervision and Control

Commands: RF on/off; 4 external control pairs

Alarms: Summary; Power Supply; Optical DL and UL failure; RF DL and UL failure; Temperature; 4 external alarm inputs

Supervision: Composite output power

SPECIFICATIONS

ION-M7P/17P - Product Specification

Mechanical***

Height, width, depth mm (in): 831 x 336 x 347 (32.7 x 13.2 x 13.6)

Weight, kg (lb): 20 (44)

Environmental

Operating temperature range, °C: -33 to +50

Ingress protection: RF port IP67; fan port IP55

Ordering Information

ION-M7P/17P: 0196-764722

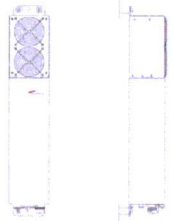
Depending on the selected option and the configuration the ordering material number cannot be identifying cells.

Extension Unit Options

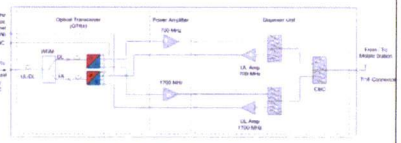
No connection to extension unit possible.

- 2 dB reduction of Port @ carrier bandwidth - 1 MHz
- from Reference point B to A
- Ignoring required 40 mm (1.58 in) around case

All figures are typical values, unless otherwise stated.



Cabinet of ION-M7P/17P Remote Unit



ION-M7P/17P Remote Unit Design Principle - Combined Antenna Port

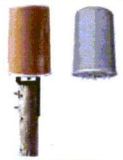
RADIO SPECIFICATIONS — SCALE: N.T.S. — 18

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (MHz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°



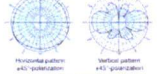
General specifications

Frequency range	698–894 MHz; 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3 < -150 dBc
Polarization	+45° upper and lower band; -45° upper and lower band
Connector	4 x 7-16 (M) female
Isolation intersystem / intersystem	>30 dB; >40 dB (698–894 // 1710–2170 MHz)
Radome color	Brown or grey
Weight	46 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph) 32 lbf (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole, using a customer mounting bracket supplied by the customer

See reverse for order information.

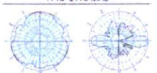
* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

698–894 MHz



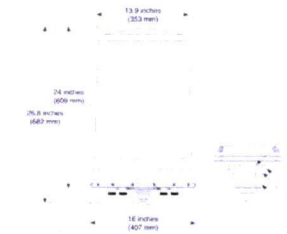
Horizontal pattern ±45° polarization — Vertical pattern ±45° polarization

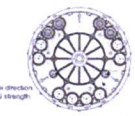
1710–2170 MHz



Horizontal pattern ±45° polarization — Vertical pattern ±45° polarization

Specifications	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi	4.5 dBi (with 1.4 dB rulls, typical)	0 dBi	0 dBi (with 4.10 dB rulls typical)	4.0 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half power)	30° (half power)	19° (half power)	17° (half power)	17.5° (half power)





Arrows indicate the direction of maximum signal strength

Avoid obstructing the two vent fittings

Customer supplied mounting bracket must fit within a 10 inch (254 mm) circle.

Order information

Model	Description
840 10510	Brown Dual band X pol Omni Antenna
840 10511	Grey Dual band X pol Omni Antenna

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com

Kathrein Inc. Scala Division · Post Office Box 4580 · Medford, OR 97501 (USA) · Phone (541) 779-6500 · Fax (541) 779-3991
Email: communications@kathrein.com · Internet: www.kathrein-scala.com

ANTENNA SPECIFICATIONS — SCALE: N.T.S. — 12

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

SHIFT
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7333 E. MONTE VISTA ROAD
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ph: 480.264.0829
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REVISIONS

NO.	DATE	COMMENT
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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER: 120603

IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

SHEET NUMBER: T1.3

PAGE: 3 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-008-01 - PROJECT(Recovery).rvt

4/18/2014 7:22:25 AM

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE PANEL ANTENNA IN CONCEALMENT SHROUD	8/D1.1 & 12/T1.3
A02	PROPOSED CROWN CASTLE UNDERGROUND COAX CONDUIT (APPROXIMATE LOCATION, F.V.)	20/D1.1
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/A1.3
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	N/A	
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1
U01	PROPOSED CROWN CASTLE UNDERGROUND POWER ROUTE (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2
U02	PROPOSED CROWN CASTLE UNDERGROUND FIBER ROUTE BY OTHERS (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2

LATITUDE:	29.715860
LONGITUDE:	-95.776210
POLE TYPE:	WOOD POLE
POLE ID #:	N/A

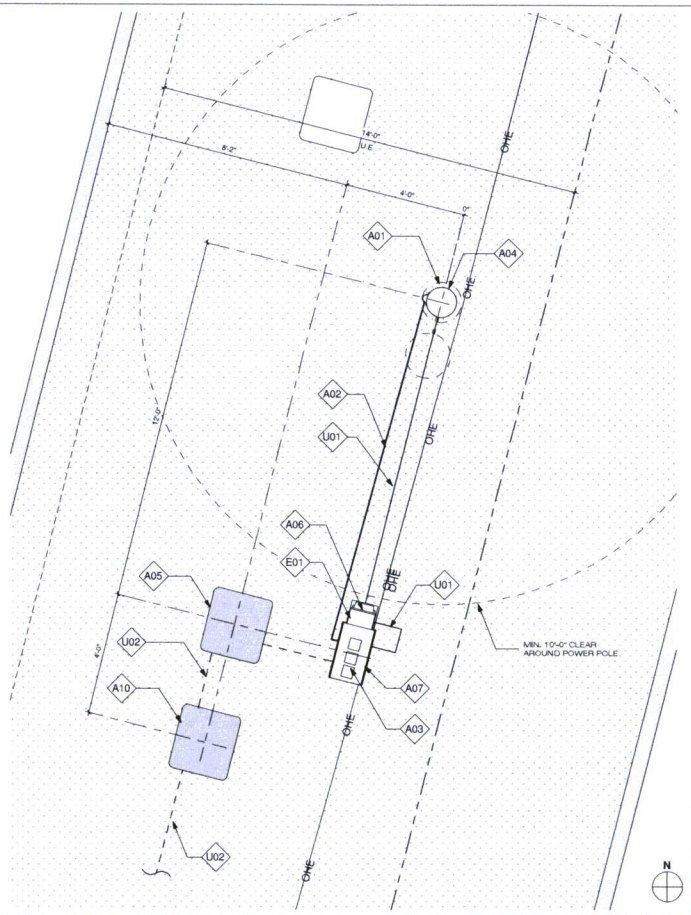
GENERAL NOTES

1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
2. CONTRACTOR TO FIELD LOCATE EXIST. UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY. VERIFY ALL DIMENSIONS.
6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

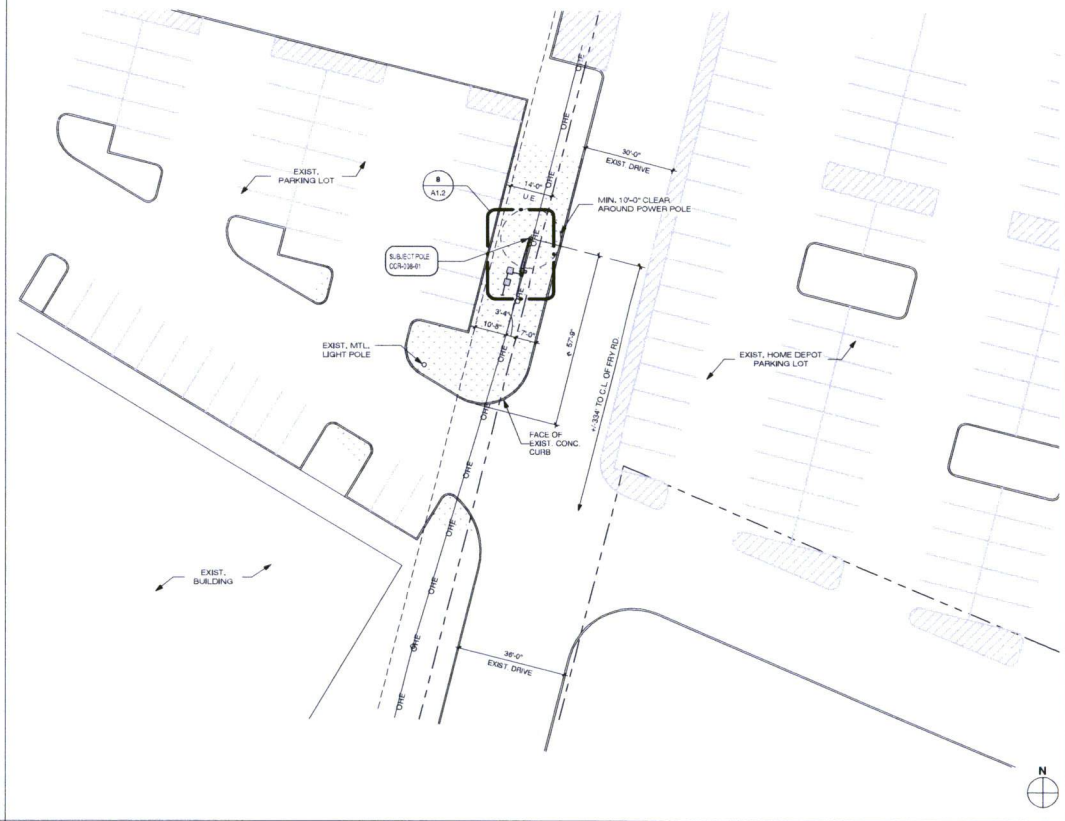
811 CALL TWO WORKING DAYS BEFORE YOU DIG.
UNDERGROUND SERVICE ALERT OF TEXAS
1-800-545-6005

NOTES:

1. ANY DAMAGE TO EXISTING GUTTER, CURB, SIDEWALK AND ROADWAY DURING CONSTRUCTION TO BE REPAIRED OR REPLACED.
2. EXISTING VEGETATION DAMAGED IN CONSTRUCTION TO BE REPLACED BY SAME SPECIES.



EQUIPMENT AND ANTENNA PLAN 1/2" = 1'-0" 8



OVERALL SITE PLAN 1" = 20'-0" 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER: 120603

IN HOUSE: DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

SITE PLAN, EQUIPMENT AND ANTENNA PLAN

SHEET NUMBER: A1.2

PAGE: 4 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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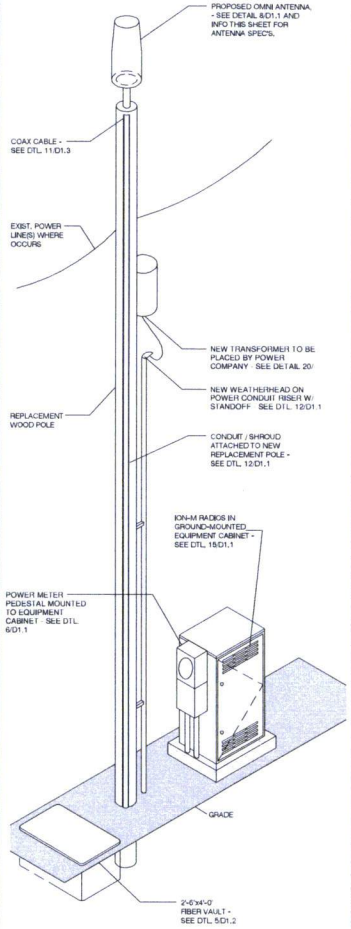


NOTES:

1. FIBER VAULT, POWER METER PEDESTAL AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE RECONFIGURED TO SUIT PROJECT LOCATION
2. ISOMETRIC IS A SCHEMATIC DESIGN ONLY.

WD. POLE ISOMETRIC — SCALE: N.T.S. — 4

MODEL:	KATHREIN SCALA 840 13510
LENGTH:	24.0"
WIDTH:	16.0"D
DEPTH:	N/A
WEIGHT:	45.0 LBS

PROPOSED PANEL ANTENNA SPECS

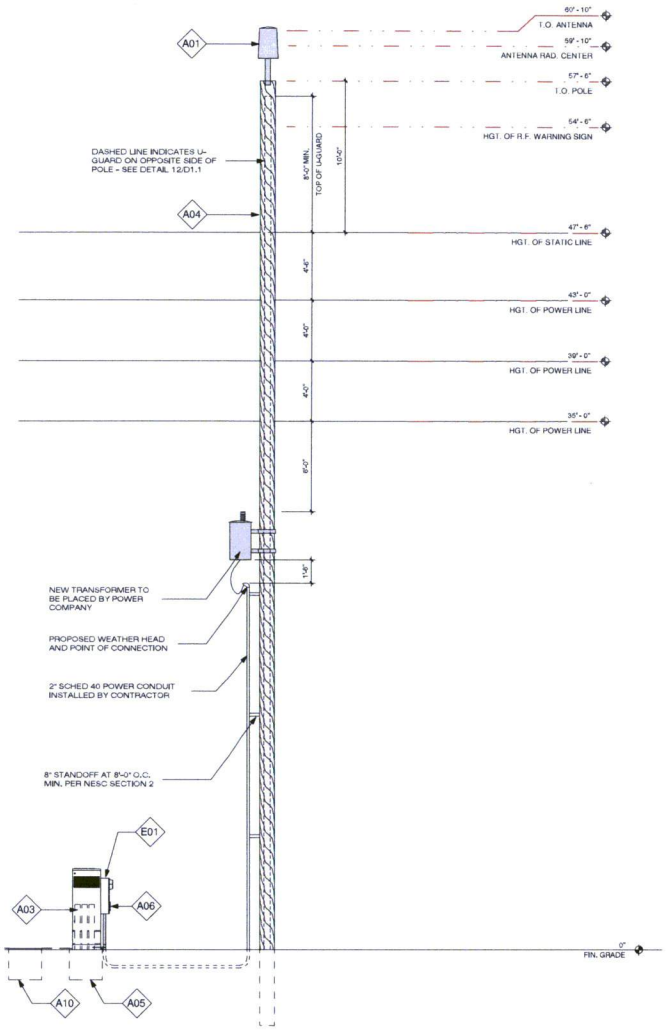
PROPOSED POLE WIDTH = 12"Ø

PROPOSED POLE HEIGHT = 57' - 6"
(+ 2' 0" ANTENNA AND 1' 4" ANTENNA MAST)

POLE INFO

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/-
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	PROPOSED CROWN CASTLE CONCELEMENT SHROUD	8/D1.1
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1



POLE ELEVATION (PROPOSED) — SCALE: 1/4" = 1' 0" — 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

POLE ELEVATION, PROPOSED

SHEET NUMBER	PAGE
A1.3	5 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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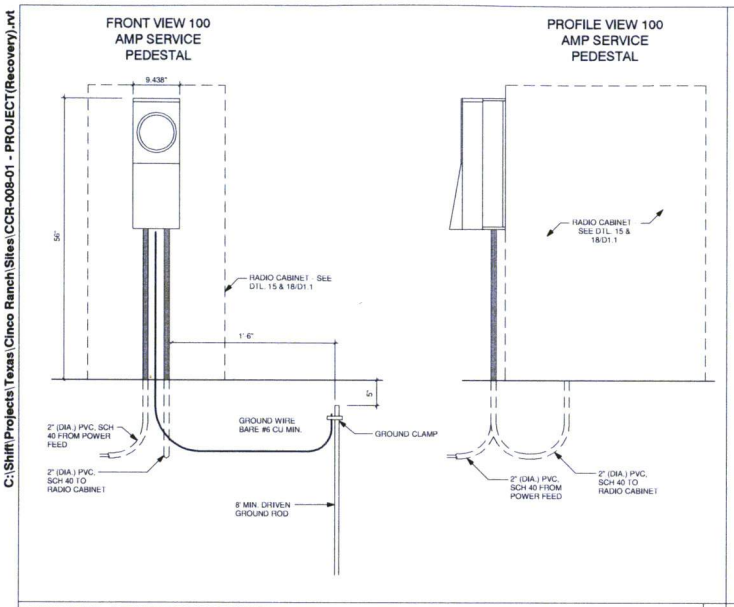
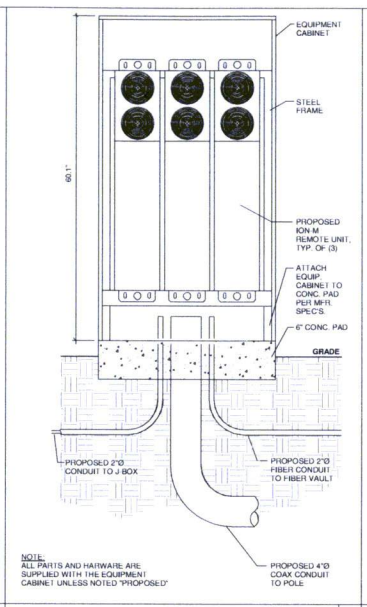
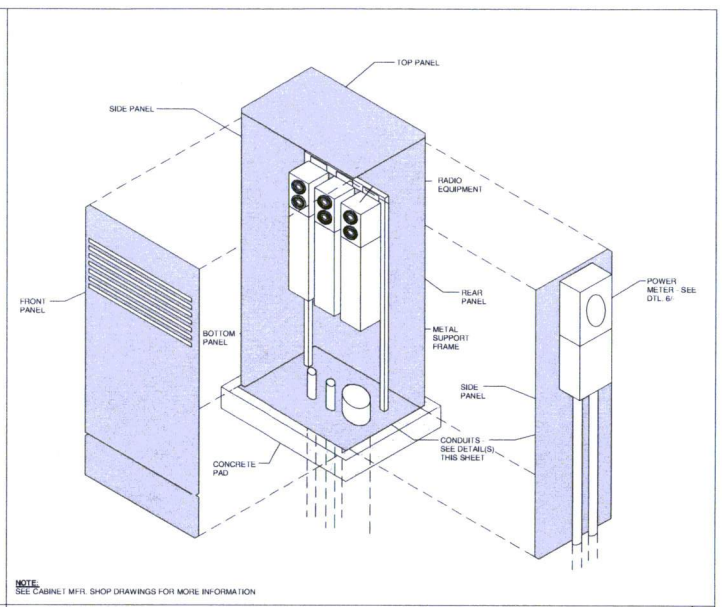


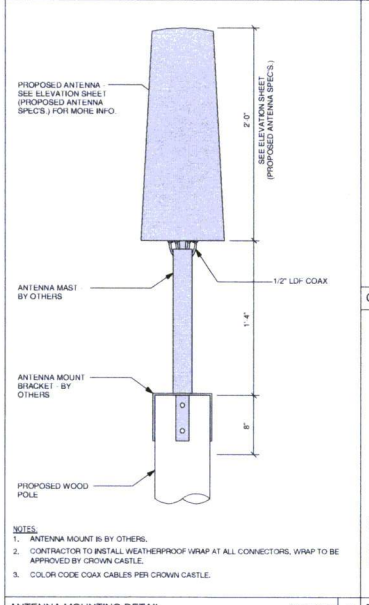
POWER METER - MOUNTED TO RADIO CABINET SCALE: 1" = 1'-0" 6



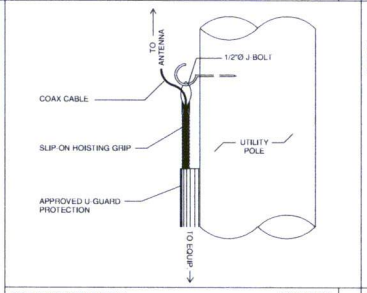
EQUIPMENT CABINET SECTION SCALE: N.T.S. 10



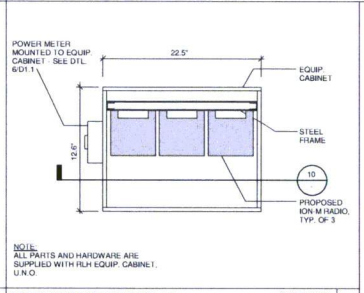
EQUIPMENT ENCLOSURE SCALE: N.T.S. 18



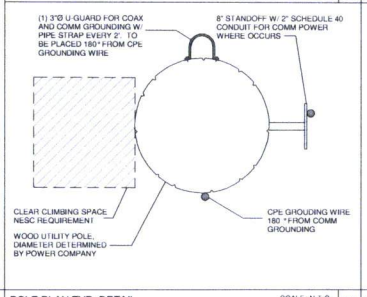
ANTENNA MOUNTING DETAIL SCALE: NTS 8



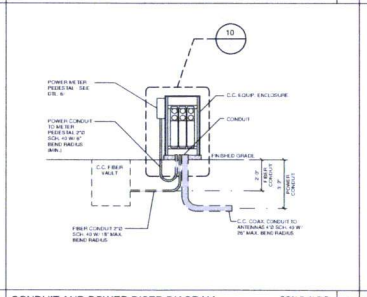
COAX HANGER DETAIL SCALE: N.T.S. 11



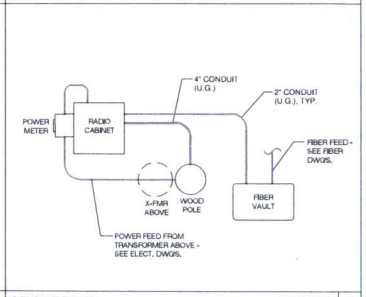
EQUIPMENT ENCLOSURE PLAN SCALE: N.T.S. 15



POLE PLAN TYP. DETAIL SCALE: N.T.S. 12



CONDUIT AND POWER RISER DIAGRAM SCALE: N.T.S. 16



CONDUIT ROUTE SCALE: N.T.S. 20

4/18/2014 7:22:26 AM

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

RECORD DRAWING DRAFTING ONLY

SHIFT

Shift Companies, LLC
7333 E. MONTE VISTA ROAD
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RELEASE

DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER: 120603

IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

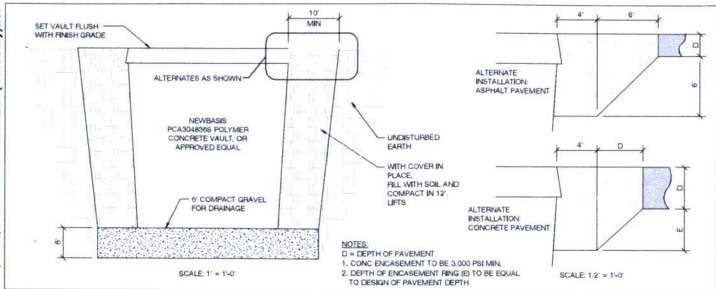
SHEET NUMBER: D1.1

PAGE: 6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #



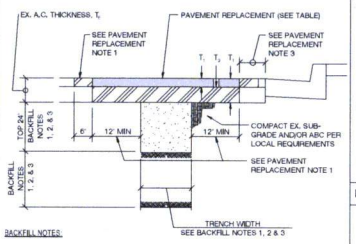
NOTES:
D = DEPTH OF PAVEMENT
1. CONC ENCASEMENT TO BE 3,000 PSI MIN.
2. DEPTH OF ENCASEMENT RING (E) TO BE EQUAL TO DESIGN OF PAVEMENT DEPTH

SCALE: 1" = 1'-0" SCALE: 1/2" = 1'-0"

VAULT INSTALLATION

SCALE: AS NOTED | 5

EXISTING PAVEMENT THICKNESS, T_E	ASPHALT CONCRETE (A.C.) PAVEMENT REPLACEMENT		
	A.C. SINGLE COURSE OR SURFACE COURSE, T_1	A.C. BASE COURSE, T_2	TOTAL THICKNESS, T_T
$T_E \leq 3'$	3" MINIMUM	NONE	3" MINIMUM
$T_E > 3'$	2" MINIMUM	2" MINIMUM	T_E (MATCH EXIST)



BACKFILL NOTES:

1. TRENCHES LESS THAN 24' IN WIDTH - 1/2 SACK CSLM, FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE (ABC) LAYER IN PAVEMENT STRUCTURE OR 6' BELOW PAVEMENT IN FULL DEPTH PAVEMENT STRUCTURES, CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
2. TRENCHES 24' TO 6' IN WIDTH - 1/2 SACK CSLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24' OF THE TRENCH; FOR BALANCE OF BACKFILL.
3. TRENCHES OVER 6' IN WIDTH - FULL DEPTH OF BACKFILL.
4. TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLIATIVE, 1:1 DILUTION RATIO, 0.50 GAL/SY APPLICATION RATE.
5. CSLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
6. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

PAVEMENT REPLACEMENT NOTES:

1. "T"-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE "T" CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4' AND THICKER.

   A. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE A MINIMUM OF 6' ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.

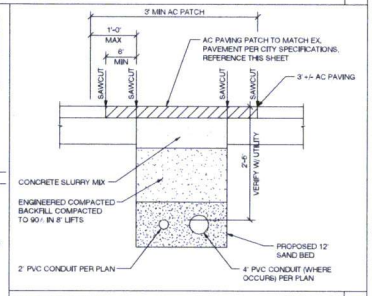
A. FOR NEW AND OVERLAID PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF LOCAL CITY/TOWN CODE AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET, FOR PAVEMENTS LESS THAN 4' THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.

B. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS. MATCH EXISTING A.C. DEPTH, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.

2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
3. IF PAVEMENT REMNANT IS LESS THAN 36", REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS, FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

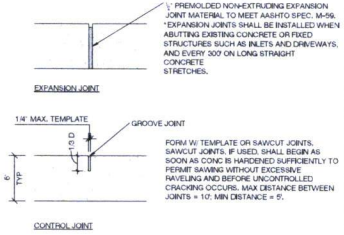
TRENCH AND PATCHING REQUIREMENTS

SCALE: N.T.S. | 4



POWER TRENCH

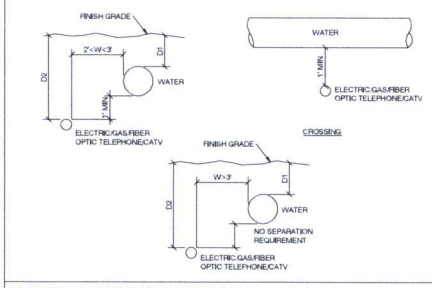
SCALE: 3/4" = 1'-0" | 6



NOTE:
JOINT LAYOUT FOR CONC. STREETS IS TO BE SUBMITTED TO APPROPRIATE GOVERNING MUNICIPALITY FOR APPROVAL.

CONCRETE JOINT DETAILS

SCALE: 1 1/2" = 1'-0" | 8



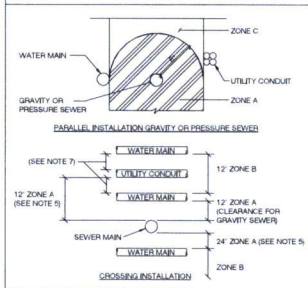
LEGEND:
D1 = 3' MIN. FOR PIPE < 12" DIA; 4' MIN. FOR PIPE = 12" DIA; 5' MIN FOR PIPE > 12" DIA
D2 = MINIMUM COVER
W = HORIZONTAL SEPARATION

NOTES:

1. ELECTRIC SEPARATION REQUIREMENTS ARE FOR PRIMARY ELECTRIC CONDUCTORS ONLY. FOR SERVICE CONDUCTORS SEE PLANS.
2. PRIMARY ELECTRIC, GAS, TELEPHONE, CABLE TV OR FIBER OPTIC LINES SHALL NOT CROSS ABOVE A WATER LINE WITHOUT WRITTEN APPROVAL FROM THE CITY'S WATER RESOURCES DEPARTMENT. IF THIS APPROVAL IS OBTAINED, DOUBLE UTILITY LOCATOR STRIPS AND ABC SLURRY CONFORMING TO LOCAL CITY/TOWN SPECIFICATIONS ARE REQUIRED.

MINIMUM UTILITY SEPARATION REQUIREMENTS

SCALE: N.T.S. | 15



NOTES:

1. SEPARATION DISTANCES AND/OR EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS.
2. SEE CROSS INSTALLATION DETAIL ON THIS SHEET FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.

   A. NO WATER MAINS OR UTILITY CONDUITS SHALL FALL WITHIN ZONE A.

   B. EXTRA PROTECTION WILL BE REQUIRED WHEN THE WATER MAIN FALLS WITHIN ZONE B. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING SANITARY SEWER MAINS WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE. DUCTILE IRON PIPE SHALL COMPLY WITH THE REQUIREMENTS FOR SEWER INSTALLATION, IN A CROSSING. THE NUMBER OF JOINTS SHALL BE HELD TO A MINIMUM WITH ONE FULL JOINT OF PIPE CENTERED OVER/UNDER THE OTHER. AN ALTERNATIVE PROTECTION MAY CONSIST OF ENCASING SEWER MAINS IN REINFORCED CONCRETE.

   C. NO ADDITIONAL PROTECTION WILL BE REQUIRED OUTSIDE OF ZONES A AND B.

   D. WATER MAINS PERMITTED IN ZONE C ONLY WITH WRITTEN PERMISSION FROM THE WATER RESOURCES DEPARTMENT.
3. SEPARATION REQUIREMENTS FOR 4" OR 6" INDIVIDUAL HOUSE SERVICE CONNECTIONS SHALL COMPLY WITH THE PLUMBING CODES ADOPTED BY THE LOCAL CITY/TOWN.
4. RECLAIMED WATER SHALL BE CONSIDERED AS POTABLE WATER WHEN PLACED NEXT TO A SANITARY SEWER AND CONSIDERED A PRESSURE OR FORCED SANITARY SEWER MAIN. WHEN PLACED NEXT TO A POTABLE WATER MAIN.
5. ZONE A IS 24' WHERE WATER MAINS AND UTILITY CONDUITS CROSS PRESSURE SEWER MAINS.
6. REFERENCE LOCAL CITY/TOWN STANDARD DETAILS.

SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES

SCALE: N.T.S. | 16

NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennas.

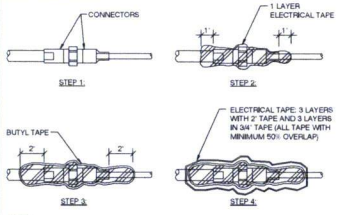
RF EXPOSURE AT 2 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 2-FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: (866) 446-3984 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE: _____

CROWN CASTLE

FCC RF EXPOSURE SIGN

SCALE: N.T.S. | 18



NOTE:

1. ALL TAPE ENDS SHALL BE CUT (DO NOT STRETCH), COAT WITH 3M SCOTCHKOTE SPRAY SEALER.
2. VERTICAL CONNECTIONS SHALL BE TAPED FROM THE BOTTOM UP SO OVERLAP MOVES WATER AWAY FROM CONNECTION; TYP.

CABLE CONNECTOR WATERPROOFING

SCALE: N.T.S. | 19

(3/8" TEXT HEIGHT)
CROWN CASTLE
(1/4" TEXT HEIGHT)
NODE SITE ID:
(1/4" TEXT HEIGHT)
IN CASE OF EMERGENCY CONTACT
NOC: 800.708.7011
(3/16" TEXT HEIGHT)
FACILITY COMPLIES WITH FCC EMISSION REQUIREMENTS.
FACILITY DESIGN APPROVED BY THE THE (LOCAL CITY/TOWN)

NOTE: 4" x 6 1/2" STICKER

NODE IDENTIFICATION SIGNAGE

SCALE: N.T.S. | 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

RECORD DRAWING DRAFTING ONLY

SHIFT
Shift Companies, LLC
7233 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.294.0929
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RELEASE	
DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-008-01

HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER	PAGE
D1.2	7 OF 8

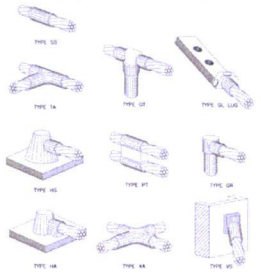
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-008-01 - PROJECT(Recovery).rvt

4/18/2014 7:22:27 AM



CADWELD DETAILS SCALE: N.T.S. 1

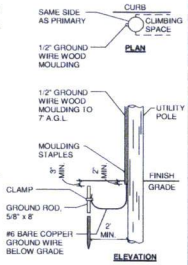
NOTES:
1. WOOD MOULDING SHALL BE INSTALLED IN WORKING SPACE TO PROTECCT THE LINEWORKER ON SAME SIDE AS PRIMARY.

2. STAPLE GROUND WIRE AT APPROPRIATE INTERVALS AND JUST ABOVE AND BELOW WOOD MOULDING.

3. INSTALL WOOD MOULDING WITH GALV. STAPLES AT 3'-0" O.C. 3" FROM TOP AND BOTTOM - ALLOW FOR EXPANSION.

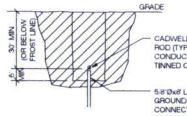
4. PROPOSED 8' GROUND ROD 6' CLEAR OF ALL EXISTING GROUND RODS - CALL FOR UTILITY LOCATE PRIOR TO INSTALLATION.

5. IF SAW CUT IS REQUIRED, CUT A 24"x24" OPENING FOR GROUND ROD INSTALL. REPAIR CONCRETE 2 SACK MIN. - REPAIR NEAT AND FLUSH WITH EXIST. SURFACE.



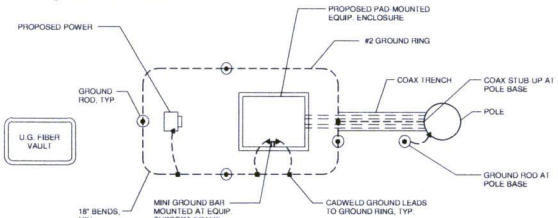
GROUNDING AT WOOD POLE SCALE: N.T.S. 5

NOTES:
1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS SHALL BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE:
   1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT. 3/8"Ø BOLT AND LOCKWASHER.

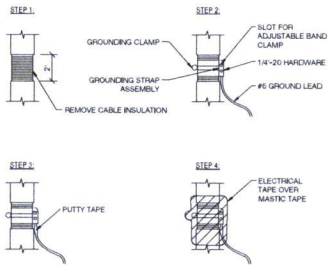


GROUND ROD DETAIL SCALE: NTS 9

■ CADWELD CONNECTION - SEE DTL. 18/
◄ MECHANICAL CONNECTION
⊙ GROUND ROD - SEE DTL. 10/

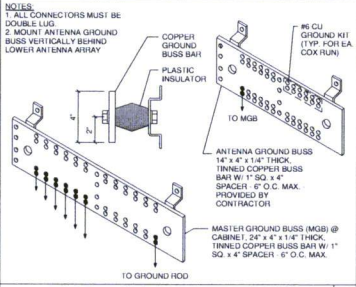


TYPICAL GRADE-MOUNTED EQUIPMENT GROUNDING SCHEMATIC @ WOOD POLE SCALE: NTS 17



COAXIAL CABLE GROUNDING SCALE: NTS 2

NOTES:
1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY



GROUND BUSS BAR DETAIL SCALE: NTS 6

PANEL A

AMPACITY: 60 | MAINS: MCB | KAIC: 10 | RATING: LINK FAULT CALC
VOLTAGE: 120/240V | NEMA: 3R | MOUNTING: SURF | CIRCUITS: 8

PANEL A	NO.	M	C	N	R	L	CB	PHASE		CB	L	R	N	C	M	NO.	LOAD
CONVENIENCE RECEPTACLE	1				0.36		20/1	0.91		20/1			0.55			2	RADIO EQUIPMENT
CONVENIENCE RECEPTACLE	3				0.36		20/1		0.91	20/1			0.55			4	RADIO EQUIPMENT
EXHAUST FAN	5	0.36					20/1	0.36		20/1						6	SPARE
BUSSED SPACE	7								0.36	20/1					0.36	8	SUPPLY FAN

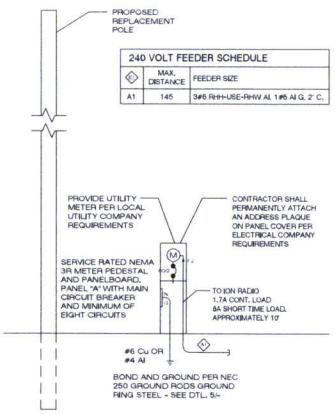
LIGHTING LOAD @ 125% =	0.00	0.00	KVA
RECEPTACLES (1ST 10KVA @ 100% + REMAINDER @ 50%) =	0.36	0.36	KVA
NON-CONTINUOUS LOAD @ 125% =	0.55	0.55	KVA
CONTINUOUS LOAD @ 125% =	0.00	0.00	KVA
MOTORS + 25% OF LARGEST MOTOR =	0.45	0.45	KVA
TOTAL PANEL A DEMAND =	1.36	1.36	KVA
TOTAL DEMAND AMPS =	11.33	11.33	KVA

PER NEC 210.4(B)
PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

ELECTRICAL PANEL SCHEDULES SCALE: NTS 14

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT (UNDERGROUND) AND IMC CONDUIT ABOVE GROUND.
6. PROVIDE 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NSR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
9. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
10. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POTHOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
11. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
12. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

ELECTRICAL NOTES SCALE: NONE 18

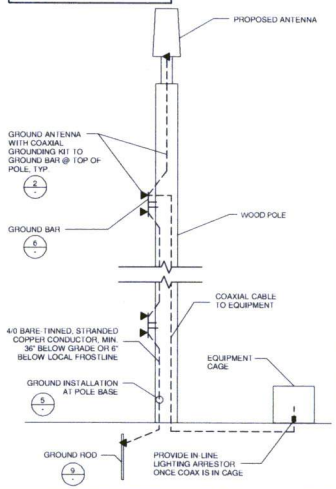


240 VOLT FEEDER SCHEDULE		
◇	MAX. DISTANCE	FEEDER SIZE
A1	145	3#6 RHH-USE-RHW AL 1#6 Al G, 2" C.

NOTES:
1. EC TO FIELD VERIFY SITE CONDITION.
2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
4. PROVIDE ADEQUATE SERVICE CONDUCTOR LENGTH AT THE BASE OF THE RISER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND CONNECT TO UTILITY COMPANY SECONDARY LINES WITH A 1'-2" DRIP LOOP.
5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
6. ALL WIRE TO BE THHN OR THWN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
7. FUTURE BREAKERS IN PANEL B SHALL BE SERIES RATED WITH THEIR RESPECTIVE UPSTREAM REMOTE MAIN PROTECTIVE DEVICE. A TWO TIER (22K/10KVA) SYSTEM IS SPECIFIED.
8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.

ONE-LINE DIAGRAM SCALE: NTS 4

■ CADWELD - SEE DTL. 1/
◄ MECHANICAL CONNECTION
GROUND BAR (GB) 14" x 4" x 1/4" COPPER
MASTER GROUND BAR (GB) 24" x 4" x 1/4" COPPER
⏚ GROUND

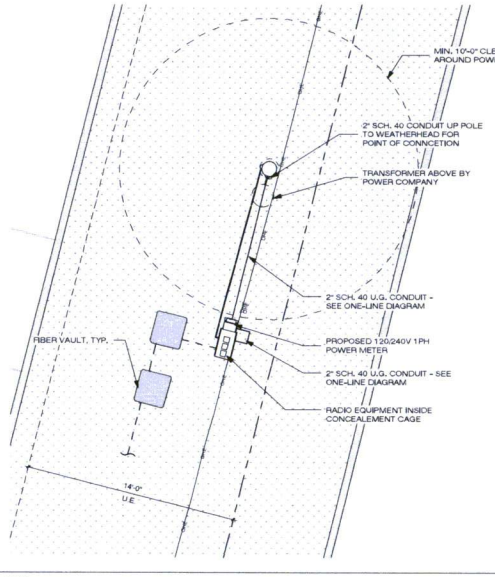


GROUNDING SCHEMATIC - WOOD POLE SCALE: NTS 8

FAULT CURRENT CALCULATION

FAULT	F1	F2	F3	F4	F5
LOCATION	CSU POS	PANEL @ 20'	PANEL @ 155'	PANEL @ 240'	PANEL @ 370'
AFC (FROM SOURCE)	49300	49300	49300	49300	49300
CONDUCTOR SIZE		#6	#4	#2	#1/0
CONDUCTOR TYPE		AL	AL	AL	AL
LENGTH		20	155	240	370
# OF SETS		1	1	1	1
TYPE OF CONDUIT		PVC	PVC	PVC	PVC
C VALUE		1482	2350	3730	5838
VOLTAGE PRIMARY		240	240	240	240
VOLTAGE SECONDARY (XFMR)					
XFMR IMPEDENCE					
XFMR KVA					
"F" FACTOR		5.54	27.10	26.43	26.04
MULTIPLIER		0.15	0.04	0.04	0.04
CALCULATED FAULT CURENT	49300	7533	1756	1797	1823
RATED (SERIES / FULLY)		FULLY @ 10K	FULLY @ 10K	FULLY @ 10K	FULLY @ 10K

FAULT CURRENT CALCULATION SCALE: NTS 12



ELECTRICAL PLAN 1/4" = 1'-0" 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.18

SHIFT
Shift Companies, LLC
7233 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.264.4829
fax: 480.264.0143

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DATE	SUBMITTAL
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1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-008-01
HOME DEPOT PARKING LOT, N. OF FRY RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603 | IN HOUSE
DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES

SHEET NUMBER: E1.1 | PAGE: 8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #
CASE #

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4/18/2014 7:22:30 AM

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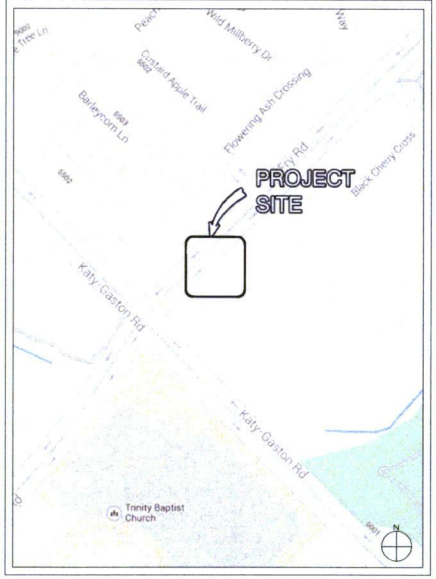
4/18/2014 8:29:32 AM

CROWN CASTLE

PROJECT NAME:	VERIZON - CINCO RANCH
PROJECT ADDRESS:	FRY RD., NE OF KATY-GASTON RD.
PROJECT TYPE:	WOOD POWER POLE
HUB AREA:	CINCO RANCH, TX
NODE #(s):	CCR-003-01
COORDINATES:	LAT: 29.712240, LONG: -95.805409

VICINITY MAP



PROJECT TEAM

ARCHITECT
Company: SHIFT CONSULTING
Address: 7333 E. MONTE VISTA RD. SCOTTSDALE, AZ 85257
Phone Number: 480.264.0829
Fax Number: 480.264.0163
Contact: CHRIS MYERS

STRUCTURAL
Company: WSC
Address: 2734 E PROMINENT CT. S. SALEM, OR 97302
Phone Number: 503.587.0101
Fax Number:
Contact:

RF ENGINEER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

FIBER ENGINEERING
Company: ICTX
Address: 419 CENTURY PLAZA, STE. 250 HOUSTON, TX 77073
Phone Number: 832.465.4510
Fax Number:
Contact:

GENERAL CONTRACTOR
Company: T.B.D.
Address:
Phone Number:
Fax Number:
Contact:

PROJECT MANAGER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

PROJECT SUMMARY

PROJECT NAME:
VERIZON - CINCO RANCH

PROJECT AREA:
CINCO RANCH, TX

JURISDICTION:
FORT BEND COUNTY ENGINEERING DEPT.
1124 BLUME RD.
ROSENBERG, TX 77471
PH: 281.633.7500
CONTACT: JOHNNY ORTEGA

HANDICAPPED REQUIREMENTS:
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.

PLUMBING REQUIREMENTS:
- FACILITY HAS NO PLUMBING.

POWER COMPANY:
CENTERPOINT ENERGY
5431 HIGHWAY BLVD.
KATY, TX 77494
PH: 281.520.6275
CONTACT: KEN CORTEZ

APPLICANT:
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
CONTACT: BRUCE POTTER

CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2008 NATIONAL ELECTRICAL CODE (NEC)
2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)

KEY MAP AREA:
524D

T1.1-Sheet Index

Sheet #	Sheet Description	Page
T1.1	TITLE SHEET	1
T1.2	GENERAL NOTES ABBREVIATIONS AND SYMBOLS	2
T1.3	EQUIPMENT SPECIFICATIONS	3
A1.2	SITE PLAN, EQUIPMENT AND ANTENNA PLAN	4
A1.3	POLE ELEVATION, PROPOSED	5
D1.1	CONSTRUCTION DETAILS	6
D1.2	CONSTRUCTION DETAILS	7
E1.1	ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES	8

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE COMMUNITY OF CINCO RANCH, TEXAS. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY IN RESIDENTIAL AREAS. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

A SUBJECT NODE WILL CONSIST OF GROUND MOUNTED EQUIPMENT AND INSTALLATION OF AN ANTENNA MOUNTED ON WOOD POLES SPECIFICALLY ENGINEERED TO SUPPORT THE PROPOSED NETWORK ANTENNAS. THE RADIO EQUIPMENT WILL BE MOUNTED INSIDE CONCEALEMENT CAGES ON THE GROUND, ALONG WITH A SEPARATE METER PEDESTAL.

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-003-01
FRY RD., NE OF KATY-GASTON RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603
IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE
TITLE SHEET

SHEET NUMBER: T1.1
PAGE: 1 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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1. RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
3. CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
4. ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
5. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
6. ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
7. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
8. TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
9. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
10. OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
11. CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
12. ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
13. CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIONS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
15. THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

GENERAL PROJECT NOTES — SCALE: NTS — 10

A/C	AIR CONDITIONING
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATELY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
BLK	BLOCK
BOB	BOTTOM OF BLOCK
B/S	BUILDING STANDARD
CLG	CEILING
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CO	COMPANY
DBL	DOUBLE
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EPB	ELECTRICAL PULL BOX
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXT	EXTERIOR
FIN	FINISH
FLUOR	FLUORESCENT
FLR	FLOOR
FT	FOOT, FEET
GA	GAUGE
GALV	GALVANIZE(D)
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GRND	GROUND
GWB	GYPSUM WALL BOARD
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTING AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIA
IN	INCH
INFO	INFORMATION
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MFR	MANUFACTURER
MGR	MANAGER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OPP	OPPOSITE
PL	PROPERTY LINE
PLY	PLYWOOD
PR	PAIR
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
RCP	REFLECTED CEILING PLAN
REQ'D	REQUIRED
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RX	RECEIVE SIGNAL
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SY	SQUARE YARD
THRU	THROUGH
TNND	TINNED
T.O.	TOP OF
TOB	TOP OF BLOCK
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TS	TUBE STEEL
TX	TRANSMIT SIGNAL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
URH	UNIVERSAL RADIO HEAD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
WDW	WINDOW
W/O	WITHOUT
WP	WORKING POINT
WTR	WATER

— — — — —	CENTER LINE
— — — —	PROPERTY LINE
— — — —	RIGHT-OF-WAY
— -F- — -F- —	FIBER
— -G- — -G —	GAS
— -P- — -P- —	POWER
— -S- — -S- —	SANITARY SEWER
— SD- — -SD —	STORM DRAIN
— W- — -W —	WATER
—P——P—	LIGHT CIRCUIT POWER

3	REVISION
A21	KEY NOTE
1 / 1	DETAIL REFERENCE
8 / A-2	ELEVATION REFERENCE
17 / A-3	SECTION REFERENCE
	ELEVATION MARKER
A.5	PHOTOSIM REFERENCE
##	ANTENNA AZIMUTH
1 / A-02	VIEW NUMBER / SHEET NUMBER / SHEET GROUP

ABBREVIATIONS AND SYMBOLS — SCALE: NTS — 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER | **IN HOUSE**

120603 — DRAWN BY: RA — CHECKED BY: CM

SHEET TITLE

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

SHEET NUMBER | **PAGE**

T1.2 — 2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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SPECIFICATIONS

ION-M7P/17P - Product Specification

Electrical

Power Supply

Mains power, Vac: 85 to 264; 115 to 230

Power consumption, watts: max. temp., fully loaded 139; room temp., dle 108

Optical Link

Optical Link

Connectors: 12000/APC 8°

Optical return loss, dB: 45

Fiber type: Single mode IR/125 µm

Optical link budget, dB: 0 to 16

Composite input power @ CATV+ reader side, dBm: 700 MHz 3.0 nominal; AWS1700/2100 3.0 nominal

RF Interface

BTS Side (SMA)

Number of connectors: Standard 4; 700 MHz 4; AWS1700/2100 4

System optimized for BTS power, dBm: 23; 46

Commercial 700 MHz

Frequency range, MHz: Uplink 698 to 716; Uplink 776 to 787; Downlink 728 to 757

Output power per carrier, dBm

Number of Carriers	1	2	4	8
CB	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input ICP3, dBm**: ICP3 optimized 11 min; Noise figure optimized 18 min

Noise figure, dB**: ICP3 optimized <10 max; Noise figure optimized <8 max; <4.5 typical

AWS1700/2100

Frequency range, MHz: Uplink 1710 to 1755; Downlink 2110 to 2155

Output power per carrier, dBm

Number of Carriers	1	2	4	8
CDMA	43	40	37	34
LTE	43	40	37	34
UMTS	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input ICP3, dBm**: ICP3 optimized 12 min; Noise figure optimized 18 min

Noise figure, dB**: ICP3 optimized <11 max; Noise figure optimized <6 max; <4.5 typical

System Supervision and Control

Commands: RF on/off; 4 external control ports

Alarms: Summary; Power Supply; Optical DL and BL failure; RF DL and DL failure; Temperature; 4 external alarm inputs

Supervision: Composite output power

SPECIFICATIONS

ION-M7P/17P - Product Specification

Mechanical*

Height, width, depth mm (in): 331 x 156 x 147 (13.0 x 6.1 x 5.8)

Weight, kg (lb): 20 (44)

Environmental

Operating temperature range, °C: -33 to +50

Ingress protection: RF port IP67; fan port IP55

Ordering Information

ION-M7P/17P: 0Ma-744032

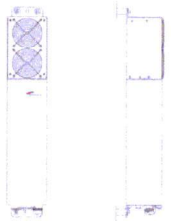
Depending on the wired system and the configuration the ordering material number varies or identifying suffix.

Extension Unit Options

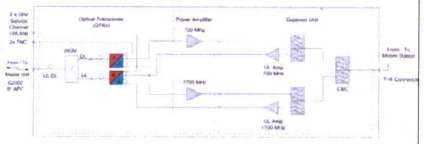
No connection to extension unit possible

- 2 dB reduction of Port 0 carrier bandwidth - 1 MHz
- Iron Reference point 0 to 4
- Spacing required 10 mm (1.38 in) around unit

All figures are typical values, unless otherwise stated.



Cabinet of ION-M7P/17P Remote Unit



RADIO SPECIFICATIONS

SCALE: N.T.S. | 18

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (MHz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°

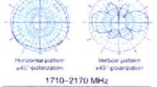
General specifications

Frequency range	698–894 MHz; 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3 < -150 dBc
Polarization	+45° upper and lower band; -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intersystem / intersystem	>30 dB; >40 dB (698–894 / 1710–2170 MHz)
Radome color	Brown or grey
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph) 32 lbf (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer

See reverse for order information

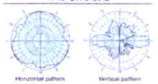
*Mechanical design is based on environmental conditions as specified in TIA-222-G-2 (Structural Standard for Antenna Structures) and its Addendum 1 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

698–894 MHz



Horizontal pattern ±45° polarization — Vertical pattern ±45° polarization

1710–2170 MHz



Horizontal pattern ±45° polarization — Vertical pattern ±45° polarization

Specifications:

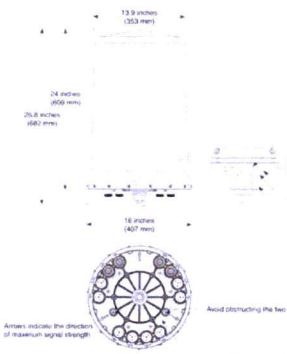
	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi (with 1-4 dB nulls typical)	5.5 dBi	7 dBi	7.5 dBi (with 0-10 dB nulls typical)	8.5 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)

Kathrein Inc. Scala Division · Post Office Box 4580 · Medford, OR 97501 (USA) · Phone (541) 779-6900 · Fax (541) 779-3991
Email communications@kathrein.com · Internet www.kathrein-scala.com

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna



Customer supplied mounting bracket must fit within a 10 inch (254 mm) circle.

Order Information:

Model	Description
840 10510	Brown Dualband X-pol Omni Antenna
840 10511	Grey Dualband X-pol Omni Antenna

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com

Kathrein Inc. Scala Division · Post Office Box 4580 · Medford, OR 97501 (USA) · Phone (541) 779-6900 · Fax (541) 779-3991
Email communications@kathrein.com · Internet www.kathrein-scala.com

ANTENNA SPECIFICATIONS

SCALE: N.T.S. | 12

4/18/2014 8:29:33 AM

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PLAN CHECK #

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

SHEET NUMBER T1.3

PAGE 3 OF 8

CASE #

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-003-01 - PROJECT(Recovery).rvt

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE PANEL ANTENNA IN CONCEALMENT SHROUD	8/D1.1 & 12/T1.3
A02	PROPOSED CROWN CASTLE UNDERGROUND COAX CONDUIT (APPROXIMATE LOCATION, F.V.)	20/D1.1
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/A1.3
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	N/A	
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1
U01	PROPOSED CROWN CASTLE UNDERGROUND POWER ROUTE (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2
U02	PROPOSED CROWN CASTLE UNDERGROUND FIBER ROUTE BY OTHERS (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2

LATITUDE:	29.712240
LONGITUDE:	-95.805409
POLE TYPE:	WOOD POWER POLE
POLE ID #:	N/A

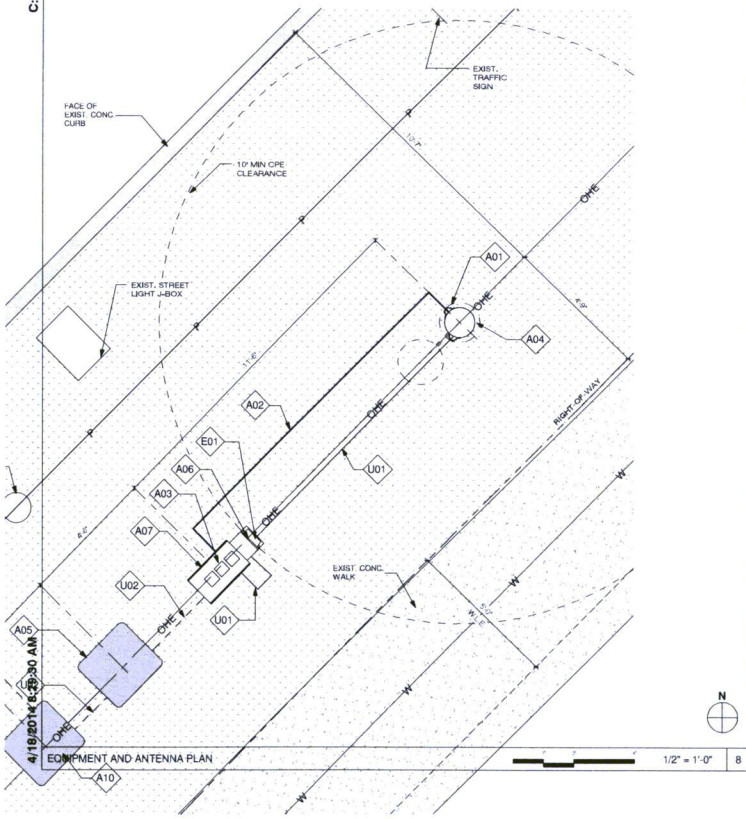
GENERAL NOTES

1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
2. CONTRACTOR TO FIELD LOCATE EXIST. UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY. VERIFY ALL DIMENSIONS.
6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

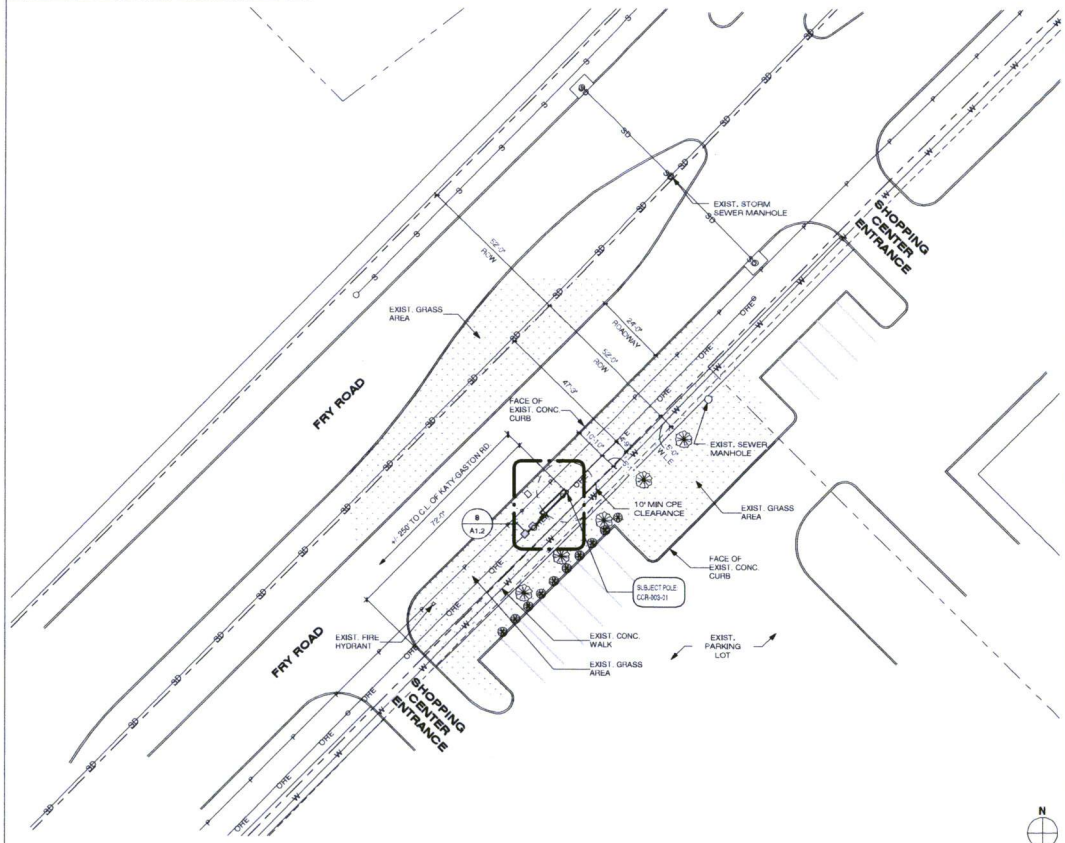
811 CALL TWO WORKING DAYS BEFORE YOU DIG.
UNDERGROUND SERVICE ALERT OF TEXAS
1-800-545-6005

NOTES:

1. ANY DAMAGE TO EXISTING GUTTER, CURB, SIDEWALK AND ROADWAY DURING CONSTRUCTION TO BE REPAIRED OR REPLACED.
2. EXISTING VEGETATION DAMAGED IN CONSTRUCTION TO BE REPLACED BY SAME SPECIES.



EQUIPMENT AND ANTENNA PLAN — 1/2" = 1'-0" — 8



OVERALL SITE PLAN — 1" = 20'-0" — 20

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HOUSTON, TX 77057
PH: 469.343.4401

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REVISIONS		
NO.	DATE	COMMENT
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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

SITE PLAN, EQUIPMENT AND ANTENNA PLAN

SHEET NUMBER	PAGE
A1.2	4 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

4/18/2014 8:29:30 AM

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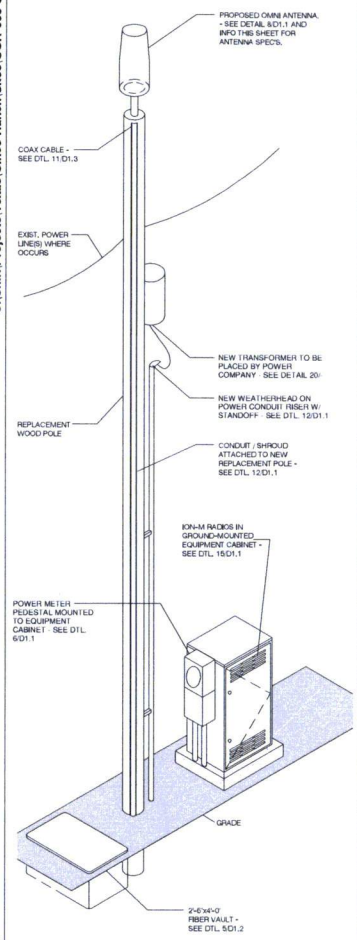
4/18/2014 8:29:30 AM



NOTES:

1. FIBER VAULT, POWER METER PEDESTAL AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE RECONFIGURED TO SUIT PROJECT LOCATION
2. ISOMETRIC IS A SCHEMATIC DESIGN ONLY.

WD. POLE ISOMETRIC — SCALE: N.T.S. — 4

MODEL: KATHREIN SCALA 840 10510
LENGTH: 24.0"
WIDTH: 16.0"Ø
DEPTH: N/A
WEIGHT: 45.0 LBS

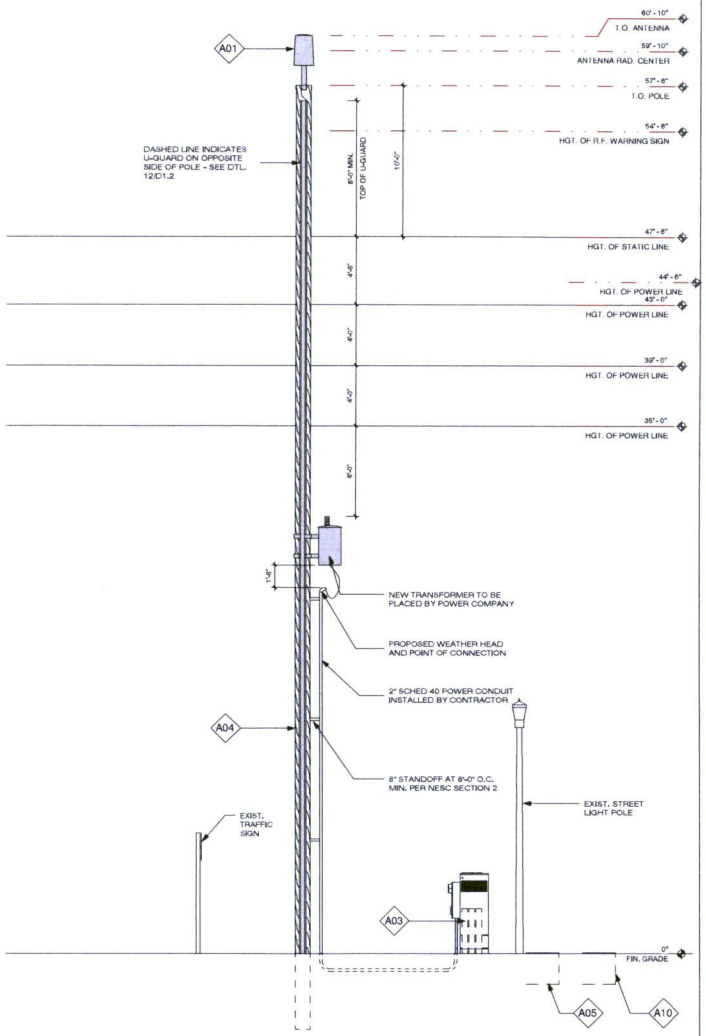
PROPOSED PANEL ANTENNA SPECS

PROPOSED POLE WIDTH = 12"Ø
PROPOSED POLE HEIGHT = 57' - 6"
(+ 2' 0" ANTENNA AND 1' 4" ANTENNA MAST)

POLE INFO

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/-
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	PROPOSED CROWN CASTLE CONCELEMENT SHROUD	8/D1.1
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1



POLE ELEVATION (PROPOSED) — SCALE: 1/4" = 1' 0" — 20

CROWN CASTLE

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HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

POLE ELEVATION, PROPOSED

SHEET NUMBER A1.3 **PAGE** 5 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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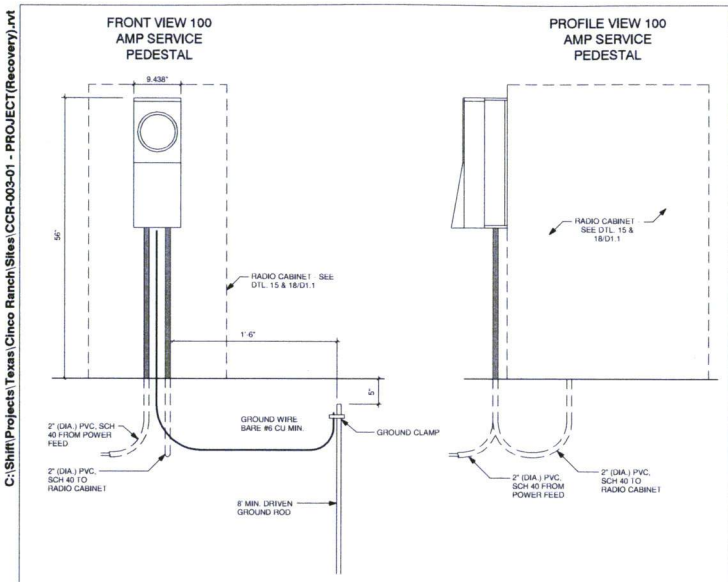
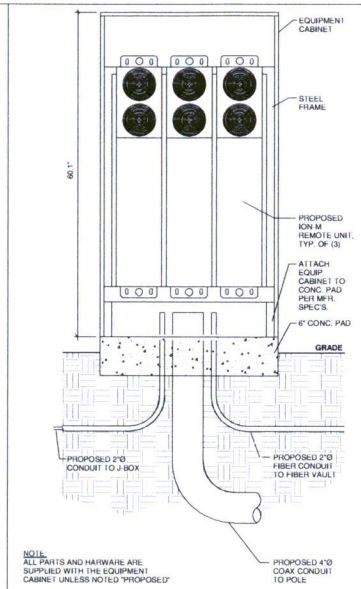
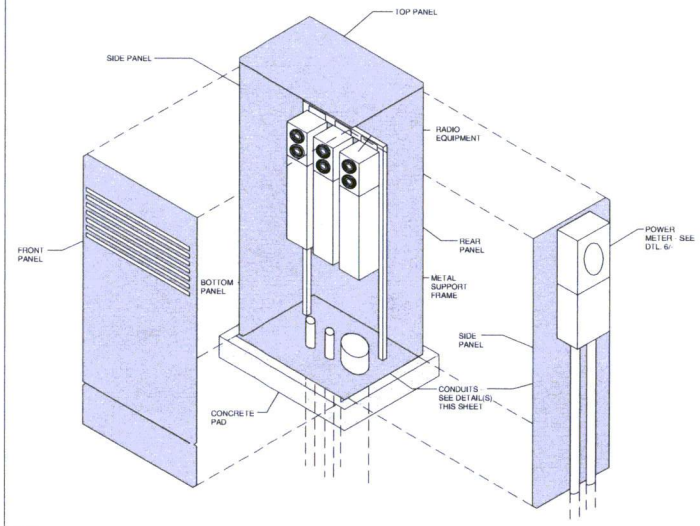


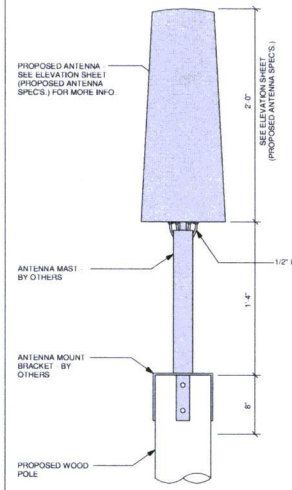
POWER METER - MOUNTED TO RADIO CABINET — SCALE: 1" = 1'-0" — 6



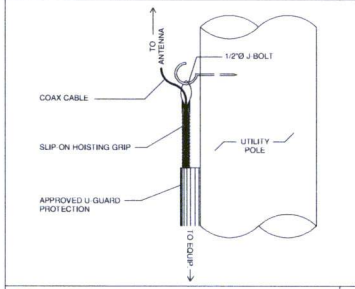
EQUIPMENT CABINET SECTION — SCALE: N.T.S. — 10



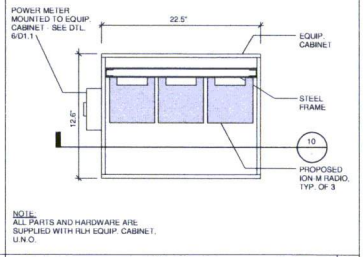
EQUIPMENT ENCLOSURE — SCALE: N.T.S. — 18



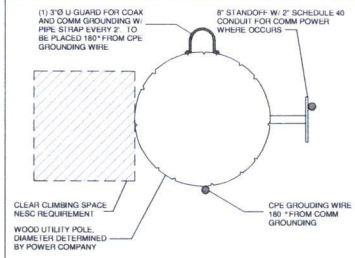
ANTENNA MOUNTING DETAIL — SCALE: N.T.S. — 8



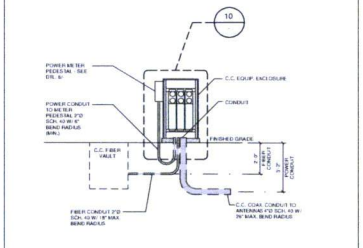
COAX HANGER DETAIL — SCALE: N.T.S. — 11



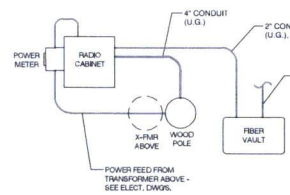
EQUIPMENT ENCLOSURE PLAN — SCALE: N.T.S. — 15



POLE PLAN TYP. DETAIL — SCALE: N.T.S. — 12



CONDUIT AND POWER RISER DIAGRAM — SCALE: N.T.S. — 16



CONDUIT ROUTE — SCALE: N.T.S. — 20

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NODE ADDRESS

NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER D1.1

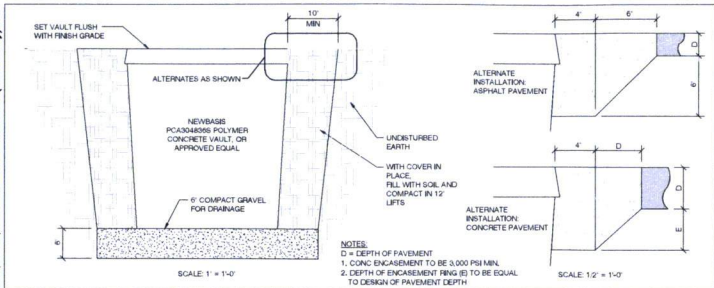
PAGE 6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

4/18/2014 8:29:31 AM



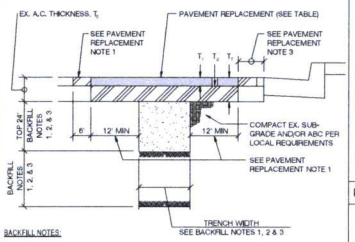
NOTES:
D = DEPTH OF PAVEMENT
1. CONC ENCASEMENT TO BE 3,000 PSI MIN.
2. DEPTH OF ENCASEMENT RING (E) TO BE EQUAL TO DESIGN OF PAVEMENT DEPTH

SCALE: 1/2" = 1'-0'

VAULT INSTALLATION

SCALE: AS NOTED | 5

EXISTING PAVEMENT THICKNESS, T_1	ASPHALT CONCRETE (A.C.) PAVEMENT REPLACEMENT		
	A.C. SINGLE COURSE OR SURFACE COURSE, T_1	A.C. BASE COURSE, T_2	TOTAL THICKNESS, T_T
$T_1 \leq 3'$	3" MINIMUM	NONE	3" MINIMUM
$T_1 > 3'$	2" MINIMUM	2" MINIMUM	T_1 (MATCH EXIST)



BACKFILL NOTES:

1. TRENCHES LESS THAN 24" IN WIDTH - 1/2 SACK CSLM. FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE (ABC) LAYER IN PAVEMENT STRUCTURE OR 6" BELOW PAVEMENT IN FULL DEPTH PAVEMENT STRUCTURES, CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
2. TRENCHES 24" TO 6' IN WIDTH - 1/2 SACK CSLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24" OF THE TRENCH, FOR BALANCE OF BACKFILL.
3. TRENCHES OVER 6' IN WIDTH - FULL DEPTH OF BACKFILL.
4. TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLIATIVE. 1:1 DILUTION RATIO. 0.50 GAL/SY APPLICATION RATE.
5. CSLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
6. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

PAVEMENT REPLACEMENT NOTES:

1. "T"-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE "T" CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4" AND THICKER.
   A. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12" OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4" AND THICKER, MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM OF 6" ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.

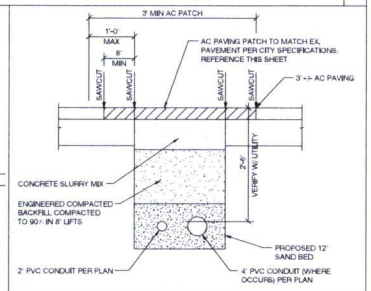
A. FOR NEW AND OVERLAID PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF LOCAL CITY/TOWN CODE AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12" OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4" AND THICKER, MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET. FOR PAVEMENTS LESS THAN 4" THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.

B. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS. MATCH EXISTING A.C. DEPTH, MILL AND REMOVE THE TOP 2" OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.

2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
3. IF PAVEMENT REMNANT IS LESS THAN 36", REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS, FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

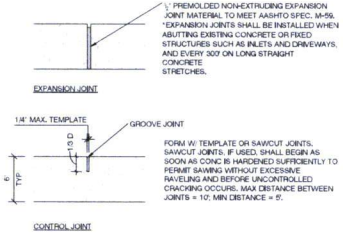
TRENCH AND PATCHING REQUIREMENTS

SCALE: N.T.S. | 4



POWER TRENCH

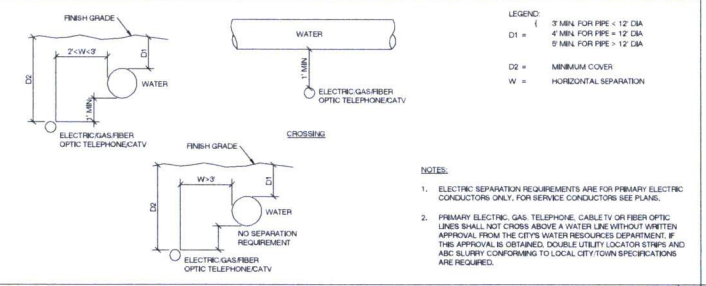
SCALE: 3/4" = 1'-0" | 6



NOTE:
JOINT LAYOUT FOR CONC. STREETS IS TO BE SUBMITTED TO APPROPRIATE GOVERNING MUNICIPALITY FOR APPROVAL.

CONCRETE JOINT DETAILS

SCALE: 1 1/2" = 1'-0" | 8



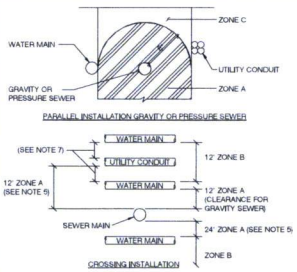
LEGEND:
D1 = 3' MIN. FOR PIPE < 12" DIA
4' MIN. FOR PIPE = 12" DIA
5' MIN. FOR PIPE > 12" DIA
D2 = MINIMUM COVER
W = HORIZONTAL SEPARATION

NOTES:

1. ELECTRIC SEPARATION REQUIREMENTS ARE FOR PRIMARY ELECTRIC CONDUCTORS ONLY. FOR SERVICE CONDUCTORS SEE PLANS.
2. PRIMARY ELECTRIC, GAS, TELEPHONE, CABLE TV OR FIBER OPTIC LINES SHALL NOT CROSS ABOVE A WATER LINE WITHOUT WRITTEN APPROVAL FROM THE CITY'S WATER RESOURCES DEPARTMENT. IF THIS APPROVAL IS OBTAINED, DOUBLE UTILITY LOCATOR STRIPS AND ABC SLURRY CONFORMING TO LOCAL CITY/TOWN SPECIFICATIONS ARE REQUIRED.

MINIMUM UTILITY SEPARATION REQUIREMENTS

SCALE: N.T.S. | 15



NOTES:

1. SEPARATION DISTANCES AND/OR EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS.
2. SEE CROSS INSTALLATION DETAIL ON THIS SHEET FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
   A. NO WATER MAINS OR UTILITY CONDUITS SHALL FALL WITHIN ZONE A.
   B. EXTRA PROTECTION WILL BE REQUIRED WHEN THE WATER MAIN FALLS WITHIN ZONE B. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING SANITARY SEWER MAINS WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE. DUCTILE IRON PIPE SHALL COMPLY WITH THE REQUIREMENTS FOR SEWER INSTALLATION, IN A CROSSING. THE NUMBER OF JOINTS SHALL BE HELD TO A MINIMUM WITH ONE FULL JOINT OF PIPE CENTERED OVER/UNDER THE OTHER. AN ALTERNATIVE PROTECTION MAY CONSIST OF ENCASING SEWER MAINS IN REINFORCED CONCRETE.
   C. NO ADDITIONAL PROTECTION WILL BE REQUIRED OUTSIDE OF ZONES A AND B.
   D. WATER MAINS PERMITTED IN ZONE C ONLY WITH WRITTEN PERMISSION FROM THE WATER RESOURCES DEPARTMENT.
3. SEPARATION REQUIREMENTS FOR 4" OR 6" INDIVIDUAL HOUSE SERVICE CONNECTIONS SHALL COMPLY WITH THE PLUMBING CODES ADOPTED BY THE LOCAL CITY/TOWN.
4. RECLAIMED WATER SHALL BE CONSIDERED AS POTABLE WATER WHEN PLACED NEXT TO A SANITARY SEWER AND CONSIDERED A PRESSURE OR FORCED SANITARY SEWER MAIN, WHEN PLACED NEXT TO A POTABLE WATER MAIN.
5. ZONE A IS 24' WHERE WATER MAINS AND UTILITY CONDUITS CROSS PRESSURE SEWER MAINS.
6. REFERENCE LOCAL CITY/TOWN STANDARD DETAILS.

SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES

SCALE: N.T.S. | 16

NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennas.

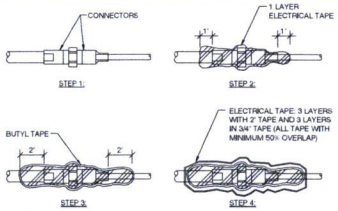
RF EXPOSURE AT 2 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 2-FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: (866) 446-3984 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE: _____

CROWN CASTLE

FCC RF EXPOSURE SIGN

SCALE: N.T.S. | 18



NOTE:
1. ALL TAPE ENDS SHALL BE CUT (DO NOT STRETCH), COAT WITH 3M SCOTCHKOTE SPRAY SEALER.
2. VERTICAL CONNECTIONS SHALL BE TAPED FROM THE BOTTOM UP SO OVERLAP MOVES WATER AWAY FROM CONNECTION, TYP.

CABLE CONNECTOR WATERPROOFING

SCALE: N.T.S. | 19

(3/8" TEXT HEIGHT)
CROWN CASTLE
(1/4" TEXT HEIGHT)
NODE SITE ID:
(1/4" TEXT HEIGHT)
IN CASE OF EMERGENCY CONTACT
NOC: 800.708.7011
(3/16" TEXT HEIGHT)
FACILITY COMPLIES WITH FCC EMISSION REQUIREMENTS.
FACILITY DESIGN APPROVED BY THE THE (LOCAL CITY/TOWN)

NOTE: 4" x 6 1/2" STICKER

NODE IDENTIFICATION SIGNAGE

SCALE: N.T.S. | 20

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

RECORD DRAWING DRAFTING ONLY

SHIFT
Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.284.0829
fax: 480.284.0163

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RELEASE	
DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-003-01

FRY RD., NE OF KATY-GASTON RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER	PAGE
D1.2	7 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-003-01 - PROJECT(Recovery).rvt

4/18/2014 8:29:31 AM

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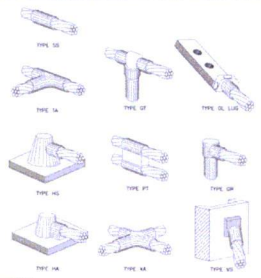


CADWELD DETAILS

SCALE: N.T.S. | 1

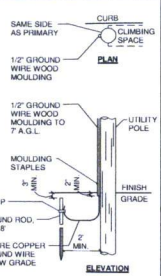
NOTES:
1. WOOD MOULDING SHALL BE INSTALLED IN WORKING SPACE TO PROTECCT THE LINEWORKER ON SAME SIDE AS PRIMARY.

2. STAPLE GROUND WIRE AT APPROPRIATE INTERVALS AND JUST ABOVE AND BELOW WOOD MOULDING.

3. INSTALL WOOD MOULDING WITH GALV. STAPLES AT 3'-0" O.C. 3" FROM TOP AND BOTTOM - ALLOW FOR EXPANSION.

4. PROPOSED 8' GROUND ROD IS CLEAR OF ALL EXISTING GROUND RODS - CALL FOR UTILITY LOCATE PRIOR TO INSTALLATION.

5. IF SAW CUT IS REQUIRED, CUT A 24"x24" OPENING FOR GROUND ROD INSTALL. REPAIR CONCRETE 2 SACK MIN. REPAIR NEAT AND FLUSH WITH EXIST. SURFACE.



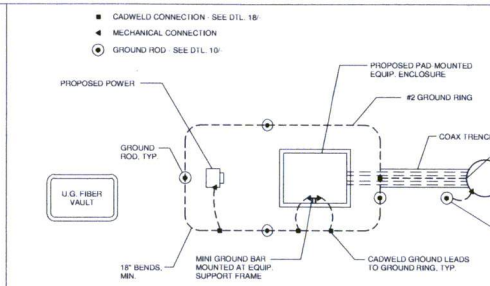
GROUNDING AT WOOD POLE

SCALE: N.T.S. | 5

NOTES:
1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS SHALL BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE:
   1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT, 3/8"Ø BOLT AND LOCKWASHER.

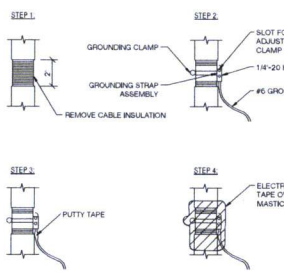
GROUND ROD DETAIL

SCALE: NTS | 9



TYPICAL GRADE-MOUNTED EQUIPMENT GROUNDING SCHEMATIC @ WOOD POLE

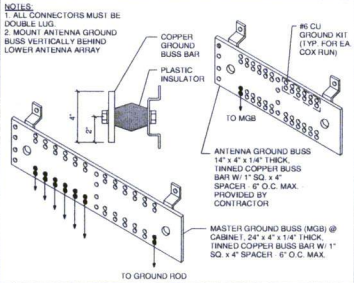
SCALE: NTS | 17



COAXIAL CABLE GROUNDING

SCALE: NTS | 2

NOTES:
1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY



GROUND BUSS BAR DETAIL

SCALE: NTS | 6

PANEL A

AMPACITY: **60** | MAINS: **MCB** | KAIC: **10** | RATING: **LINK FAULT CALC**
VOLTAGE: **120/240V** | NEMA: **3R** | MOUNTING: **SURF** | CIRCUITS: **8**

PANEL A	NO.	M	C	N	R	L	CB	PHASE		CB	L	R	N	C	M	NO.	LOAD
CONVENIENCE RECEPTACLE	1				0,36		20/1	0,91		20/1			0,55			2	RADIO EQUIPMENT
CONVENIENCE RECEPTACLE	3				0,36		20/1		0,91	20/1			0,55			4	RADIO EQUIPMENT
EXHAUST FAN	5	0,36					20/1	0,36		20/1						6	SPARE
BUSSED SPACE	7								0,36	20/1					0,36	8	SUPPLY FAN
					LIGHTING LOAD @ 125% =			0,00	0,00	KVA							
					RECEPTACLES (1ST 10KVA @ 100% + REMAINDER @ 50%) =			0,36	0,36	KVA							
					NON-CONTINUOUS LOAD @ 125% =			0,55	0,55	KVA							
					CONTINUOUS LOAD @ 125% =			0,00	0,00	KVA							
					MOTORS + 25% OF LARGEST MOTOR =			0,45	0,45	KVA							
					TOTAL PANEL A DEMAND =			1,36	1,36	KVA							
					TOTAL DEMAND AMPS =			11,33	11,33	KVA							

PER NEC 210.4(B)
PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

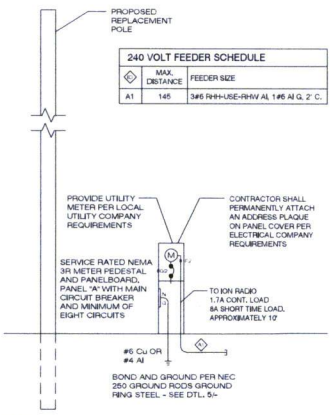
ELECTRICAL PANEL SCHEDULES

SCALE: NTS | 14

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT (UNDERGROUND) AND IMC CONDUIT ABOVE GROUND.
6. PROVIDE 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1 SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NOR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
10. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
11. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POTHOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
12. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
13. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS.
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

ELECTRICAL NOTES

SCALE: NONE | 18



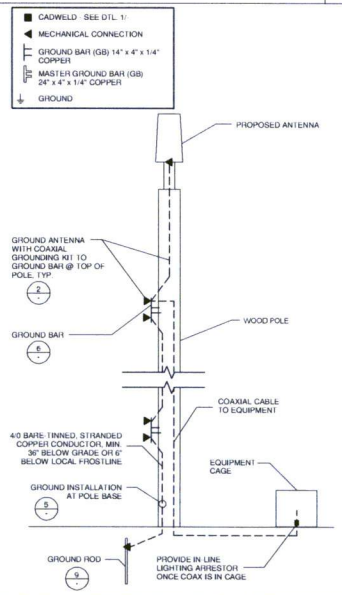
240 VOLT FEEDER SCHEDULE

◇	MAX. DISTANCE	FEEDER SIZE
A1	145	3#6 RHH-USE-RHW AL 1#6 Al G, 2" C.

NOTES:
1. EC TO FIELD VERIFY SITE CONDITION.
2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
4. PROVIDE ADEQUATE SERVICE CONDUCTOR LENGTH AT THE BASE OF THE RISER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND CONNECT TO UTILITY COMPANY SECONDARY LINES WITH A 12" DRIP LOOP.
5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
6. ALL WIRE TO BE THHN OR THWN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
7. FUTURE BREAKERS IN PANEL B SHALL BE SERIES RATED WITH THEIR RESPECTIVE UPSTREAM REMOTE MAIN PROTECTIVE DEVICE. A TWO TIER (22K/10KVA) SYSTEM IS SPECIFIED.
8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.

ONE-LINE DIAGRAM

SCALE: NTS | 4



GROUNDING SCHEMATIC - WOOD POLE

SCALE: NTS | 8

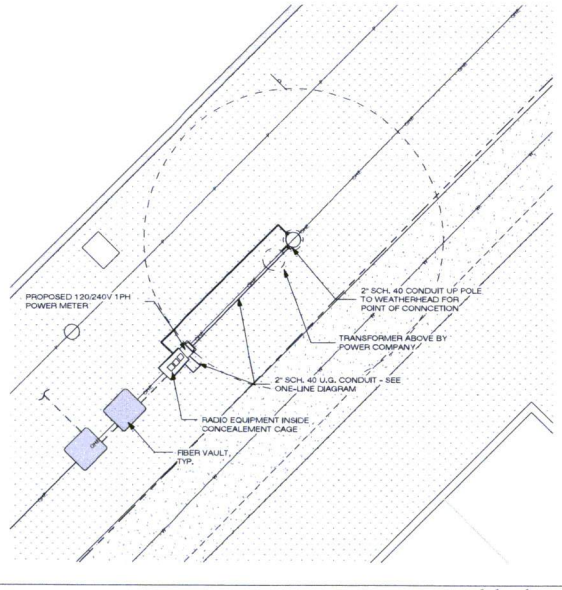
FAULT CURRENT CALCULATION

FAULT	F1	F2	F3	F4	F5
LOCATION	CSU POS	PANEL @ 20'	PANEL @ 159'	PANEL @ 240'	PANEL @ 370'
AFC (FROM SOURCE)	49300	49300	49300	49300	49300
CONDUCTOR SIZE		#6	#4	#2	#1/0
CONDUCTOR TYPE		AL	AL	AL	AL
LENGTH		20	156	240	370
# OF SETS		1	1	1	1
TYPE OF CONDUIT		PVC	PVC	PVC	PVC
C VALUE		1482	2350	3730	5838
VOLTAGE PRIMARY		240	240	240	240
VOLTAGE SECONDARY (XFMR)					
XFMR IMPEDENCE					
XFMR KVA					
"f" FACTOR		5.54	27.10	26.43	26.04
MULTIPLIER		0.15	0.04	0.04	0.04
CALCULATED FAULT CURENT	49300	7533	1755	1797	1823
RATED (SERIES / FULLY)		FULLY @ 10K	FULLY @ 10K	FULLY @ 10K	FULLY @ 10K

11

FAULT CURRENT CALCULATION

SCALE: NTS | 12



ELECTRICAL PLAN

1/4" = 1'-0" | 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

SHIFT
Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.264.0829
fax: 480.264.0163

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RELEASE

DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-003-01
FRY RD., NE OF KATY-GASTON RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603 | IN HOUSE: DRAWN BY: RA, CHECKED BY: CM

SHEET TITLE
ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES

SHEET NUMBER: E1.1 | PAGE: 8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

4/18/2014 8:30:55 AM

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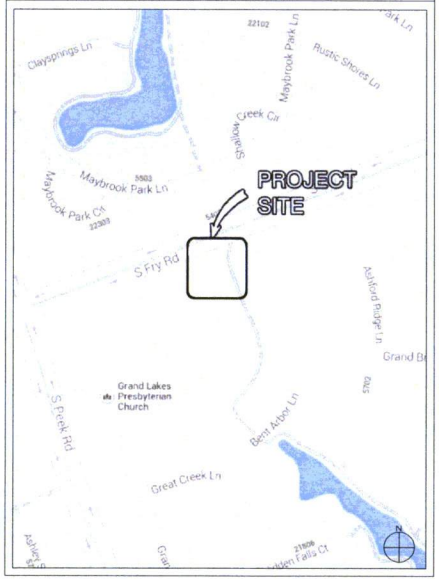
4/18/2014 6:09:01 AM

CROWN CASTLE

PROJECT NAME:	VERIZON - CINCO RANCH
PROJECT ADDRESS:	S. OF FRY RD., E. OF PEEK RD.
PROJECT TYPE:	WOOD POWER POLE
HUB AREA:	CINCO RANCH, TX
NODE #(s):	CCR-009-01
COORDINATES:	LAT: 29.713900, LONG: -95.761860

VICINITY MAP



PROJECT TEAM

ARCHITECT
Company: SHIFT CONSULTING
Address: 7333 E. MONTE VISTA RD., SCOTTSDALE, AZ 85257
Phone Number: 480.264.0829
Fax Number: 480.264.0163
Contact: CHRIS MYERS

STRUCTURAL
Company: WSC
Address: 2734 E PROMINENT CT., S. SALEM, OR 97302
Phone Number: 503.587.0101
Fax Number:
Contact:

RF ENGINEER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

FIBER ENGINEERING
Company: IGTX
Address: 419 CENTURY PLAZA, STE. 250 HOUSTON, TX 77073
Phone Number: 832.465.4510
Fax Number:
Contact:

GENERAL CONTRACTOR
Company: T.B.D.
Address:
Phone Number:
Fax Number:
Contact:

PROJECT MANAGER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE COMMUNITY OF CINCO RANCH, TEXAS. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY IN RESIDENTIAL AREAS. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

A SUBJECT NODE WILL CONSIST OF GROUND MOUNTED EQUIPMENT AND INSTALLATION OF AN ANTENNA MOUNTED ON WOOD POLES SPECIFICALLY ENGINEERED TO SUPPORT THE PROPOSED NETWORK ANTENNAS. THE RADIO EQUIPMENT WILL BE MOUNTED INSIDE CONCEALEMENT CAGES ON THE GROUND, ALONG WITH A SEPARATE METER PEDESTAL.

PROJECT SUMMARY

PROJECT NAME:
VERIZON - CINCO RANCH

PROJECT AREA:
CINCO RANCH, TX

JURISDICTION:
FORT BEND COUNTY ENGINEERING DEPT.
1124 BLUME RD.
ROSENBERG, TX 77471
PH: 281.633.7500
CONTACT: JOHNNY ORTEGA

HANDICAPPED REQUIREMENTS:
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.

PLUMBING REQUIREMENTS:
- FACILITY HAS NO PLUMBING.

POWER COMPANY:
CENTERPOINT ENERGY
5431 HIGHWAY BLVD.
KATY, TX 77494
PH: 281.520.6275
CONTACT: KEN CORTEZ

APPLICANT:
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
CONTACT: BRUCE POTTER

CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2008 NATIONAL ELECTRICAL CODE (NEC)
2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)

KEY MAP AREA:
525C

T1.1-Sheet Index

Sheet #	Sheet Description	Page
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T1.2	GENERAL NOTES ABBREVIATIONS AND SYMBOLS	2
T1.3	EQUIPMENT SPECIFICATIONS	3
A1.2	SITE PLAN, EQUIPMENT AND ANTENNA PLAN	4
A1.3	POLE ELEVATION, PROPOSED	5
D1.1	CONSTRUCTION DETAILS	6
D1.2	CONSTRUCTION DETAILS	7
E1.1	ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES	8

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
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	4.17.14	CENTERPOINT RESUBMITTAL

PLAN CHECK #

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-009-01
S. OF FRY RD., E. OF PEEK RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER 120603
IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
TITLE SHEET

SHEET NUMBER T1.1
PAGE 1 OF 8

CASE #

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

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4/18/2014 6:09:02 AM

1. RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
3. CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
4. ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
5. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
6. ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
7. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
8. TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
9. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
10. OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
11. CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
12. ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
13. CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY UNIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIOINS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
15. THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

GENERAL PROJECT NOTES — SCALE: NTS — 10

A/C	AIR CONDITIONING
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATELY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
BLK	BLOCK
BOB	BOTTOM OF BLOCK
B/S	BUILDING STANDARD
CLG	CEILING
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CO	COMPANY
DBL	DOUBLE
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EPB	ELECTRICAL PULL BOX
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXT	EXTERIOR
FIN	FINISH
FLUOR	FLUORESCENT
FLR	FLOOR
FT	FOOT, FEET
GA	GAUGE
GALV	GALVANIZE(D)
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GRND	GROUND
GWB	GYPSUM WALL BOARD
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTING AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIA
IN	INCH
INFO	INFORMATION
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MFR	MANUFACTURER
MGR	MANAGER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OPP	OPPOSITE
PL	PROPERTY LINE
PLY	PLYWOOD
PR	PAIR
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
RCP	REFLECTED CEILING PLAN
REQD	REQUIRED
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RX	RECEIVE SIGNAL
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SY	SQUARE YARD
THRU	THROUGH
TNND	TINNED
T.O.	TOP OF
TOB	TOP OF BLOCK
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TS	TUBE STEEL
TX	TRANSMIT SIGNAL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
URH	UNIVERSAL RADIO HEAD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
WDW	WINDOW
W/O	WITHOUT
WP	WORKING POINT
WTR	WATER

— – — – —	CENTER LINE
—— – – ——	PROPERTY LINE
—— – – ——	RIGHT-OF-WAY
— -F- — -F- —	FIBER
— -G- — -G- —	GAS
— -P- — -P- —	POWER
— -S- — -S- —	SANITARY SEWER
— SD- — -SD —	STORM DRAIN
— W- — -W —	WATER
—P——P—	LIGHT CIRCUIT POWER

3	REVISION
A01	KEY NOTE
1 / A1	DETAIL REFERENCE
8 / A-2	ELEVATION REFERENCE
17 / A-3	SECTION REFERENCE
	ELEVATION MARKER
A.5	PHOTOSIM REFERENCE
##°	ANTENNA AZIMUTH

1 — VIEW NUMBER
A-02 — SHEET NUMBER / SHEET GROUP

ABBREVIATIONS AND SYMBOLS — SCALE: NTS — 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-009-01

S. OF FRY RD., E. OF PEEK RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER — 120603

IN HOUSE — DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

SHEET NUMBER — T1.2

PAGE — 2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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SPECIFICATIONS

ION-M7P/17P - Product Specification

Electrical

Power Supply

Mains power, Vac: 85 to 264; 115 to 230

Power consumption, watts: max. temp., fully loaded 150; cold temp., dlle 200

Optical Link

Optical Link Connectors: 12000/APC 8°

Optical return loss, dB: 45

Fibre type: Single mode (9/125 µm)

Optical link budget, dB: 0 to 10

Composite input power @ CFBx master side, dBm: 700 MHz 3.0 nominal; AWS1700/2100 3.0 nominal

RF Interface

BTS Side (SMA)

Number of connectors: Standard 700 MHz 4; AWS1700/2100 4

System optimized for BTS power, dBm: 23; 36

Commercial 700 MHz

Frequency range, MHz: Uplink 698 to 716; Uplink 776 to 787; Downlink 728 to 757

Output power per carrier, dBm

Number of Carriers	1	2	4	8
UB	42	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input ICP3, dBm**: ICP3 optimized 11 min; Noise figure optimized 18 min

Noise figure, dB**: ICP3 optimized <10 max; Noise figure optimized <8 max; <4.5 typical

AWS1700/2100

Frequency range, MHz: Uplink 1710 to 1755; Downlink 2110 to 2155

Output power per carrier, dBm

Number of Carriers	1	2	4	8
CDMA	43	40	37	34
LTE	43	40	37	34
UMTS	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input ICP3, dBm**: ICP3 optimized 12 min; Noise figure optimized 18 min

Noise figure, dB**: ICP3 optimized <11 max; Noise figure optimized <6 max; <4.5 typical

System Supervision and Control

Commands: RF on/off; 4 external control pairs

Alarms: Summary; Power Supply; Optical DL and UL failure; RF DL and UL failure; Temperature; 4 external alarm inputs

Supervision: Composite output power

SPECIFICATIONS

ION-M7P/17P - Product Specification

Mechanical*

Height, width, depth mm (in): 331 x 136 x 147 (13.0 x 5.4 x 5.8)

Weight kg (lbs): 26 (58)

Environmental

Operating temperature range, °C: -33 to +50

Ingress protection: IP per; Fan part IP55

Ordering Information

ION-M7P/17P: (Qty 2)x4733

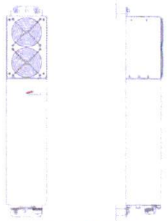
Depending on the selected options and the configuration the ordering material number contains an identifying suffix.

Extension Unit Options

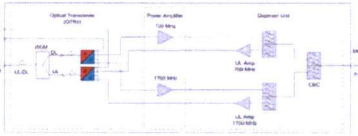
No connection to extension unit possible.

- 2 dB reduction of Port ① cover bandwidth - 1 MHz
- Uses Reference port 8 to 4
- Spacing required 40 mm (1.58 in) around unit

All figures are typical values, unless otherwise stated.



Cabinet of ION-M7P/17P Remote Unit



ION-M7P/17P Remote Unit Design Principle - Combined Antenna Port

RADIO SPECIFICATIONS

SCALE: N.T.S.

18

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (Mhz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°

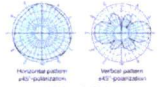
General specifications:

Frequency range	698–894 MHz; 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3 < -150 dBc
Polarization	±45° upper and lower band; -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intersystem / intersystem	>30 dB; >40 dB (698–894 / 1710–2170 MHz)
Radome color	Brown or gray
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind spot Side	at 90 mph (150kph): 52.8# (138 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a 2½" pole, using a custom mounting bracket supplied by the customer

See reverse for order information.

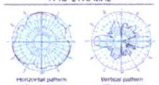
* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of this catalog for further details.

698–894 MHz



Horizontal pattern ±45° polarization; Vertical pattern ±45° polarization

1710–2170 MHz



Horizontal pattern ±45° polarization; Vertical pattern ±45° polarization

Specifications:	698-806 MHz	806-894 MHz	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Gain (typical)	4.5 dBi	6.5 dBi (with 1-4 dB nulls, typical)	8 dBi	8 dBi (with 0-10 dB nulls, typical)	8.5 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)

TÜV 11282-G; RoHS Lead Free

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501-0304 Phone (541) 779-6500 Fax (541) 779-3991
Email communications@kathrein.com Internet www.kathrein-scala.com

ANTENNA SPECIFICATIONS

SCALE: N.T.S.

12

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

SHIFT
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7233 E. MONTE VISTA ROAD
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1-21-14	CENTERPOINT SUBMITTAL

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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-009-01

S. OF FRY RD., E. OF PEEK RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

SHEET NUMBER T1.3

PAGE 3 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE PANEL ANTENNA IN CONCEALMENT SHROUD	8/D1.1 & 12/T1.3
A02	PROPOSED CROWN CASTLE UNDERGROUND COAX CONDUIT (APPROXIMATE LOCATION, F.V.)	20/D1.1
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/A1.3
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	N/A	
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1
U01	PROPOSED CROWN CASTLE UNDERGROUND POWER ROUTE (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2
U02	PROPOSED CROWN CASTLE UNDERGROUND FIBER ROUTE BY OTHERS (APPROXIMATE LOCATION, F.V.)	20/D1.1 & 6/D1.2

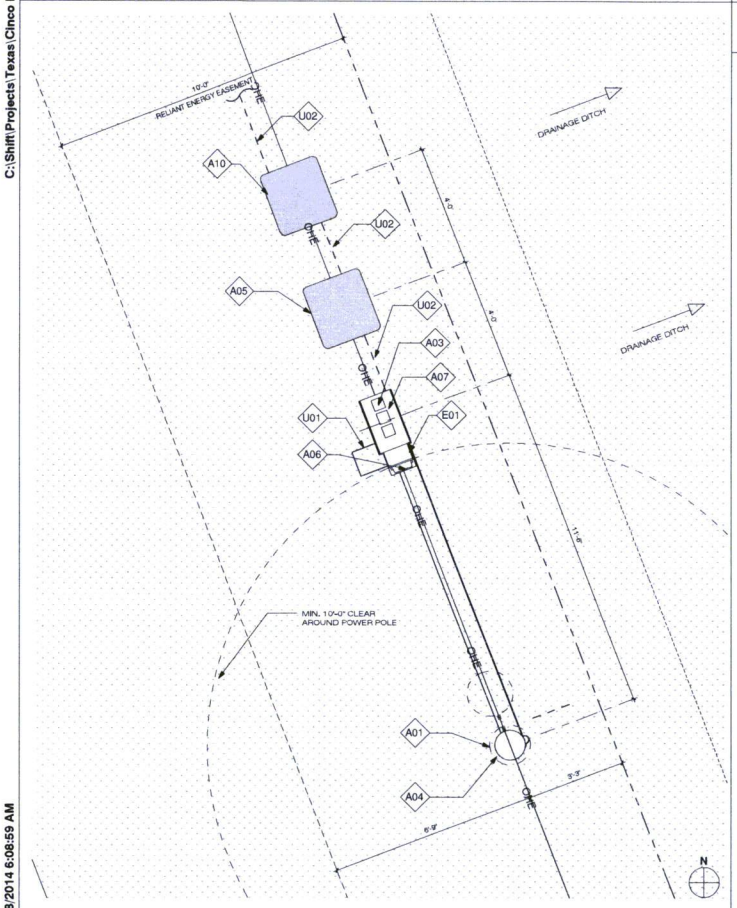
LATITUDE:	29.713900
LONGITUDE:	-95.781860
POLE TYPE:	WOOD POWER POLE
POLE ID #:	N/A

GENERAL NOTES

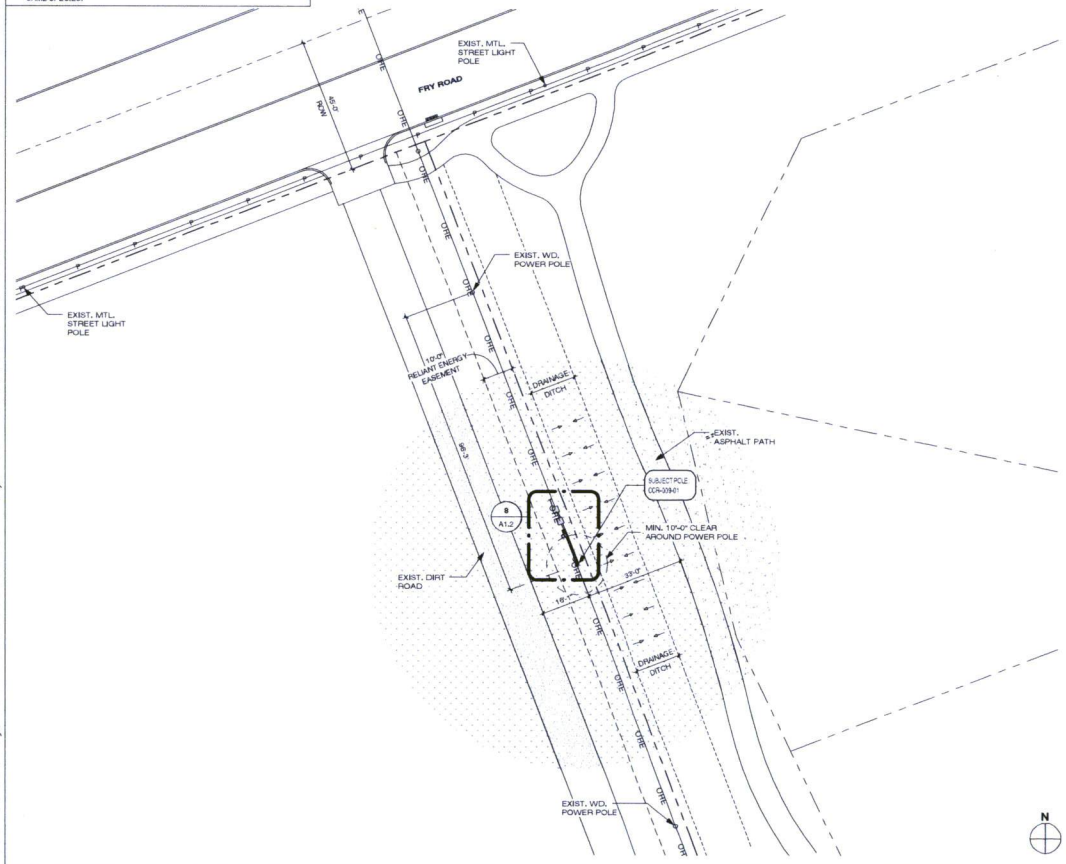
1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
2. CONTRACTOR TO FIELD LOCATE EXIST. UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY. VERIFY ALL DIMENSIONS.
6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

811 CALL TWO WORKING DAYS BEFORE YOU DIG.
UNDERGROUND SERVICE ALERT OF TEXAS
1-800-545-6005

NOTES:
1. ANY DAMAGE TO EXISTING GUTTER, CURB, SIDEWALK AND ROADWAY DURING CONSTRUCTION TO BE REPAIRED OR REPLACED.
2. EXISTING VEGETATION DAMAGED IN CONSTRUCTION TO BE REPLACED BY SAME SPECIES.



EQUIPMENT AND ANTENNA PLAN 1/2" = 1'-0" 8



OVERALL SITE PLAN 1" = 20'-0" 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 459.343.4401

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NODE ADDRESS

NODE #:CCR-009-01

S. OF FRY RD., E. OF PEEK RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

SITE PLAN, EQUIPMENT AND ANTENNA PLAN

SHEET NUMBER A1.2 **PAGE** 4 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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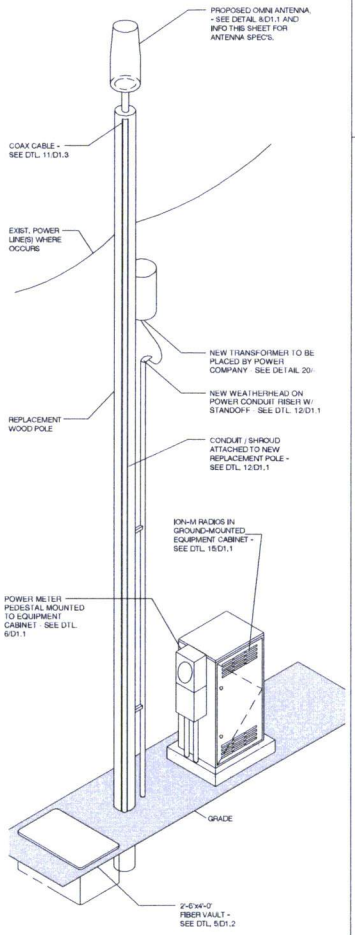


NOTES:

1. FIBER VAULT, POWER METER PEDESTAL AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE RECONFIGURED TO SUIT PROJECT LOCATION
2. ISOMETRIC IS A SCHEMATIC DESIGN ONLY.

WD. POLE ISOMETRIC — SCALE: N.T.S. — 4

MODEL:	KATHREIN SCALA #40 13510
LENGTH:	24.0"
WIDTH:	16.0"Ø
DEPTH:	N/A
WEIGHT:	45.0 LBS

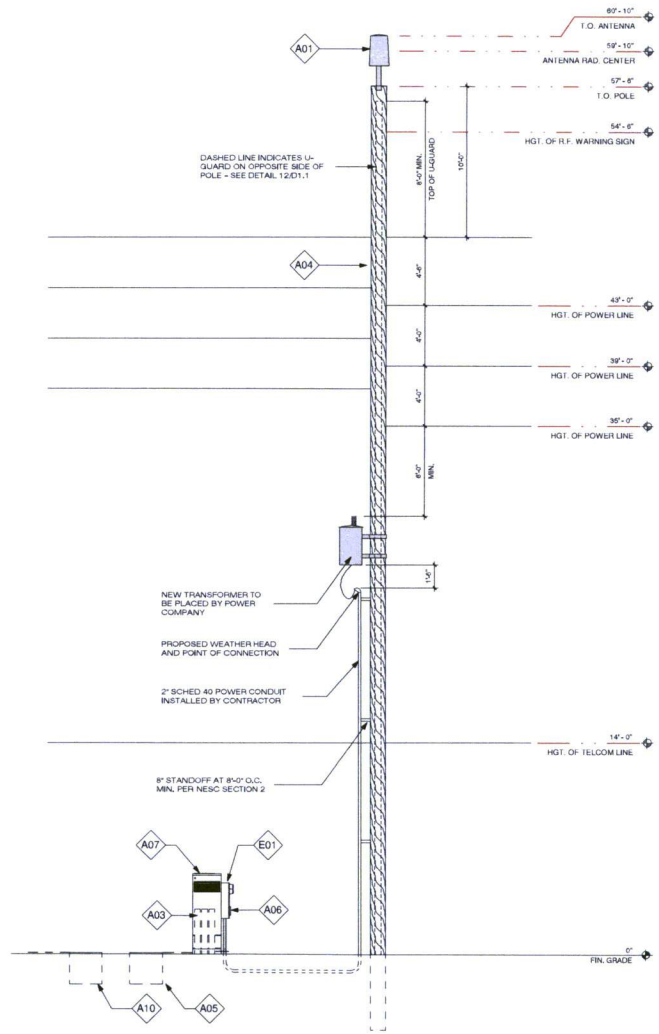
PROPOSED PANEL ANTENNA SPECS

PROPOSED POLE WIDTH = 12"Ø
PROPOSED POLE HEIGHT = 57' - 6"
(+ 2' 0" ANTENNA AND 1' 4" ANTENNA MAST)

POLE INFO

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/-
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	PROPOSED CROWN CASTLE CONCELEMENT SHROUD	8/D1.1
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1



POLE ELEVATION (PROPOSED) — SCALE: 1/4" = 1' 0" — 20

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POLE ELEVATION, PROPOSED

SHEET NUMBER A1.3

PAGE 5 OF 8

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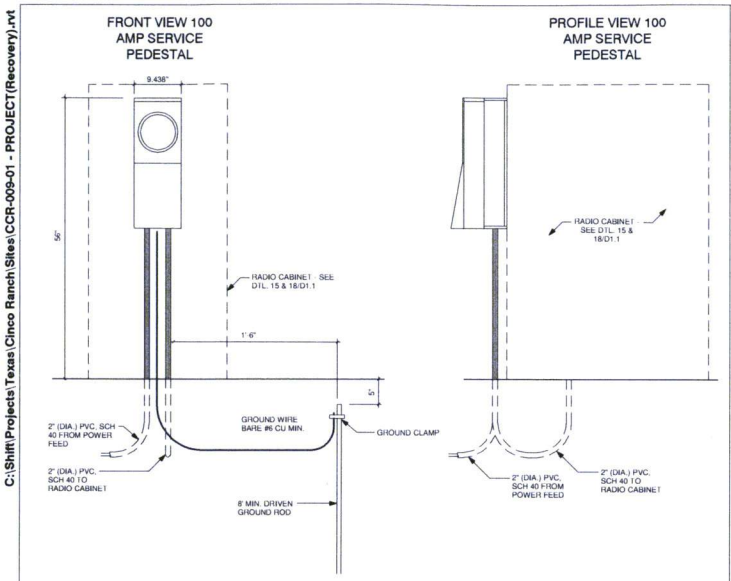
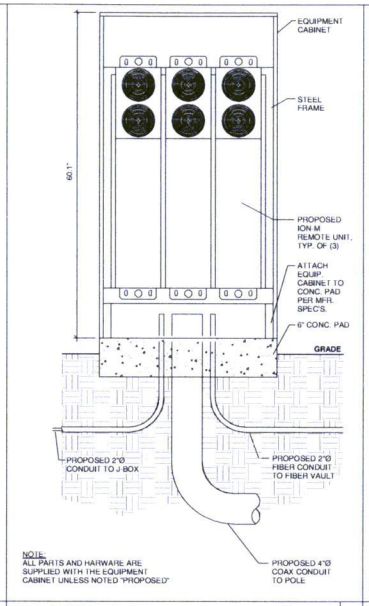
CASE #

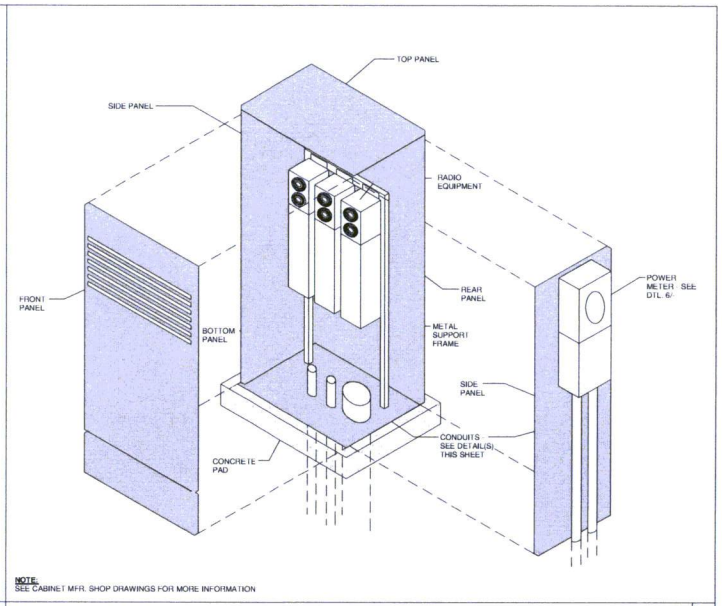
C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-009-01 - PROJECT(Recovery).rvt



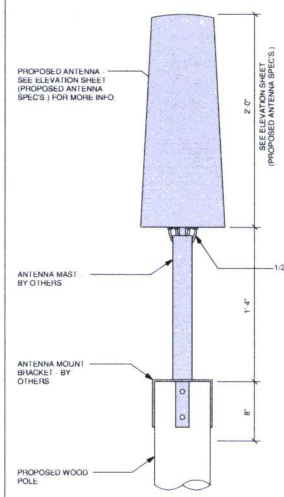
POWER METER - MOUNTED TO RADIO CABINET SCALE: 1" = 1'-0" 6



EQUIPMENT CABINET SECTION SCALE: N.T.S. 10

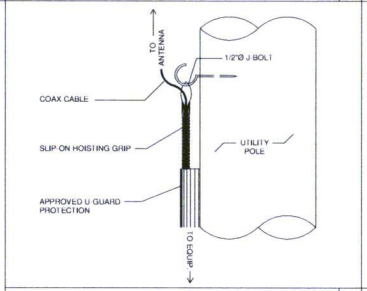


EQUIPMENT ENCLOSURE SCALE: N.T.S. 18

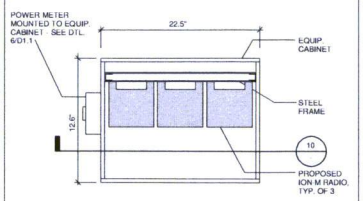


NOTES:
1. ANTENNA MOUNT IS BY OTHERS.
2. CONTRACTOR TO INSTALL WEATHERPROOF WRAP AT ALL CONNECTORS. WRAP TO BE APPROVED BY CROWN CASTLE.
3. COLOR CODE COAX CABLES PER CROWN CASTLE.

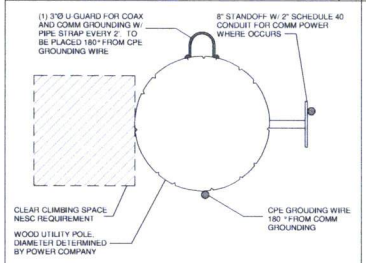
ANTENNA MOUNTING DETAIL SCALE: N.T.S. 8



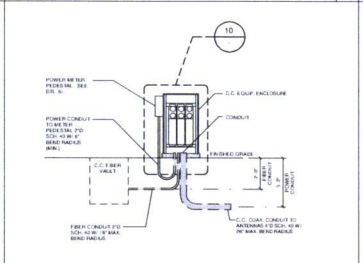
COAX HANGER DETAIL SCALE: N.T.S. 11



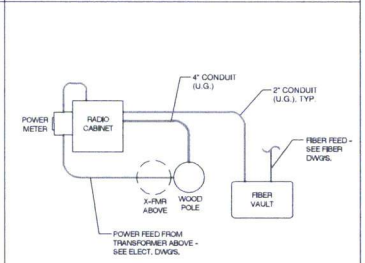
EQUIPMENT ENCLOSURE PLAN SCALE: N.T.S. 15



POLE PLAN TYP. DETAIL SCALE: N.T.S. 12



CONDUIT AND POWER RISER DIAGRAM SCALE: N.T.S. 16



CONDUIT ROUTE SCALE: N.T.S. 20

4/18/2014 6:09:00 AM

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 409.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

RECORD DRAWING DRAFTING ONLY

SHIFT
Shift Companies, LLC
7133 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.284.0829
fax: 480.284.0163

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RELEASE

DATE	SUBMITTAL
1-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-009-01

S. OF FRY RD., E. OF PEEK RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

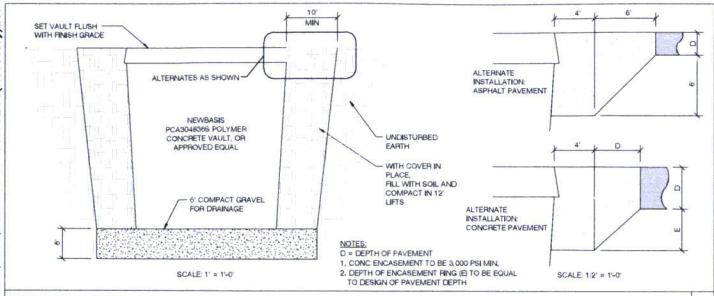
SHEET NUMBER D1.1

PAGE 6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

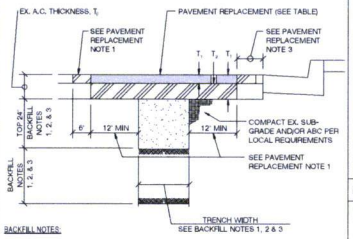
CASE #



NOTES:
D = DEPTH OF PAVEMENT
1. CONC ENCASEMENT TO BE 3,000 PSI MIN.
2. DEPTH OF ENCASEMENT RING (E) TO BE EQUAL TO DESIGN OF PAVEMENT DEPTH

VAULT INSTALLATION — SCALE: AS NOTED — 5

EXISTING PAVEMENT THICKNESS, T_1	ASPHALT CONCRETE (A.C.) PAVEMENT REPLACEMENT		
	A.C. SINGLE COURSE OR SURFACE COURSE, T_1	A.C. BASE COURSE, T_2	TOTAL THICKNESS, T_T
$T_1 \leq 3'$	3" MINIMUM	NONE	3" MINIMUM
$T_1 > 3'$	2" MINIMUM	2" MINIMUM	T_1 (MATCH EXIST)



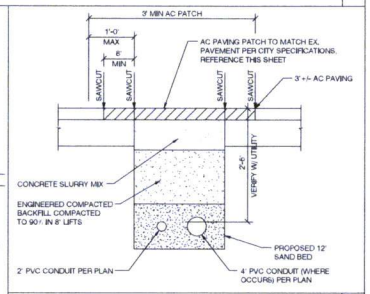
BACKFILL NOTES:

1. TRENCHES LESS THAN 24' IN WIDTH - 1/2 SACK CSLM. FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE (ABC) LAYER IN PAVEMENT STRUCTURE OR 6' BELOW PAVEMENT IN FULL DEPTH PAVEMENT STRUCTURES, CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
2. TRENCHES 24' TO 6' IN WIDTH - 1/2 SACK CSLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24' OF THE TRENCH, FOR BALANCE OF BACKFILL.
3. TRENCHES OVER 6' IN WIDTH - FULL DEPTH OF BACKFILL.
4. TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLIATIVE; 1:1 DILUTION RATIO, 0.50 GAL/SY APPLICATION RATE.
5. CSLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
6. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

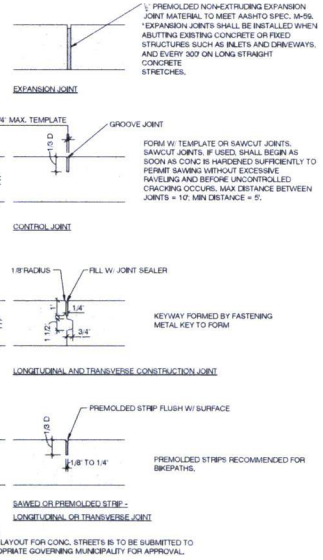
PAVEMENT REPLACEMENT NOTES:

1. T'-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE 'T' CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4' AND THICKER.
   A. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE 'T'-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE A MINIMUM OF 6' ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.
A. FOR NEW AND OVERLAID PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF LOCAL CITY/TOWN CODE AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE 'T'-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET. FOR PAVEMENTS LESS THAN 4' THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.
B. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS. MATCH EXISTING A.C. DEPTH, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.
2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
3. IF PAVEMENT REMNANT IS LESS THAN 36', REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS, FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

TRENCH AND PATCHING REQUIREMENTS — SCALE: N.T.S. — 4

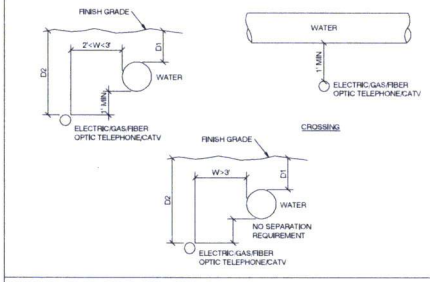


POWER TRENCH — SCALE: 3/4" - 1'-0" — 6



NOTE:
JOINT LAYOUT FOR CONC. STREETS IS TO BE SUBMITTED TO APPROPRIATE GOVERNING MUNICIPALITY FOR APPROVAL.

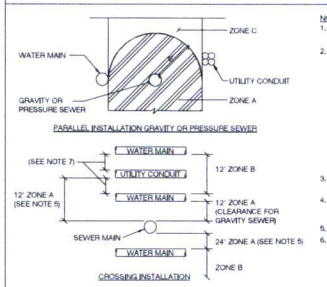
CONCRETE JOINT DETAILS — SCALE: 1 1/2" - 1'-0" — 8



LEGEND:
D1 = 3' MIN. FOR PIPE < 12" DIA
4' MIN. FOR PIPE = 12" DIA
5' MIN. FOR PIPE > 12" DIA
D2 = MINIMUM COVER
W = HORIZONTAL SEPARATION

NOTES:
1. ELECTRIC SEPARATION REQUIREMENTS ARE FOR PRIMARY ELECTRIC CONDUCTORS ONLY. FOR SERVICE CONDUCTORS SEE PLANS.
2. PRIMARY ELECTRIC, GAS, TELEPHONE, CABLE TV OR FIBER OPTIC LINES SHALL NOT CROSS ABOVE A WATER LINE WITHOUT WRITTEN APPROVAL FROM THE CITY'S WATER RESOURCES DEPARTMENT. IF THIS APPROVAL IS OBTAINED, DOUBLE UTILITY LOCATOR STRIPS AND ABC SLURRY CONFORMING TO LOCAL CITY/TOWN SPECIFICATIONS ARE REQUIRED.

MINIMUM UTILITY SEPARATION REQUIREMENTS — SCALE: N.T.S. — 15



NOTES:
1. SEPARATION DISTANCES AND/OR EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS.
2. SEE CROSS INSTALLATION DETAIL ON THIS SHEET FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
   A. NO WATER MAINS OR UTILITY CONDUITS SHALL FALL WITHIN ZONE A.
   B. EXTRA PROTECTION WILL BE REQUIRED WHEN THE WATER MAIN FALLS WITHIN ZONE B. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING SANITARY SEWER MAINS WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE. DUCTILE IRON PIPE SHALL COMPLY WITH THE REQUIREMENTS FOR SEWER INSTALLATION, IN A CROSSING. THE NUMBER OF JOINTS SHALL BE HELD TO A MINIMUM WITH ONE FULL JOINT OF PIPE CENTERED OVER/UNDER THE OTHER. AN ALTERNATIVE PROTECTION MAY CONSIST OF ENCASING SEWER MAINS IN REINFORCED CONCRETE.
   C. NO ADDITIONAL PROTECTION WILL BE REQUIRED OUTSIDE OF ZONES A AND B.
   D. WATER MAINS PERMITTED IN ZONE C ONLY WITH WRITTEN PERMISSION FROM THE WATER RESOURCES DEPARTMENT.
3. SEPARATION REQUIREMENTS FOR 4' OR 6' INDIVIDUAL HOUSE SERVICE CONNECTIONS SHALL COMPLY WITH THE PLUMBING CODES ADOPTED BY THE LOCAL CITY/TOWN.
4. RECLAIMED WATER SHALL BE CONSIDERED AS POTABLE WATER WHEN PLACED NEXT TO A SANITARY SEWER AND CONSIDERED A PRESSURE OR FORCED SANITARY SEWER MAIN, WHEN PLACED NEXT TO A POTABLE WATER MAIN.
5. ZONE A IS 24' WHERE WATER MAINS AND UTILITY CONDUITS CROSS PRESSURE SEWER MAINS.
6. REFERENCE LOCAL CITY/TOWN STANDARD DETAILS.

SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES — SCALE: N.T.S. — 16

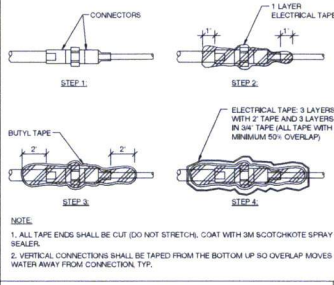
NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennas.

RF EXPOSURE AT 2 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 2FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: (866) 446-3984 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE: _____

FCC RF EXPOSURE SIGN — SCALE: N.T.S. — 18



NOTE:
1. ALL TAPE ENDS SHALL BE CUT (DO NOT STRETCH), COAT WITH 3M SCOTCHKOTE SPRAY SEALER.
2. VERTICAL CONNECTIONS SHALL BE TAPED FROM THE BOTTOM UP SO OVERLAP MOVES WATER AWAY FROM CONNECTION, TYP.

CABLE CONNECTOR WATERPROOFING — SCALE: N.T.S. — 19

(3/8" TEXT HEIGHT)
CROWN CASTLE
(1/4" TEXT HEIGHT)
NODE SITE ID:
(1/4" TEXT HEIGHT)
IN CASE OF EMERGENCY CONTACT
NOC: 800.708.7011
(3/16" TEXT HEIGHT)
FACILITY COMPLIES WITH FCC EMISSION REQUIREMENTS.
FACILITY DESIGN APPROVED BY THE THE (LOCAL CITY/TOWN)

NOTE: 4" x 6 1/2" STICKER

NODE IDENTIFICATION SIGNAGE — SCALE: N.T.S. — 20

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

RECORD DRAWING DRAFTING ONLY

SHIFT
Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.264.0023
fax: 480.264.0163

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RELEASE	
DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-009-01
S. OF FRY RD., E. OF PEEK RD.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER	PAGE
D1.2	7 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

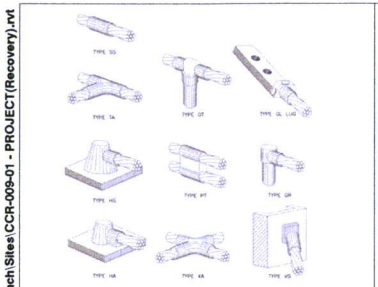
PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-009-01 - PROJECT(Recovery).rvt

4/18/2014 6:09:00 AM

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-009-01 - PROJECT(Recovery).rvt
4/18/2014 6:09:01 AM



CADWELD DETAILS

SCALE: N.T.S. | 1

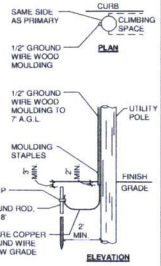
NOTES:
1. WOOD MOULDING SHALL BE INSTALLED IN WORKING SPACE TO PROTECCT THE LINEWORKER ON SAME SIDE AS PRIMARY.

2. STAPLE GROUND WIRE AT APPROPRIATE INTERVALS AND JUST ABOVE AND BELOW WOOD MOULDING.

3. INSTALL WOOD MOULDING WITH GALV. STAPLES AT 3'-0" O.C. 3" FROM TOP AND BOTTOM - ALLOW FOR EXPANSION.

4. PROPOSED 8' GROUND ROD 6' CLEAR OF ALL EXISTING GROUND RODS - CALL FOR UTILITY LOCATE PRIOR TO INSTALLATION.

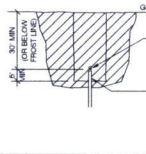
5. IF SAW CUT IS REQUIRED, CUT A 24"x24" OPENING FOR GROUND ROD INSTALL - REPAIR CONCRETE 2 SACK MIN. - REPAIR NEAT AND FLUSH WITH EXIST. SURFACE.



GROUNDING AT WOOD POLE

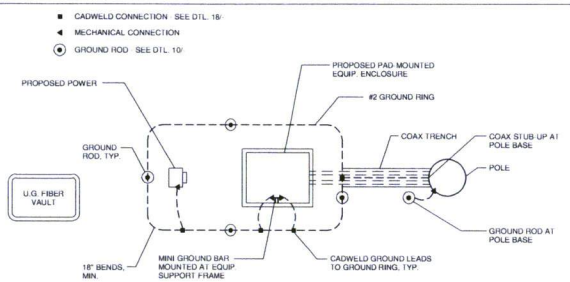
SCALE: N.T.S. | 5

NOTES:
1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS SHALL BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE:
   1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT, 3/8"Ø BOLT AND LOCKWASHER.



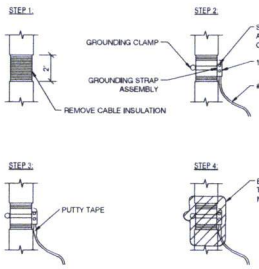
GROUND ROD DETAIL

SCALE: NTS | 9



TYPICAL GRADE-MOUNTED EQUIPMENT GROUNDING SCHEMATIC @ WOOD POLE

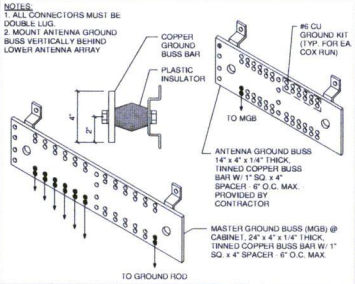
SCALE: NTS | 17



COAXIAL CABLE GROUNDING

SCALE: NTS | 2

NOTES:
1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY



GROUND BUSS BAR DETAIL

SCALE: NTS | 6

PANEL A

AMPACITY: **60** | MAINS: **MCB** | KAIC: **10** | RATING: **LINK FAULT CALC**
VOLTAGE: **120/240V** | NEMA: **3R** | MOUNTING: **SURF** | CIRCUITS: **8**

PANEL A	NO.	M	C	N	R	L	CB	PHASE	CB	L	R	N	C	M	NO.	LOAD
CONVENIENCE RECEPTACLE	1				0,36		20/1	0,91	20/1			0,55			2	RADIO EQUIPMENT
CONVENIENCE RECEPTACLE	3				0,36		20/1	0,91	20/1			0,55			4	RADIO EQUIPMENT
EXHAUST FAN	5	0,36					20/1	0,36	20/1						6	SPARE
BUSSED SPACE	7							0,36	20/1					0,36	8	SUPPLY FAN
					LIGHTING LOAD @ 125% =			0,00	0,00	KVA						
					RECEPTACLES (1ST 10KVA @ 100% + REMAINDER @ 50%) =			0,36	0,36	KVA						
					NON -CONTINUOUS LOAD @ 125% =			0,55	0,55	KVA						
					CONTINUOUS LOAD @ 125% =			0,00	0,00	KVA						
					MOTORS + 25% OF LARGEST MOTOR =			0,45	0,45	KVA						
					TOTAL PANEL A DEMAND =			1,36	1,36	KVA						
					TOTAL DEMAND AMPS =			11,33	11,33	KVA						

PER NEC 210.4(B)

PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

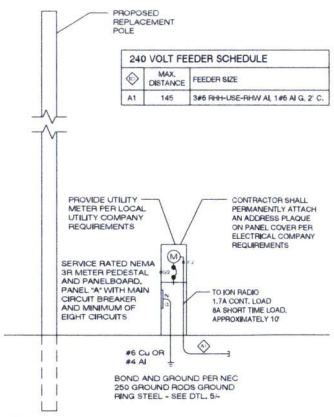
ELECTRICAL PANEL SCHEDULES

SCALE: NTS | 14

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT (UNDERGROUND) AND EMC CONDUIT ABOVE GROUND.
6. PROVIDE 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER NSR LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
10. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
11. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POTHOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
12. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
13. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

ELECTRICAL NOTES

SCALE: NONE | 18



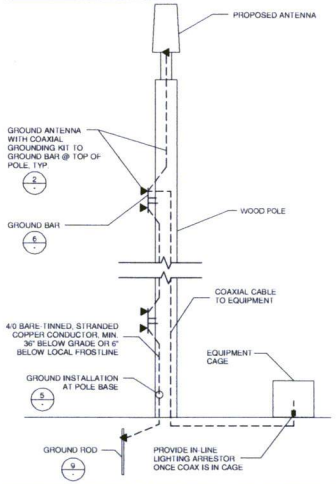
240 VOLT FEEDER SCHEDULE		
◇	MAX. DISTANCE	FEEDER SIZE
A1	145	3#6 RHH-USE-RHW AL 1#6 Al G. 2" C.

NOTES:
1. EC TO FIELD VERIFY SITE CONDITION.
2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
4. PROVIDE ADEQUATE SERVICE CONDUCTOR LENGTH AT THE BASE OF THE RISER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND CONNECT TO UTILITY COMPANY SECONDARY LINES WITH A 12" DRIP LOOP.
5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
6. ALL WIRE TO BE THHN OR THWN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
7. FUTURE BREAKERS IN PANEL B SHALL BE SERIES RATED WITH THEIR RESPECTIVE UPSTREAM REMOTE MAIN PROTECTIVE DEVICE. A TWO TIER (22K/10KVA) SYSTEM IS SPECIFIED.
8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.

ONE-LINE DIAGRAM

SCALE: NTS | 4

■ CADWELD - SEE DTL. 1/-
◀ MECHANICAL CONNECTION
GROUND BAR (GB) 14" x 4" x 1/4" COPPER
MASTER GROUND BAR (GB) 24" x 4" x 1/4" COPPER
GROUND



GROUNDING SCHEMATIC - WOOD POLE

SCALE: NTS | 8

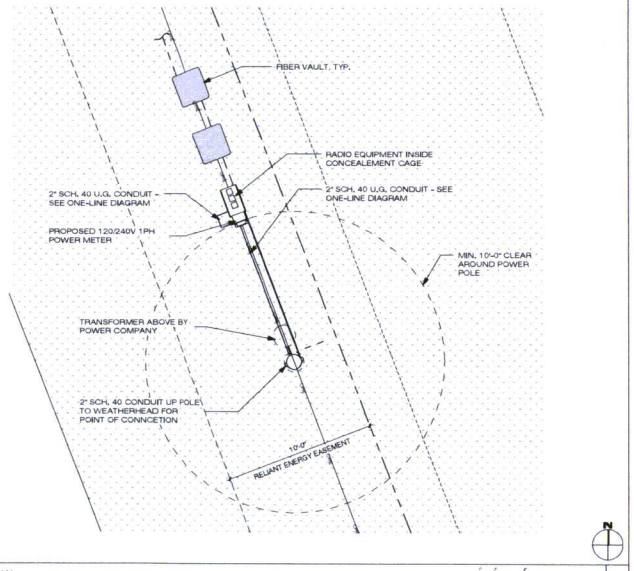
FAULT CURRENT CALCULATION

FAULT	F1	F2	F3	F4	F5
LOCATION	CSU POS	PANEL @ 20'	PANEL @ 155'	PANEL @ 240'	PANEL @ 370'
AFC (FROM SOURCE)	49300	49300	49300	49300	49300
CONDUCTOR SIZE		#6	#4	#2	#1/0
CONDUCTOR TYPE		AL	AL	AL	AL
LENGTH		20	155	240	370
# OF SETS		1	1	1	1
TYPE OF CONDUIT		PVC	PVC	PVC	PVC
C VALUE		1482	2350	3730	5838
VOLTAGE PRIMARY		240	240	240	240
VOLTAGE SECONDARY (XFMR)					
XFMR IMPEDENCE					
XFMR KVA					
"f" FACTOR		5.54	27.10	26.43	26.04
MULTIPLIER		0.15	0.04	0.04	0.04
CALCULATED FAULT CURENT	49300	7533	1755	1797	1823
RATED (SERIES / FULLY)		FULLY @ 10K	FULLY @ 10K	FULLY @ 10K	FULLY @ 10K

11

FAULT CURRENT CALCULATION

SCALE: NTS | 12



ELECTRICAL PLAN

1/4" = 1'-0" | 20

CROWN CASTLE

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 459.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

SHIFT

Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
ph: 480.294.0629
fax: 480.294.0163

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RELEASE

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11-26-13	1ST CITY SUBMITTAL
1-21-14	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-009-01

S. OF FRY RD., E. OF PEEK RD.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES

SHEET NUMBER E1.1 **PAGE** 8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

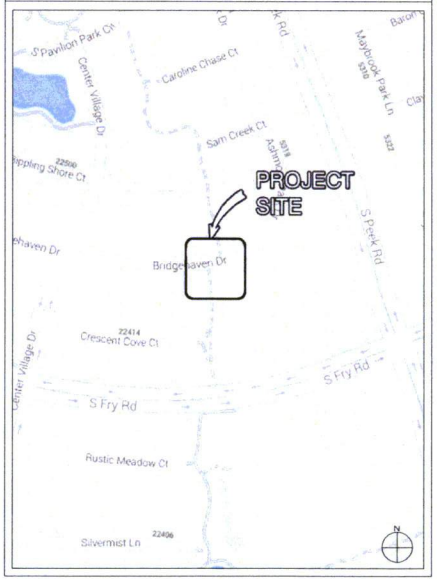
CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-004-01 - PROJECT(Recovery).rvt

CROWN CASTLE

PROJECT NAME:	VERIZON - CINCO RANCH
PROJECT ADDRESS:	BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.
PROJECT TYPE:	WOOD POWER POLE
HUB AREA:	CINCO RANCH, TX
NODE #(s):	CCR-004-01
COORDINATES:	LAT: 29.714380, LONG: -95.766700

VICINITY MAP



PROJECT TEAM

ARCHITECT
Company: SHIFT CONSULTING
Address: 7333 E. MONTE VISTA RD. SCOTTSDALE, AZ 85257
Phone Number: 480.264.0829
Fax Number: 480.264.0163
Contact: CHRIS MYERS

STRUCTURAL
Company: WSC
Address: 2734 E PROMINENT CT. S. SALEM, OR 97302
Phone Number: 503.587.0101
Fax Number:
Contact:

RF ENGINEER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

FIBER ENGINEERING
Company: ICTX
Address: 419 CENTURY PLAZA, STE. 250 HOUSTON, TX 77073
Phone Number: 832.465.4510
Fax Number:
Contact:

GENERAL CONTRACTOR
Company: T.B.D.
Address:
Phone Number:
Fax Number:
Contact:

PROJECT MANAGER
Company: CROWN CASTLE
Address: 1220 AUGUSTA DR. HOUSTON, TX 77057
Phone Number: 469.343.4401
Fax Number:
Contact: BRUCE POTTER

PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE COMMUNITY OF CINCO RANCH, TEXAS. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY IN RESIDENTIAL AREAS. THE NETWORK AND ASSOCIATED EQUIPMENT HAVE BEEN DESIGNED TO MINIMIZE VISUAL IMPACTS IN URBAN SETTINGS. THE PROPOSED SYSTEM WILL PROVIDE A CELLULAR NETWORK THAT CAN BE UTILIZED SIMULTANEOUSLY BY DIFFERENT LICENSED TELECOMMUNICATIONS COMPANIES.

A SUBJECT NODE WILL CONSIST OF GROUND MOUNTED EQUIPMENT AND INSTALLATION OF AN ANTENNA MOUNTED ON WOOD POLES SPECIFICALLY ENGINEERED TO SUPPORT THE PROPOSED NETWORK ANTENNAS. THE RADIO EQUIPMENT WILL BE MOUNTED INSIDE CONCEALEMENT CAGES ON THE GROUND, ALONG WITH A SEPARATE METER PEDESTAL.

PROJECT SUMMARY

PROJECT NAME:
VERIZON - CINCO RANCH

PROJECT AREA:
CINCO RANCH, TX

JURISDICTION:
FORT BEND COUNTY ENGINEERING DEPT.
1124 BLUME RD.
ROSENBERG, TX 77471
PH: 281.633.7500
CONTACT: JOHNNY ORTEGA

HANDICAPPED REQUIREMENTS:
- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.

PLUMBING REQUIREMENTS:
- FACILITY HAS NO PLUMBING.

POWER COMPANY:
CENTERPOINT ENERGY
5431 HIGHWAY BLVD.
KATY, TX 77494
PH: 281.520.8275
CONTACT: KEN CORTEZ

APPLICANT:
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
CONTACT: BRUCE POTTER

CODES:
2009 INTERNATIONAL BUILDING CODE (IBC)
2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2008 NATIONAL ELECTRICAL CODE (NEC)
2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)

KEY MAP AREA:
525C

T1.1-Sheet Index

Sheet #	Sheet Description	Page
T1.1	TITLE SHEET	1
T1.2	GENERAL NOTES ABBREVIATIONS AND SYMBOLS	2
T1.3	EQUIPMENT SPECIFICATIONS	3
A1.2	SITE PLAN, EQUIPMENT AND ANTENNA PLAN	4
A1.3	POLE ELEVATION, PROPOSED	5
D1.1	CONSTRUCTION DETAILS	6
D1.2	CONSTRUCTION DETAILS	7
E1.1	ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES	8

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

PLAN CHECK #

NODE ADDRESS
NODE #:CCR-004-01
BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER 120603
IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE
TITLE SHEET

SHEET NUMBER T1.1
PAGE 1 OF 8

CASE #

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

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1. RIGHT-OF-WAY USE PERMIT SHALL BE OBTAINED BY CONTRACTOR PRIOR TO COMMENCING WORK.
2. A UTILITY LOCATE IS REQUIRED FOR ALL PROJECTS.
3. CROSSING OF EXISTING UTILITIES SHALL BE COORDINATED BY CONTRACTOR.
4. ALL WORK TO BE CONDUCTED IN CITY RIGHT OF WAY, U.N.O.
5. ALL DISTURBED LANDSCAPING SHALL BE REPLACED TO SIMILAR EXISTING CONDITION.
6. ALL SURFACE REPAIR SHALL BE TO CITY SPECIFICATIONS.
7. ANY SIDEWALK CLOSURE SHALL BE COORDINATED WITH THE CITY AND PROPER SIGNAGE WILL BE PLACED.
8. TEMPORARY LIGHTING WILL BE COORDINATED WITH CITY AND PROVIDED WHENEVER EXISTING LIGHTING IS REMOVED OR UNAVAILABLE AS REQUIRED.
9. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON PRIVATE PROPERTY OR BLOCK ACCESS TO PRIVATE PROPERTY.
10. OPEN EXCAVATIONS SHALL BE PROPERLY GUARDED AND SIGNED. NO OPEN EXCAVATIONS WILL BE LEFT ACCESSIBLE TO THE PUBLIC.
11. CLEANUP OF THE WORK AREA WILL BE COMPLETED EACH EVENING AND THE PROJECT AREA WILL BE RETURNED TO EXISTING CONDITION AT THE COMPLETION OF CONSTRUCTION AT EACH NODE LOCATION.
12. ALL WORK TO COMPLY WITH OSHA AND CITY GUIDELINES.
13. CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING PRIVATE IRRIGATION PRIOR TO EXCAVATION. CONTRACTOR WILL REPAIR OR REROUTE IRRIGATION IN ROW AS NECESSARY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE TO REMOVE AND REPLACE, AT THEIR COST, ANY AND ALL DAMAGED PAVEMENT, SIDEWALK, CURB AND GUTTER OUTSIDE THE PAY LIMIT, DAMAGE DUE TO THEIR ACTIVITIES ON THE PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO THE REMOVAL AND REPLACEMENT OF NEWLY CRACKED, THE REMOVAL AND REPLACEMENT OF EXISTING CRACKS WHERE THE CRACKS HAVE BEEN ENLARGED DUE TO THE CONTRACTORS OPERATIONS, THE REMOVAL AND REPLACEMENT OF DEFORMED PAVEMENT, CURB AND GUTTTER, SIDEWALK, ETC.. ALL SAW CUTS USED FOR THE REMOVAL OF THESE ITEMS SHALL BE PERPENDICULAR AND PARALLEL TO THE CENTERLINE CONTROLLING THAT ITEM, OR AT THE DISCRETION OF THE CITY INSPECTOR.
15. THE VAULTS INSTALLED IN CONJUNCTION WITH THE INDIVIDUAL ANTENNA NODES SHALL BE FLUSH WITH THE GROUND.

GENERAL PROJECT NOTES — SCALE: NTS — 10

A/C	AIR CONDITIONING
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATELY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BLDG	BUILDING
BLK	BLOCK
BOB	BOTTOM OF BLOCK
BS	BUILDING STANDARD
CLG	CEILING
CLR	CLEAR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CO	COMPANY
DBL	DOUBLE
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DTL, DETL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELECT	ELECTRICAL
EPB	ELECTRICAL PULL BOX
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXT	EXTERIOR
FIN	FINISH
FLUOR	FLUORESCENT
FLR	FLOOR
FT	FOOT, FEET
GA	GAUGE
GALV	GALVANIZE(D)
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GRND	GROUND
GWB	GYPSUM WALL BOARD
HORIZ	HORIZONTAL
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTING AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIA
IN	INCH
INFO	INFORMATION
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MFR	MANUFACTURER
MGR	MANAGER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPG	OPENING
OPP	OPPOSITE
PL	PROPERTY LINE
PLY	PLYWOOD
PR	PAIR
PROJ	PROJECT
PROP	PROPERTY
PT	PRESSURE TREATED
RCP	REFLECTED CEILING PLAN
REQ'D	REQUIRED
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RX	RECEIVE SIGNAL
S	SOUTH
SCHED	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	SANITARY SEWER
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SY	SQUARE YARD
THRU	THROUGH
TNND	TINNED
T.O.	TOP OF
TOB	TOP OF BLOCK
TOC	TOP OF CONCRETE
TOM	TOP OF MASONRY
TS	TUBE STEEL
TX	TRANSMIT SIGNAL
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LAB
URH	UNIVERSAL RADIO HEAD
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
VT	VINYL TILE
W	WEST
W/	WITH
WDW	WINDOW
W/O	WITHOUT
WP	WORKING POINT
WTR	WATER

— — — — —	CENTER LINE
—— — — ——	PROPERTY LINE
—— — — ——	RIGHT-OF-WAY
— -F- — -F- —	FIBER
— -G- — -G —	GAS
— -P- — -P- —	POWER
— -S- — -S —	SANITARY SEWER
— SD- — -SD —	STORM DRAIN
— W- — -W —	WATER
—P——P—	LIGHT CIRCUIT POWER

9	REVISION
A01	KEY NOTE
1 / A1	DETAIL REFERENCE
6 / A-2	ELEVATION REFERENCE
11 / A-3	SECTION REFERENCE
	ELEVATION MARKER
A.3	PHOTOSIM REFERENCE
##°	ANTENNA AZIMUTH

1 — VIEW NUMBER
A-02 — SHEET NUMBER / SHEET GROUP

ABBREVIATIONS AND SYMBOLS — SCALE: NTS — 20

CROWN CASTLE

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HOUSTON, TX 77057
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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-004-01

BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

SHEET NUMBER T1.2

PAGE 2 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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SPECIFICATIONS

ION-M7P/17P - Product Specification

Electrical

Power Supply

Mains power, Vac: 85 to 264; 115 or 230

Power consumption, watts: max. temp. fully loaded 330; warm temp. dBs 306

Optical Link

Optical Link Connectors: (2000) APC E

Optical return loss, dB: 65

Fibre type: Single mode (9/125 µm)

Optical link budget, dB: 0 to 10

Composite input power @ OTRx: master side, dBm: 700 MHz 3.0 nominal; AWS1700/2100 3.0 nominal

RF Interface

BTS Side (SMA)

Number of connectors: Standard 700 MHz 4; AWS1700/2100 4

System optimized for BTS power, dBm: 23; 16

Commercial 700 MHz

Frequency range, MHz: Uplink 698 to 716; Uplink 776 to 787; Downlink 728 to 757

Output power per carrier, dBm

Number of Carriers	1	2	4	8
UB	43	40	32	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input IC3, dBm**: BTS optimized 11 min; Noise figure optimized 18 min

Noise figure, dB**: BTS optimized +10 max; Noise figure optimized +4 max; +4.5 typical

AWS1700/2100

Frequency range, MHz: Uplink 1710 to 1755; Downlink 2110 to 2155

Output power per carrier, dBm

Number of Carriers	1	2	4	8
EDGE	43	40	37	34
UTI	43	40	37	34
UMTS	43	40	37	34

DL output tolerance over frequency, dB: ±1

DL output tolerance over temperature, dB: ±0.5

Spurious emission: < -13 dBm / 1 MHz

Input IC3, dBm**: BTS optimized 12 min; Noise figure optimized 18 min

Noise figure, dB**: BTS optimized < 11 max; Noise figure optimized < 4 max; < 4.5 typical

System Supervision and Control

Commands: RF on/off; 4 external control ports

Alarms: Summary; Power Supply; Uplink DL and DL failure; RF UL and DL failure; Temperature; 4 external alarm inputs

Supervision: Composite output power

SPECIFICATIONS

ION-M7P/17P - Product Specification

Mechanical*

Height, width, depth mm (in): 831 x 156 x 147 (32.7 x 6.1 x 5.8)

Weight kg (lbs): 20 (44)

Environmental

Operating temperature range, °C: -33 to +50

Ingress protection: IP per IP67; fan per IP55

Ordering Information

ION-M7P/17P: Qty 744033

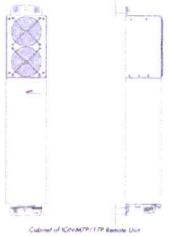
Depending on the related system and the configuration the ordering material number varies or doubling cells

Extension Unit Options

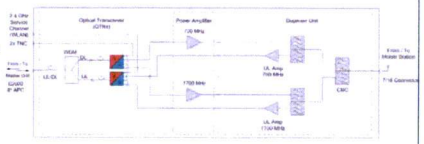
No connection to extension unit possible

- 3 dB reduction of Port 0 carrier bandwidth - 1 MHz
- from Reference point B to A
- Ignoring required 40 mm (1.58 in) ground area

All figures are typical values, unless otherwise stated.



Cabinet of ION-M7P/17P Remote Unit



ION-M7P/17P Remote Unit Design Principle - Combined Antenna Port

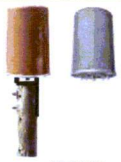
RADIO SPECIFICATIONS — SCALE: N.T.S. — 18

KATHREIN SCALA DIVISION

840 10510 840 10511

700 MHz Dual Band Omni Antenna

	Antenna 1	Antenna 2
Dual Band (MHz)	698–894	1710–2170
Dual Polarization	X	X
HPBW	360°	360°



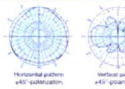
General specifications:

Frequency range	698–894 MHz; 1710–2170 MHz
VSWR	<1.5:1
Impedance	50 ohms
Intermodulation (2x20W)	IM3: < -150 dBc
Polarization	+45° upper and lower band; -45° upper and lower band
Connector	4 x 7-16 DIN female
Isolation intersystem / intersystem	>30 dB; >40 dB (698–894 / 1710–2170 MHz)
Radome color	Brown or gray
Weight	45 lb (20.4 kg)
Height	24 inches (609 mm)
Radome diameter	16 inches (407 mm)
Wind load Side	at 93 mph (150kph): 30 lbf (136 N)
Wind survival rating*	100 mph (160 kph)
Shipping dimensions	32 x 20 x 19 inches (813 x 508 x 483 mm)
Shipping weight	52 lb (23.6 kg)
Mounting	Designed to be mounted on top of a utility pole using a custom mounting bracket supplied by the customer

See reverse for order information

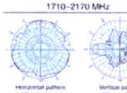
*Mechanical design is based on environmental conditions as stipulated in TIA 222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

698–894 MHz



Horizontal pattern +45° polarization — Vertical pattern +45° polarization

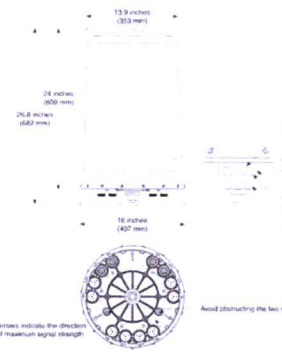
1710–2170 MHz



Horizontal pattern +45° polarization — Vertical pattern +45° polarization

Specifications:

	698–806 MHz	806–894 MHz	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain (typical)	4.5 dBi	6.5 dBi (with 1–4 dB nulls, typical)	0 dBi	5 dBi (with 6–10 dB nulls, typical)	6.5 dBi
Maximum input power	250 watts (at 50°C)	250 watts (at 50°C)	200 watts (at 50°C)	350 watts (at 50°C)	200 watts (at 50°C)
+45° and -45° polarization vertical beamwidth	37° (half-power)	30° (half-power)	19° (half-power)	17° (half-power)	17.5° (half-power)



Order Information:

Model	Description
840 10510	Brown Dualband X pol Omni Antenna
840 10511	Grey Dualband X pol Omni Antenna

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com

Kathrein Inc. Scala Division · Post Office Box 4580 · Medford, OR 97501 (USA) · Phone (541) 779-6500 · Fax (541) 779-3991
Email: communications@kathrein.com · Internet: www.kathrein-scala.com

ANTENNA SPECIFICATIONS — SCALE: N.T.S. — 12

CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 459.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

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1-21-13	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-004-01

BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER: 120603

IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

SHEET NUMBER: T1.3

PAGE: 3 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

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4/18/2014 8:22:31 AM

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE PANEL ANTENNA IN CONCEALMENT SHROUD	8/D1.1 & 12/T1.3
A02	PROPOSED CROWN CASTLE UNDERGROUND COAX CONDUIT (APPROXIMATE LOCATION. F.V.)	20/D1.1
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/A1.3
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	N/A	
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1
U01	PROPOSED CROWN CASTLE UNDERGROUND POWER ROUTE (APPROXIMATE LOCATION. F.V.)	20/D1.1 & 6/D1.2
U02	PROPOSED CROWN CASTLE UNDERGROUND FIBER ROUTE BY OTHERS (APPROXIMATE LOCATION. F.V.)	20/D1.1 & 6/D1.2

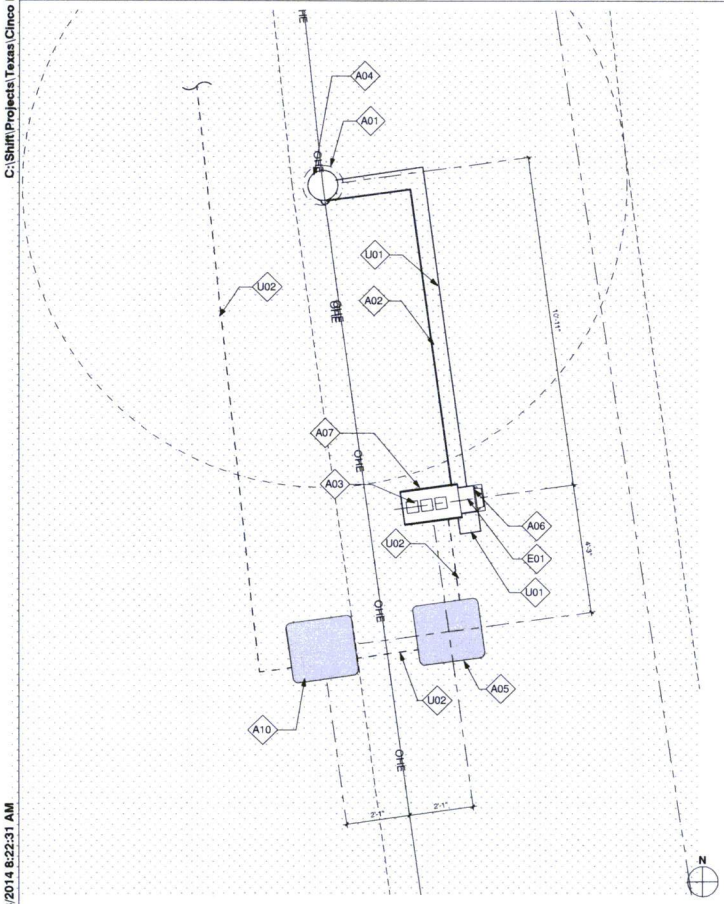
LATITUDE:	29.714380
LONGITUDE:	-95.786700
POLE TYPE:	WOOD POWER POLE
POLE ID #:	N/A

GENERAL NOTES

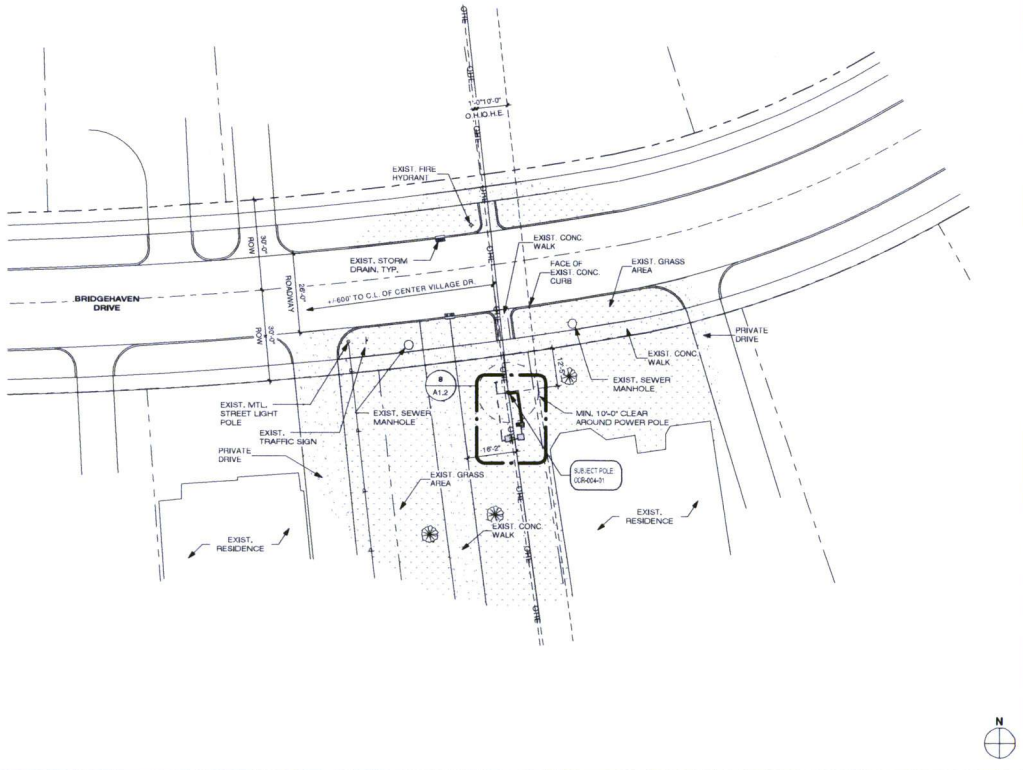
1. PAINT PROPOSED GROUND EQUIPMENT A NATURAL EARTH COLOR OR AS APPROVED BY CITY.
2. CONTRACTOR TO FIELD LOCATE EXIST. UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION
3. EX. LANDSCAPE PLANTINGS AND DECORATIVE HARDSCAPES DISTURBED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO HAND LOCATE EX. IRRIGATION PRIOR TO EXCAVATION.
5. SITE PLAN IS A DIAGRAMMATIC REPRESENTATION ONLY. VERIFY ALL DIMENSIONS.
6. VERIFY ALL PROPERTY LINE INFORMATION WITH AVAILABLE R.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

811 CALL TWO WORKING DAYS BEFORE YOU DIG.
UNDERGROUND SERVICE ALERT OF TEXAS
1-800-545-6005

NOTES:
1. ANY DAMAGE TO EXISTING GUTTER, CURB, SIDEWALK AND ROADWAY DURING CONSTRUCTION TO BE REPAIRED OR REPLACED.
2. EXISTING VEGETATION DAMAGED IN CONSTRUCTION TO BE REPLACED BY SAME SPECIES.



EQUIPMENT AND ANTENNA PLAN 1/2" = 1'-0" 8



OVERALL SITE PLAN 1" = 20'-0" 20

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	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-004-01

BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER: 120603

IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE

SITE PLAN, EQUIPMENT AND ANTENNA PLAN

SHEET NUMBER: A1.2

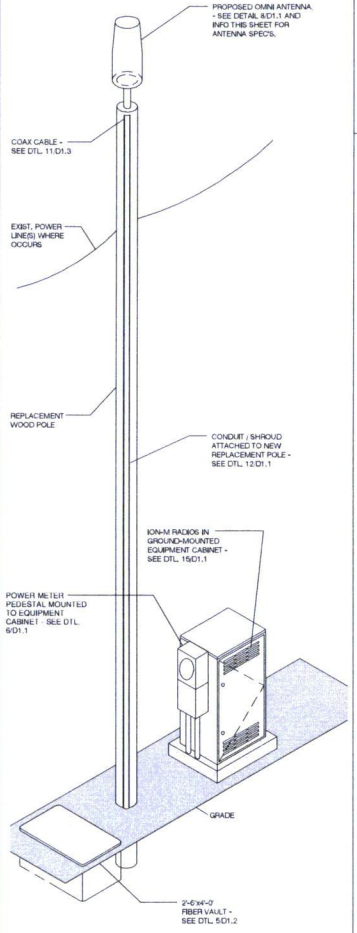
PAGE: 4 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-004-01 - PROJECT(Recovery).rvt



NOTES:

1. FIBER VAULT, POWER METER PEDESTAL AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE RECONFIGURED TO SUIT PROJECT LOCATION
2. ISOMETRIC IS A SCHEMATIC DESIGN ONLY.

WD. POLE ISOMETRIC — SCALE: N.T.S. — 4

MODEL:	KATHREIN SCALA 843 10510
LENGTH:	24.0"
WIDTH:	16.0"D
DEPTH:	N/A
WEIGHT:	45.0 LBS

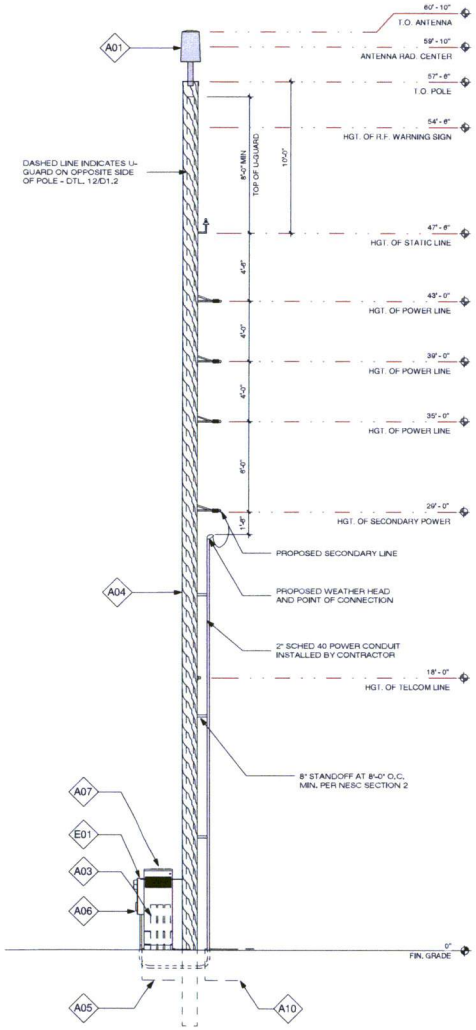
PROPOSED PANEL ANTENNA SPECS

PROPOSED POLE WIDTH = 12"Ø
PROPOSED POLE HEIGHT = 57' - 6"
(+ 2' - 0" ANTENNA AND 1' - 4" ANTENNA MAST)

POLE INFO

KEYNOTE LEGEND

KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE PANEL ANTENNA	8/D1.1 & 12/T1.3
A03	PROPOSED CROWN CASTLE REMOTE UNIT INSIDE EQUIPMENT CABINET	15/D1.1 & 18/T1.3
A04	PROPOSED NEW / REPLACEMENT POLE	4/-
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5/D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20/D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	15/D1.1
A08	N/A	
A09	PROPOSED CROWN CASTLE CONCELEMENT SHROUD	8/D1.1
A10	PROPOSED ICTX UNDERGROUND CONC. FIBER VAULT	SEE FIBER PLANS
E01	PROPOSED POWER METER PEDESTAL (DISTRIBUTED PANEL AND DISCONNECT)	6/D1.1



POLE ELEVATION (PROPOSED) — SCALE: 1/4" = 1' - 0" — 20

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HOUSTON, TX 77057
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PROJECT NAME

VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-004-01

BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER 120603

IN HOUSE DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

POLE ELEVATION, PROPOSED

SHEET NUMBER A1.3 **PAGE** 5 OF 8

PLOT SCALE: 1:1 @ 24"x36", 1:2 @ 11"x17"

PLAN CHECK #

CASE #

4/18/2014 8:22:31 AM

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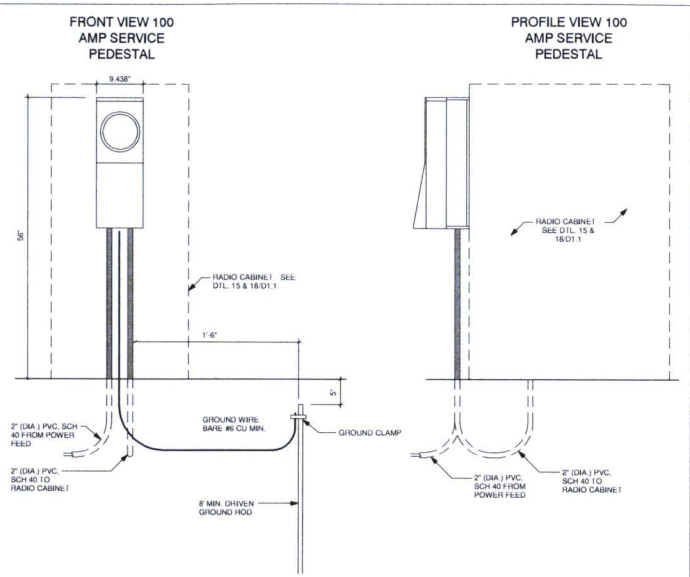
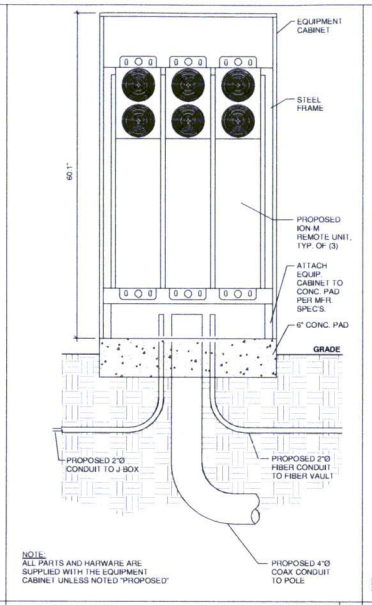
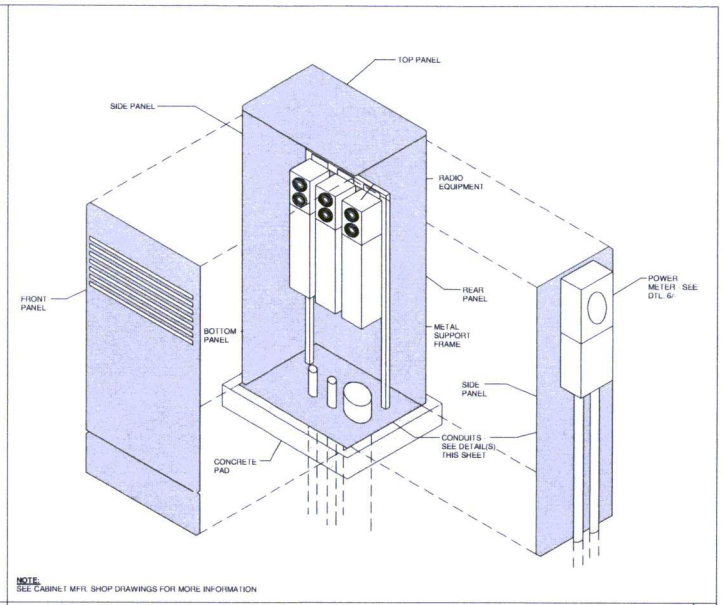


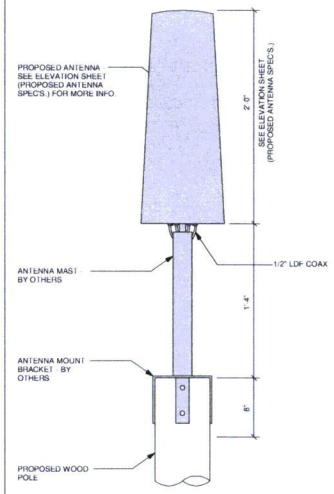
POWER METER - MOUNTED TO RADIO CABINET SCALE: 1" = 1'-0" 6



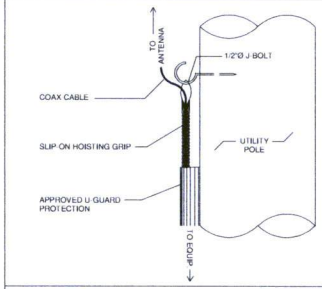
EQUIPMENT CABINET SECTION SCALE: N.T.S. 10



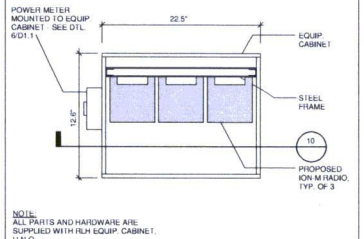
EQUIPMENT ENCLOSURE SCALE: N.T.S. 18



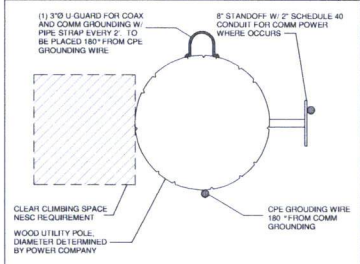
ANTENNA MOUNTING DETAIL SCALE: N.T.S. 8



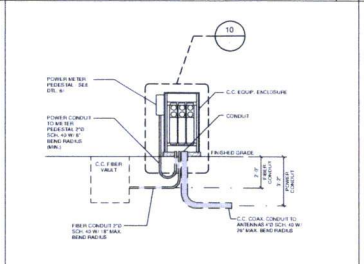
COAX HANGER DETAIL SCALE: N.T.S. 11



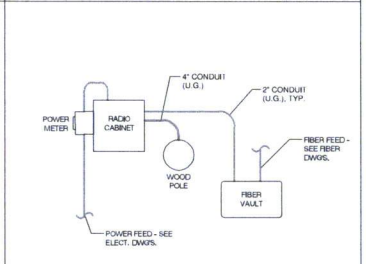
EQUIPMENT ENCLOSURE PLAN SCALE: N.T.S. 15



POLE PLAN TYP. DETAIL SCALE: N.T.S. 12



CONDUIT AND POWER RISER DIAGRAM SCALE: N.T.S. 16



CONDUIT ROUTE SCALE: N.T.S. 20

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VERIZON - CINCO RANCH

NODE ADDRESS

NODE #:CCR-004-01

BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA

CINCO RANCH, TX

SHIFT JOB NUMBER	IN HOUSE
120603	DRAWN BY: RA CHECKED BY: CM

SHEET TITLE

CONSTRUCTION DETAILS

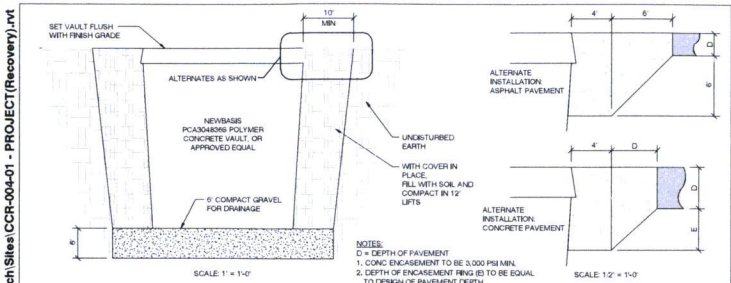
SHEET NUMBER	PAGE
D1.1	6 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

4/18/2014 8:22:32 AM

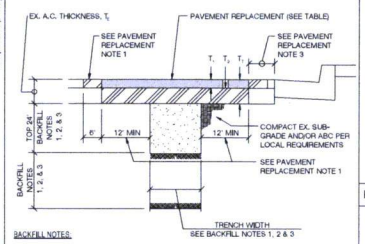


NOTES:
D = DEPTH OF PAVEMENT
1. CONC ENCASEMENT TO BE 3,000 PSI MIN.
2. DEPTH OF ENCASEMENT RING (E) TO BE EQUAL TO DESIGN OF PAVEMENT DEPTH

VAULT INSTALLATION

SCALE: AS NOTED | 5

EXISTING PAVEMENT THICKNESS, T_1	ASPHALT CONCRETE (A.C.) PAVEMENT REPLACEMENT		
	A.C. SINGLE COURSE OR SURFACE COURSE, T_1	A.C. BASE COURSE, T_2	TOTAL THICKNESS, T_1
$T_1 \leq 3'$	3' MINIMUM	NONE	3' MINIMUM
$T_1 > 3'$	2' MINIMUM	2' MINIMUM	T_1 (MATCH EXIST)



BACKFILL NOTES:

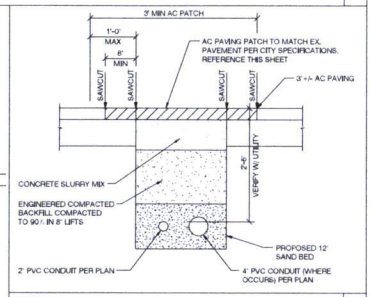
1. TRENCHES LESS THAN 24' IN WIDTH - 1/2 SACK CSLM. FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE (ABC) LAYER IN PAVEMENT STRUCTURE OR 6' BELOW PAVEMENT IN FULL DEPTH PAVEMENT STRUCTURES, CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
2. TRENCHES 24' TO 6' IN WIDTH - 1/2 SACK CSLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24' OF THE TRENCH, FOR BALANCE OF BACKFILL.
3. TRENCHES OVER 6' IN WIDTH - FULL DEPTH OF BACKFILL.
4. TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLIATIVE, 1:1 DILUTION RATIO, 0.50 GAL/SY APPLICATION RATE.
5. CSLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
6. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

PAVEMENT REPLACEMENT NOTES:

1. "T"-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE "T" CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4' AND THICKER.
   A. FOR PAVEMENT 4 YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE A MINIMUM OF 6' ON EACH SIDE OF THE T-TOP PRIOR TO PLACEMENT OF THE FINAL SURFACE COURSE LIFT.
A. FOR NEW AND OVERLAID PAVEMENT LESS THAN 4 YEARS OLD AND WHEN ALLOWED UNDER THE PROVISIONS OF LOCAL CITY/TOWN CODE AND ALL PAVEMENTS WITH RUBBERIZED SURFACE COURSES: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT & REMOVE 12' OF A.C. MINIMUM ON EACH SIDE OF THE TRENCH FOR THE "T"-TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4' AND THICKER, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET. FOR PAVEMENTS LESS THAN 4' THICK SAWCUT, REMOVE AND REPLACE THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 10 FEET, AS DIRECTED BY THE ENGINEER.
B. FOR DEEP PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LIFTS: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH COMPACTION. SAWCUT, REMOVE AND REPLACE A.C. ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A RIDE ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A.C. BASE COURSE LIFTS. MATCH EXISTING A.C. DEPTH, MILL AND REMOVE THE TOP 2' OF THE SURFACE COURSE EQUALLY ON BOTH SIDES OF THE TRENCH TO A MINIMUM TOTAL WIDTH OF 10 FEET.
2. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
3. IF PAVEMENT REMNANT IS LESS THAN 36", REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ABC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS, FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

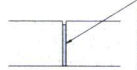
TRENCH AND PATCHING REQUIREMENTS

SCALE: N.T.S. | 4



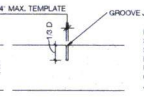
POWER TRENCH

SCALE: 3/4" = 1'-0" | 6



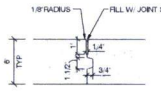
EXPANSION JOINT

½" PREMOLDED NON-EXTRUDING EXPANSION JOINT MATERIAL TO MEET AASHTO SPEC. M-153. *EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURES SUCH AS INLETS AND DRIVEWAYS, AND EVERY 300' ON LONG STRAIGHT CONCRETE STRETCHES.



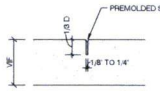
CONTROL JOINT

FORM W/ TEMPLATE OR SAWCUT JOINTS. SAWCUT JOINTS, IF USED, SHALL BEGIN AS SOON AS CONC IS HARDENED SUFFICIENTLY TO PERMIT SAWING WITHOUT EXCESSIVE RAVELING AND BEFORE UNCONTROLLED CRACKING OCCURS. MAX DISTANCE BETWEEN JOINTS = 10', MIN DISTANCE = 5'.



KEYWAY FORMED BY FASTENING METAL KEY TO FORM

LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINT



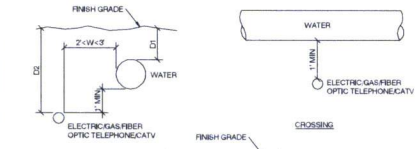
PREMOLDED STRIPS RECOMMENDED FOR BIKEPATHS.

SAWED OR PREMOLDED STRIP - LONGITUDINAL OR TRANSVERSE JOINT

NOTE:
JOINT LAYOUT FOR CONC. STREETS IS TO BE SUBMITTED TO APPROPRIATE GOVERNING MUNICIPALITY FOR APPROVAL.

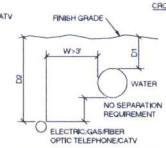
CONCRETE JOINT DETAILS

SCALE: 1 1/2" = 1'-0" | 8



LEGEND:
D1 = 3' MIN. FOR PIPE < 12" DIA
4' MIN. FOR PIPE > 12" DIA
5' MIN. FOR PIPE > 12" DIA
D2 = MINIMUM COVER
W = HORIZONTAL SEPARATION

CROSSING

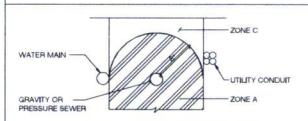


NOTES:

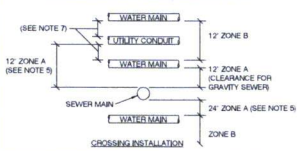
1. ELECTRIC SEPARATION REQUIREMENTS ARE FOR PRIMARY ELECTRIC CONDUCTORS ONLY. FOR SERVICE CONDUCTORS SEE PLANS.
2. PRIMARY ELECTRIC, GAS, TELEPHONE, CABLE TV OR FIBER OPTIC LINES SHALL NOT CROSS ABOVE A WATER LINE WITHOUT WRITTEN APPROVAL FROM THE CITY'S WATER RESOURCES DEPARTMENT. IF THIS APPROVAL IS OBTAINED, DOUBLE UTILITY LOCATOR STRIPS AND ABC SLURRY CONFORMING TO LOCAL CITY/TOWN SPECIFICATIONS ARE REQUIRED.

MINIMUM UTILITY SEPARATION REQUIREMENTS

SCALE: N.T.S. | 15



PARALLEL INSTALLATION GRAVITY OR PRESSURE SEWER



CROSSING INSTALLATION

NOTES:

1. SEPARATION DISTANCES AND/OR EXTRA PROTECTION SHALL BE REQUIRED TO PROTECT WATER MAINS FROM CONTAMINATION BY SANITARY SEWER MAINS.
2. SEE CROSS INSTALLATION DETAIL ON THIS SHEET FOR LIMITS OF SEPARATION/EXTRA PROTECTION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE PIPES.
   A. NO WATER MAINS OR UTILITY CONDUITS SHALL FALL WITHIN ZONE A.
   B. EXTRA PROTECTION WILL BE REQUIRED WHEN THE WATER MAIN FALLS WITHIN ZONE B. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING SANITARY SEWER MAINS WITH MECHANICAL JOINT OR RESTRAINED JOINT DUCTILE IRON PIPE. DUCTILE IRON PIPE SHALL COMPLY WITH THE REQUIREMENTS FOR SEWER INSTALLATION. IN A CROSSING, THE NUMBER OF JOINTS SHALL BE HELD TO A MINIMUM WITH ONE FULL JOINT OF PIPE CENTERED OVER/UNDER THE OTHER. AN ALTERNATIVE PROTECTION MAY CONSIST OF ENCASING SEWER MAINS IN REINFORCED CONCRETE.
   C. NO ADDITIONAL PROTECTION WILL BE REQUIRED OUTSIDE OF ZONES A AND B.
   D. WATER MAINS PERMITTED IN ZONE C ONLY WITH WRITTEN PERMISSION FROM THE WATER RESOURCES DEPARTMENT.
3. SEPARATION REQUIREMENTS FOR 4" OR 6" INDIVIDUAL HOUSE SERVICE CONNECTIONS SHALL COMPLY WITH THE PLUMBING CODES ADOPTED BY THE LOCAL CITY/TOWN.
4. RECLAIMED WATER SHALL BE CONSIDERED AS POTABLE WATER WHEN PLACED NEXT TO A SANITARY SEWER AND CONSIDERED A PRESSURE OR FORCED SANITARY SEWER MAIN, WHEN PLACED NEXT TO A POTABLE WATER MAIN.
5. ZONE A IS 24' WHERE WATER MAINS AND UTILITY CONDUITS CROSS PRESSURE SEWER MAINS.
6. REFERENCE LOCAL CITY/TOWN STANDARD DETAILS.

SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES

SCALE: N.T.S. | 16

NOTICE

The radio frequency (RF) emissions at this site have been evaluated for potential RF exposure to personnel who may need to work near these antennas

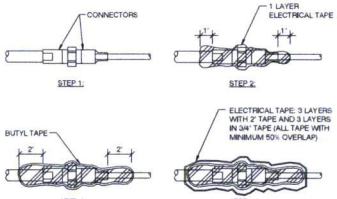
RF EXPOSURE AT 2 FEET OR CLOSER TO THE FACE OF THE ANTENNA MAY EXCEED THE FCC PUBLIC EXPOSURE STANDARD AND THUS ONLY QUALIFIED RF WORKERS MAY WORK IN THIS 2 FOOT EXCLUSION ZONE. OTHERS WHO NEED TO WORK IN THE EXCLUSION ZONE SHOULD CALL: (866) 446-3984 FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.

REFER TO SITE: _____

CROWN CASTLE

FCC RF EXPOSURE SIGN

SCALE: N.T.S. | 18



NOTE:
1. ALL TAPE ENDS SHALL BE CUT (DO NOT STRETCH), COAT WITH 3M SCOTCHKOTE SPRAY SEALER.
2. VERTICAL CONNECTIONS SHALL BE TAPED FROM THE BOTTOM UP SO OVERLAP MOVES WATER AWAY FROM CONNECTION. TYP.

CABLE CONNECTOR WATERPROOFING

SCALE: N.T.S. | 19

(3/8" TEXT HEIGHT)
CROWN CASTLE
(1/4" TEXT HEIGHT)
NODE SITE ID:
(1/4" TEXT HEIGHT)
IN CASE OF EMERGENCY CONTACT
NOC: 800.708.7011
(3/16" TEXT HEIGHT)
FACILITY COMPLIES WITH FCC EMISSION REQUIREMENTS.
FACILITY DESIGN APPROVED BY THE THE (LOCAL CITY/TOWN)

NOTE: 4" x 6 1/2" STICKER

NODE IDENTIFICATION SIGNAGE

SCALE: N.T.S. | 20

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

RECORD DRAWING DRAFTING ONLY

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Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
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fax: 480.294.0163

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RELEASE	
DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-13	CENTERPOINT SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-004-01
BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603
IN HOUSE: DRAWN BY: RA; CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER: D1.2
PAGE: 7 OF 8

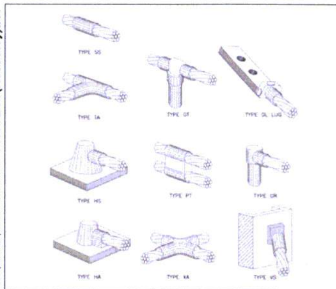
PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

PLAN CHECK #

CASE #

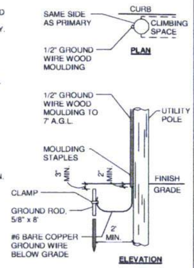
C:\Shift\Projects\Texas\Cinco Ranch\Sites\CCR-004-01 - PROJECT(Recovery).rvt

4/18/2014 8:22:32 AM



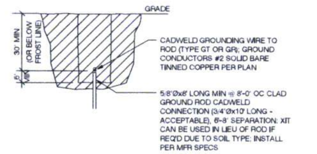
CADWELD DETAILS — SCALE: N.T.S. — 1

NOTES:
1. WOOD MOULDING SHALL BE INSTALLED IN WORKING SPACE TO PROTECCT THE LINEWORKER ON SAME SIDE AS PRIMARY.
2. STAPLE GROUND WIRE AT APPROPRIATE INTERVALS AND JUST ABOVE AND BELOW WOOD MOULDING.
3. INSTALL WOOD MOULDING WITH GALV. STAPLES AT 3'-0" O.C. 3" FROM TOP AND BOTTOM · ALLOW FOR EXPANSION.
4. PROPOSED 8' GROUND ROD 6' CLEAR OF ALL EXISTING GROUND RODS · CALL FOR UTILITY LOCATE PRIOR TO INSTALLATION.
5. IF SAW CUT IS REQUIRED, CUT A 24"x24" OPENING FOR GROUND ROD INSTALL · REPAIR CONCRETE 2 SACK MIN. · REPAIR NEAT AND FLUSH WITH EXIST. SURFACE.

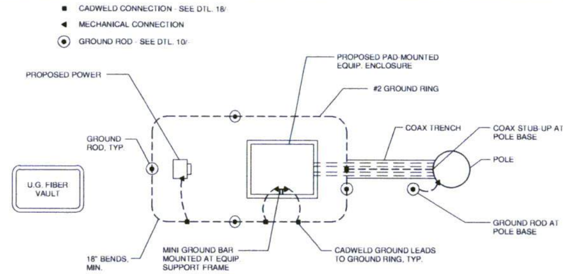


GROUNDING AT WOOD POLE — SCALE: N.T.S. — 5

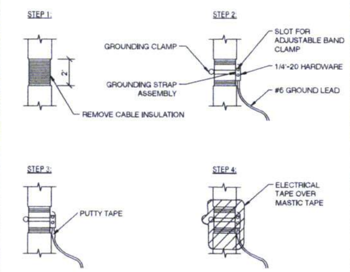
NOTES:
1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCREENED FROM VIEW).
3. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
4. ALL CONNECTORS SHALL BE DOUBLE LUG.
5. GROUND BAR KITS TO INCLUDE: 1/4" THICK TIN COPPER BUSS BAR, SS BRACKET, INSULATOR OR EQUIVALENT, 3/8"Ø BOLT AND LOCKWASHER.



GROUND ROD DETAIL — SCALE: NTS — 9

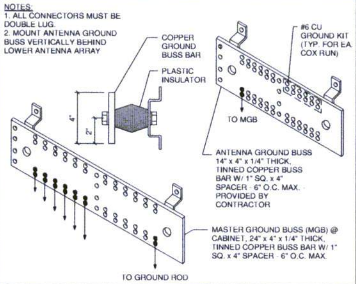


TYPICAL GRADE-MOUNTED EQUIPMENT GROUNDING SCHEMATIC @ WOOD POLE — SCALE: NTS — 17



COAXIAL CABLE GROUNDING — SCALE: NTS — 2

NOTES:
1. ALL CONNECTORS MUST BE DOUBLE LUG.
2. MOUNT ANTENNA GROUND BUSS VERTICALLY BEHIND LOWER ANTENNA ARRAY



GROUND BUSS BAR DETAIL — SCALE: NTS — 6

PANEL A	NO.	M	C	N	R	L	CB	PHASE	PHASE	CB	L	R	N	C	M	NO.	LOAD
CONVENIENCE RECEPTACLE	1				0.36		20/1	0.91		20/1			0.55			2	RADIO EQUIPMENT
CONVENIENCE RECEPTACLE	3				0.36		20/1		0.91	20/1			0.55			4	RADIO EQUIPMENT
EXHAUST FAN	5	0.36					20/1	0.36		20/1						6	SPARE
BUSSED SPACE	7								0.36	20/1					0.36	8	SUPPLY FAN

PANEL A — AMPACITY: 60 — VOLTAGE: 120/240V — MAINS: MCB — NEMA: 3R — KAIC: 10 — MOUNTING: SURF — RATING: LINK FAULT CALC — CIRCUITS: 8

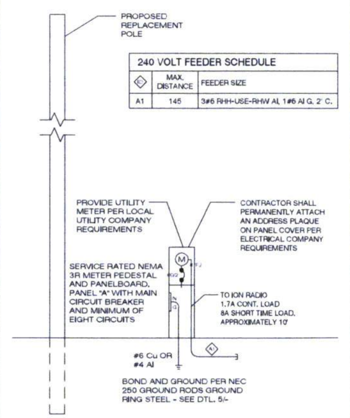
LIGHTING LOAD @ 125% =	0.00	0.00	KVA
RECEPTACLES (1ST 10KVA @ 100% + REMAINDER @ 50%) =	0.36	0.36	KVA
NON-CONTINUOUS LOAD @ 125% =	0.55	0.55	KVA
CONTINUOUS LOAD @ 125% =	0.00	0.00	KVA
MOTORS + 25% OF LARGEST MOTOR =	0.45	0.45	KVA
TOTAL PANEL A DEMAND =	1.36	1.36	KVA
TOTAL DEMAND AMPS =	11.33	11.33	KVA

PER NEC 210.4(B)
PROVIDE COMMON TRIP HANDLES FOR ALL MULTI-CIRCUIT CONDUIT RUNS.

ELECTRICAL PANEL SCHEDULES — SCALE: NTS — 14

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL PERMIT FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY SERVICE LOCATIONS AND CONTACT PROJECT MANAGER WITH DISCREPANCIES FROM PLAN.
4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT (UNDERGROUND) AND IMC CONDUIT ABOVE GROUND.
6. PROVIDE 2 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND APS JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES PER UTILITY STANDARDS.
7. USE 1" SCHEDULE 40 PVC CONDUIT AND APPROPRIATE FITTINGS TO ENTER N3R LOAD CENTER.
8. CONTRACTOR TO NOTIFY ALL APPROPRIATE PARTIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NDOT REQUIREMENTS.
10. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE STAKE.
11. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED POTHOLING METHODS AND NOTE ON PLAN SETS FOR AS-BUILT CLOSE OUT.
12. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REDLINE DRAWINGS.
13. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR MODIFYING.
14. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEERS
15. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.

ELECTRICAL NOTES — SCALE: NONE — 18

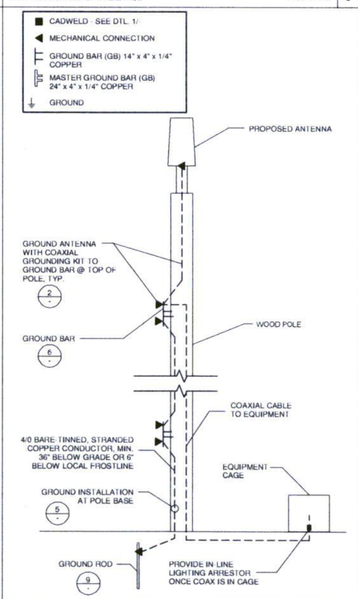


240 VOLT FEEDER SCHEDULE

◇	MAX. DISTANCE	FEEDER SIZE
A1	145	3#6 RHH-USE-RHW Al, 1#6 Al G. 2" C.

NOTES:
1. EC TO FIELD VERIFY SITE CONDITION.
2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
4. PROVIDE ADEQUATE SERVICE CONDUCTOR LENGTH AT THE BASE OF THE RISER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND CONNECT TO UTILITY COMPANY SECONDARY LINES WITH A 12" DRIP LOOP.
5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
6. ALL WIRE TO BE THHN OR THWN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
7. FUTURE BREAKERS IN PANEL B SHALL BE SERIES RATED WITH THEIR RESPECTIVE UPSTREAM REMOTE MAIN PROTECTIVE DEVICE. A TWO TIER (22K/10KVA) SYSTEM IS SPECIFIED.
8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.

ONE-LINE DIAGRAM — SCALE: NTS — 4



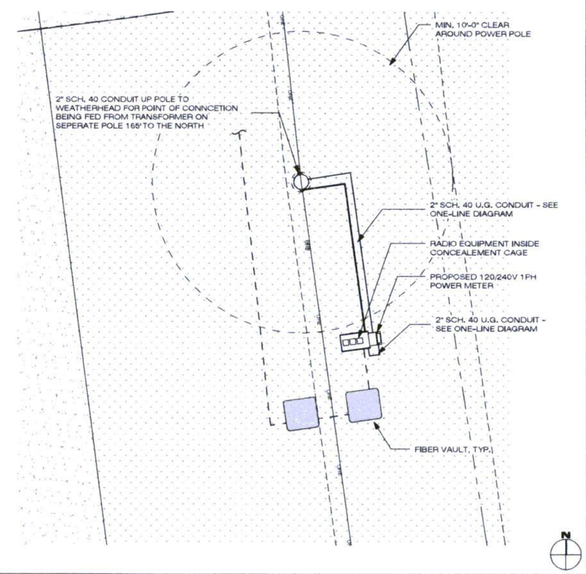
GROUNDING SCHEMATIC - WOOD POLE — SCALE: NTS — 8

FAULT CURRENT CALCULATION

FAULT	F1	F2	F3	F4	F5
LOCATION	CSU POS	PANEL @ 20'	PANEL @ 159'	PANEL @ 240'	PANEL @ 370'
AFC (FROM SOURCE)	49300	49300	49300	49300	49300
CONDUCTOR SIZE		#6	#4	#2	#1/0
CONDUCTOR TYPE		AL	AL	AL	AL
LENGTH		20	155	240	370
# OF SETS		1	1	1	1
TYPE OF CONDUIT		PVC	PVC	PVC	PVC
C VALUE		1482	2350	3730	5838
VOLTAGE PRIMARY		240	240	240	240
VOLTAGE SECONDARY (XFMR)					
XFMR IMPEDENCE					
XFMR KVA					
"f" FACTOR		5.54	27.10	26.43	26.04
MULTIPLIER		0.15	0.04	0.04	0.04
CALCULATED FAULT CURENT	49300	7533	1755	1797	1823
RATED (SERIES / FULLY)		FULLY @ 10K	FULLY @ 10K	FULLY @ 10K	FULLY @ 10K

11

FAULT CURRENT CALCULATION — SCALE: NTS — 12



ELECTRICAL PLAN — 1/4" = 1'-0" — 20

CROWN CASTLE
CROWN CASTLE
1220 AUGUSTA DR.
HOUSTON, TX 77057
PH: 469.343.4401

RECORD DRAWINGS ISSUE DATE: 4.17.14

SHIFT
Shift Companies, LLC
7333 E. MONTE VISTA ROAD
SCOTTSDALE, ARIZONA 85257
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fax: 480.264.0163

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RELEASE

DATE	SUBMITTAL
11-26-13	1ST CITY SUBMITTAL
1-21-13	CENTERPOINT SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
	12.11.13	FIBER COORDINATION
	4.17.14	CENTERPOINT RESUBMITTAL

PROJECT NAME
VERIZON - CINCO RANCH

NODE ADDRESS
NODE #:CCR-004-01
BRIDGEHAVEN DR., E. OF CENTER VILLAGE DR.

PLAN CHECK #

HUB AREA
CINCO RANCH, TX

SHIFT JOB NUMBER: 120603 — IN HOUSE — DRAWN BY: RA — CHECKED BY: CM

SHEET TITLE
ELECTRICAL DETAILS AND NOTES, GROUNDING DETAILS AND NOTES

SHEET NUMBER: E1.1 — PAGE: 8 OF 8

PLOT SCALE: 1:1 @ 24"x36"; 1:2 @ 11"x17"

CASE #