



REVIEW BY FORT BEND COUNTY COMMISSIONERS COURT

Fort Bend County Engineering Department
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- Right of Way Permit**
- Commercial Driveway Permit**

Permit No: 2016-10726

Applicant: Crown Castle NG General LLC/Shift Companies

Job Location Site: 24544 1/2 Westheimer Parkway, Katy, TX 77494

Bond No. [REDACTED] **Date of Bond:** 5/12/2014 **Amount:** \$50,000.00

The above applicant came to make use of certain Fort Bend County property subject to, "The Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas, of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Chapter 181, Vernon's Texas Statutes and Codes Annotated.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
 - a. 48 hours in advance of construction start up, and
 - b. When construction is completed and ready for final inspection, submit notification to Permit Administrator thru MyGovernmentOnline.org portal.
3. This permit expires one (1) year from date of permit if construction has not commenced.

On this 13th day of December, 2016, Upon Motion of Commissioner Meyers, seconded by Commissioner Patterson, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Signature

Presented to Commissioners Court and approved.

By: Charles O. Ay
for County Engineer

Date Recorded 12-21-16 Comm. Court No. 13J

By: N/A
Drainage District Engineer/Manager

Clerk of Commissioners Court
By: Ronda Wilks
Deputy



**PERMIT APPLICATION REVIEW FORM FOR
CABLE, CONDUIT, AND POLE LINE ACTIVITY
IN FORT BEND COUNTY**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- Right of Way Permit**
 Commercial Driveway Permit

Permit No: 2016-10726

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

(1) COMPLETE APPLICATION FORM:

- a. Name of road, street, and/or drainage ditch affected.
 b. Vicinity map showing course of directions
 c. Plans and specifications

(2) BOND:

- County Attorney, approval when applicable.
- Perpetual bond currently posted. Bond No: Amount: \$50,000.00
- Performance bond submitted. Bond No: Amount:
- Cashier's Check Check No: Amount:

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

Drainage District Approval

Date

We have reviewed this project and agree it meets minimum requirements.

Charles O. Ay

Permit Administrator

12/6/16

Date



PROJECT NAME: CINCO RANCH EXPANSION
PROJECT ADDRESS: WESTHEIMER PKWY AND GLENTHORPE LN

PROJECT TYPE: METAL SLIMLINE POLE
HUB AREA: CINCO RANCH - HGCW
NODE #(s): **CCR-42**
COORDINATES: LAT: 29.739739, LONG: -95.785369

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FORT BEND COUNTY ENGINEER
 ENGINEER: *Paul D. Stagle, P.E., Prof.*
 For: Richard W. Smith, P.E.
 DATE: 11/11/16
 THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEAR FROM DATE OF APPROVAL.
 APPROVED: *[Signature]*
 Development Coordinator
 DATE: 11/11/16

TEAM MEMBERS REVIEW	REVIEWED/DATE
R.F. ENGINEERING	
PRODUCT MANAGEMENT	
NETWORK REAL ESTATE TEAM	
UTILITY TEAM	
IMPLEMENTATION	
OPERATIONS	



CROWN CASTLE
 800 E. JOHN CARPENTER Pkwy
 SUITE 300
 IRVING, TX 75002

RECORD DRAWING ISSUE DATE: 10/16/16

RECORD DRAWING DRAFTING ONLY



Shift Companies, LLC
 1101 E. ROBERTSON AVE
 SUITE 1000
 HOUSTON, TX 77057
 TEL: 281.434.1100

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PROJECT TEAM	
ARCHITECT	OWNER INFO
Company: SHIFT CONSULTING Address: 7333 E. MCKNITE VISTA RD SCOTTSDALE, AZ 85257 Phone Number: 480.264.0629 Fax Number: 480.264.0163 Contact: CHRIS MYERS	Company: CROWN CASTLE Address: 1200 AUGUSTA DR HOUSTON, TX 77057 Phone #: 817.449.3113 Email: BARRY.CAMPALU@CROWNCASTLE.COM Contact: BARRY CAMPALU
STRUCTURAL	RF ENGINEER
Company: T.B.D. Address: Phone Number: Fax Number: Contact:	Company: CROWN CASTLE Address: 1200 AUGUSTA DR HOUSTON, TX 77057 Phone Number: Fax Number: Contact:
FIBER ENGINEERING	
Company: TDC2 Address: 710 EAST PARK BLVD, SUITE 110 PLANO, TX 75074 Phone: 972.423.9060 Email: vj@tbc2.com Contact: SCOTT CRUM	

PROJECT SUMMARY	
PROJECT NAME: CINCO RANCH EXPANSION	APPLICANT: CROWN CASTLE 1200 AUGUSTA DR HOUSTON, TX 77057 CONTACT: BARRY CAMPALU
PROJECT AREA: CINCO RANCH - HGCW	CODES: 2009 INTERNATIONAL BUILDING CODE (IBC) 2009 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2008 NATIONAL ELECTRICAL CODE (NEC) 2008 NATIONAL ELECTRICAL SAFETY CODE (NESC)
JURISDICTION: FORT BEND COUNTY ENGINEERING DEPT. 1124 BLUME RD. ROSENBERG, TX 77471 PH: 281.633.7500 CONTACT: JOHNNY ORTEGA	PLUMBING REQUIREMENTS: FACILITY HAS NO PLUMBING.
HANDICAPPED REQUIREMENTS: -FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION -HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED.	POWER COMPANY: CENTERPOINT ENERGY 5431 HIGHWAY BLVD KATY, TX 77494 PH: 281.520.6275 CONTACT: KEN CORTEZ

NOTE: NOT ALL SITES ARE INCLUDED IN THIS SET. SEE NODE #3 ABOVE FOR SITES THAT ARE IN THIS SET.



PROJECT DESCRIPTION

CROWN CASTLE PROPOSES TO PROVIDE AN ENHANCED RESIDENTIAL WIRELESS COMMUNICATIONS SYSTEM FOR THE KATY, TEXAS AREA. THE SYSTEM WILL IMPROVE CELLULAR COMMUNICATIONS AND INCREASE CALL CAPACITY. 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 NEW METAL SLIMLINE POLE. THEY WILL HAVE GROUND MOUNTED RADIO EQUIPMENT INSIDE A CABINET WITH A METER AND DISCONNECT ATTACHED. THERE WILL ALSO BE POLE-TOP ANTENNAS CONCEALED IN SHROUDS.

RELEASE	
DATE	SUBMITTAL
6/28/16	1ST CITY SUBMITTAL
10/18/16	2ND CITY SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
1	10/18/16	CITY COMMENTS

PROJECT NAME
 CINCO RANCH EXPANSION

NODE ADDRESS

NODE #: CCR-42
 WESTHEIMER PKWY
 AND GLENTHORPE LN

HUB AREA
 CINCO RANCH - HGCW

SHIFT JOB NUMBER IN HOUSE
 150602 DRAWN BY: RM
 CHECKED BY: DM

SHEET TITLE
 TITLE SHEET

SHEET NUMBER **PAGE**
 T1.1 1 OF 14

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

Cinco Ranch Expansion
700 RRH Specifications

Mechanical	
Frequency Band	B2 & B28 (700)
Technology	LTE FDD
RF Output Power	240W/420W (5W configurable)
Operational Range	DL: 746-756 MHz UL: 2777-2787 MHz
Instantaneous BW	10 MHz (1 Carrier)
RF Configuration	2T2R, 2T4R, 4T4R 2 CPRI ports (max 7) A90 2.0 RS485 port 2 integrated Smart Sites Test 1 port external alarms (4x) Tx & Rx monitor ports
Interfaces	
Power	-48 VDC -48 VDC typical @ full RF load
Environmental Conditions	-40°C to +55°C
IP65	
Connectors	DIN 7116



Physical	
Dimensions	21.8 x 12 x 9.9 in.
Weight	53 lbs
Mounting options	Pole/Wall
Connector Location	Bottom

Cinco Ranch Expansion
PCS RRH Specifications (Future)

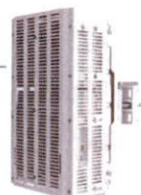
Mechanical	
Frequency Band	B2 & B28 (700)
Technology	LTE FDD
RF Output Power	240W/420W (5W configurable)
Operational Range	DL: 1900-1995 MHz UL: 1660-1675 MHz
Instantaneous BW	6.5 MHz (4 Carriers)
RF Configuration	2T2R, 2T4R, 4T4R 2 CPRI ports (max 7) A90 2.0 RS485 port 2 integrated Smart Sites Test 1 port external alarms (4x) Tx & Rx monitor ports
Interfaces	
Power	-48 VDC -48 VDC typical @ full RF load
Environmental Conditions	-40°C to +55°C
IP65	
Connectors	DIN 7116



Physical	
Dimensions	21.8 x 12 x 9.9 in.
Weight	53 lbs
Mounting options	Pole/Wall
Connector Location	Bottom

Cinco Ranch Expansion
AWS RRH Specifications

Mechanical	
Frequency Band	B4 (2100)
Technology	LTE FDD
RF Output Power	240W/420W (5W configurable)
Operational Range	DL: 2110-2180 MHz UL: 1660-1710 MHz
Instantaneous BW	10 MHz
RF Configuration	2T2R, 2T4R, 4T4R 2 CPRI ports (max 7) A90 2.0 RS485 port 2 integrated Smart Sites Test 1 port external alarms (4x)
Interfaces	
Power	-48 VDC -48 VDC typical @ full RF load
Environmental Conditions	-40°C to +55°C
IP65	
Connectors	DIN 7116



Physical	
Dimensions	20 x 12 x 7.2 in.
Weight	39 lbs
Mounting options	Pole/Wall
Connector Location	Bottom

RADIO SPECIFICATIONS

Amphenol 696-960 / 696-960 / 1695-2700 / 1695-2700 MHz

2C2UT36DX12Fsys0

- Features**
- Flexible design configuration with 8 connectors
 - Used for Small Cell, DAS applications
 - Available with 2.1/1.9 or 3.1/3.0 or 3.7/4.0 connectors
 - Three unique mounting options
 - Can be painted to blend with a building structure

Connector Description

Low Band #1 and #2	High Band #1 and #2
Low Band #1: 696-960 MHz	Red Ring
Low Band #2: 1695-2700 MHz	Blue Ring
High Band #1: 1695-2700 MHz	Yellow Ring
High Band #2: 1695-2700 MHz	Orange Ring

Electrical Characteristics

Frequency Bands (MHz)	DL 696-960 MHz	UL 1695-2700 MHz	DL 1695-2700 MHz	UL 696-960 MHz
Return Loss	> 14 dB	> 14 dB	> 14 dB	> 14 dB
Vertical Beamwidth	360°	360°	360°	360°
Horizontal Beamwidth	20°	10°	10°	10°
Gain	+3.2 dB	+2.8 dB	+2.8 dB	+2.8 dB
Return Loss (dB)	15.0	15.0	15.0	15.0
VSWR	< 1.31	< 1.31	< 1.31	< 1.31
Open Circuit Impedance	< 15 ohm	< 15 ohm	< 15 ohm	< 15 ohm
Isolation Between Ports	> 20 dB	> 20 dB	> 20 dB	> 20 dB
RF Output Power	> 150 W	> 150 W	> 150 W	> 150 W
Input Power	> 150 W	> 150 W	> 150 W	> 150 W
Number of System / Sector Spacing	1 Sector / Pseudo-Division			
Lightning Protection	Direct Ground			

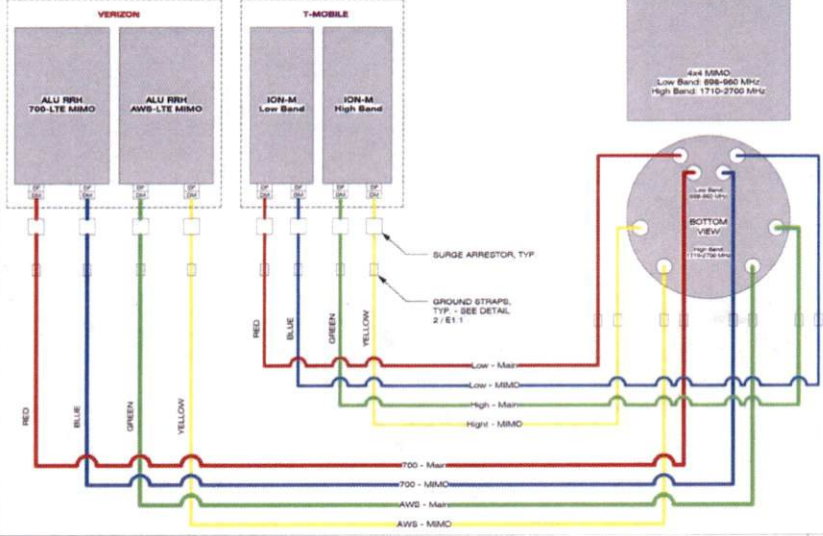
Mechanical Characteristics

Antenna Elements (Height x Diameter)	1219 x 27" / 30.9 x 68.6 cm
Weight without Mounting Bracket (kg)	17.3 kg / 38.1 lbs
Terminal Wind Speed	300 km/h / 175 mph
Wind Area	0.47 m ² / 5.0 ft ²
Wind Load (140 km/h or 100 mph)	99 N / 22 lbs

ANTENNA SPECIFICATIONS

SCALE N.T.S. 10

CROWN CASTLE



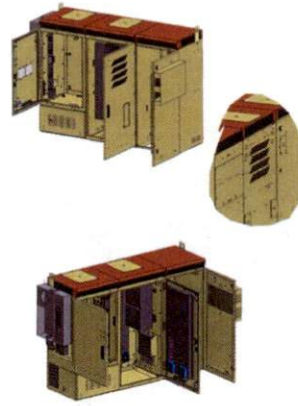
WIRING DIAGRAM

SCALE N.T.S. 10

ANTENNA SPECIFICATIONS

SCALE N.T.S. 12

EQUIPMENT CABINET SPECIFICATIONS



sharles A

sharles A

APPROVED: *[Signature]*
Development Coordinator
DATE: 11/1/16

CROWN CASTLE

300 E. JOHN CARPENTER Pkwy.
SUITE 200
IRVING, TX 75062

RECORD DRAWINGS ISSUE DATE: 10/16/16

SHIFT

Shift Companies, LLC
7511 NORTH KYLE ROAD
SCOTTSDALE, ARIZONA 85257
PH: 480.364.5075
FAX: 480.364.5033

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RELEASE

DATE	SUBMITTAL
6/20/16	1ST CITY SUBMITTAL
10/18/16	2ND CITY SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
10/18/16		CITY COMMENTS

PROJECT NAME

CINCO RANCH EXPANSION

HUB AREA

CINCO RANCH - HGCW

SHIFT JOB NUMBER **IN HOUSE**

150602 DRAWN BY: SA

CHECKED BY: CM

SHEET TITLE

EQUIPMENT SPECIFICATIONS

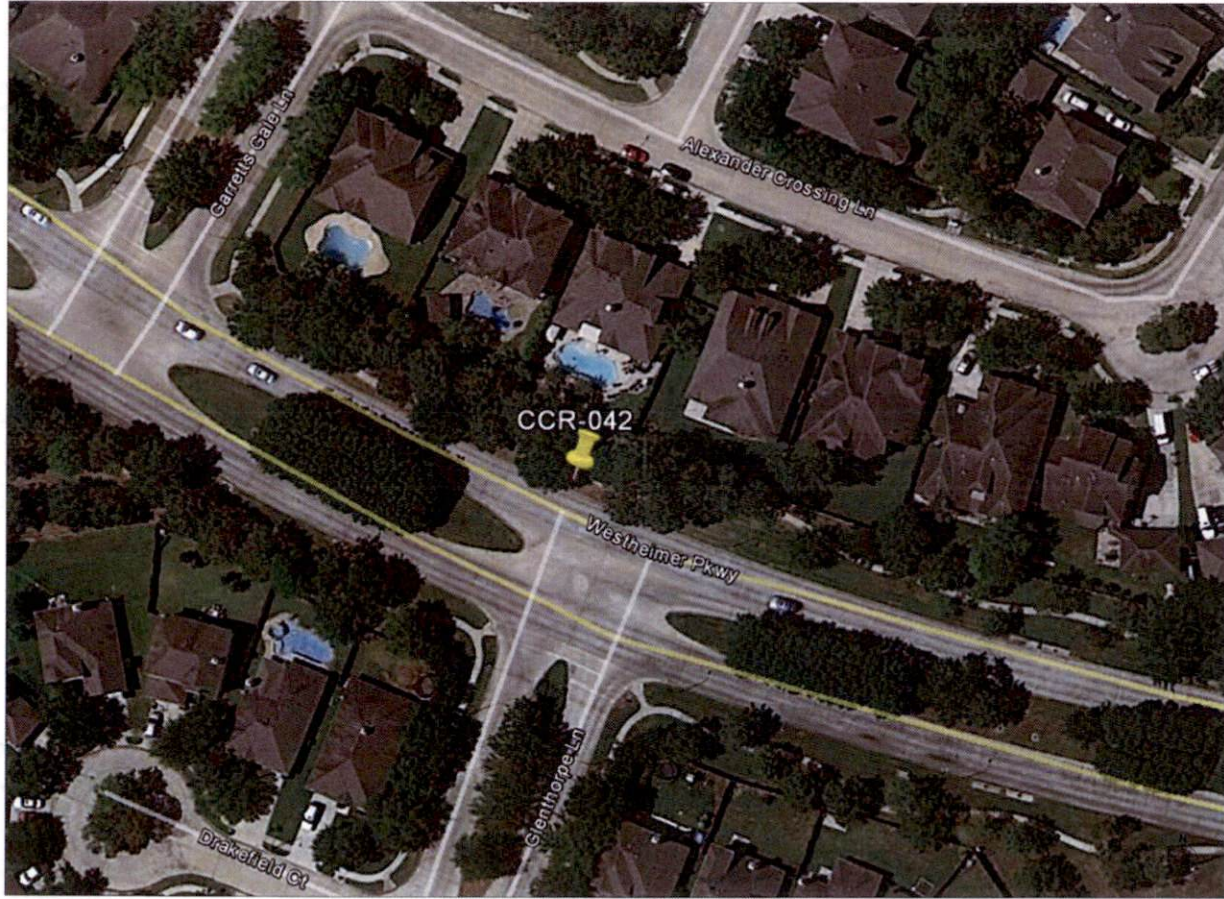
SHEET NUMBER **PAGE**

T1.3 3 OF 14

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

PLAN CHECK #

CASE #



NODE AERIAL PLAN

SUBJECT POLE: CCR-42

GPS COORDINATES:

LAT: 29.797794

LONG: -95.785260

POLE TYPE: METAL, SLM/SHR POLE

POLE ID #:

UPPER ANTENNA RAD CENTER: 30' O.A.F.S.

LOWER ANTENNA RAD CENTER: 30' O.A.F.S.

APPROVED: 
Development Coordinator

DATE: 11/15/16



CROWN CASTLE
600 E. JOHN CARPENTER Fwy.
SUITE 300
IRVING, TX 75069

RECORD DRAWINGS ISSUE DATE: 10/18/16



Shift Companies, LLC
7521 E. HIGHT VISTA ROAD
KOOTENAI, MICHIGAN 49707
PH: 268.244.8025
WWW: 482.284.2103

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RELEASE	
DATE	SUBMITTAL
5/03/16	1ST CITY SUBMITTAL
10/18/16	2ND CITY SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	10/18/16	CITY COMMENTS

PROJECT NAME:
CINCO RANCH EXPANSION

NODE ADDRESS:
NODE #:CCR-42

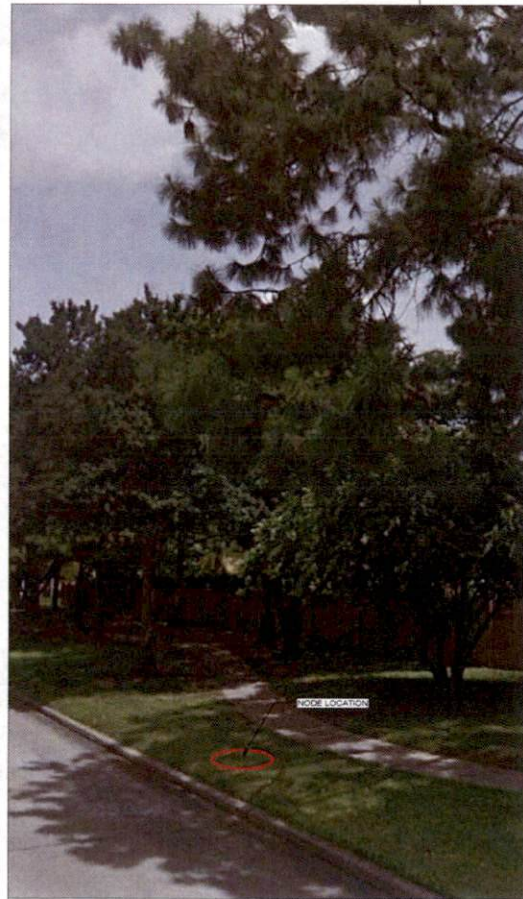
WESTHEIMER PKWY
AND GLENTHORPE LN

HUB AREA:
CINCO RANCH - HGCW

SHIFT JOB NUMBER: 150602
IN HOUSE: DRAWN BY: BA
CHECKED BY: CM

SHEET TITLE:
AERIAL

SHEET NUMBER: A1.0
PAGE: 4 OF 14



SITE PHOTO (EXISTING)

N.T.S.

PLOT SCALE: 1/1" @ 24'x36" 1/2" @ 11'x17"

PLAN CHECK # _____
CASE # _____

KEYNOTE	DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE DMM ANTENNA	1-01.1
A02	PROPOSED CROWN CASTLE 2" U.G. CONDUIT (APPROXIMATE LOCATION, F.V.)	2-01.1
A03	PROPOSED CROWN CASTLE REMOTE RADIO UNIT INSIDE EQUIPMENT CABINET	1-01.1
A04	PROPOSED NEW METAL SLIMLINE POLE	2-01.1
A05	PROPOSED CROWN CASTLE UNDERGROUND CONC. FIBER VAULT	5-01.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	3-01.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	1-01.1
A08	PROPOSED CROWN CASTLE PIER FOUNDATION	1-01.1
A09	PROPOSED ELECTRICAL HANG HOLE	

KEYNOTE	DESCRIPTION	DETAIL
E01	PROPOSED POWER METER MOUNTED TO EQUIPMENT CABINET (DISTRIBUTED PANEL AND DISCONNECT)	1-01.1
U01	PROPOSED 2" CROWN CASTLE U.G. POWER CONDUIT (APPROXIMATE LOCATION, F.V.)	2-01.1 & 5-01.2
U02	PROPOSED CROWN CASTLE 2" U.G. FIBER CONDUIT BY OTHERS (APPROXIMATE LOCATION, F.V.)	2-01.1 & 5-01.2



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.

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 HARDSCAPE 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.

SUBJECT POLE: CCR-42

GPS COORDINATES:

LAT: 29.735750
LONG: -95.765069

POLE TYPE: METAL SLIMLINE POLE

POLE ID #

UPPER ANTENNA RAD CENTER: 32' - 0" A.F.D.
LOWER ANTENNA RAD CENTER: 30' - 0" A.F.D.

SUBJECT POLE IS LOCATED IN: FORT BEND COUNTY R.O.W.

APPROVED: [Signature]
 Development Coordinator

DATE: 11/1/16



CROWN CASTLE
 800 E. JOHN CARPENTER Fwy.
 SUITE 300
 IRVING, TX 75062

RECORD DRAWINGS ISSUE DATE: 10-18-16



Shift Companies, LLC
 13111 N. HWY. 169A BOX 407
 SCOTTSDALE, ARIZONA 85250
 PH: 480.244.8269
 FAX: 480.244.8368

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RELEASE	
DATE	SUBMITTAL
6/22/15	1ST CITY SUBMITTAL
10/18/16	2ND CITY SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
1	10/18/16	CITY COMMENTS

PROJECT NAME:
 CINCO RANCH EXPANSION

NODE ADDRESS:
 NODE #CCR-42

WESTHEIMER PKWY AND GLENTHORPE LN

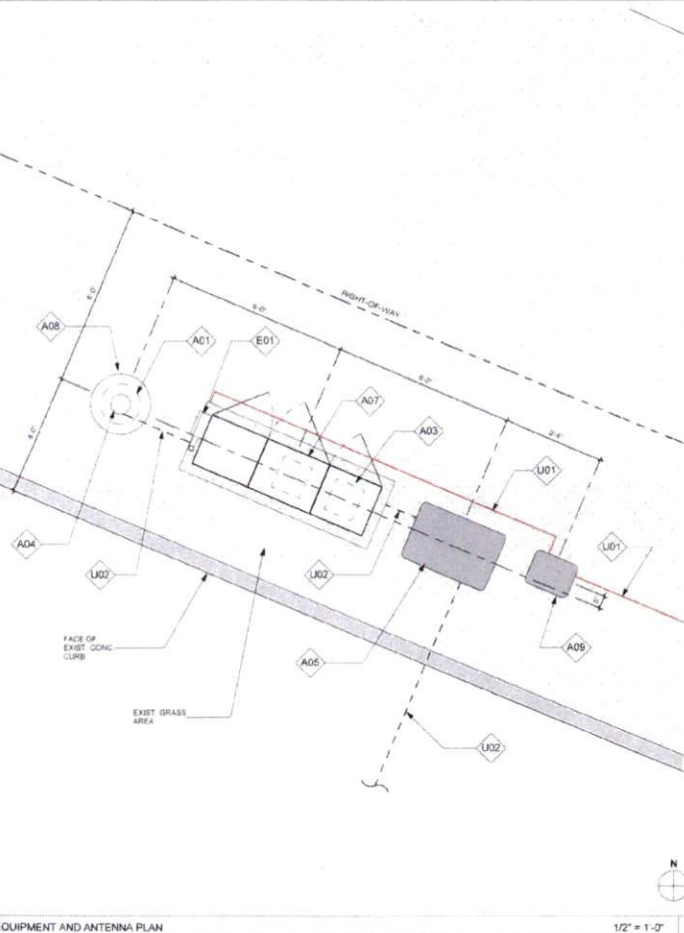
HUB AREA:
 CINCO RANCH - HGCW

SHIFT JOB NUMBER: 150602
IN HOUSE: DRAWN BY: RA, CHECKED BY: DM

SHEET TITLE:
 SITE PLAN, EQUIPMENT AND ANTENNA PLAN

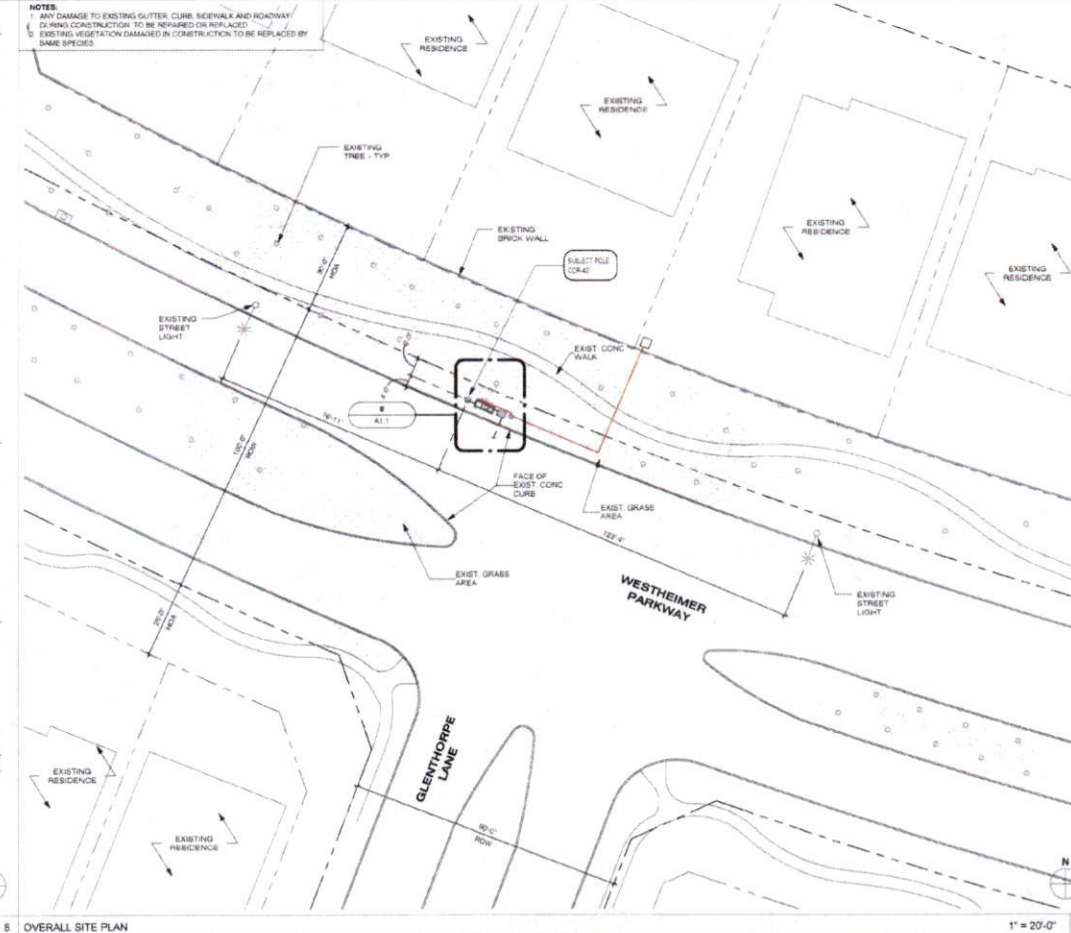
SHEET NUMBER: A1.1
PAGE: 5 OF 14

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



EQUIPMENT AND ANTENNA PLAN

1/2" = 1'-0"



OVERALL SITE PLAN

1" = 20'-0"

PLAN CHECK #

CASE #

NOTE
ISO IS SCHEMATIC IN NATURE. FIBER VAULT, POWER METER PEDESTAL
AND GROUND-MOUNTED RADIO EQUIPMENT PEDESTAL CAN BE
RECONFIGURED TO SUIT PROJECT LOCATION

KEYNOTE LEGEND		
KEYNOTE	DESCRIPTION	DETAIL NUMBER
A01	PROPOSED CROWN CASTLE OMNI ANTENNA	16D1.1
A02	PROPOSED CROWN CASTLE 2" U.G. CONDUIT (APPROXIMATE LOCATION P.V.)	2D1.1
A03	PROPOSED CROWN CASTLE REMOTE RADIO UNITS (RSC) EQUIPMENT CABINET	18D1.1
A04	PROPOSED NEW METAL SUBLINE POLE	10D1.1
A05	PROPOSED CROWN CASTLE UNDERGROUND COBE, FIBER VAULT	16D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SENSOR	10D1.1
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	18D1.1
A08	PROPOSED CROWN CASTLE POLE FOUNDATION	12D1.1
A09	PROPOSED ELECTRICAL HAND HOLE	18D1.1
E01	PROPOSED POWER METER MOUNTED TO EQUIPMENT CABINET (DISTRICTED PANEL AND DISCONNECT)	18D1.1

MODEL	ARPHENCL-3CUTM912Fwd
LENGTH	4E
WIDTH	14 E DIA
DEPTH	NA
WEIGHT	31 LBS
PROPOSED PANEL ANTENNA SPECS	
PROPOSED POLE WIDTH = 8"Ø	
PROPOSED POLE HEIGHT = 27' - 6"	
14' 4" ANTENNA AND 1'-0" ANTENNA MOUNT	
POLE INFO	

APPROVED: 
Development Coordinator
DATE: 11/11/16



CROWN CASTLE
600 E. JOHN CARPENTER Pkwy.
SUITE 300
IRVING, TX 75062

RECORD DRAWINGS (SEE DATE) 10/14/16



Shift Companies, LLC
13111 NORTH VISTA ROAD
SCOTTSDALE, ARIZONA 85257
PH: 480.348.2020
FW: 480.348.0551

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RELEASE	
DATE	SUBMITTAL
6/28/16	1ST CITY SUBMITTAL
10/19/16	2ND CITY SUBMITTAL

REVISIONS		
NO.	DATE	COMMENT
	10/19/16	CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

NODE ADDRESS

NODE #:CCR-42
WESTHEIMER PKWY AND GLENTHORPE LN

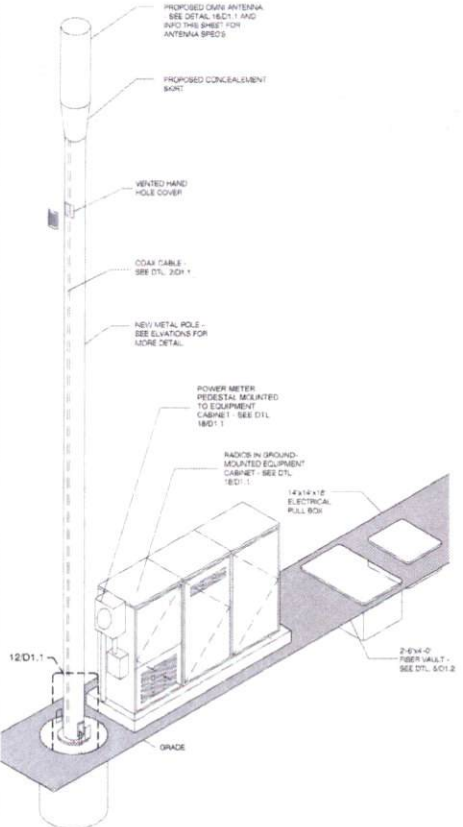
HUB AREA
CINCO RANCH - HGCW

SHIFT JOB NUMBER: 150602
IN HOUSE: DRAWN BY: RA
CHECKED BY: CM

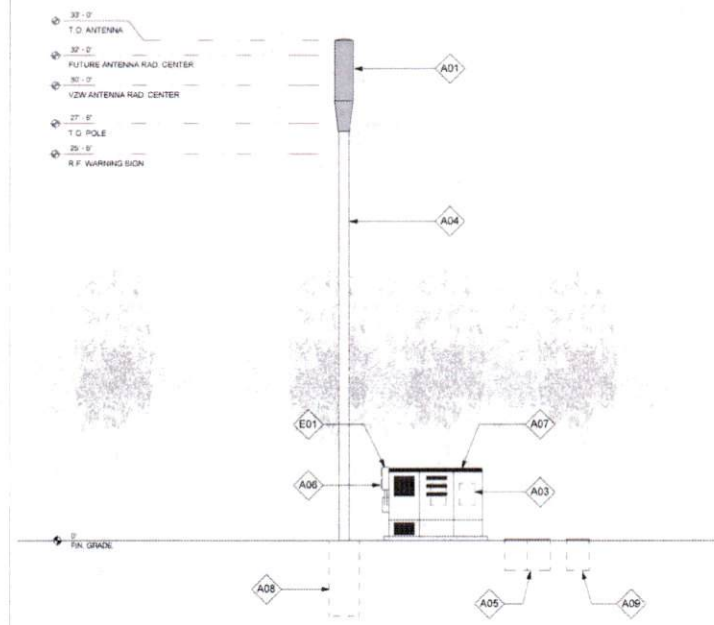
SHEET TITLE
POLE ELEVATION, PROPOSED

SHEET NUMBER: A1.2
PAGE: 6 OF 14

PLOT SCALE: 1/4" = 1'-0" (1/4" = 1'-0")



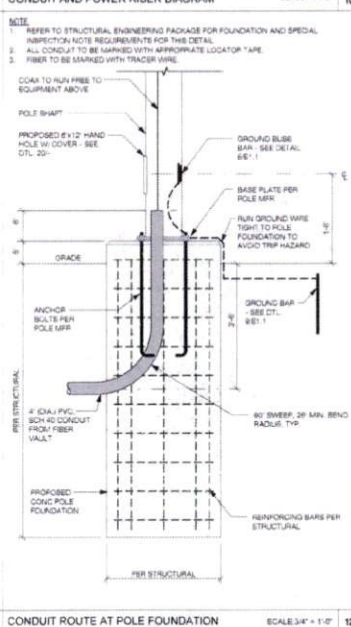
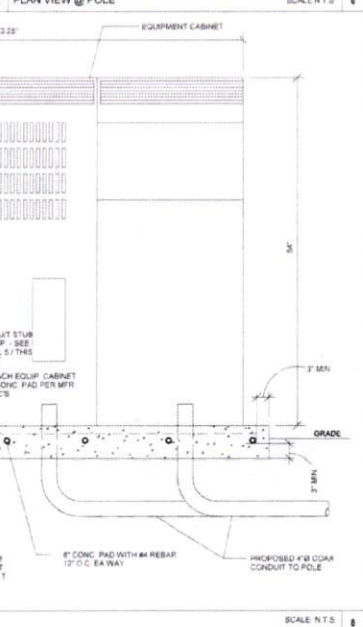
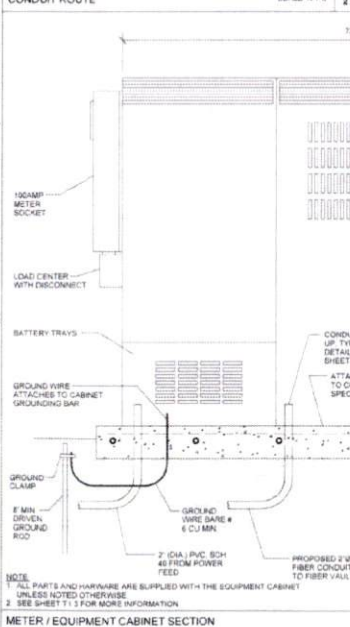
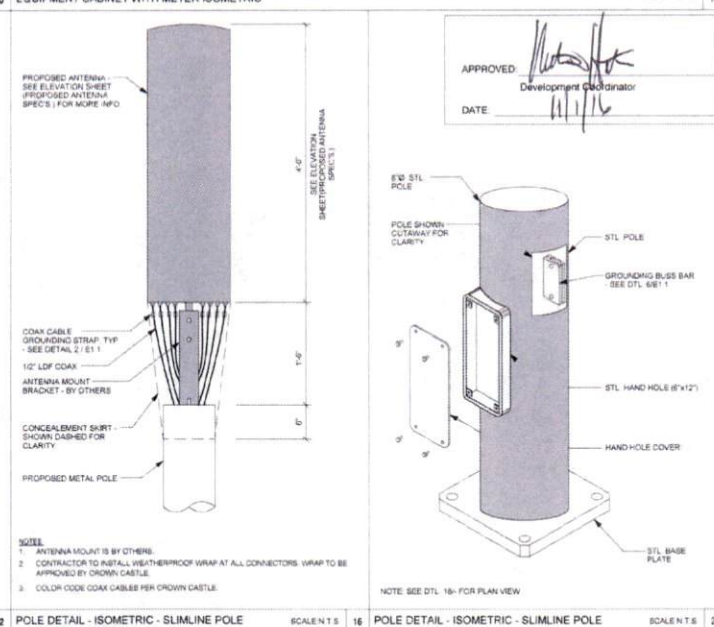
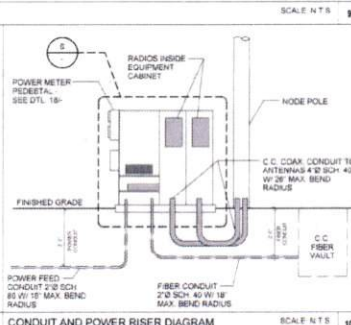
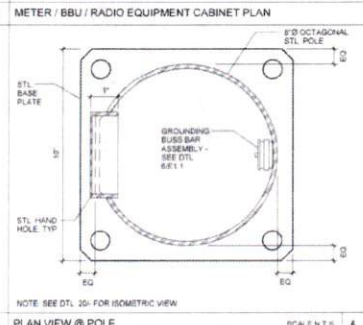
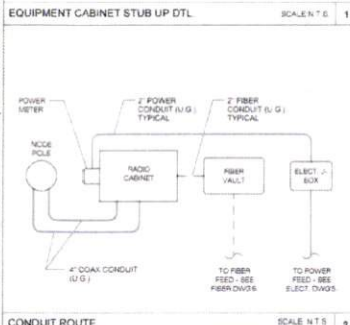
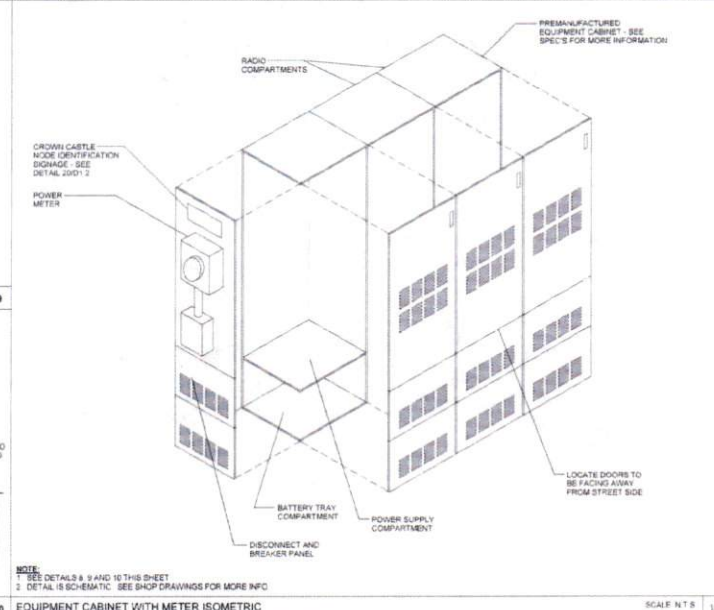
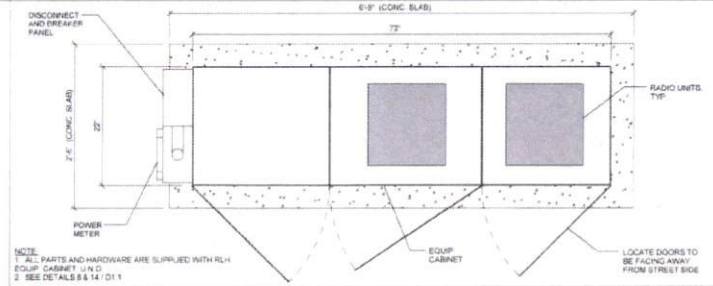
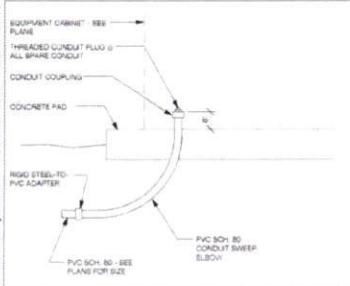
METAL POLE ISOMETRIC SCALE: SCALE N.T.S. 4



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

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10/17/2016 3:28:55 PM



CROWN CASTLE
800 E. JOHN CARPENTER Pkwy
SUITE 200
IRVING, TX 75062

RECORD DRAWING ISSUE DATE: 10/14/16



Shift Companies, LLC
7317 F. ROSS BLVD
SCOTTSDALE, ARIZONA 85257
PH: 480-244-3000
FAX: 480-244-5300

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RELEASE DATE	SUBMITTAL
03/16	1ST CITY SUBMITTAL
10/16	2ND CITY SUBMITTAL

NO.	DATE	COMMENT
10	10/16/16	CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

HUB AREA
CINCO RANCH - HGCW

SHIFT JOB NUMBER: 150602
IN HOUSE: DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

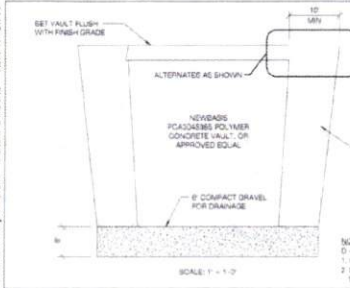
SHEET NUMBER: D1.1
PAGE: 7 OF 14

PLOT SCALE: 1/16" @ 24"X36" / 1/32" @ 11"X17"

PLAN CHECK #

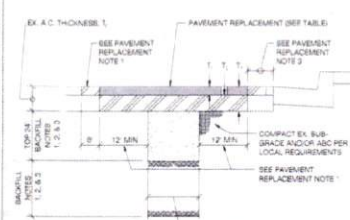
CASE #

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VAULT INSTALLATION SCALE: 1" = 1'-0"

EXISTING PAVEMENT THICKNESS T ₁	ASPHALT CONCRETE (A/C) PAVEMENT REPLACEMENT	TOTAL THICKNESS T ₂
T ₁ ≥ 3	A/C SINGLE COURSE OR SURFACE COURSE T	2 MINIMUM
T ₁ ≥ 2	A/C BASE COURSE T	2 MINIMUM
T ₁ ≥ 1	2 MINIMUM	2 MINIMUM
T ₁ = 0	2 MINIMUM	2 MINIMUM



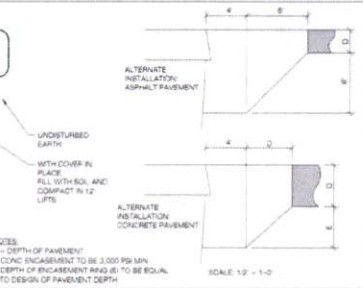
POWER TRENCH SCALE: 3/4" = 1'-0"

- BACKFILL NOTES**
- TRENCHES LESS THAN 24" IN WIDTH - 12" BACK COLM. FULL DEPTH OF BACKFILL BOTTOM OF ADJUGATE BASE COURSE (SECOND 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.
 - TRENCHES 24" TO 6" IN WIDTH - 12" BACK COLM AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24" OF THE TRENCH. FOR BALANCE OF BACKFILL.
 - TRENCHES OVER 6" IN WIDTH - FULL DEPTH OF BACKFILL.
 - TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGHTWEIGHT DUST FALLING. 1:1 DUSTING RATIO. 1:1 RATIO BY APPLICATION RATE. COLM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
 - RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

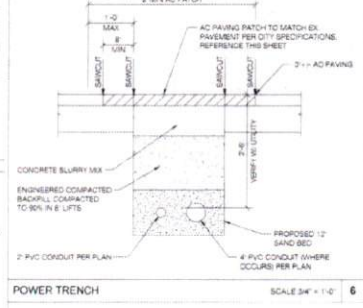
PAVEMENT REPLACEMENT NOTE

- 1"-TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A/C) SURFACE COURSE REPLACEMENT TO BE MAILED DOUBLE T CONFORMANCE 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 CONSTRUCTION. SAWCUT & REMOVE 12" OF A/C MINIMUM ON EACH SIDE OF THE TRENCH FOR THE 1" TOP AFTER THE BACKFILL MATERIAL IS PLACED. PAVEMENTS 4" AND THICKER SHALL ALSO SAWCUT REMOVE AND REPLACE THE ENTIRE PAVEMENT STRUCTURE TO A MINIMUM TOTAL WIDTH OF 10 FEET AS DIRECTED BY THE ENGINEER.
 - B. FOR NEW PAVEMENT STRUCTURES REQUIRING TWO OR MORE PAVEMENT BASE LITE INITIAL A/C REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH CONSTRUCTION. SAWCUT REMOVE AND REPLACE A/C ON BOTH SIDES OF THE TRENCH AS NECESSARY TO ACCOMMODATE A 4" ON TYPE VIBRATORY ROLLER COMPACTOR FOR PLACEMENT OF THE A/C BASE COURSE LITE. MATCH EXISTING A/C DEPTH. SAWCUT 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 REMAINS 6" LESS THAN 36" REMOVE AND REPLACE PAVEMENT AS PER THIS DETAIL.
4. ADJUGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING ARC THICKNESS IN ADJACENT ROADWAY.
5. REFER TO LOCAL JURISDICTION SPECIFICATIONS FOR PAVEMENT SMOOTHNESS REQUIREMENTS.

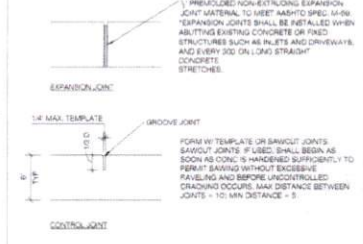
TRENCH AND PATCHING REQUIREMENTS SCALE: 1" = 1'-0"



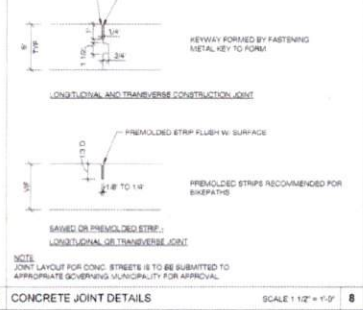
CONCRETE JOINT DETAILS SCALE: 1 1/2" = 1'-0"



SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES SCALE: 1/2" = 1'-0"



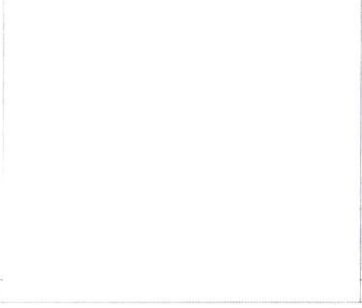
MINIMUM UTILITY SEPARATION REQUIREMENTS SCALE: 1/2" = 1'-0"



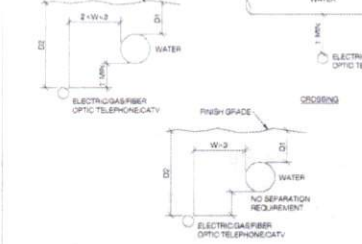
CONCRETE JOINT DETAILS SCALE: 1 1/2" = 1'-0"



SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES SCALE: 1/2" = 1'-0"



MINIMUM UTILITY SEPARATION REQUIREMENTS SCALE: 1/2" = 1'-0"



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

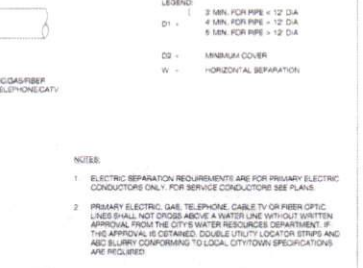
Step #1: Prep

Step #2: Install

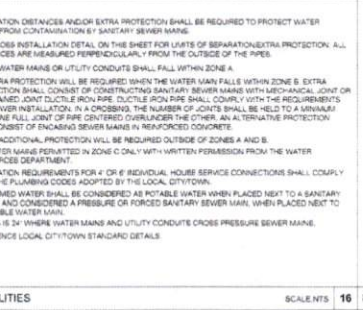
Step #3: Compress

Step #4: Torque

COAX WATERPROOFING - JMA TYPE SCALE: 1" = 1'-0"



COAX WATERPROOFING - JMA TYPE SCALE: 1" = 1'-0"



COAX WATERPROOFING - FUSION TAPE TYPE SCALE: 1" = 1'-0"

APPROVED: *[Signature]*
Development Coordinator
DATE: 11/1/16

RECORD DRAWINGS ISSUE DATE: 10/18/16

SHIFT

Shift Companies, LLC
7331 C. HOSE WETA BLVD
SCITUS, ARIZONA 85737
PH: 480.294.8821
WWW: 480.294.8821

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RELEASE

DATE	SUBMITTAL
03.19.16	1ST CITY SUBMITTAL
10.18.16	2ND CITY SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
1	10.18.16	CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

CROWN CASTLE

114' TEXT HEIGHT
NODE SITE ID:
114' TEXT HEIGHT
IN CASE OF EMERGENCY CONTACT
NOC: 888.632.0931

114' TEXT HEIGHT
FACILITY COMPLEX WITH FCC EMISSION REQUIREMENTS
FACILITY DESIGN APPROVED BY THE LOCAL CITY/TOWN

SCALE: 4" = 1'-0" STICHER

NODE IDENTIFICATION SIGNAGE SCALE: 1" = 1'-0"



CROWN CASTLE
600 E. JOHN CARPENTER PWAY
SUITE 300
IRVING, TX 75062

RECORD DRAWINGS ISSUE DATE: 10/18/16



Shift Companies, LLC
7331 C. HOSE WETA BLVD
SCITUS, ARIZONA 85737
PH: 480.294.8821
WWW: 480.294.8821

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RELEASE

DATE	SUBMITTAL
03.19.16	1ST CITY SUBMITTAL
10.18.16	2ND CITY SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
1	10.18.16	CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

CINCO RANCH - HGCW

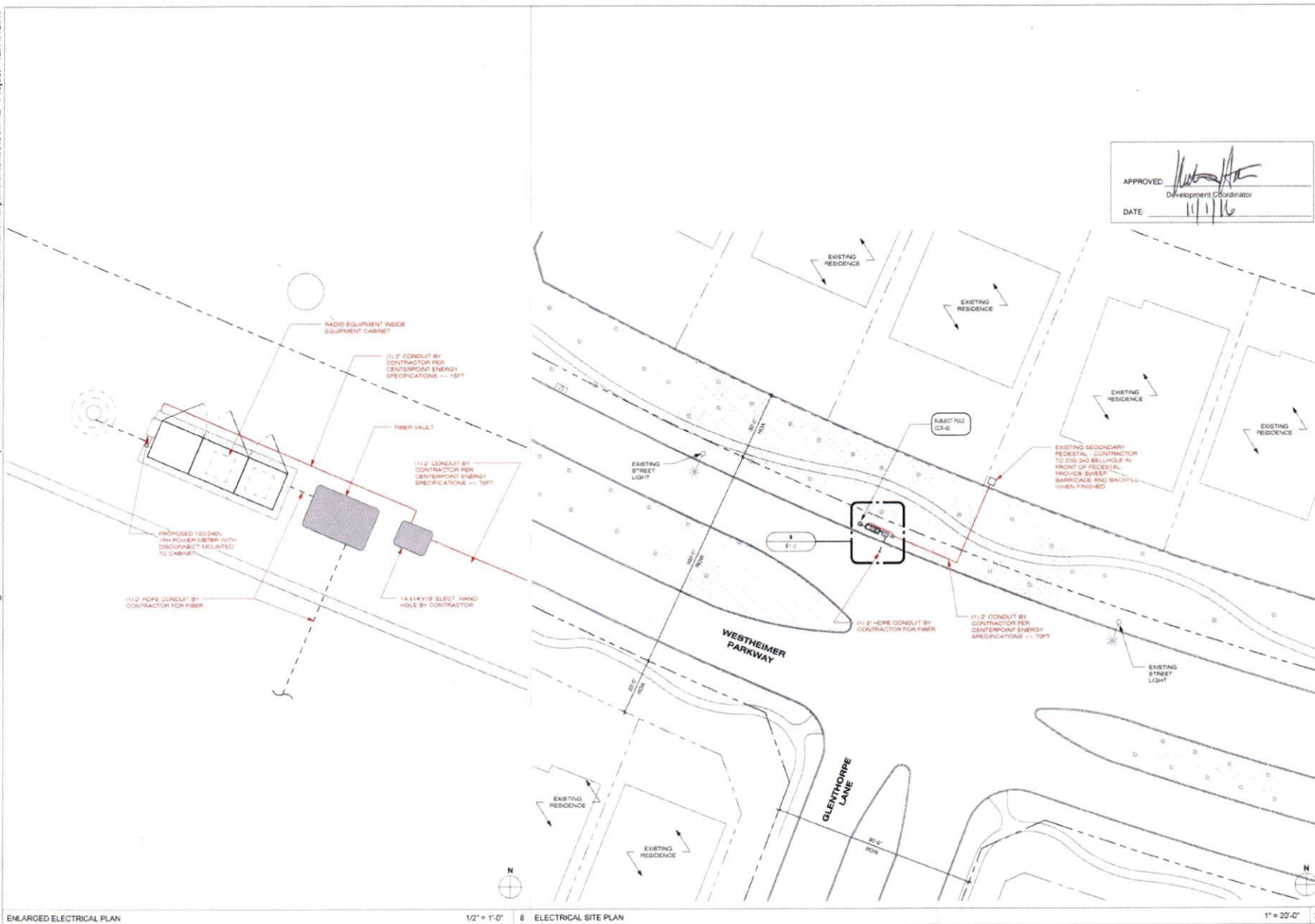
SHEET JOB NUMBER: 150602
IN HOUSE: DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER 8 OF 14
PAGE

PLOT SCALE: 111 3/4" X 24 3/8" 1:2 @ 11 1/2" X 17"

CASE # PLAN CHECK #



APPROVED: *[Signature]*
Development Coordinator
DATE: 11/1/16



CROWN CASTLE
800 E. JOHN CARPENTER Pkwy
SUITE 200
IRVING, TX 75062

RECORD DRAWINGS ISSUE DATE: 10/18/16



Shift Companies, LLC
7313 E. MOORE AVE SUITE 100
SCOTTSDALE, ARIZONA 85251
PH: 480.388.8200
FAX: 480.234.0143

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RELEASE	DATE	SUBMITTAL
	6/23/16	1ST CITY SUBMITTAL
	10/18/16	2ND CITY SUBMITTAL

REVISIONS	NO.	DATE	COMMENT
		10/18/16	CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

NODE ADDRESS
**NODE #CCR-42
WESTHEIMER PKWY
AND GLENTHORPE LN**

HUB AREA
CINCO RANCH - HGCV

SHIFT JOB NUMBER **150602** IN HOUSE
DRAWN BY: RA
CHECKED BY: CR

SHEET TITLE
ELECTRICAL PLANS

SHEET NUMBER **E1.0** PAGE **9 OF 14**

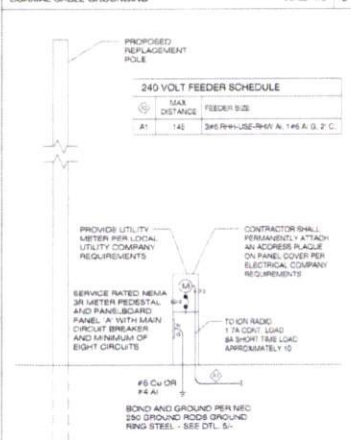
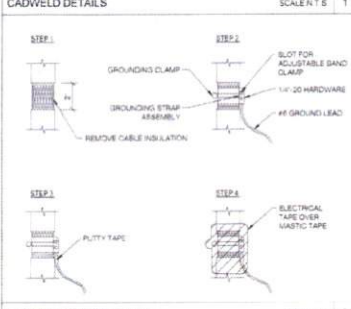
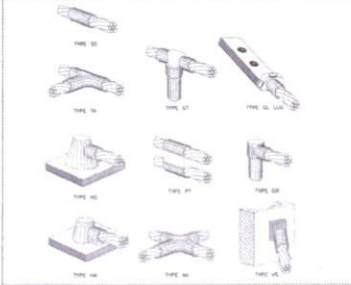
PLOT SCALE: 1/1 @ 24x36", 1/2 @ 11x17"

ENLARGED ELECTRICAL PLAN

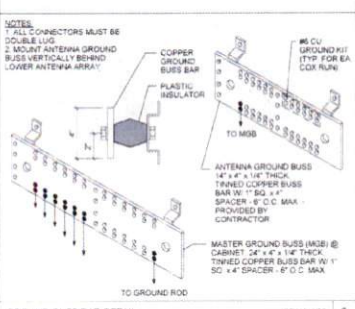
1/2" = 1'-0" 8 ELECTRICAL SITE PLAN

1" = 20'-0" 20

PLAN CHECK #



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 LOCAL UTILITY COMPANY SECONDARY LINES WITH A 1/2" OVER LOOP.
 5. ALL TRENCHES SHALL BE MIN. 24" IN DEPTH.
 6. ALL WIRE TO BE THIN OR THIN INSULATION OR EQUIVALENT EXCEPT WHERE NOTED OTHERWISE.
 7. FUTURE BREAKERS IN PANEL SHALL BE SERVICED WITH THEIR RESPECTIVE UPSTREAM NEARBY MAIN PROTECTIVE DEVICE. A TWO TIER (2P/2VA) SYSTEM IS SPECIFIED.
 8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CONVERT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.



NOTES:
 1. VERIFY LIGHT GROUNDING REQUIREMENTS FOR LIGHT ARMS WHEN APPLICABLE.
 2. ALL GROUND BARS ASSOCIATED WITH POLE TO BE MOUNTED AT INTERIOR (SCHEMATIC FROM VIEW).
 3. MOUNT ANTENNA GROUND BARS VERTICALLY BEHIND LOWER ANTENNA ARRAY.
 4. ALL CONNECTORS SHALL BE DOUBLE LUG.
 5. GROUND BAR #13 TO INCLUDE 1/4" THICK TIA COPPER BUS BAR, SE BRACKET, INSULATOR OR EQUIVALENT, 3/8" BOLT AND LOCKWASHER.
 6. CADWELD GROUNDING WIRE TO ROD TYPE ST OR GAL. GROUND CONDUCTORS #1 SOLID BARE TINED COPPER PER PLAN.
 7. 5/8" DIA. LONG MIN. 8'-0" OD CLAD GROUND ROD CADWELDED CONNECTION DIA. IS LONG ACCEPTABLE. IF SE SEPARATION, ST CAN BE USED IN USE OF ROD IF REQD DUE TO SOIL TYPE. INSTALL PER MFR SPEC.

PANEL A FED FROM TRANSFORMER 120/240V 2P 3W
 BUS RINGS 60 NUTS STANDARD
 VOLTAGE 240/120V 2P 3W
 BUS RINGS 60 NUTS STANDARD

NO.	CB	CIRCUIT DESCRIPTION	KVA LOAD	A	B	NO.	CB	CIRCUIT DESCRIPTION	KVA LOAD	A	B	
1	-	SPACE	0.00	2	201	1	-	RADIO EQUIPMENT	1.08			
3	-	SPACE	0.00	4	201	2	-	RADIO EQUIPMENT	0.00	1.58		
6	-	SPACE	0.00	6	201	3	-	SPACE	0.00	0.00		
7	-	SPACE	0.00	8	-	4	-	SPACE	0.00	0.00		
			TOTAL CONNECTED KVA BY PHASE		1.08	1.58			TOTAL CONNECTED KVA BY PHASE		11.8	11.8
			LUG-RING		0	0			CONTINUOUS		0	0
			LARGEST MOTOR		0	0			HEATING		0	0
			OTHER MOTORS		0	0			NONCONTINUOUS		2.1	2.1
			NECARTICLES		0	0			TOTAL KVA		2.82	2.82

PER NEC 2.1.5(B) PROVIDE COMMON TRIP HANDLES FOR ALL MULTY-CIRCUIT CONDUIT RUNS.

POWER FEEDER SCHEDULE

LENGTH	SIZE (AWG/CML)	GROUND SIZE	CONDUIT SIZE
330	2	6	2"
380	2	4	2"
470	1.0	2	2"
550	2.0	2	2"
680	3.0	2	2"
800	4.0	1	2"
900	2.0	1.0	2-1/4"
1350	3.0	2.0	2-1/2"

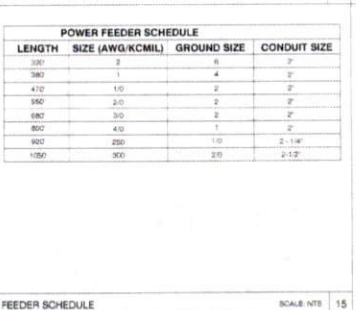
FEEDER SCHEDULE SCALE: NTS 15

FAULT CURRENT CALCULATION SCALE: NTS 20

Fault Point	Panel Transformer	Source (Fault Point)	Source (amps)	Conduit Type	Wire/Bus Size	C' value	E (volts)	L (length)	f	M	Isc	ARC Rating
1	UTILITY XFMRY'S PEDESTAL	1	22000	NM	1 Set(s) of 2	3730	240	20	0.851	0.54	11864	22,000
2	Panel A @ 20'	1	22000	NM	1 Set(s) of 2	3730	240	100	4.256	0.19	4185	10,000
3	Panel A @ 100'	1	22000	NM	1 Set(s) of 2	3730	240	150	6.385	0.14	2979	10,000
4	Panel A @ 200'	1	22000	NM	1 Set(s) of 2	3730	240	200	8.513	0.11	2313	10,000

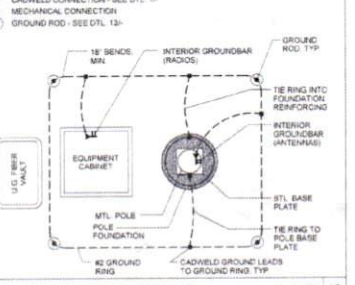


NOTES:
 1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE LOCAL CODES.
 2. CONTRACTOR SHALL OBTAIN ALL PERMITS, FEES, AND SCHEDULE ALL REQUIRED INSPECTIONS. CONTRACTOR SHALL OBTAIN LOCAL POWER COMPANY APPROVAL, AND COORDINATE SERVICE ENTRANCE REQUIREMENTS.
 3. CONTRACTOR SHALL VERIFY SERVICE LOCATION AND CONTACT PROJECT MANAGER WITH SPECIFICATIONS PROVIDED.
 4. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL, SPECIFIED ON THE DRAWING, AND ALL PERMITS NECESSARY TO COMPLETE AND PRESERVE THE PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL TESTS SHALL BE FULLY APPROVED OR LISTED.
 5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT UNDERGROUND AND IN CONDUIT ABOVE GROUND.
 6. PROVIDE 1/2" SCHEDULE 40 PVC UNDERGROUND CONDUIT WITH FULL WIRE BETWEEN ELECTRICAL JUNCTION BOXES AND ALL JUNCTION BOXES. 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 AND LEAVE CENTER.
 8. CONTRACTOR TO NOTIFY ALL APPROPRIATE AGENCIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER LOCAL REQUIREMENTS.
 9. CONTRACTOR TO LOCATE ALL UTILITIES IN PROJECT AREA PRIOR TO CONSTRUCTION THROUGH BLUE PRINTS.
 10. VERIFY DEPTH OF EXISTING UTILITY CROSSING POINTS VIA APPROVED METHODS AND NOTE ON PLAN SETS FOR AS-BUILT SUBMITTAL.
 11. NOTE DEPTH AND LOCATIONS OF ALL INSTALLED UTILITIES ON AS-BUILT REQUIRE DRAWINGS.
 12. IF EXISTING IRRIGATION LINES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBING OR OCCUPYING.
 13. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM CROWN CASTLE AND PROJECT ENGINEER.
 14. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.



ELECTRICAL NOTES SCALE: NONE 18

APPROVED: [Signature]
 Development Coordinator
 DATE: 11/11/16



NOTES:
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 14. MATERIAL SUBSTITUTIONS ARE SUBJECT TO CROWN CASTLE AND ENGINEERING REVIEW PRIOR TO CONSTRUCTION.



ELECTRICAL NOTES SCALE: NONE 18

APPROVED: [Signature]
 Development Coordinator
 DATE: 11/11/16



CROWN CASTLE
 600 E. JOHN CARPENTER Pkwy.
 SUITE 200
 IRVING, TX 75062

RECORD DRAWINGS (SHEET DATE: 10-18-16)



Shift Companies, LLC
 11111 E. WISSE AVE. SUITE 400
 SCOTTSDALE, ARIZONA 85251
 PH: 480.349.8777
 WWW.SHIFT.COM

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RELEASE

DATE	SUBMITTAL
6/15/16	1ST CITY SUBMITTAL
10/18/16	2ND CITY SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
10/18/16	CITY COMMENTS	

PROJECT NAME
 CINCO RANCH EXPANSION

HUB AREA
 CINCO RANCH - HGCW

SHEET JOB NUMBER 150602
IN HOUSE DRAWN BY: RA
 CHECKED BY: DM

SHEET TITLE
 ELECTRICAL DETAILS

SHEET NUMBER E1.1
PAGE 10 OF 14

PLOT SCALE: 1:1 (1/24X36) 1:2 (1/11X17)

SHIFT

November 28, 2016

Carmen Escobar, CFM
Permit Administrator
Fort Bend County Engineering
301 Jackson St, Richmond, TX 77469

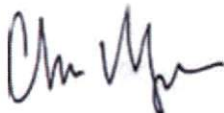
**RE: Cinco Ranch Traffic Control Plan
- Shift Project #160614**

Carmen,

Per our conversation on the phone, the work we are doing in the ROW will not require any road closures. There is no TCP required, the contractor will take adequate measure to ensure they are not impeding the public way.

Please let me know if you need anything else.

Thank you,



Chris Myers
Principal
SHIFT Companies