



**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: 2016-10724

Applicant: Crown Castle NG General LLC/Shift Companies

Job Location Site: 23631 1/2 Westheimer Parkway, Katy, TX 77494

Bond No. **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

By: Charles O. Ay
County Engineer

By: N/A
Drainage District Engineer/Manager

Presented to Commissioners Court and approved.

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

Clerk of Commissioners Court

By: Ronda Welles
Deputy



PROJECT NAME: CINCO RANCH EXPANSION
PROJECT ADDRESS: WESTHEIMER PKWY. AND SOUTHFORD MANOR LN
PROJECT TYPE: METAL SLIMLINE POLE
HUB AREA: CINCO RANCH - HGCW
NODE #(s): **CCR-40**
COORDINATES: LAT: 29.733755, LONG: -95.776304

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

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



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

RECORD DRAWINGS ISSUE DATE: 10/14/16

RECORD DRAWING DRAFTING ONLY



Shift Companies, LLC
 7331 F. HWY 2616 ROAD
 HOUSTON, TEXAS 77061
 PH: 481.244.0500
 FAX: 481.244.0502

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

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

PROJECT NAME
 CINCO RANCH EXPANSION

NODE ADDRESS

NODE #:CCR-40
 WESTHEIMER PKWY.
 AND SOUTHFORD
 MANOR LN

HUB AREA

CINCO RANCH - HGCW

SHIFT JOB NUMBER IN HOUSE

150602 DRAWN BY: RA

CHECKED BY: CM

SHEET TITLE

TITLE SHEET

SHEET NUMBER PAGE

T1.1 1 OF 14

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

PROJECT TEAM	
ARCHITECT	OWNER INFO
Company: SHIFT CONSULTING	Company: CROWN CASTLE
Address: 7333 E. MONTE VISTA RD SCOTTSDALE, AZ 85257	Address: 1220 AUGUSTA DR HOUSTON, TX 77057
Phone Number: 480.264.0829	Phone #: 817.449.3113
Fax Number: 480.264.0163	Email: BARRY.CAMPALU@CROWNCASTLE.COM
Contact: CHRIS MYERS	Contact: BARRY CAMPALU
STRUCTURAL	RF ENGINEER
Company: T.B.D.	Company: CROWN CASTLE
Address:	Address: 1220 AUGUSTA DR HOUSTON, TX 77057
Phone Number:	Phone Number:
Fax Number:	Fax Number:
Contact:	Contact:
FIBER ENGINEERING	
Company: TDC2	
Address: 710 EAST PARK BLVD, SUITE 110 PLANO, TX 75074	
Phone: 972.423.9080	
Email: c@tupgsc.com	
Contact: SCOTT CRUM	

PROJECT SUMMARY	
PROJECT NAME: CINCO RANCH EXPANSION	APPLICANT: CROWN CASTLE 1220 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 (NEISC)
JURISDICTION: FORT BEND COUNTY ENGINEERING DEPT. 1124 SLIMLINE RD ROSENBERG, TX 77471 PH: 281.833.7500 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: 281.520.0275 CONTACT: KEN CORTEZ

NOTE: NOT ALL SITES ARE INCLUDED IN THIS SET. SEE NODE #S 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.

Cinco Ranch Expansion
700 RRH Specifications

Mechanical	
Frequency Band	B13 (700C)
Technology	LTE FDD
RF Output Power	2400W/4200W (5W configurable)
Operational Range	DL: 748-758 MHz UL: 2727-2787 MHz
Instantaneous BW	10 MHz (1 Carrier)
RF Configuration	2TxR, 2TxL, 4TxR
Interfaces	2 CPRI ports (each Tx) ASG 2.0 RS485 port 2 Integrated Smart Base Tees 3 port external alarm (Tx & Rx monitor ports)
Power	620W typical @ full RF load
Environmental Conditions	-40 C to +55 C
Connectors	DIN 7116



Physical	
Dimensions	21.5 x 12 x 8.9 in
Weight	87 lbs
Mounting options	Flush/Mat
Connector Location	Bottom

Cinco Ranch Expansion
PCS RRH Specifications (Future)

Mechanical	
Frequency Band	B3 & B20 (1900)
Technology	LTE FDD
RF Output Power	2400W/4200W (5W configurable)
Operational Range	DL: 1930-1995 MHz UL: 1650-1615 MHz
Instantaneous BW	60 MHz (4 Carriers)
RF Configuration	2TxR, 2TxL, 4TxR
Interfaces	2 CPRI ports (each Tx) ASG 2.0 RS485 port 2 Integrated Smart Base Tees 3 port external alarm (Tx & Rx monitor ports)
Power	620W typical @ full RF load
Environmental Conditions	-40 C to +55 C
Connectors	DIN 7116



Physical	
Dimensions	21.2 x 12 x 7.8 in
Weight	82 lbs
Mounting options	Flush/Mat
Connector Location	Bottom

Cinco Ranch Expansion
AWS RRH Specifications

Mechanical	
Frequency Band	B4 (1700)
Technology	LTE FDD
RF Output Power	2400W/4200W (5W configurable)
Operational Range	DL: 2110-2180 MHz UL: 1690-1760 MHz
Instantaneous BW	70 MHz
RF Configuration	2TxR, 2TxL, 4TxR
Interfaces	2 CPRI ports (each Tx) ASG 2.0 RS485 port 2 Integrated Smart Base Tees 3 port external alarm (Tx & Rx monitor ports)
Power	620W typical @ full RF load
Environmental Conditions	-40 C to +55 C
Connectors	M80-DIN 4.3-10



Physical	
Dimensions	20 x 12 x 7.8 in
Weight	79 lbs
Mounting options	Flush/Mat
Connector Location	Bottom

RADIO SPECIFICATIONS

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

2C2UT360X12Fxyx0
Tenth Dual-Band / P-BEAM / OMNI / CARTRIDGE ANTENNA / 2x50-PIN / 360° / 360° / 360° / 360° / 3.3-5.8 dB / 6.4-8.8 / FROD 767

- Features**
- Flexible Crown configuration with 8 connectors
 - Mount for Smart Call™ (5W) applications
 - Available with 3.3/3.9 or 4.3/3.9 or 7/10-DB connectors
 - Three unique mounting options
 - Can be powered by stand-in or in-mounting structure

Connector Description

The antenna has 8 connectors located on the bottom, each marked with a colored ring:

- Low-Band #1: 4x4-900 MHz Blue Ring
- High-Band #1: 1475-2700 MHz Yellow Ring
- High-Band #2: 1475-2700 MHz Orange Ring

Electrical Characteristics	Low-Band #1 and #2		High-Band #1 and #2	
	2x 4x4-900 MHz	2x 4x4-900 MHz	2x 1475-2700 MHz	2x 1475-2700 MHz
Frequency Bands (MHz)	4x4-900, 4x4-900	4x4-900, 4x4-900	1475-2700, 1475-2700	1475-2700, 1475-2700
Polarization	2x H, 2x V	2x H, 2x V	2x H, 2x V	2x H, 2x V
Horizontal Beamwidth	360°	360°	360°	360°
Vertical Beamwidth	12°	30°	12°	12°
Gain	6.1 dBi	5.8 dBi	6.3 dBi	6.1 dBi
Electrical Efficiency (%)	30.7	30.7	30.7	30.7
Impedance	50 Ω	50 Ω	50 Ω	50 Ω
VSWR	1.15	1.15	1.15	1.15
Return Loss (dB)	19.4	19.4	19.4	19.4
Maximum Power (W)	20	20	20	20
Weight (kg)	1.1	1.1	1.1	1.1
Wind Load (N/m²)	100	100	100	100

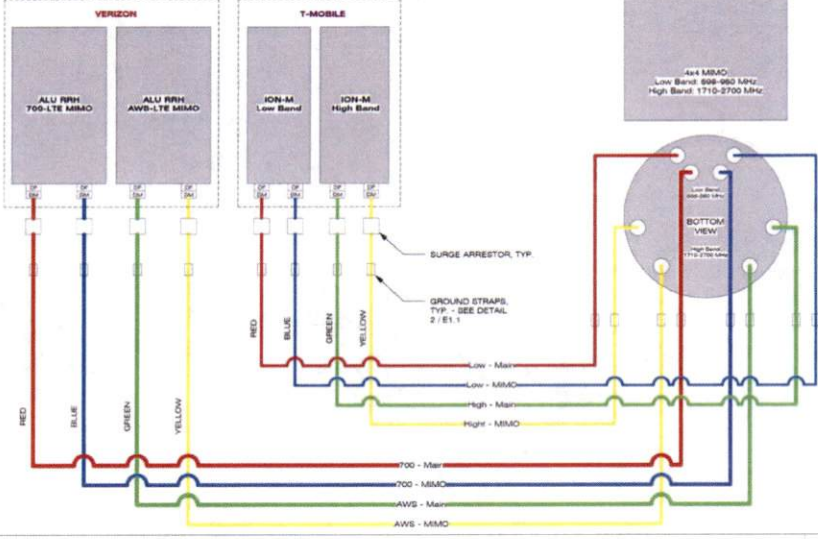
Mechanical Characteristics	
Antenna Dimensions (Height x Diameter)	1219 x 127 mm / 48.0 x 5.0 in
Weight without Mounting Bracket (kg)	11.2 kg / 24.8 lb
Mounting Bracket Weight (kg)	2.00 kg / 4.4 lb
Wind Area (m²)	0.47 m² / 5.0 ft²
Wind Load (N/m²) at 100 mph	381 N / 86 lb



ANTENNA SPECIFICATIONS

SCALE: N.T.S. 12

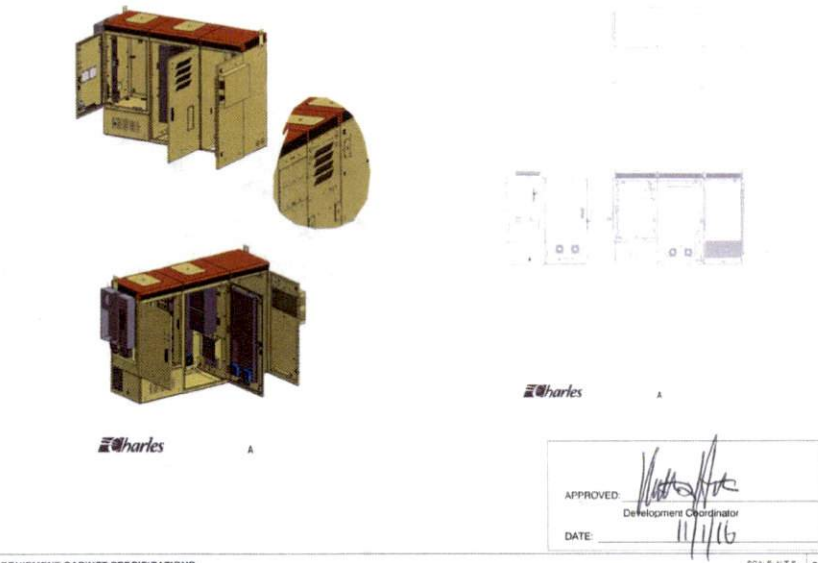
CROWN CASTLE



WIRING DIAGRAM

SCALE: N.T.S. 10

EQUIPMENT CABINET SPECIFICATIONS



EQUIPMENT CABINET SPECIFICATIONS

SCALE: N.T.S. 20

CROWN CASTLE

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

RECORD DRAWINGS ISSUE DATE: 10.18.16

SHIFT

Shift Companies, LLC
13111 WHITE OAK ROAD
SCOTTSDALE, ARIZONA 85257
PH: 480.224.8271
FAX: 480.224.8263

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DATE	SUBMITTAL
6/23/16	1ST CITY SUBMITTAL
10/18/16	IND CITY SUBMITTAL

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

PROJECT NAME
CINCO RANCH EXPANSION

HUB AREA
CINCO RANCH - HGCW

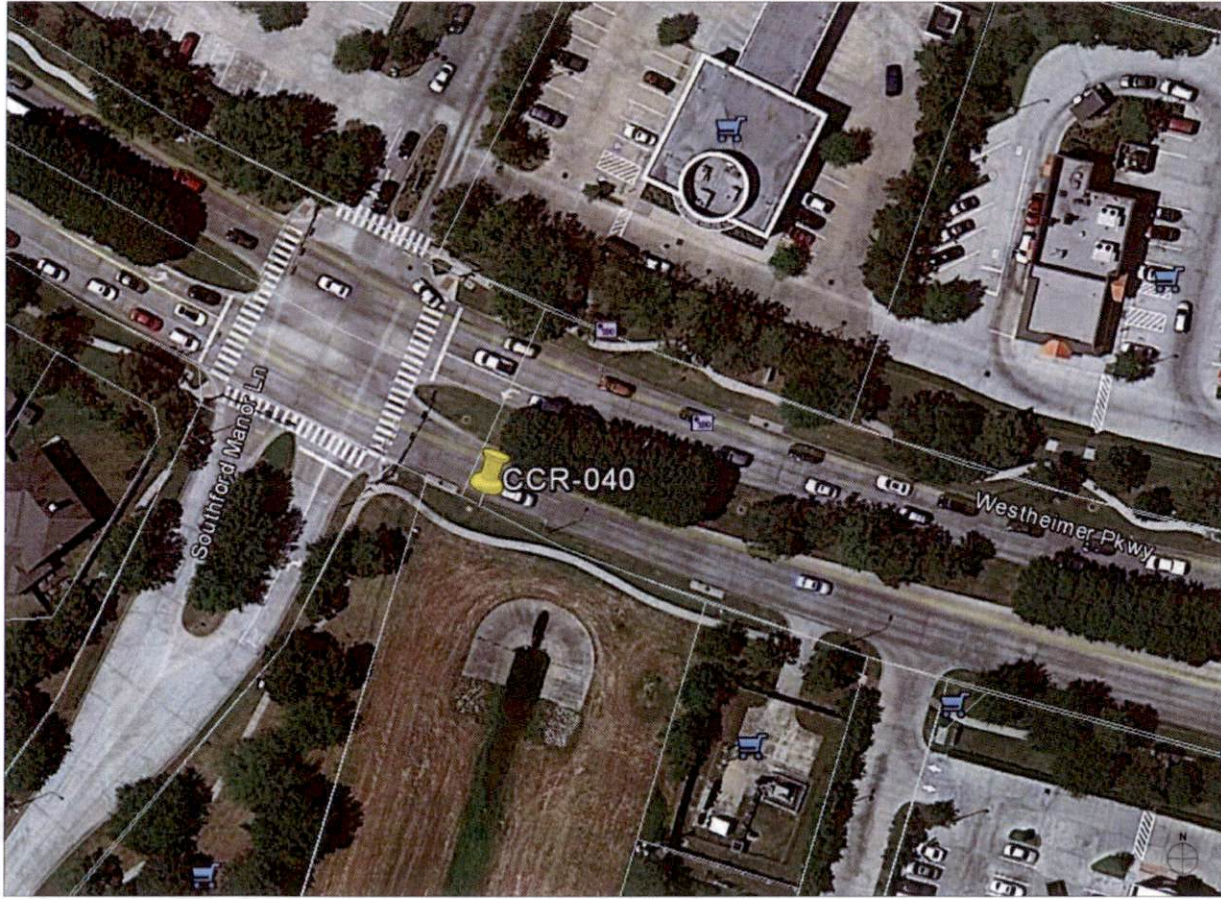
SHIFT JOB NUMBER: 150602
IN HOUSE: DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
EQUIPMENT SPECIFICATIONS

SHEET NUMBER: T1.3 OF 14

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

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



NODE AERIAL PLAN

SUBJECT POLE: CCR-40

GPS COORDINATES:

LAT: 26.733755

LONG: -96.76354

POLE TYPE: METAL SUSPENSION POLE

POLE ID #:

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

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

APPROVED: *[Signature]*
Development Coordinator

DATE: 11/16



SITE PHOTO (EXISTING)

N T S



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

RECORD DRAWINGS ISSUE DATE: 10/16/16



Shift Companies, LLC
7331 HEATE VILLAGE
SOUTHDALE, ALABAMA 36686
PH: 404.264.3529
FAX: 404.264.3532

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10/16/16	1ST CITY SUBMITTAL
10/18/16	IND. CITY SUBMITTAL

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

PROJECT NAME
CINCO RANCH EXPANSION

NODE ADDRESS
NODE #: CCR-40

WESTHEIMER PKWY.
AND SOUTHFORD
MANOR LN

HUG AREA
CINCO RANCH - HGCW

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

SHEET TITLE
AERIAL

SHEET NUMBER A1.0
PAGE 4 OF 14

PLOT SCALE: 1/8" @ 24'x36" 1/2" @ 11'x17"

PLAN CHECK #
CASE #

KEYNOTE	KEYNOTE LEGEND DESCRIPTION	DETAIL
A01	PROPOSED CROWN CASTLE OMNI ANTENNA	18'D1.1
A02	PROPOSED CROWN CASTLE 7' U.S. CONELET (APPROXIMATE LOCATION, F.V.)	2'D1.1
A03	PROPOSED CROWN CASTLE REMOTE RADIO UNIT/ NODE EQUIPMENT CABINET	18'D1.1
A04	PROPOSED NEW METAL 5.5ALUMI POLE	30'D1.1
A05	PROPOSED CROWN CASTLE UNDERGROUND CONDUIT FIBER VAULT	5'D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20'D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	18'D1.1
A08	PROPOSED CROWN CASTLE FIBER FOUNDATION	18'D1.1
A09	PROPOSED ELECTRICAL HAND HOLE	

KEYNOTE	KEYNOTE LEGEND DESCRIPTION	DETAIL
B01	PROPOSED POWER METER MOUNTED TO EQUIPMENT CABINET (DISTRIBUTED PANEL AND DISCONNECT)	18'D1.1
U01	PROPOSED 2" CROWN CASTLE U.S. POWER CONDUIT (APPROXIMATE LOCATION, F.V.)	5'D1.1 & 5'D1.2
U02	PROPOSED CROWN CASTLE 2" U.S. FIBER CONDUIT BY OTHERS (APPROXIMATE LOCATION, F.V.)	5'D1.1 & 5'D1.2



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 HANDCAPES OBTAINED OR DESTROYED AS A RESULT OF CONSTRUCTION SHALL BE REPLACED WITH A LIKE SIZE AND SPECIE.
4. CONTRACTOR TO FIELD 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 F.O.W. DATA.
7. EXIST. UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY (AS PROVIDED BY LOCAL UTILITIES).

SUBJECT POLE: CCR-40

GPS COORDINATES:

LAT: 28.737755
LONG: -96.775204

POLE TYPE: METAL SLIMLINE POLE
 POLE ID #:
 UPPER ANTENNA RAD CENTER: 33' - 0" A.F.G.
 LOWER ANTENNA RAD CENTER: 30' - 0" A.F.G.

SUBJECT POLE # LOCATED IN: FORT BEND COUNTY F.O.W.

APPROVED: [Signature]
 Development Coordinator

DATE: 11/16



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

RECORD DRAWINGS ISSUE DATE: 10.16.16



Shift Companies, LLC
 7313 E. HWY 75/14 ROAD
 SCOTTSDALE, ARIZONA 85257
 P: 480.384.8639
 M: 480.384.2463

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RELEASE	
DATE	SUBMITTAL
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10/18/16	2ND CITY SUBMITTAL

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

PROJECT NAME
CINCO RANCH EXPANSION

NODE ADDRESS
WESTHEIMER PKWY. AND SOUTHFORD MANOR LN

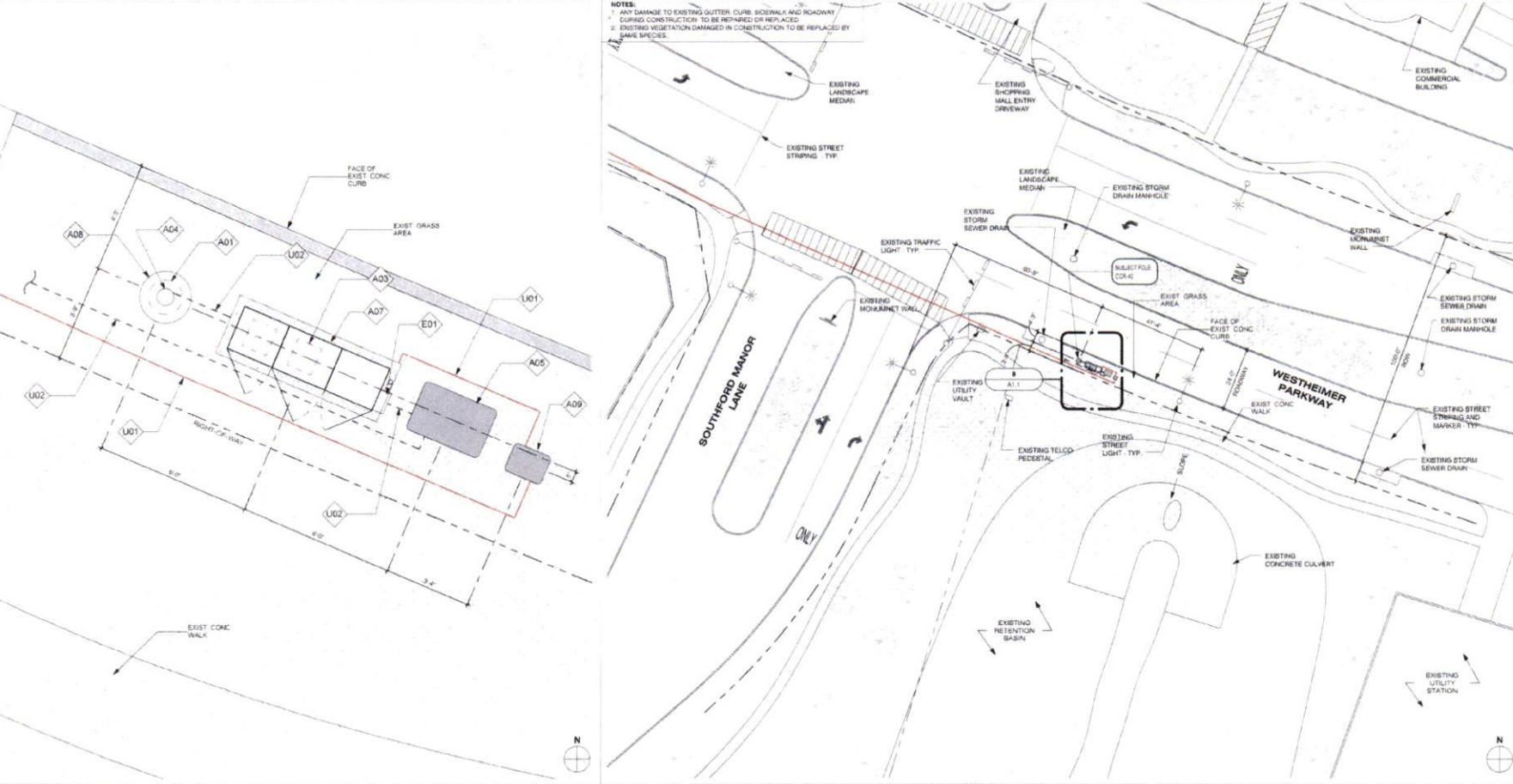
HUB AREA
CINCO RANCH - HGCW

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

SHEET TITLE
SITE PLAN, EQUIPMENT AND ANTENNA PLAN

SHEET NUMBER: A1.1
 PAGE: 5 OF 14

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



EQUIPMENT AND ANTENNA PLAN

1/2" = 1'-0" 8

OVERALL SITE PLAN

1" = 20'-0" 20

PLAN CHECK #

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	18D1.1
A02	PROPOSED CROWN CASTLE 2" U.G. CONDUIT (APPROXIMATE LOCATION P.V.)	20C1.1
A03	PROPOSED CROWN CASTLE REMOTE RADIO UNITS INSIDE EQUIPMENT CABINET	18D1.1
A04	PROPOSED NEW METAL SUMMIT POLE	20D1.1
A05	PROPOSED CROWN CASTLE UNDERGROUND CONDUIT FIBER VAULT	50D1.2
A06	PROPOSED CROWN CASTLE NODE IDENTIFICATION SIGNAGE	20D1.2
A07	PROPOSED CROWN CASTLE EQUIPMENT CABINET	18D1.1
A08	PROPOSED CROWN CASTLE POLE FOUNDATION	12D1.1
A09	PROPOSED ELECTRICAL HAND HOLE	
E01	PROPOSED POWER METER MOUNTED TO EQUIPMENT CABINET (ESTIMATED PANEL AND DISCONNECT)	18D1.1

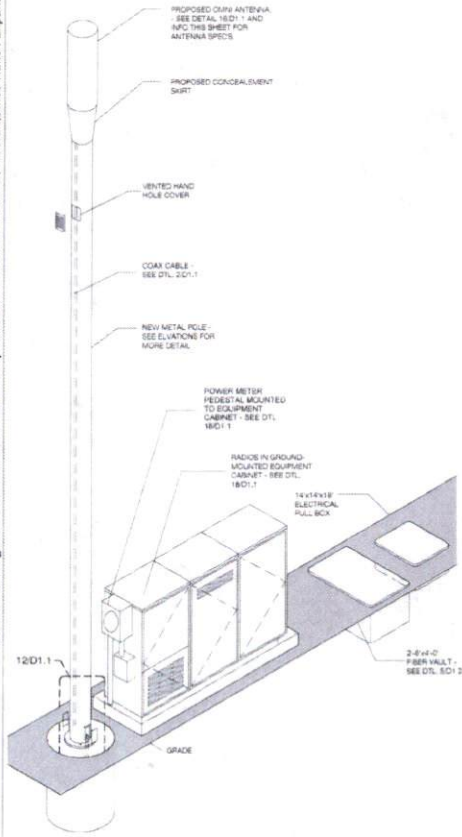
MODEL: AMPHERCAL - SCOUTANT10FW40
LENGTH: 40'
WIDTH: 14.6" DIA
DEPTH: 30A
WEIGHT: 38,118LB

PROPOSED PANEL ANTENNA SPECS

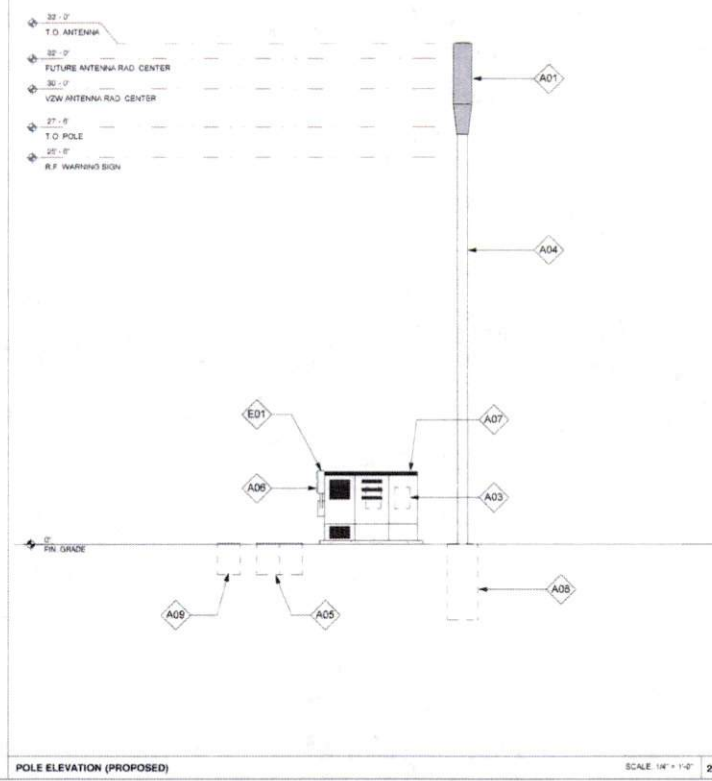
PROPOSED POLE WIDTH: 8"Ø
PROPOSED POLE HEIGHT: 27' - 0"
(1" 4" Ø ANTENNA RAD. T.4" ANTENNA MOUNT)

POLE INFO

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



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



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



CROWN CASTLE
800 E. JOHNS CARPENTER FWAY,
SUITE 800
IRVING, TX 75062

RECORD DRAWINGS ISSUE DATE: 10/15/16



Shift Companies, LLC
1331 E. WORTH WEAVER ROAD
SCOTTSDALE, ARIZONA 85217
PH: 480.294.2671
WWW: 480.294.0433

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10/18/16	2ND CITY SUBMITTAL

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

PROJECT NAME
CINCO RANCH EXPANSION

NODE ADDRESS
CCR-40

**WESTHEIMER PKWY.
AND SOUTHFORD
MANOR LN**

HUB AREA
CINCO RANCH - HGCW

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

SHEET TITLE
**POLE ELEVATION,
PROPOSED**

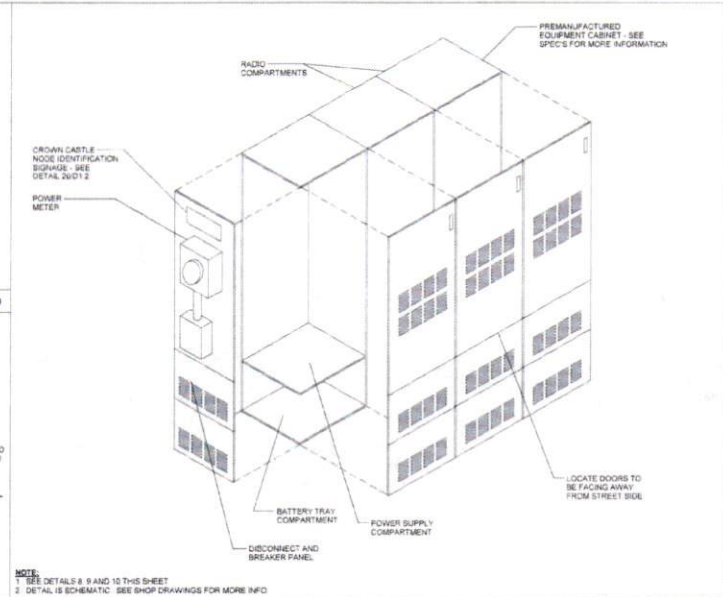
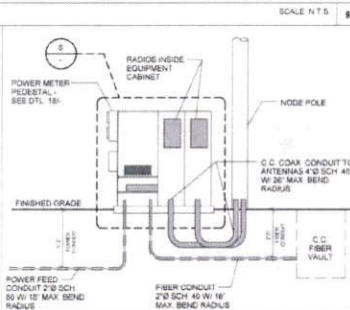
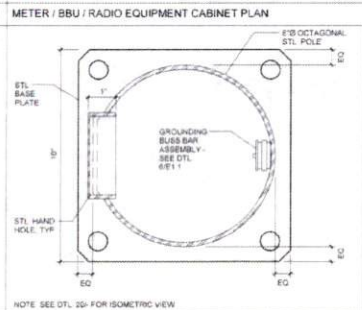
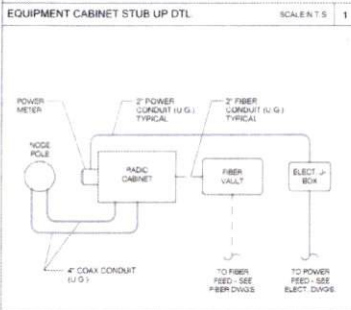
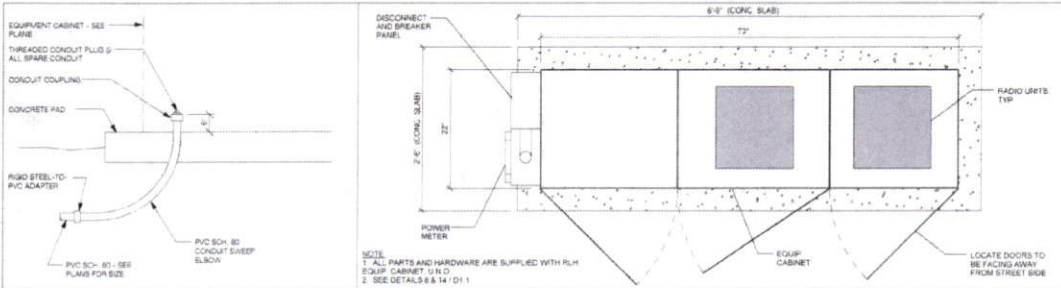
SHEET NUMBER: A1.2
PAGE: 6 OF 14

PLOT SCALE: 1/4" = 1'-0" 1:12 = 1'-0" 1/8" = 1'-0"

PLAN CHECK # CASE #

C:\Users\mbe_000\Documents\AAA - Crown Castle\Houston\Cinco Ranch Expansion\Detail Sheets - 12.14.15.rvt

10/17/2016 3:28:55 PM

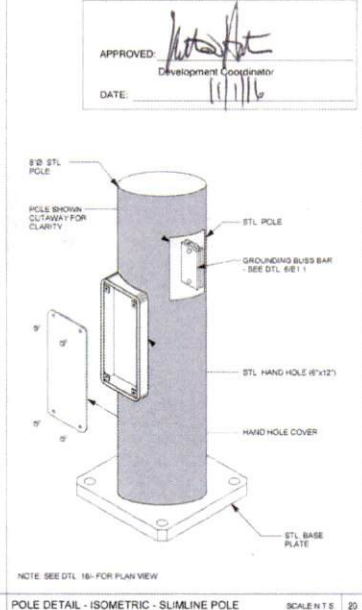
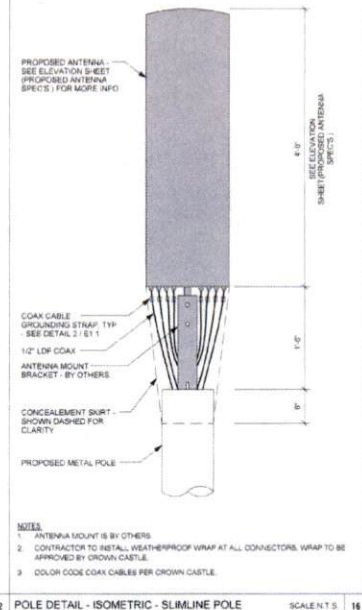
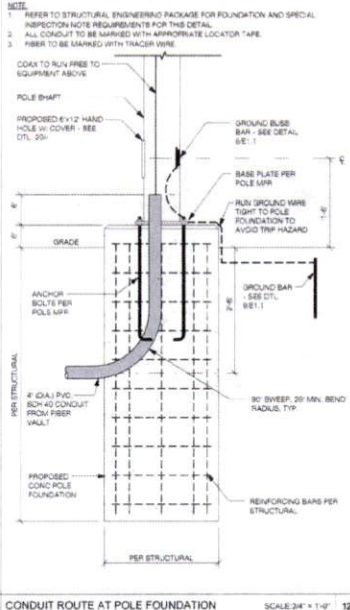
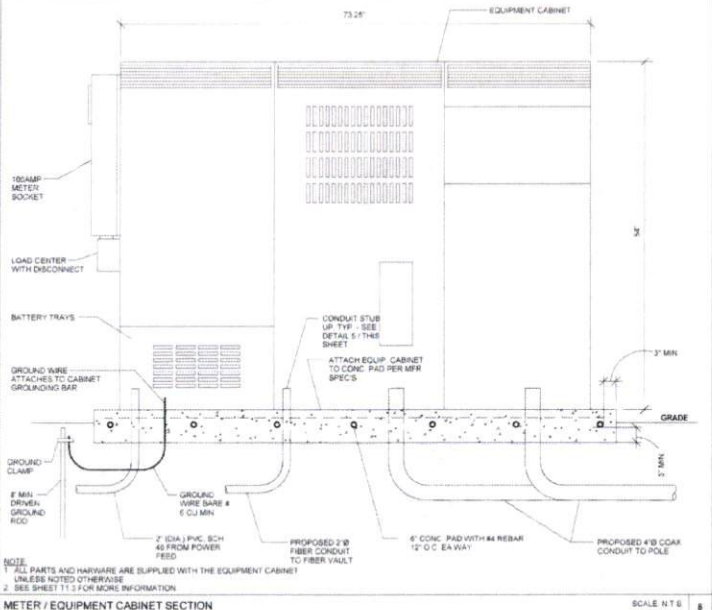


EQUIPMENT CABINET STUB UP DTL SCALE: N.T.S. 1

METER / RADIO EQUIPMENT CABINET PLAN SCALE: N.T.S. 2

CONDUIT AND POWER RISER DIAGRAM SCALE: N.T.S. 3

EQUIPMENT CABINET WITH METER ISOMETRIC SCALE: N.T.S. 4



METER / EQUIPMENT CABINET SECTION SCALE: N.T.S. 5

CONDUIT ROUTE AT POLE FOUNDATION SCALE: 3/4" = 1'-0" 6

POLE DETAIL - ISOMETRIC - SLIMLINE POLE SCALE: N.T.S. 7

POLE DETAIL - ISOMETRIC - SLIMLINE POLE SCALE: N.T.S. 8

POLE DETAIL - ISOMETRIC - SLIMLINE POLE SCALE: N.T.S. 9



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

RECORD DRAWINGS ISSUE DATE: 10/16/16



Shift Companies, LLC
1312 E. HEAVE WITH ROAD
SCOTTSDALE, ARIZONA 85137
PH: 480.294.8827
WWW: 480.294.8833

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RELEASE DATE	SUBMITTAL
5/22/16	1ST CITY SUBMITTAL
10/16/16	2ND CITY SUBMITTAL

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

PROJECT NAME
CINCO RANCH EXPANSION

HUB AREA
CINCO RANCH - HGCW

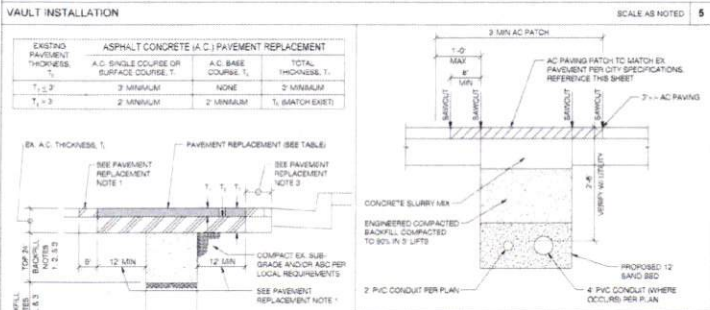
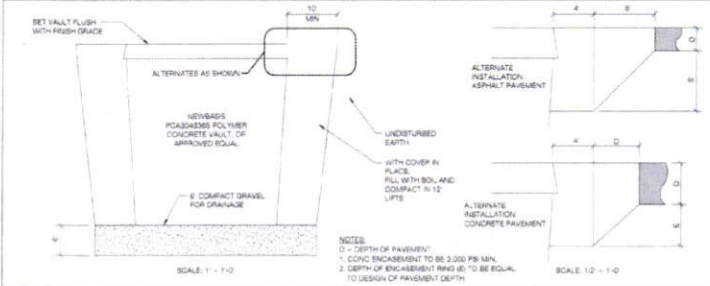
SHIFT JOB NUMBER **150602** IN HOUSE
DRAWN BY: RA
CHECKED BY: CM

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER **D1.1** PAGE **7 OF 14**

PLOT SCALE: 1" @ 24' X 30"; 1/2" @ 11' X 17'

PLAN CHECK # CASE #

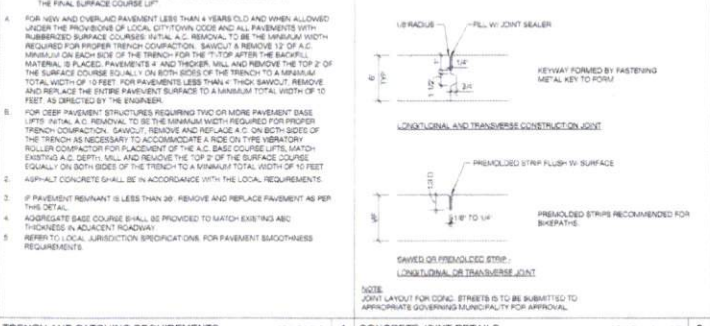
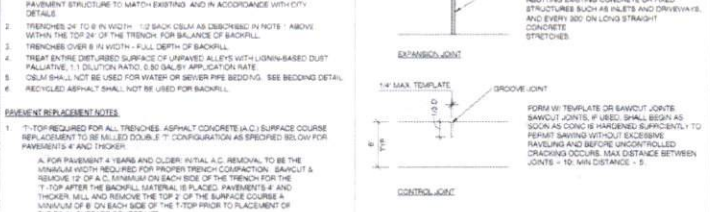


BACKFILL NOTES

- TRENCHES LESS THAN 24" IN WIDTH - 12" BACK (MIN.) FULL DEPTH OF BACKFILL BOTTOM OF AGGREGATE BASE COURSE ABOVE LAYER IN PAVEMENT STRUCTURE OR 8" BELOW PAVEMENT IS FULL DEPTH PAVEMENT STRUCTURE. CONSTRUCT PAVEMENT STRUCTURE TO MATCH EXISTING AND IN ACCORDANCE WITH CITY DETAILS.
- TRENCHES 24" TO 36" IN WIDTH - 12" BACK (MIN.) AS DESCRIBED IN NOTE 1 ABOVE WITHIN THE TOP 24" OF THE TRENCH FOR BALANCE OF BACKFILL.
- TRENCHES OVER 36" IN WIDTH - FULL DEPTH OF BACKFILL.
- TREAT ENTIRE DISTURBED SURFACE OF UNPAVED ALLEYS WITH LIGNIN-BASED DUST PALLETITE, 1) DUSTION RATIO: 8.80 GAL/100 LB APPLICATION RATE.
- CEM SHALL NOT BE USED FOR WATER OR SEWER PIPE BEDDING. SEE BEDDING DETAIL.
- RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL.

PAVEMENT REPLACEMENT NOTES

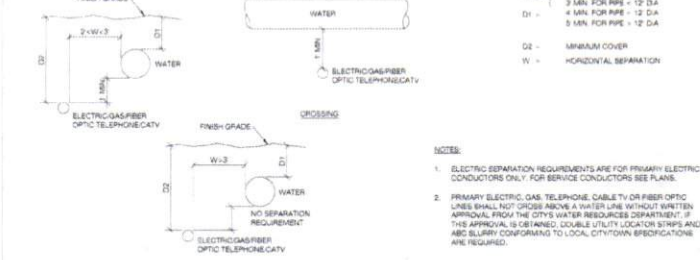
- 1" TOP REQUIRED FOR ALL TRENCHES. ASPHALT CONCRETE (A.C.) SURFACE COURSE REPLACEMENT TO BE MILLED DOUBLE T. CONFIGURATION AS SPECIFIED BELOW FOR PAVEMENTS 4" AND THICKER.
 - A. FOR PAVEMENT 4" YEARS AND OLDER: INITIAL A.C. REMOVAL TO BE THE MINIMUM WIDTH REQUIRED FOR PROPER TRENCH CONSTRUCTION. SAWCUT & 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 SHALL REMOVE THE TOP 2" OF THE SURFACE COURSE. SAWCUT & REMOVE AND REPAIR THE ENTIRE PAVEMENT SURFACE TO A MINIMUM TOTAL WIDTH OF 12 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 CONSTRUCTION. SAWCUT & REMOVE AND REPAIR THE TOP 2" OF THE SURFACE COURSE 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 12 FEET.
- ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE LOCAL REQUIREMENTS.
- IF PAVEMENT REMAINS IS LESS THAN 36" REMOVE AND REPLACE PAVEMENT AS PER THE DETAIL.
- AGGREGATE BASE COURSE SHALL BE PROVIDED TO MATCH EXISTING A.C. THICKNESS IN ADJACENT ROADWAY.
- REFER TO LOCAL JURISDICTION SPECIFICATIONS FOR PAVEMENT SMOOTHNESS REQUIREMENTS.



TRENCH AND PATCHING REQUIREMENTS SCALE: 1/2" = 1'-0" 4



SANITARY SEWER SEPARATION / PROTECTION FROM WATER & UTILITIES SCALE: 1/2" = 1'-0" 8



COAX WATERPROOFING - JMA TYPE SCALE: 1/2" = 1'-0" 18



COAX WATERPROOFING - FUSION TAPE TYPE SCALE: 1/2" = 1'-0" 19

Step #1: Prep

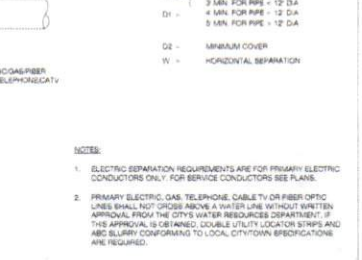
Step #2: Install

Step #3: Compress

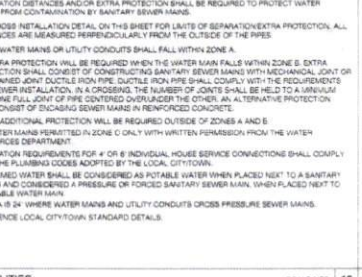
Step #4: Torque

COAX WATERPROOFING - JMA TYPE SCALE: 1/2" = 1'-0" 18

COAX WATERPROOFING - JMA TYPE SCALE: 1/2" = 1'-0" 18



MINIMUM UTILITY SEPARATION REQUIREMENTS SCALE: 1/2" = 1'-0" 15



NODE IDENTIFICATION SIGNAGE SCALE: 1/2" = 1'-0" 20

APPROVED: *Walter A. H.*
 Development Coordinator
 DATE: 11/1/16

SHIFT

Shift Companies, LLC
 1332 E. TEXAS STREET
 SCOTTSDALE, ARIZONA 85257
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 FX: 480.364.6622

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RELEASE

DATE	SUBMITTAL
4.02.16	1ST CITY SUBMITTAL
10.18.16	2ND CITY SUBMITTAL

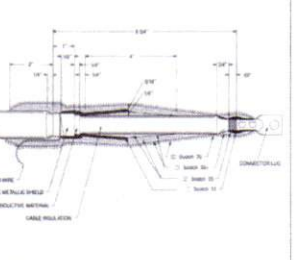
REVISIONS

NO.	DATE	COMMENT
10.18.16	CITY COMMENTS	

PROJECT NAME
 CINCO RANCH EXPANSION

SCALE: 1/2" = 1'-0" 19

COAX WATERPROOFING - FUSION TAPE TYPE SCALE: 1/2" = 1'-0" 19



CROWN CASTLE NODE SITE ID SCALE: 1/2" = 1'-0" 20



CONSTRUCTION DETAILS SCALE: 1/2" = 1'-0" 20



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

RECORD DRAWINGS ISSUE DATE: 10/18/16



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DATE	SUBMITTAL
4.02.16	1ST CITY SUBMITTAL
10.18.16	2ND CITY SUBMITTAL

REVISIONS

NO.	DATE	COMMENT
10.18.16	CITY COMMENTS	

PROJECT NAME
 CINCO RANCH EXPANSION

SCALE: 1/2" = 1'-0" 19

CONSTRUCTION DETAILS

HUB AREA
 CINCO RANCH - HGCW

SHIFT JOB NUMBER 150602 **IN HOUSE**

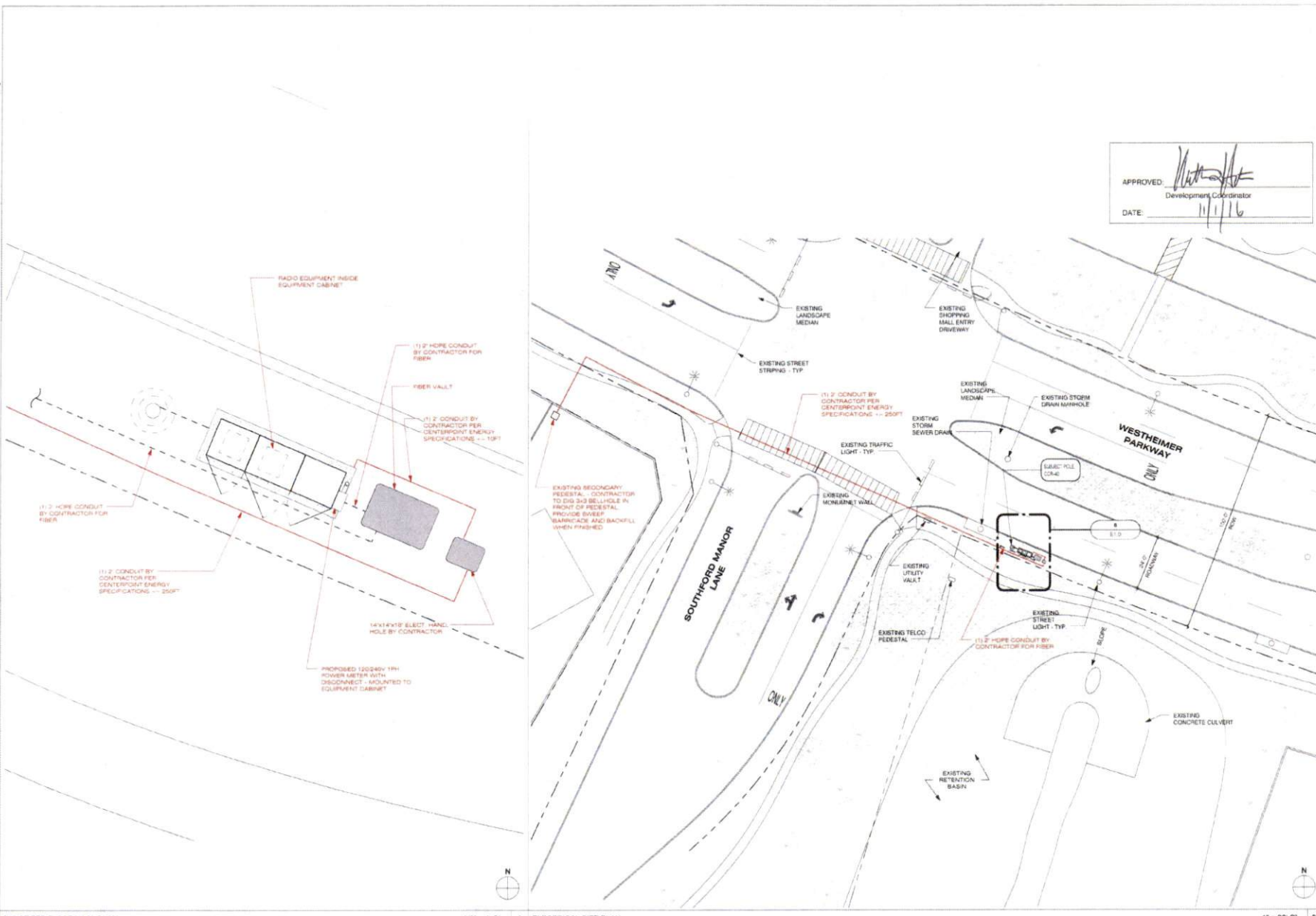
SHEET TITLE CONSTRUCTION DETAILS

SHEET NUMBER D1.2 **PAGE** 8 OF 14

PLOT SCALE: 1" @ 24" x 36", 1/2" @ 11" x 17"

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



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

RECORD DRAWINGS - ISSUE DATE: 10/18/16



Shift Companies, LLC
1331 E. ROSS AVE. SUITE 400
SCOTTSDALE, ARIZONA 85257
PH: 480.384.8827
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RELEASE	
DATE	SUBMITTAL
6/22/15	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-40

**WESTHEIMER PKWY.
AND SOUTHFORD
MANOR LN**

HUB AREA
CINCO RANCH - HGCV

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

SHEET TITLE
ELECTRICAL PLANS

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

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

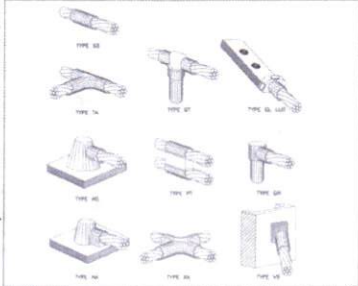
ENLARGED ELECTRICAL PLAN

1/2" = 1'-0" 5 ELECTRICAL SITE PLAN

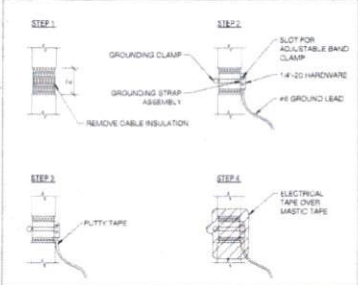
1" = 20'-0" 20

PLAN CHECK #

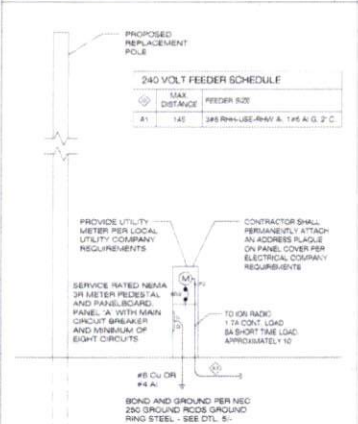
CASE #



CADWELD DETAILS SCALE: NTS 1

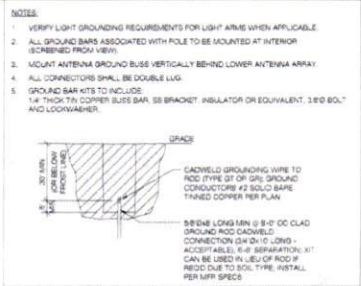


COAXIAL CABLE GROUNDING SCALE: NTS 2 GROUND BUSS BAR DETAIL SCALE: NTS 6

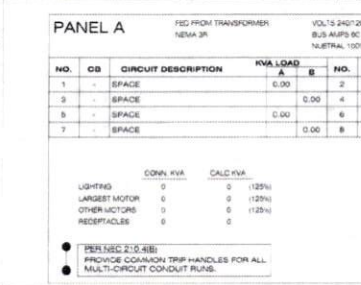


ONE-LINE DIAGRAM SCALE: NTS 4

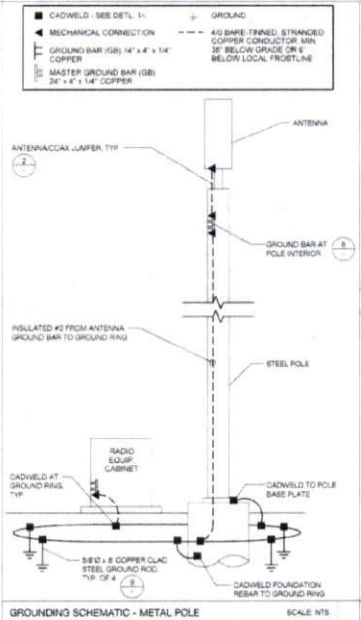
- NOTES:**
1. GO TO FIELD VERIFY SITE CONDITION.
 2. ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
 3. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.
 4. PROVIDE ADEQUATE SERVICE CONDUCTION LENGTH AT THE BASE OF THE PIER POLE FOR LOCAL UTILITY COMPANY TO INSTALL UP THE POLE AND DOWN TO UTILITY COMPANY SECONDARY LINES WITH A 12" DEEP 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 B SHALL BE SERVED WITH THEIR RESPECTIVE UPSTREAM REDUCE MAIN PROTECTIVE DEVICE. A TWO TIER DISTRIBUTION SYSTEM IS SPECIFIED.
 8. WHERE NECESSARY TO TERMINATE OVERSIZED CONDUCTORS, CONTRACTOR TO CORRECT CONDUCTORS TO PANEL LUG APPROVED SIZE USING AN NEC COMPLIANT CONNECTOR.



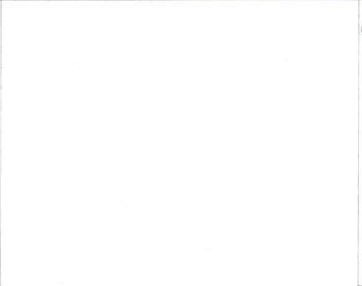
GROUND ROD DETAIL SCALE: NTS 9



ELECTRICAL PANEL SCHEDULES SCALE: NTS 14



GROUNDING SCHEMATIC - METAL POLE SCALE: NTS 8



EQUIPMENT GROUNDING SCHEMATIC DTL SCALE: NTS 17

POWER FEEDER SCHEDULE

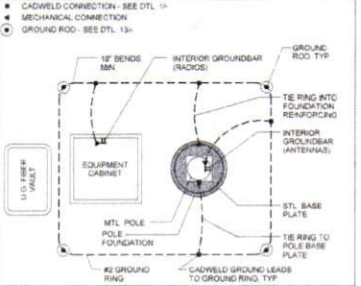
LENGTH	SIZE (AWG/KC/MIL)	GROUND SIZE	CONDUIT SIZE
300	2	2	2"
380	1	2	2"
470	1/0	2	2"
540	3/0	2	2"
580	0/0	2	2"
800	4/0	1	2"
880	360	1/0	2-1/4"
1060	300	2/0	2-1/2"

FEEDER SCHEDULE SCALE: NTS 15

FAULT CURRENT CALCULATION

Fault Point	Panel Transformer	Source (Fault Point)	Source I (amps)	Conduit Type	Wire/Bus Size	C value	E (volts)	L (length)	f	M	Isc	WC Rating
1	UTILITY XPMRFRYS PEDESTAL		22000				240				22000	
2	Panel A @ 20'	1	22000	NM	1 Sets(s) of 2	3730	240	20	0.851	0.54	11684	22,000
3	Panel A @ 150'	1	22000	NM	1 Sets(s) of 2	3730	240	100	0.256	0.19	4185	10,000
4	Panel A @ 150'	1	22000	NM	1 Sets(s) of 2	3730	240	150	0.385	0.14	2979	10,000
5	Panel A @ 200'	1	22000	NM	1 Sets(s) of 2	3730	240	200	0.513	0.11	2313	10,000

FAULT CURRENT CALCULATION SCALE: NTS 20



EQUIPMENT GROUNDING SCHEMATIC DTL SCALE: NTS 17

- ELECTRICAL 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 FROM ALL PERTINENT AGENCIES 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, SPECIFIED ON THE DRAWING AND ALL ITEMS NECESSARY TO COMPLETE AND PRESENT FOR THE PROJECT AS FULLY OPERATIONAL. ALL ELECTRICAL TESTS SHALL BE APPROVED BY LISTED.
 5. CONDUCTORS SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT (UNDERGROUND) AND MC CONDUIT ABOVE GROUND.
 6. PROVIDE 1/2" SCHEDULE 40 RIGID UNDERGROUND CONDUIT WITH PULL WIRE BETWEEN ELECTRICAL JUNCTION DEMARCATION POINT AND MAIN JUNCTION BOX. CONTRACTOR SHALL DETERMINE REQUIRED NUMBER AND LOCATION OF JUNCTION BOXES FOR UTILITY STANDARDS.
 7. USE 1" SCHEDULE 40 RIGID CONDUIT AND APPROPRIATE FITTINGS TO ENTER NON-LOAD CENTER.
 8. CONTRACTOR TO NOTIFY ALL APPROPRIATE AGENCIES PRIOR TO CONSTRUCTION AND SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN PER NOTED 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 METHODS AND NOTE ON ALL SHEETS FOR ALL-BUILT GROUND OUT.
 11. NOTE DEPTH AND LOCATION OF ALL INSTALLED UTILITIES ON ALL-BUILT RECLINE DRAWINGS.
 12. IF EXISTING UTILITIES ARE ENCOUNTERED, CONTRACTOR SHALL NOTIFY OWNER PRIOR TO DISTURBANCE OR MODIFYING.
 13. CONTRACTOR SHALL NOT RELOCATE PROPOSED EQUIPMENT OR POLE LOCATIONS WITHOUT WRITTEN APPROVAL FROM 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: 11/1/16

RELEASE

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

REVISIONS

NO	DATE	COMMENT
10/16/16		CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

HUB AREA
CINCO RANCH - HGCW

SHIFT JOB NUMBER
150802

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E1.1

PAGE
10 OF 14

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



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

RECORD DRAWINGS ISSUE DATE: 10/16/16



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11113 WOOD BRIDGE
NORTHSHALE, ARROYA 6517
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FW: 469-948-8883

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PLAN CHECK #

RELEASE

DATE	SUBMITTAL
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10/16/16	2ND CITY SUBMITTAL

REVISIONS

NO	DATE	COMMENT
10/16/16		CITY COMMENTS

PROJECT NAME
CINCO RANCH EXPANSION

HUB AREA
CINCO RANCH - HGCW

SHIFT JOB NUMBER
150802

SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E1.1

PAGE
10 OF 14

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

PLAN CHECK #

CASE #

SHIFT

November 28, 2016

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

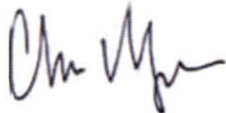
**RE: Cinco Ranch Traffic Control Plan
- Shift Project #160614**

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